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TEWIN LANDS
2021-22 FIELD MONITORING REPORT

June 2023
Updated April 2024

Prepared For:

David Schaeffer Engineering Ltd
120 Iber Road (UNIT 103)
Stittsville, ON
K2S 1E9

Prepared By:

J.F. Sabourin and Associates Inc.
52 Springbrook Drive
Stittsville, ON
K2S 1B9

1.1 Introduction

This Tewin Lands: Cumulative Hydrologic Impact Assessment is part of a set of technical reports which have been prepared as part of Phase 1 of the Tewin study process. The Tewin Study Area ("Study Area") lands were identified as a future urban development area in the new City of Ottawa Official Plan (2023). The Study Area is located in southeast Ottawa, generally bordered by Leitrim Road to the north, Farmers Way to the east, Thunder Road to the south, and Anderson Road and Ramsayville Road to the west. The Study Area is outlined in **Figure 1** below. These technical reports are intended to establish an understanding of the existing physical, social and ecological conditions that characterize the Study Area. Where appropriate, these reports also identify preliminary opportunities to help guide the next phase of the master planning process.

This information will be used to identify opportunities and strategic considerations that will inform the Tewin community design process going forward, as well as frame the preparation of additional site-specific technical studies and recommendation reports. Development at Tewin will explore new approaches to planning, design and development, including alternative strategies and solutions that can successfully implement the key community objectives.

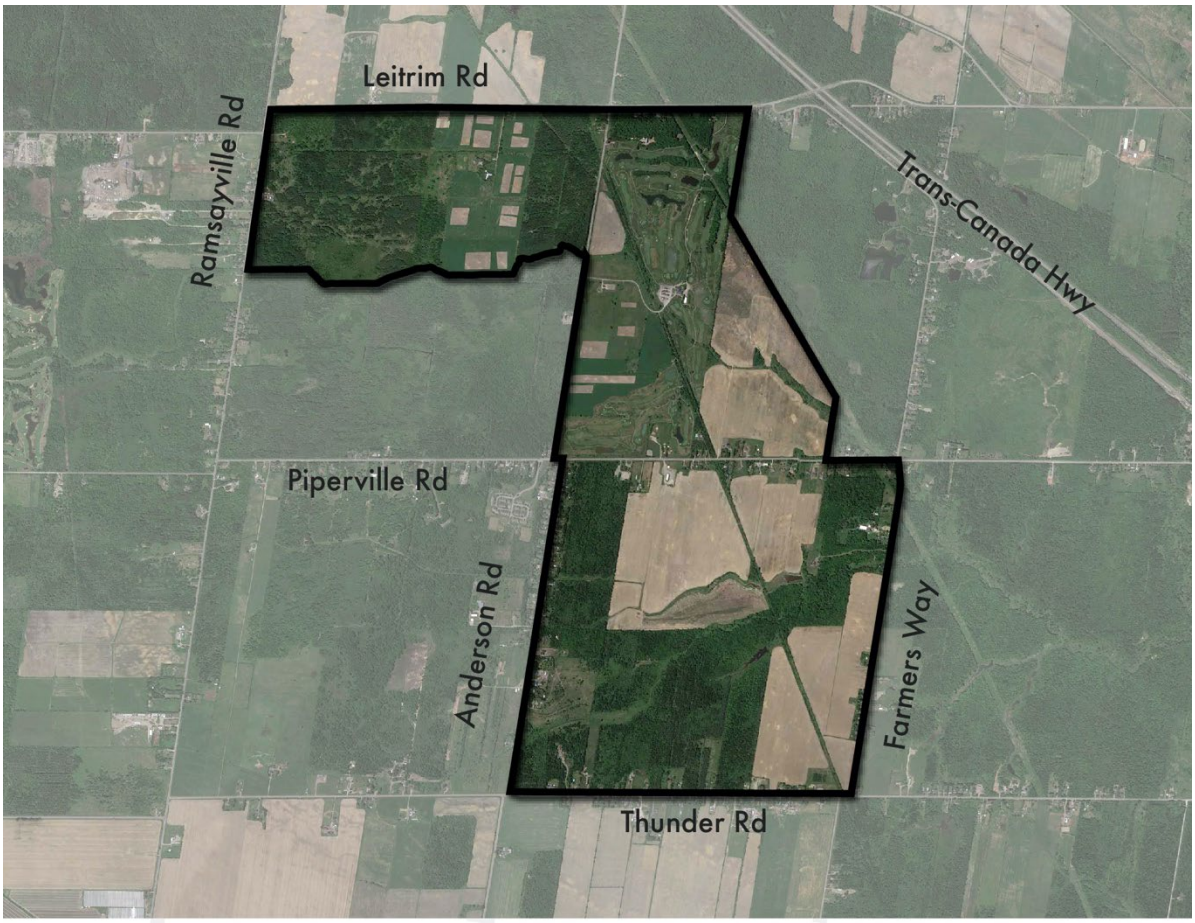

Figure 1: The Tewin Study Area is identified in black outline

1.2 Integrated Master Plan & Municipal Class EA Process

The ambition and scale of Tewin requires ongoing internal and external consultation. The purpose of the integrated Master Plan and Municipal Class EA process is to consolidate the various technical and community planning elements of the project to promote coordinated community engagement through streamlined and aligned decision making. This format will ensure critical partners, consultants and stakeholders are brought together at major milestones to identify and track challenges and opportunities through the development process.

The integrated Master Plan and Municipal Class EA process will include a public consultation strategy and technical study review timeline that achieves the requirements of the Master Plan and Municipal Class EA concurrently. The statutory Municipal Class EA meetings will be timed to align with the development of the community objectives, urban framework, preferred plans, and the draft secondary plan. Additional public and targeted consultations will be planned to complement the statutory consultation requirements. The development of the One Planet Action Plan (OPAP) will occur in parallel, with the final OPAP available at the time of final secondary plan Council approval. One Planet Living endorsement will follow Council approval of the secondary plan.

1.3 Tewin Overview and Community Vision

Tewin is planned to be a community of approximately 45,000 people and thousands of jobs. It will be more compact and dense than existing suburbs in Ottawa, with new urban areas integrated alongside valuable natural areas. Tewin will be an inclusive community, anchored in Algonquin wisdom and placekeeping principles, and welcoming to all. The community will have a meaningful mix of land uses and support active mobility, to achieve a complete, future ready community. The Tewin Project Team and City of Ottawa have committed to exploring appropriate options, alternatives and standards to enable Tewin to become a model of best practices in sustainable and inclusive community design in the North American context.

The integrated Master Plan and Municipal Class EA process will bring together various technical and community planning considerations.

The key objectives for Tewin are to create a community that is:

- Anchored in Algonquin wisdom, principles and placekeeping;
- A benchmark for community design, demonstrating achievement of the 5 Big Moves identified in the Ottawa Official Plan;
- Mobility-oriented and supportive, promoting a broad range of active forms of movement, where personal vehicles are optional;
- Characterized by a meaningful mix of housing, community amenities, jobs and services in order to achieve a complete, future-ready community;
- Designed to protect and integrate alongside valuable natural areas and agricultural lands; and
- Affordable, inclusive, healthy, welcoming and accessible to all.

1.4 Tewin Intent: A Forward-Thinking Framework

Development at Tewin will explore new approaches to planning, design and development, finding successful options and alternatives to implement the key community objectives, in some cases likely going beyond what current development standards would allow for. The Tewin Project Team and the City of Ottawa have articulated these in the “Tewin Intent” which sets out the following:

1. Bold and Innovative Thinking:
Tewin is about creating a new kind of community, a future-focused model for smart, healthy and sustainable development. It will be a people-centred place that seeks to create the conditions for well-being. The Tewin Project Team will be open to bold ideas, innovative approaches, creative solutions, efficient use of land and resources, emerging

technologies, smart city infrastructure that advances the City's goals and objectives, and other future-forward ideas and opportunities that will enable Tewin to reach its full potential.

2. Integrating Algonquin Values and Principles:
Algonquin principles, values and teachings will guide the planning, consultation, design and development process for Tewin. The integration of Algonquin principles and design intentions will ensure the community is nature-based and sensitive to Mother Earth while creating capacity-building and economic development opportunities for the Algonquin people.

3. Sustainability and Resilience:
Tewin will be a model community that will position Ottawa as a leader in integrated sustainable design with the goal of being a resilient and holistic community. Tewin will be guided by the One Planet Living framework and Algonquin values of respect for the earth. The Community Design Plan will respond to the City's High Performance Development Standard and Climate Change Master Plan, and will result in a Community Energy Plan. A Community Energy Plan and performance-based sustainability metrics that address climate mitigation and adaptation, and the other categories of the High Performance Development Standards will be established from the start and monitored over time.

4. Systems-Based Environmental Planning
Tewin's organization and functions will be designed to respect nature and integrate natural features and landscapes into its form, character, and spirit. To that end, the Tewin Project Team is committed to pursuing a systems-based approach to natural heritage protection, environmental management, and water management in a way that is inclusive and integrated and encourages stewardship and a positive relationship with the natural world. Natural features are regarded as opportunities rather than constraints, will be woven into the fabric of the community, and will be central to its design and character.

5. Alternative Design Solutions:
Designing a community of the future requires progressive and forward-thinking infrastructure solutions. The Tewin Project Team is committed to being solutions-oriented and will consider alternative design and engineering standards that prioritize natural systems, pedestrians, cyclists and transit users, and which efficiently use available land and resources.

Surface water management strategies that achieve quality, conveyance and storage objectives will be based on the fundamentals of natural cycles, green/soft infrastructure, and multi-use opportunities that complement the human realm. Infrastructure design will consider the needs of those involved in the construction, operation and maintenance of municipal services to find opportunities to efficiently service the community and showcase sustainable practices while meeting the community's needs.

A framework for assessing alternative design standards will be established to consider and review alternatives against existing standards within the context of goals and objectives for the City and Tewin.

6. Cost-Effectiveness and Efficiency:
Tewin will demonstrate best practices in efficient and compact development. As a dense, mixed-use community of scale, Tewin will achieve a critical mass of people and jobs to support new infrastructure investments. The Tewin Project Team is committed to exploring opportunities to optimize the community's efficiency through a range of strategies, including prioritizing space-efficient modes of transportation, use of technology, green infrastructure, innovative construction practices, shared-use agreements, and mixed-use forms of development that will promote the efficient use and optimization of land; housing affordability; and supporting the long-term financial viability of the community and city resources.

7. Integrated Planning Process:
We are committed to advancing Tewin through a comprehensive and integrated planning and environmental assessment process where possible or applicable. The process will bring together various planning, environmental, transportation,

urban design, infrastructure, economic, financial, social and technical considerations. The process will be underpinned by engagement with the Algonquin people, other stakeholders, and the public.

8. Collaboration and Problem Solving:
The Tewin Project Team and City of Ottawa Project Team are committed to working collaboratively together to move Tewin forward in an expedited way. We will plan with a spirit of collaboration and joint problem-solving to ensure that the development of Tewin meets the best interests of the City of Ottawa and the Algonquins of Ontario.

9. Communication and Transparency
The Tewin Project Team and the City of Ottawa Project Team commit to open and transparent communication throughout the project. This will require proactively sharing information between the groups as decisions are made and to ensure relevant communication materials are distributed in a timely manner.

The Tewin Project Team and the City of Ottawa Project Team will ensure that all parties, including City Council, residents, and other stakeholders, are provided with pertinent details. Effective information sharing will ensure the project achieves outcomes that are, to the greatest extent possible, known by all involved.

1.5 Existing Conditions Technical Reports

A range of specialized consultants have been studying the physical environment of the Study Area to support community design, servicing strategies and the future development of Tewin. This data has been collected and reported on in a set of Existing Conditions and Opportunities Reports, of which this document is one. The full suite of reports includes the following:

- **Tewin Existing Conditions and Preliminary Opportunities Report** dated April 2024 and prepared by Urban Strategies
- **Fluvial Geomorphology Study - Tewin Lands: Existing Conditions Summary Report - Bear Brook and Ramsay Creek Watersheds** dated April 2024 and prepared by GEO Morphix Ltd.
- **Tewin Lands: Existing Conditions Hydrogeological Study** dated April 2024 and prepared by Dillon Consulting
- **Existing Conditions - Geotechnical: Tewin Lands** dated April 2024 and prepared by Paterson Group
- **Tewin Lands: Natural Heritage Preliminary Existing Conditions Report** dated April 2024 and prepared by Kilgour and Associates
- **Tewin Lands: Cumulative Hydrologic Impact Assessment** dated April 2024 and prepared by J.F. Sabourin and Associates
- **Tewin Lands: 2021-22 Field Monitoring Report** dated April 2024 and prepared by J.F. Sabourin and Associates
- **Tewin Lands - Existing Conditions Water Budget** May 2024 and prepared by J.F. Sabourin and Associates
- **Tewin Mobility Existing Conditions** dated 2024 and prepared by CGH Transportation
- **Tewin Public and Stakeholder Engagement Plan** dated April 2024 and prepared by Urban Strategies
- **Stage 1 Archeological Assessment Tewin Lands** dated July 14, 2023 and prepared by WSP Canada

1.6 Framework for Identifying Preliminary Opportunities

Given the unique scale, vision and project goals for Tewin, as well as the shared commitment to exploring new ways of advancing the community design process as expressed in the Tewin Intent, the Phase 1 reports for Tewin include a discussion of potential opportunities to be explored in subsequent stages of the integrated Master Plan and Municipal Class EA process. The identification of preliminary constraints and opportunities, as well as a preliminary community structure, is required in Phase 1 of the integrated Master Plan and Municipal Class EA process as per specific Terms of Reference that were established for each of the Tewin planning, environmental and transportation studies.

The opportunities introduced within these reports are based on a series of key policy directions and strategic considerations, including:

- **Ottawa's new Official Plan**, which promotes the creation of complete, transit-supportive communities;
- **Algonquin values and principles**, underscored by respect for nature, integration of water, and planning the natural environment to achieve long-term vitality over many generations;
- **The Tewin Intent**, which promotes innovative thinking and alternative, performance-based solutions;
- **One Planet Living**, a holistic framework for achieving environmental resiliency, sustainable development, and reduced carbon emissions;
- **Provincial policy** direction focused on supporting housing development and facilitating growth, in order to address the province's housing supply challenges; and,
- **An integrated, systems-based approach** to planning at Tewin that brings together diverse planning, environmental, technical and economic considerations.

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Prepared For:
David Schaeffer Engineering Ltd
120 Iber Rd (UNIT 103)
Stittsville, ON
K2S 1E9

Prepared by:

Matteo Petti, BA (Geography)
Field Monitoring Lead
J.F. Sabourin and Associates Inc.

Reviewed by:

Jonathon Burnett, B.Eng., P.Eng.,
Senior Water Resources Engineer
J.F. Sabourin and Associates Inc.

LICENSED PROFESSIONAL ENGINEER
J. J. BURNETT
100227734
PROVINCE OF ONTARIO

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1 PROJECT OVERVIEW

1.1 Introduction

As a part of the proposed development of the Tewin Lands in the southeast extent of the City of Ottawa, J.F. Sabourin & Associates Inc. (JFSA) has been commissioned to conduct intermittent field investigations and continuous flow monitoring throughout the area. The objective of these activities is to gain a comprehensive understanding of how watercourses in the region respond to different environmental conditions and to establish the relationship between flows and water levels at key locations within and outside the Study Area.

The Study Area is situated near Carlsbad Springs in Ottawa, Ontario, and is bounded by Leitrim Road to the north, Farmers Way to the east, Thunder Road to the south, and Ramsayville Road and Anderson Road to the west (See Figure 1). This area primarily consists of agricultural lands, rural residential lots, a golf course, and natural areas. The majority of the Study Area drains into Bear Brook, a tributary of the South Nation River, which eventually outlets to the Ottawa River. The remaining portion of the site drains into Ramsey Creek, which discharges into Green's Creek before also outletting to the Ottawa River.

As a part of the field monitoring program, JFSA has completed surface water monitoring, precipitation monitoring, and infiltration testing for the Study Area for 2021 and 2022, to enhance our understanding of the current hydrologic and hydraulic characteristics of the region. The following report presents the data obtained from both the 2021 and 2022 monitoring programs.

1.2 2021 Monitoring (Rainfall & Surface Water)

JFSA completed a short monitoring program in 2021, which started in late August and ended in mid-November. This program consisted of **9 level loggers**, **2 barometric loggers**, and **2 rain gauges**. These works were intended to develop a strong understanding of how the watercourses react to various environmental conditions and how flows and water levels are related at key locations within and outside of the Study Area. All of the monitoring locations are readily accessible and near either road or rail crossings. The rain gauges and barometric loggers were installed in two locations - one in the northwest of the Study Area (NWRG), and another in the southeast of the Study Area (SERG). **Figure 1** provides an overview of all the monitoring locations from 2021.

During the 2021 monitoring period, JFSA conducted **7** site visits to; install equipment, inspect the operation of the field equipment, download recorded data and measure instantaneous water levels. **Table 1** summarizes all dates JFSA staff were onsite and provides a brief description of the task(s) completed on that date. All field instruments were installed in August and uninstalled in November of 2021.

Table 1: Site Visit Summary, 2021

Date	Description
August 19, 2021	Initial field site assessment and rain gauge installation
August 20, 2021	Logger installation (Sites 1, 3, 4, 5, 9)
August 23, 2021	Logger installation (sites 2, 6, 7, 8)
August 31, 2021	Logger data collection
September 28, 2021	Logger data collection
October 20, 2021	Logger data collection
November 16, 2021	Logger removal and data collection

N

Legend

- Level Logger Site
- Rain Gauge/Barometer Site
- Study Area

SCALE: 1:35000

0 1 2 km

J.F. Sabourin and Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
www.jfsa.com

Tewin Lands 2021-22 Field Monitoring Report

Figure 1: Surface Water Monitoring Sites 2021

PROJECT	0971(01)-21
DRAWN	MP
DATE	MAY 2023

C:\Users\BrennanThomas\J.F. Sabourin and Associates Inc\JFSA-OTTAWA-SERVER - Documents\PROJ\0971\0971(01)-21 - Fieldwork\Design\GIS\sc\20221024-Infiltration Field Sites

1.3 2022 Overview (Precipitation, Surface Water & Infiltration)

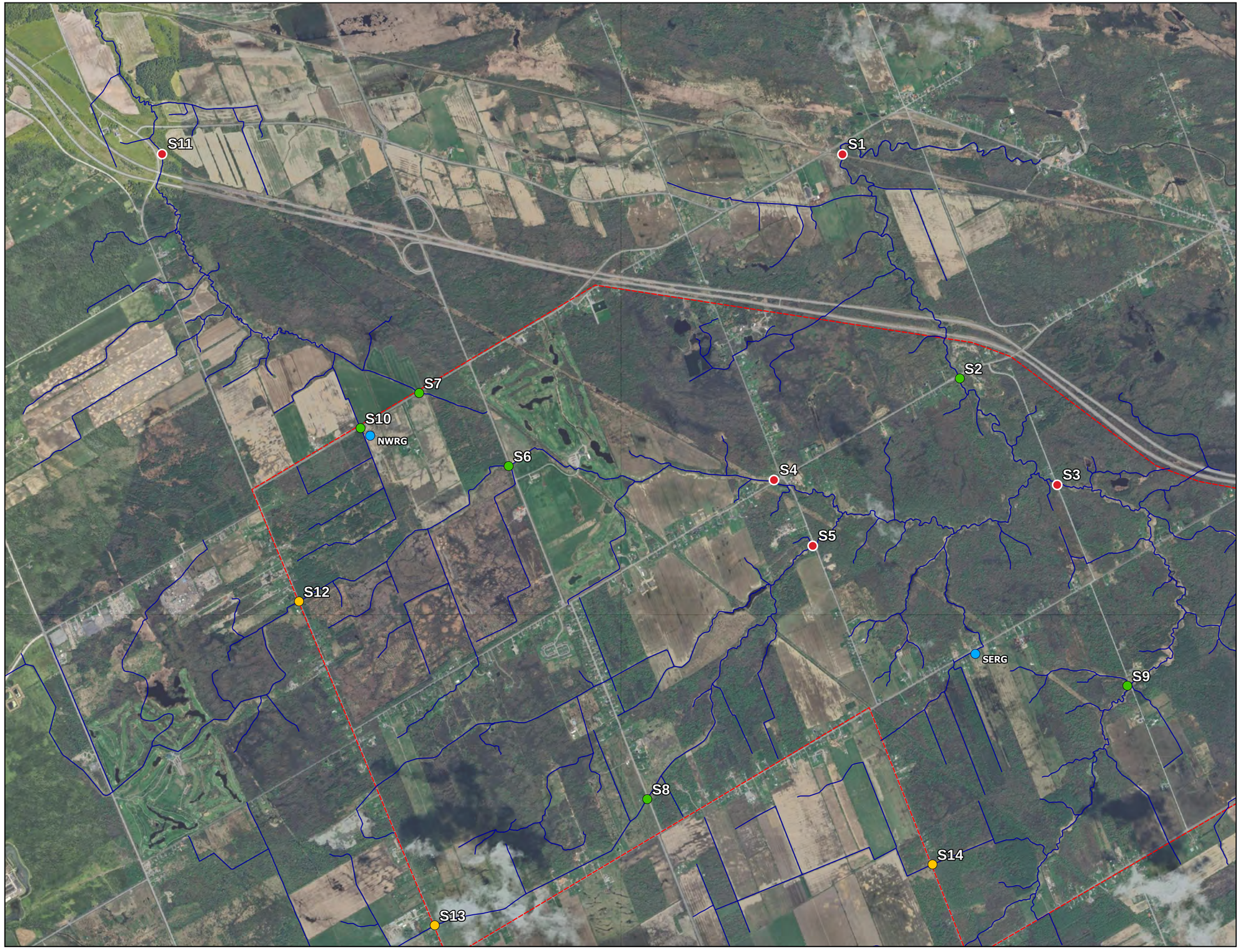
Based on the field data obtained in 2021, for the 2022 monitoring program, several additional sites were chosen for both water level and surface flow monitoring to better understand the hydrologic/hydraulic characteristics of the area. Soil infiltration field tests were also conducted throughout the Study Area. The 2022 monitoring program consisted of **11 level loggers**, **2 barometric loggers**, **8 MantaRay Portable Area Velocity Flow Meters** and **2 rain gauges**. 3 MantaRay loggers were installed at strategic locations within the Study Area to capture flows through the Smith-Gooding and Johnston Municipal Drains. 5 MantaRay loggers were installed outside of the Study Area, with three of these loggers installed upstream to monitor flows from the Johnston Municipal Drain and Bear Brook tributaries. The remaining 2 MantaRay loggers were installed to monitor flows discharging from Ramsey Creek and Bear Brook South of Highway 417. All MantaRay devices were provided and maintained by GEO Morphix Ltd (GMX).

The rain gauges and barometric loggers were installed in two locations - one in the northwest of the Study Area (NWRG), and another in the southeast, just outside of the Study Area (SERG). Snow depth measurements were also taken at these locations in February and March of 2022. Refer to **Figure 2** for the 2022 surface water monitoring locations.

During the 2022 monitoring period, JFSA conducted **19** site visits to; record snow measurements, install equipment, inspect the operation of the field equipment, download recorded data, measure instantaneous water levels, and conduct infiltration testing. **Table 2** summarizes all dates JFSA staff were onsite and provides a brief description of the task(s) completed on that date. All field instruments were installed in April of 2022 and uninstalled in early November 2022.

Table 2: Site Visit Summary, 2022

Date	Description
February 11, 2022	Snow depth measurements and core collection
March 04, 2022	Snow depth measurements and core collection
April 11, 2022	MantaRay Installation. All 8 units installed
April 20, 2022	All level loggers, barometers, and rain gauges were installed. All control points and logger depths surveyed
May 10, 2022	MantaRay data collection
May 26, 2022	Logger data collection
June 22, 2022	Logger data collection
July 26, 2022	Logger data collection
August 25, 2022	Logger data collection (S9 not downloaded due to water depth)
September 20, 2022	Logger data collection (S1/S9 not downloaded due to water depth)
September 30, 2022	Infiltration testing
October 03, 2022	Infiltration testing
October 04, 2022	Infiltration testing
October 05, 2022	Infiltration testing
October 06, 2022	Infiltration testing
October 11, 2022	Infiltration testing
October 12, 2022	Infiltration testing
October 14, 2022	Infiltration testing
November 02, 2022	Equipment removal and final data collection



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Legend

- Leve Logger Site
- Flow Logger Site
- Level & Flow Logger Site
- Rain Gauge/Barometer Site
- Twin Boundary
- Twin Urban Expansion Area
- Twin Watercourses

JFSA
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SCALE: 1:30000

1 2 km

Twin Lands 2021-22 Field Monitoring Report

Figure 2: Surface Water Monitoring Sites 2022

PROJECT	0971(01)-21
DRAWN	MP
DATE	APR 2024

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2 PRECIPITATION

2.1 Snow Monitoring (2022)

Snow depth measurements were taken on-site on February 11th, 2022 and March 4th, 2022 near the northwest rain gauge in a nearby open area. Snow cores were also taken to determine the equivalent depth of water for the snowpack. **Table 3** outlines the results of the snow monitoring, which shows that within 21 days the snow depth increased by **1.3 cm** and the total snow density also increased by **2%**. Shortly after the March 4th, 2022 visit the snow started to melt. As seen from **Table 3** below at the start of this melt there was already approximately **72.7mm** of water (in the form of snow) sitting on the surface of the site.

Table 3: Snow Monitoring Data Summary, 2022

Parameters	Feb 11th	March 4th
Snow Depth (cm)	38.5	39.8
Equivalent Water Depth (mm)	74.4	72.7
Water/Snow Ratio	18%	20%

2.2 Rain Gauge Setup and Overview

Two TE525-series tipping bucket rain gauges were installed on-site on August 19th, 2021 and April 20th, 2022, at the northwest (NWRG) and southeast (SERG) locations. These gauges were located on vacant properties and placed in flat, open areas to avoid any interference from nearby vegetation and trees. To ensure stability during heavy rain and strong winds, the gauges were securely installed on robust platforms. Before their deployment, the gauges were calibrated, and when implemented in the field the funnels' rims were aligned with the ground level to ensure accuracy in the recordings. The rain gauges were inspected monthly to ensure that they were level and functioning properly, and the data recorded during that month was downloaded.

Figure 3: 2022 NWRG Setup

Figure 4: 2022 SERG Setup

The rain gauges were active from August 19th – November 18th in 2021 and from April 20th – November 2nd in 2022, providing **91** and **197** days of rainfall data respectively. **Table 4** below provides a summary of the rain gauge data collected in both 2021 and 2022.

Table 4: Rain Gauge Data Summary, 2021-2022

Dates	Total Days Operational	Total Rain (mm)	Avg. Rainfall per Day (mm)	Maximum Rainfall Intensity (mm/hr)
August 19th – November 18th 2021	91	312.5	3.43	100.8
April 20th – November 2nd 2022	197	583.0	2.92	37.2

2.3 Ottawa International Airport Comparison

The rainfall volumes recorded at the gauge in the Study Area have been compared with the data obtained at the Environment Canada gauge located at the Ottawa International Airport (YOW). **Table 5** below provides a comparison between the total monthly rainfall volumes for these two gauges. Note that as the rain gauges in the Study Area were installed on August 19, 2021, and April 20, 2022, and uninstalled on November 18, 2021, and November 11, 2022, these are partial rainfall volumes reported for these months in the table below. From this analysis, it is seen that the total rainfall recorded at the two rain gauges for the same period differs by **16 mm** (5%) and **3.1 mm** (1%) for 2021 and 2022 respectively, which is within the expected tolerance for rain gauges separated at this sort of distance.

Table 5: Tewin Site vs Ottawa International Airport Rain Gauge Monthly Comparison 2021 & 2022

Month	Total Rainfall (mm)			
	Tewin RG 2021	YOW RG 2021	Tewin RG 2022	YOW RG 2022
April	-	-	28.9*	17.1*
May	-	-	82.5	91.0
June	-	-	87.7	103.3
July	-	-	82.1	89.0
August	22.4*	25.8*	189.3	189.1
September	112.9	118.8	81.0	65.3
October	143.8	139.9	30.0	29.6
November	33.4*	44.0*	1.5*	1.7*
Total	**312.5**	**328.5**	**583.0**	**586.1**

*Partial month data

Figure 5A and **Figure 5B** compare the cumulative volume recorded by JFSA's rain gauges against the rain gauges at the Ottawa International Airport. This figure shows that the general response of the two gauges is similar, with similar storms being recorded with slight variations in the magnitude, which is expected as a storm event will fluctuate in rainfall intensity as the storm travels.

Figure 5A - 2021 Cumulative Rainfall Comparison

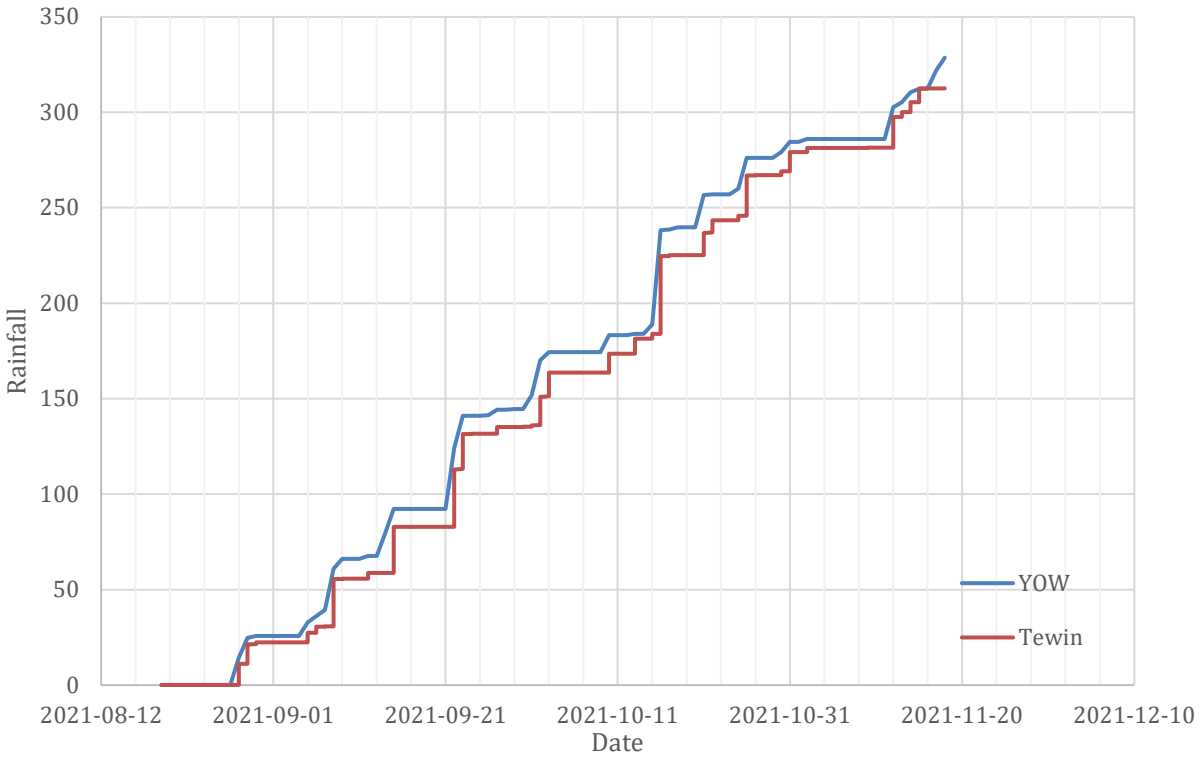
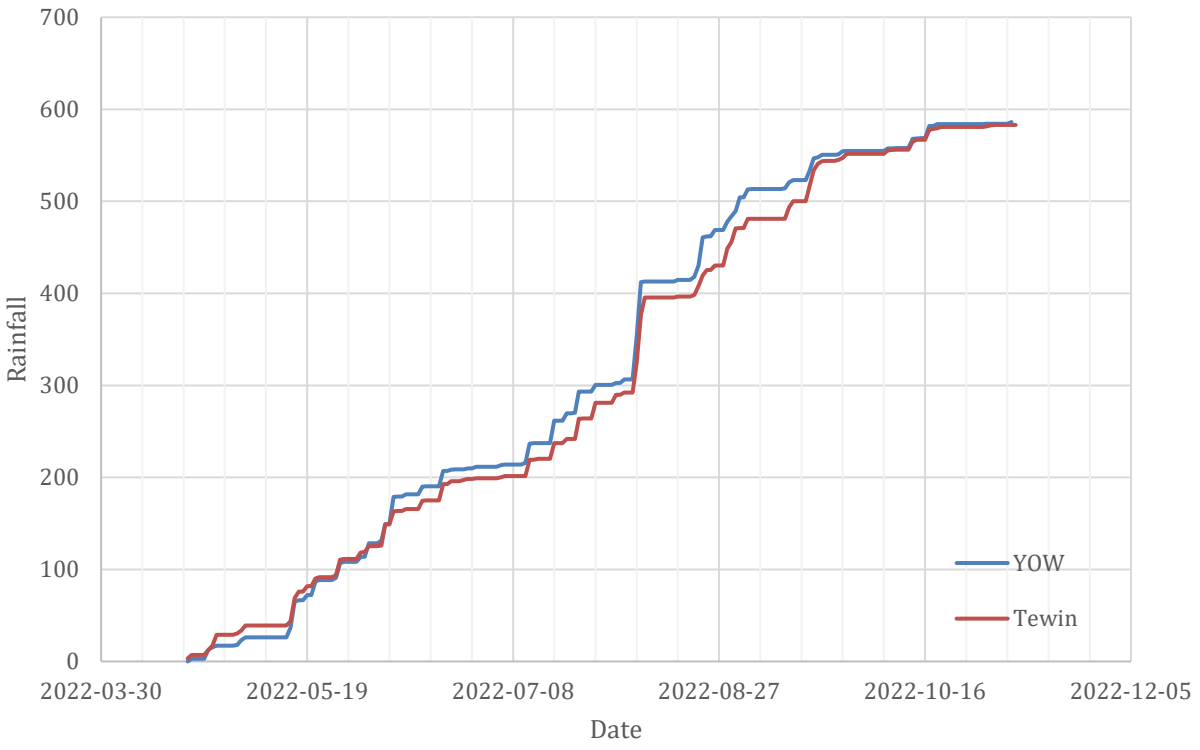


Figure 5B - 2022 Cumulative Rainfall Comparison



2.4 Significant Rainfall Events

The following section outlines the significant rainfall events that occurred during the 2021 and 2022 monitoring periods. For this study, a 'Significant Rainfall Event' was defined as a single event if the total rainfall volume was greater than 5mm and was followed by at least 12 hours without any additional rainfall. A total of **14** significant rainfall events took place in 2021 while **27** significant rainfall events were observed during the 2022 monitoring period. See **Table 6A** and **Table 6B** for a full breakdown of these events. From this analysis, the largest event recorded in 2021 occurred from September 22nd -23rd, with a total rainfall volume of **48.7 mm** over 1 day 18 hours and 50 minutes. The largest event in 2022 was from August 7 – 10, with a total rainfall volume of **103.5 mm** over 2 days 15 hours and 20 minutes.

Table 6A: Significant Rainfall Events, 2021
(Events with more than 5 mm and separated by at least 12 hours of no rain)

2021				
Event	**Start Date/Time**	**Finish Date/Time**	**Duration (day:hr:min)**	**Total Rainfall (mm)**
1	28-August 21:30	29-August 12:55	0:15:25	21.3
2	05-September 03:10	05-September 13:30	0:10:20	5.0
3	08-September 00:35	08-September 09:05	0:08:30	24.8
4	15-September 00:35	15-September 05:10	0:04:35	24.1
5	**22-September 04:30**	**23-September 23:20**	**1:18:50**	**48.7**
6	01-October 23:25	03-October 07:25	1:08:00	27.7
7	10-October 02:45	10-October 11:05	0:08:20	9.8
8	13-October 07:10	13-October 22:45	0:15:35	8.0
9	15-October 06:05	16-October 18:00	1:11:55	43.1
10	21-October 06:15	22-October 05:15	0:23:00	18.3
11	25-October 11:15	26-October 21:45	1:10:30	23.4
12	30-October 09:15	31-October 16:30	1:07:15	12.0
13	12-November 04:00	12-November 12:20	0:08:20	28.6
14	14-November 18:30	15-November 16:50	0:22:20	12.4

Table 6B: Significant Rainfall Events, 2022
(Events with more than 5 mm and separated by at least 12 hours of no rain)

Event	Start Date/Time	Finish Date/Time	Duration (day:hr:min)	Total Rainfall (mm)
1	2023-04-25 9:50	2023-04-26 3:35	0:17:45	9.9
2	2023-04-27 1:55	2023-04-27 12:25	0:10:30	11.9
3	2023-05-03 8:25	2023-05-04 6:00	0:21:58	8.5
4	2023-05-15 10:20	2023-05-17 18:30	2:08:10	36.9
5	2023-05-19 9:30	2023-05-19 12:35	0:03:05	5.8
6	2023-05-21 15:50	2023-05-21 17:00	0:01:10	8.5
7	2023-05-27 3:00	2023-05-27 12:25	0:09:25	17.0
8	2023-06-01 4:45	2023-06-02 5:20	1:00:35	7.5
9	2023-06-03 2:55	2023-06-03 5:45	0:02:50	6.3
10	2023-06-06 23:05	2023-06-07 23:25	1:00:20	23.5
11	2023-06-09 4:30	2023-06-09 12:30	0:08:00	14.4
12	2023-06-16 0:40	2023-06-17 17:25	1:16:45	9.2
13	2023-06-21 6:40	2023-06-21 19:40	0:13:00	17.9
14	2023-07-12 0:45	2023-07-12 18:35	0:17:50	17.8
15	2023-07-18 11:25	2023-07-19 7:10	0:19:45	17.0
16	2023-07-24 13:25	2023-07-25 1:30	0:12:05	22.0
17	2023-07-28 14:00	2023-07-29 6:55	0:16:55	17.2
18	2023-08-02 10:20	2023-08-02 10:50	0:00:30	8.4
19	**2023-08-07 13:25**	**2023-08-10 4:45**	**2:15:20**	**103.5**
20	2023-08-22 15:20	2023-08-24 6:45	1:15:25	21.3
21	2023-08-24 20:45	2023-08-25 0:25	0:03:40	5.9
22	2023-08-29 14:45	2023-09-01 6:00	2:15:15	40.6
23	2023-09-03 20:45	2023-09-03 23:00	0:02:15	10.1
24	2023-09-13 12:00	2023-09-14 13:35	1:01:35	19.0
25	2023-09-18 11:00	2023-09-20 7:50	1:20:50	40.8
26	2023-10-13 8:00	2023-10-14 7:30	0:23:30	10.9
27	2023-10-17 5:20	2023-10-18 4:45	0:23:25	11.6

2.5 2021-22 Intensity-Duration-Frequency (IDF) Analysis

The rainfall data obtained for the two years of monitoring was then compared against the Ottawa Airport Intensity Duration Frequency Curves on a range of durations from 5 minutes to 24 hours to determine the maximum rainfall return periods for each of the years. Based on this analysis 2021 saw events with return periods of 2.6 years or less, while 2022 saw events with return periods of less than 2 years at 5-minute - 2-hour durations and return periods between 6.6 to 7.6 years at 6-hour to 24-hour durations. The Rainfall-Duration Max Intensity summary for the 2021 and 2022 collected rainfall is shown in **Table 7A** and **Table 7B** respectively.

Table 7A: Rainfall Duration/Max Intensity Summary, 2021

	Duration	Maximum Measured Rainfall Intensity (mm/hr)	Return Periods Based on Ottawa Airport IDF (Years)
2021	5 Minute	100.80	<2
	10 Minute	82.20	=2.4
	15 Minute	64.00	=2.2
	30 Minute	39.20	=2
	60 Minute	24.60	=2.2
	2 Hour	15.70	=2.6
	6 Hour	5.92	<2
	12 Hour	3.27	<2
	24 Hour	1.70	<2

Table 7B: Rainfall Duration/Max Intensity Summary, 2022

	Duration	Maximum Measured Rainfall Intensity (mm/hr)	Return Periods Based on Ottawa Airport IDF (Years)
2022	5 Minute	37.20	<2
	10 Minute	35.40	<2
	15 Minute	34.00	<2
	30 Minute	25.40	<2
	60 Minute	13.80	<2
	2 Hour	11.70	<2
	6 Hour	8.85	=6.6
	12 Hour	5.09	=7.6
	24 Hour	2.71	=6.8

3 WATER LEVEL MONITORING

9 and **11 level loggers** were installed in and around the Study Area in April 2021 and 2022 respectively. The purpose of these loggers was to identify the fluctuations in water levels in the area due to rainfall events as well as determine outflow from the Study Area. **2 barometric loggers** were placed in the area to account for the changes in atmospheric pressure, recorded by all level loggers. With the atmospheric pressure accounted for in the recorded data, compensation was possible, and these recorded values converted to depths as both the temperature of the water and the total hydrostatic pressure were known. Manual depth measurements obtained in the field using a survey rod and level were used to correct the depths recorded by the loggers.

A GPS survey of all sites - except for S1, S2, and S11 - was completed before the commencement of the 2022 monitoring period, which allowed for the conversion of the recorded depths into geodetic water surface elevations. Missing survey data for S2 is due to bridge replacement construction which forced changes to the logger location. S1 and S11 have missing survey data since at the time of the survey, the exact logger and control point locations had yet to be finalized. In lieu of a geodetic elevation, a placeholder elevation of 100 masl was given for S1, S2 and S11. **Table 8A** and **Table 8B** is a summary of the water surface elevations physically measured in and around the Study Area during 2021 and 2022 site visits. Since Site 10 remained dry from July 26, 2022, to the end of the monitoring period in November 2022, no manual measurements were taken during this period. Note that S10 and S11 were new sites added for the 2022 field season and were not included in the 2021 field monitoring.

Table 8A: Summary of Manual Water Elevation Measurements, 2021

	2021 Manual Measurements (m)										
Date	S1*	S2*	S3	S4	S5	S6	S7	S8	S9	S10	S11*
Watercourse	BB	BB	BB	BB	BB	BB	RC	BB	BB	RC	RC
20-Aug	99.710		69.684	72.042	71.634				72.722		
23-Aug		67.288				76.268	76.970	78.399			
31-Aug	99.710	67.266	69.706	72.075	71.630	76.287	76.964	78.422	72.682		
28-Sep	99.793	67.143	69.752	72.253	71.644	76.289	77.126	78.580	72.767		
20-Oct	99.748	67.279	69.861	72.378	71.706	76.383	77.286	78.859	73.032		
16-Nov	99.943	67.416	68.872	72.493	71.818	76.476	77.340	78.898	73.160		

*Note S1, S2, and S11 were benchmarked against arbitrary datum (100m)
-BB denotes loggers on the Bear Brook watershed
-RC denotes loggers on Ramsay Creek Watershed

Table 8B: Summary of Manual Water Elevation Measurements, 2022

	2022 Manual Measurements (m)										
Date	S1*	S2*	S3	S4	S5	S6	S7	S8	S9	S10	S11*
Watercourse	BB	BB	BB	BB	BB	BB	RC	BB	BB	RC	RC
20-Apr	99.756	98.820	68.909	72.615	71.937	76.693	77.539	78.633	73.235	78.957	99.257
26-May	99.248	98.690	68.523	72.348	71.785	76.423	77.307	78.443	72.944	78.625	98.846
22-Jun	99.466	98.764	68.573	72.327	71.758	76.529	77.277	78.428	72.858	78.598	98.831
26-Jul	99.726	98.430	68.399	72.210	71.686	76.464	77.146	78.322	72.711		98.676
25-Aug	99.767	98.796	68.407	72.123	71.716	76.441	77.091	78.332	72.773		98.644
20-Sep	99.929	98.954	68.621	72.271	71.795	76.541	77.182	78.470	73.017		98.822
02-Nov	99.819	98.972	68.416	72.151	71.715	76.433	77.139	78.359	72.818		98.659

*Note S1, S2, and S11 were benchmarked against arbitrary datum (100m)

The minimum, maximum and average for both water temperature and depth, as well as the number of days with zero depth readings, are provided in **Table 9A** and **Table 9B**. Note that level loggers with a higher rate of measured dry days were exposed to the elements and thus have a more extreme range of temperatures. The graphs showing continuous water depth and temperature for all the data from each water level and barometric logger are provided in **Appendix A**, while graphs showing continuous water depth vs. rainfall events are available in **Appendix B**.

Table 9A: Level Logger Monitoring Summary, 2021

Site	Monitoring Duration (days)		Water Temperature (C)	Water Depth (m)	Duration of measured zero depth i.e. dry conditions / % of total monitoring time
S1	89	Min	2.93	0.457	0 days / 0%
		Max	23.71	1.181	
		Avg	13.72	0.755	
S2	86	Min	2.66	0.470	0 days / 0%
		Max	24.46	1.398	
		Avg	13.35	0.677	
S3	89	Min	-6.58	0	8.43 days / 9.47%
		Max	24.35	0.549	
		Avg	12.92	0.291	
S4	89	Min	2.78	0.312	0 days / 0%
		Max	27.78	1.197	
		Avg	13.77	0.581	
S5	89	Min	4.19	0.099	0 days / 0%
		Max	23.69	0.879	
		Avg	13.39	0.183	
S6	86	Min	1.80	0.086	0 days / 0%
		Max	25.61	0.680	
		Avg	13.11	0.188	
S7	86	Min	6.41	0.075	0 days / 0%
		Max	27.74	0.633	
		Avg	14.41	0.335	
S8	86	Min	3.57	0.062	0 days / 0%
		Max	25.45	0.722	
		Avg	12.64	0.376	
S9	89	Min	4.22	0.334	0 days / 0%
		Max	22.76	0.991	
		Avg	13.09	0.556	

Table 9B: Level Logger Monitoring Summary, 2022

Site	Monitoring Duration (days)		Water Temperature (C)	Water Depth (m)	Duration of measured zero depth i.e. dry conditions / % of total monitoring time
S1	197	Min	5.19	0.031	0 days / 0%
		Max	26.02	1.199	
		Avg	16.84	0.502	
S2	197	Min	4.73	0.013	0.007 days / 0.004%
		Max	30.72	0.962	
		Avg	16.06	0.310	
S3	197	Min	2.01	0.009	1.7 days / 0.86%
		Max	37.44	1.272	
		Avg	17.18	0.150	
S4	197	Min	4.45	0.413	0 days / 0%
		Max	26.16	1.068	
		Avg	16.84	0.586	
S5	197	Min	3.34	0.062	0 days / 0%
		Max	32.23	0.701	
		Avg	16.62	0.182	
S6	197	Min	3.67	0.065	0 days / 0%
		Max	28.31	0.942	
		Avg	16.54	0.198	
S7	197	Min	5.25	0.153	0 days / 0%
		Max	23.47	0.704	
		Avg	14.87	0.319	
S8	197	Min	-0.94	0.000	103.53 days / 52.55%
		Max	47.80	0.694	
		Avg	16.38	0.049	
S9	197	Min	5.44	0.000	33.99 days / 17.25%
		Max	42.66	1.051	
		Avg	16.39	0.357	
S10	197	Min	-2.85	0.000	130.24 days / 66.11%
		Max	39.27	0.376	
		Avg	15.81	0.034	
S11	197	Min	3.21	0.062	0 days / 0%
		Max	28.94	0.907	
		Avg	16.21	0.222	

4 FLOW MONITORING

8 Greyline MantaRay Portable Area Velocity Flow Meters were installed at key locations within and outside of the Study Area in 2022. These flow meters are Acoustic Doppler devices used to measure depth and velocity and in turn, calculate flow through a section. The addition of the MantaRay devices ensured that flows could be captured using two different approaches to cross reference for accuracy and ensure a strong correlation. The flow monitoring equipment was provided and installed by GEO Morphix, who also collected and processed the raw data according to their field schedule. JFSA worked alongside GEO Morphix in the field and in the processing and analysis of the data. The flows were all captured at select cross-sections at publicly accessible road crossings, an example of which is shown in **Figure 6**. The 8 crossings are listed in **Table 10** below, while **Table 11** shows a summary of the flows captured. Refer to **Figure 2** for MantaRay locations (*Flow Loggers*).

Figure 6: MantaRay Flow Meter Setup, 2022

Table 10: MantaRay Flow Meter Locations, 2022

Site	Location	Operational
S1	Russel Road / Via Rail	April 11 – August 30
S3	Hall Road North	April 11 – October 06
S4	Piperville Road West	April 11 – October 06
S5	Farmers Way North	April 11 – October 06
S11	Highway 417 near Ramsayville Road	April 11 – October 06
S12	Ramsayville Road North	April 11 – September 19
S13	Ramsayville Road South	April 11 – July 09
S14	Farmers Way South	May 10 – October 06

Table 11: Summary of MantaRay Flows Measured, 2022

Value	S1 (m^3/s)	S3 (m^3/s)	S4 (m^3/s)	S5 (m^3/s)	S11 (m^3/s)	S12 (m^3/s)	S13 (m^3/s)	S14 (m^3/s)
Minimum	0	0	0.017	0	0	0	0	0
Maximum	1.429	1.959	1.678	1.326	0.807	1.694	0.124	0.101
Average	0.519	0.152	0.530	0.033	0.076	0.096	0.044	0.012

Table 12 below outlines the total monthly flow volumes (in 1,000 m^3) recorded at each of the monitoring locations for the various months. The total runoff volumes recorded during this window for all locations were processed to confirm the flow data is reliable and that there is hydrologic continuity from one monitoring location to the next. For example, S12 has a total flow volume less than S4 (further downstream), and the sum of S3, S4 & S5 is less than the total recorded at S1 (further downstream). The only exception to this is S13 compared to S5 (further downstream), although, on July 12, 2022, the MantaRay monitoring equipment at S13 had to be removed from the channel, due to excessive vegetation growth affecting the reliability of the data. As such the rating curves used to derive flows at this location are questionable and the flows obtained from S13 have been discounted from this analysis. The flow data obtained from this monitoring window will be instrumental in determining the pre-development water budget for the site, refer to the JFSA June 2023 “Tewin Lands - Existing Conditions Water Budget Analysis” memo for more details. Note that The monitoring data recorded each year is reviewed at the end of each season by the various parties and refinements are made for the next season's monitoring plan based on these findings

Table 12: Tewin Monitoring Sites - Total Monthly Flow Volumes (1000 m^3)
May -October 2022

location Area (ha)	S1 5,298.7	S3 1,272.2	S4 1,904.2	S5 1,141.5	S12 1,168.9	S14 203.0
May	595.8	421.1	1,748.5	159.6	493.1	70.0
June	482.3	150.3	524.7	86.8	260.2	33.9
July	1,507.8	32.7	118.7	0.4	36.9	8.2
August	2,159.4	198.7	583.6	124.2	143.6	12.1
September	2,215.0	59.1	199.4	22.2	46.4	25.4
October	2,321.3	51.8	182.6	0.6	43.6	10.0
Total	**6,960.3**	**913.7**	**1,609.0**	**393.7**	**1,023.7**	**159.4**

Data was discounted due to known equipment issues.
S13 provided N/A values and has not been reported in the above table

5 INFILTRATION TESTING

Infiltration testing was completed within and outside the Study Area between September 30, 2022, and October 14, 2022. Infiltration sites were specifically chosen to ensure a wide variety of soil types present on site were profiled with these tests. Infiltration testing was completed using the SATURO Automated Field Infiltrometer by Meter Group. A typical setup for this device in the field is shown in **Figure 7**, while **Table 13** shows infiltration test results for each test site. Note that the

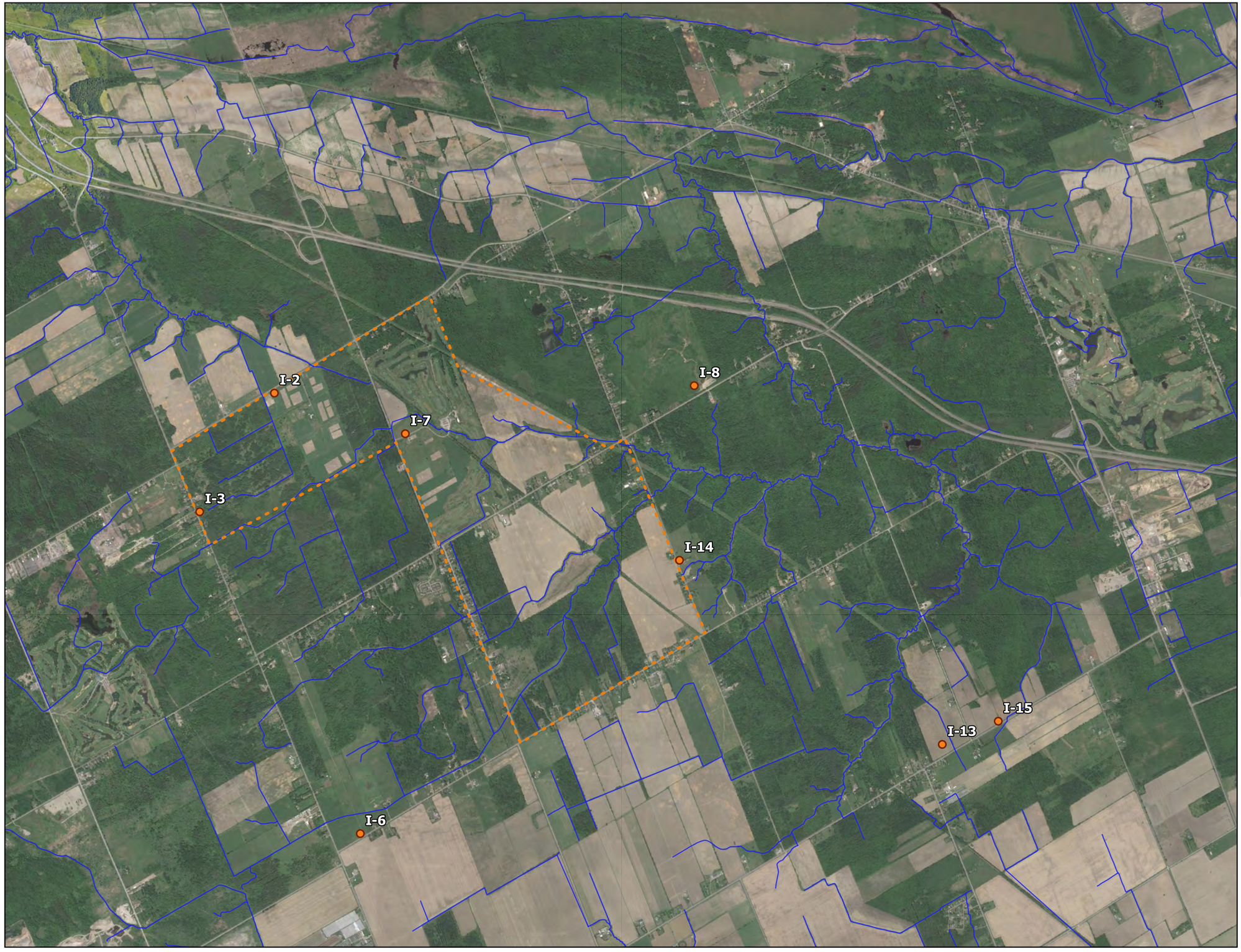
data in red showed an error percent beyond the accepted level, and the results obtained have been discounted from the analysis. **Figure 8** outlines the location of the infiltration testing within the site. Refer to **Appendix D** for a full data/analysis of infiltration results. Note that this analysis differs from that completed by Paterson, who completed permeameter testing and slug testing. Both of these tests completed by Paterson are completed at deeper levels within the soils while the infiltration testing completed by JFSA was conducted on the surface of the soil. Having the infiltration testing completed at different levels allows for a better understanding of the soil's overall infiltration abilities and limiting factors.

Figure 7: Infiltration Test Setup, 2022

Table 13: Field Infiltration Test Results, 2022

Note: Results in red have error % beyond acceptable limit due to poor soil conditions

ID	Surface Elevation (m)	Field kfs (cm/s)	Error (cm/s)	Error (%)	Calculated Infiltration Rate (mm/h)
I2	79.08	0.004981	0.000772	15.5%	132
I3	83.27	0.0001836	0.00006647	36.2%	54
I6	82.06	0.0004026	0.0001679	41.7%	67
I7	78.77	0.001684	0.0001843	10.9%	99
I8	78.95	0.002835	0.0005481	19.3%	113
I13	77.73	0.000352	0.00003717	10.6%	65
I14	78.94	0.008413	0.00444	52.8%	152
I15	77.76	0.0001668	0.00003241	19.4%	53
				Min	**53**
				Max	**152**
				Average	**92**



N

Legend

- Infiltration Test Site
- Study Area

SCALE: 1:35000

0 1 2 km

J.F. Sabourin and Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
www.jfsa.com

Tewin Lands 2021-22 Field Monitoring Report

Figure 8: Infiltration Test Site Locations 2022

PROJECT	0971(01)-21
DRAWN	MP
DATE	MAY 2023

6 HEC-RAS MODELLING

At each of the monitoring locations, JFSA derived a rating curve (water level/ flow) based on the culvert data in the HEC-RAS model of Bear Brook. The water levels obtained by the monitoring program were converted to flows based on the rating curves derived at each location. This analysis assumed that the culverts were operating under inlet control[1] the entire time. The rating curves and estimated flows for the 2021 and 2022 monitoring data are included in **Appendix E**.

In a comparison between the GEO Morphix flows obtained via MantaRay Flow Loggers and the JFSA flows using HEC-RAS modelling, there appear to be some major differences as the two data sets drift apart throughout the field season (**Appendix F**). The flows derived by JFSA assumed that all field site locations were culverts under inlet control[1], which was not the case. Many of the sites appear to have backwater conditions likely stemming from beaver activity in the area, or increased vegetation over the season. Based on the results obtained thus far, modifications and improvements will be made to future years monitoring programs to increase the overall reliability of the field data obtained. For the 2023 monitoring period, level loggers will be placed both at the upstream and downstream extents of critical culverts to allow for the derivation of more robust rating curves and a better understanding of the tailwater impacts on the flows.

7 CONCLUSIONS AND RECOMMENDATIONS

The 2021 field monitoring program consisted of 8 level loggers, 2 barometric loggers, and 2 rain gauges. The field instruments were installed in August and uninstalled in November of 2021 (81 days). The 2022 field monitoring program consisted of 11 level loggers, 2 barometric loggers, 8 MantaRay Portable Area Velocity Flow Meters and 2 rain gauges. The field instruments were installed in April of 2022 and uninstalled in early November 2022 (197 days). The 2021 and 2022 monitoring seasons provide a combined total of 278 days of continuous data collection.

The rainfall data obtained from the two rain gauges in and around the Study Area were compared with rainfall recorded at the Ottawa International Airport, located approximately 10 kilometres from the nearest JFSA Tewin rain gauge. This comparison showed a similar response for the respective rainfall events, with slight differences in intensity, total volume and timing due to the differences in the variance of rainfall over a given area. The data obtained by the MantaRay flow meters located in and around the Study Area were converted to flows (m^3/s), and their variance in flow shows a strong correlation to their respective nearby level loggers, as well as hydrologic continuity between monitoring locations. Level loggers placed in and around the Study Area recorded the water temperature and water levels throughout the year and were later converted to geodetic elevations, to enable flows through and out of the Study Area to be calculated.
After a full field monitoring season in 2022, with added infiltration testing and flow meter testing completed, a more comprehensive picture of how the local watercourses react to various weather patterns is beginning to reveal itself. The monitoring data obtained in 2022 has been instrumental in completing the water budget analysis for the site, however, some minor refinements are proposed to the monitoring plan moving forward to further increase the reliability of the data. Thus

[1] *When a culvert is operating under inlet control, the flow capacity of the culvert is determined by the conditions at the entrance of the culvert. This means that the flow of water being conveyed through the culvert and the associated headwater depth depend on the structure's entrance. Under this condition, the flow capacity of the culvert depends on the available opening area, the shape of the culvert opening, and the inlet configuration. If water can flow through and out of the culvert faster than it can enter, the culvert is under inlet control. In this case, the flow capacity is controlled at the entrance by the headwater depth, cross-sectional area, and type of inlet edge. The roughness, length, and outlet conditions are not factors in determining capacity. Therefore, the flow is controlled upstream and is limited to what can enter the culvert.*

based on the results obtained thus far, modifications and improvements will be made to future years monitoring programs to increase the overall reliability of the field data obtained.

As such it is recommended that 2023 monitoring continue as planned with some additional monitoring points to be implemented, particularly with regards to the downstream sides of the crossing, as it has been seen that tailwater effects on the watercourse appear to have significant impacts on flow estimations when simply looking at culvert hydraulics. With Level loggers placed both upstream and downstream of critical crossing in conjunction with MantaRay flow loggers placed in the channel; JFSA is confident that a robust understanding of the hydrology and hydraulics of the subject sites will be gained from the data obtained from the monitoring program in the coming year.

8 JFSA STATEMENT OF LIMITATIONS

J.F. Sabourin and Associates Inc. (JFSA) has prepared this report and performed the services described in this report, in a manner consistent with the level of care and skill normally exercised by members of the engineering and science professions currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and financial and physical constraints applicable to the services. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of the client representative, for the specific site, objective, and purpose described to JFSA by the client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. Any change in site conditions, purpose and/or development plans may alter the validity of the report. The report, which specifically includes all tables, figures and appendices, is based on data and information assembled by JFSA and is based on the conditions at the site and study area at the time of the work and on the information provided by others. JFSA has relied in good faith on all information provided and does not accept responsibility for any deficiencies, misstatements, or inaccuracies contained in the report as a result of omissions, misinterpretation, or fraudulent acts of the persons contacted or errors or omissions in the reviewed documentation and data. Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. JFSA accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

JFSA
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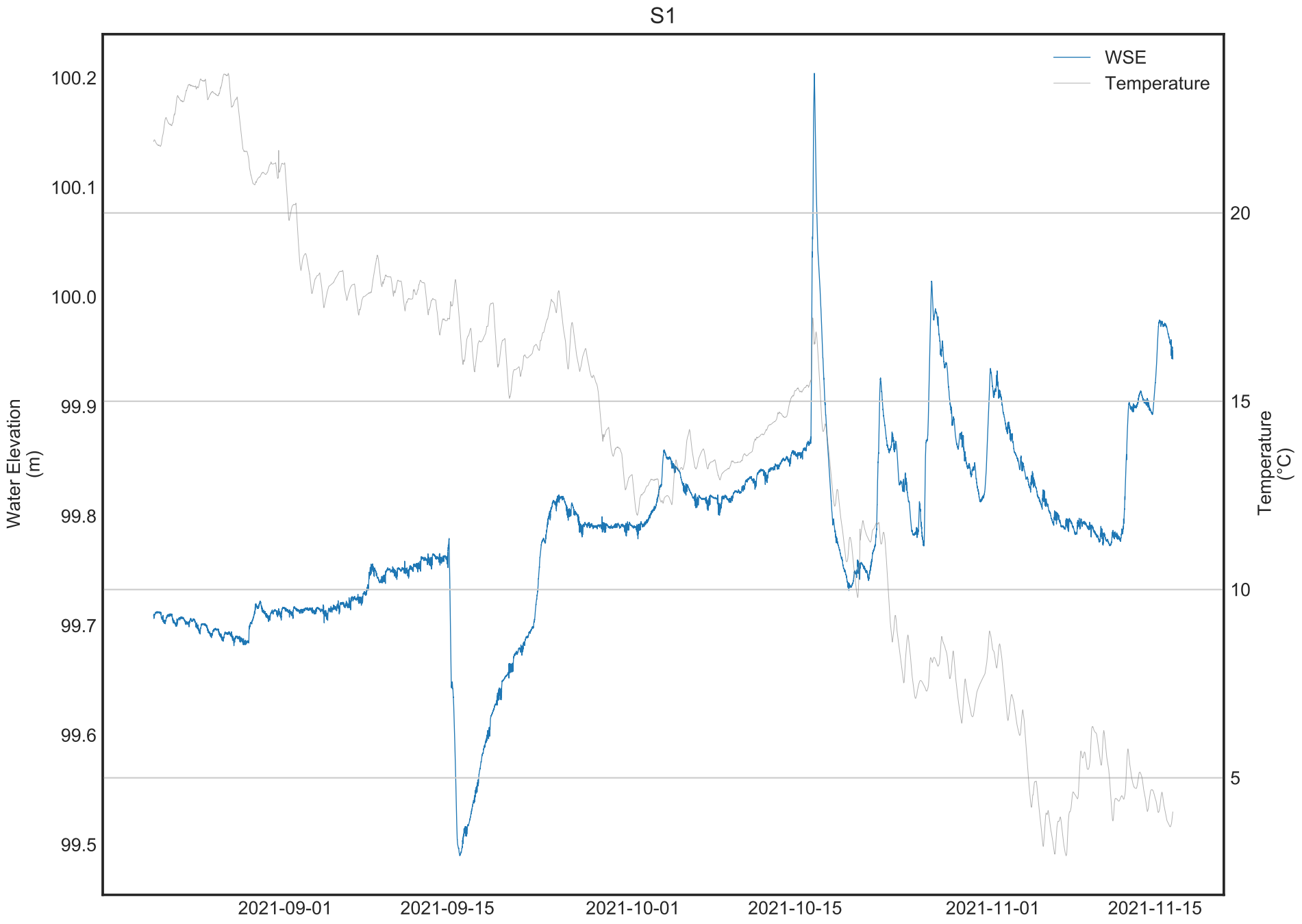
Appendix A

2021-22 Water Level vs. Temperature Figures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99.7
99.6
99.5
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20
15
10
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2021-10-15
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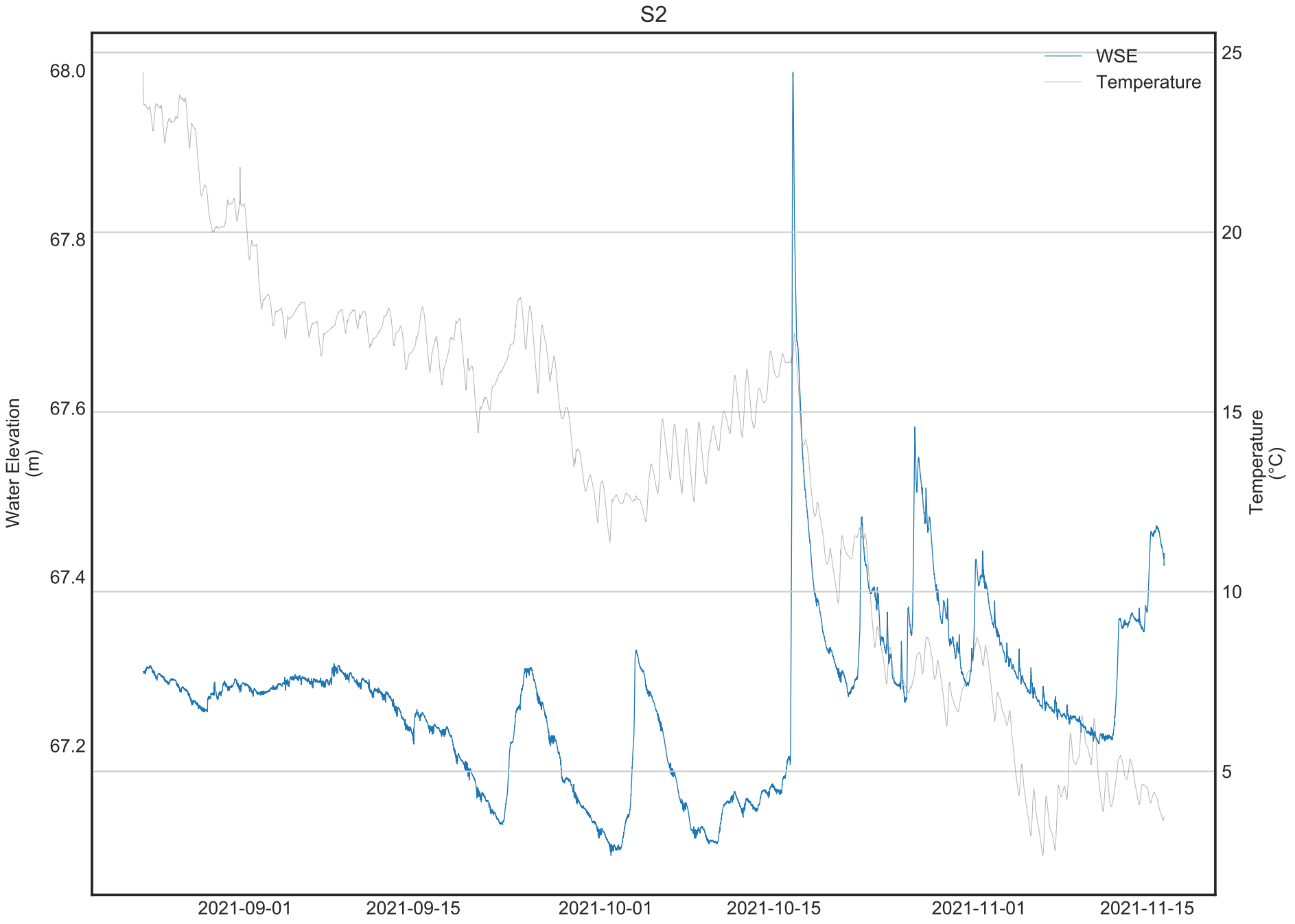
2021-11-15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67.2
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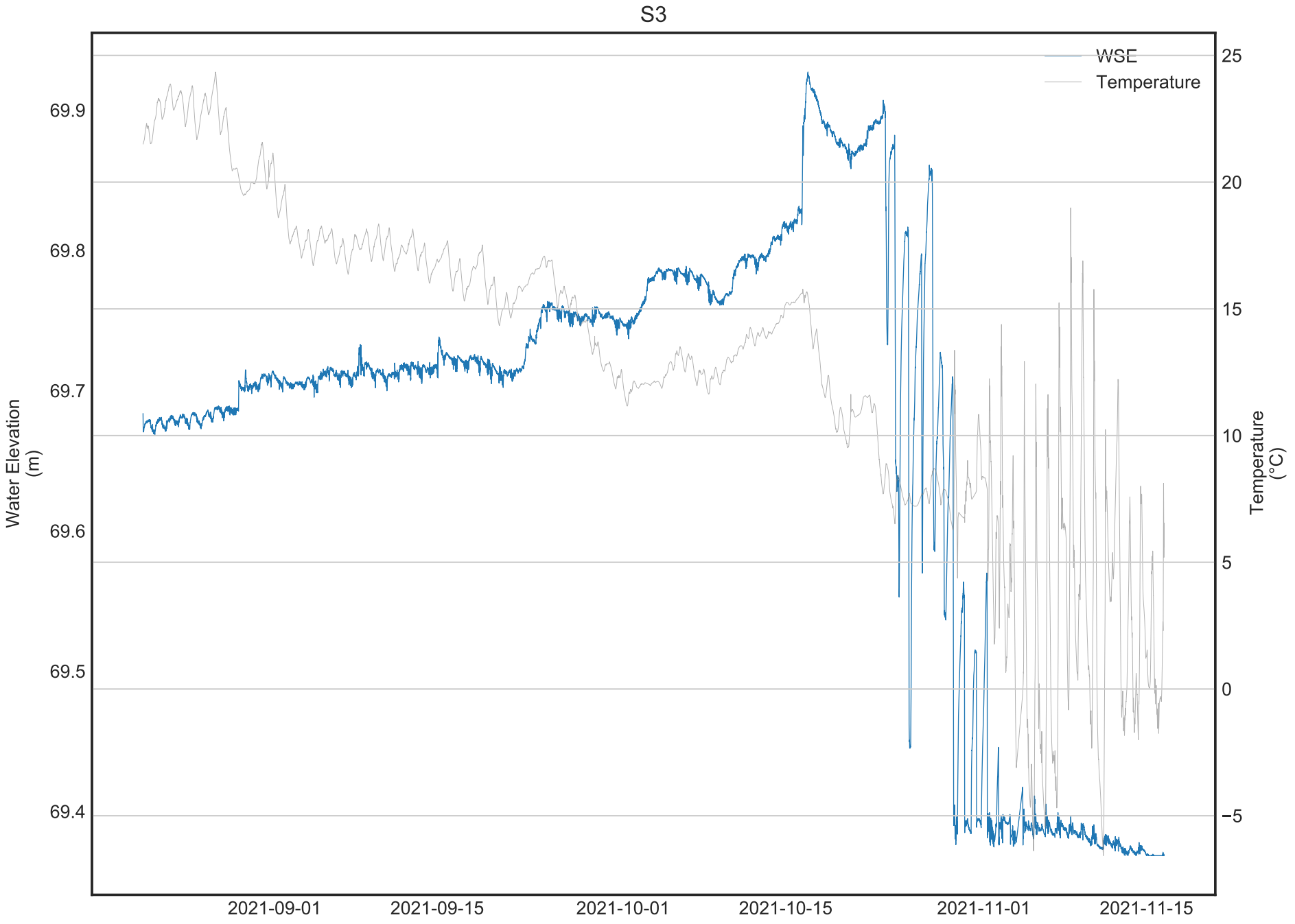
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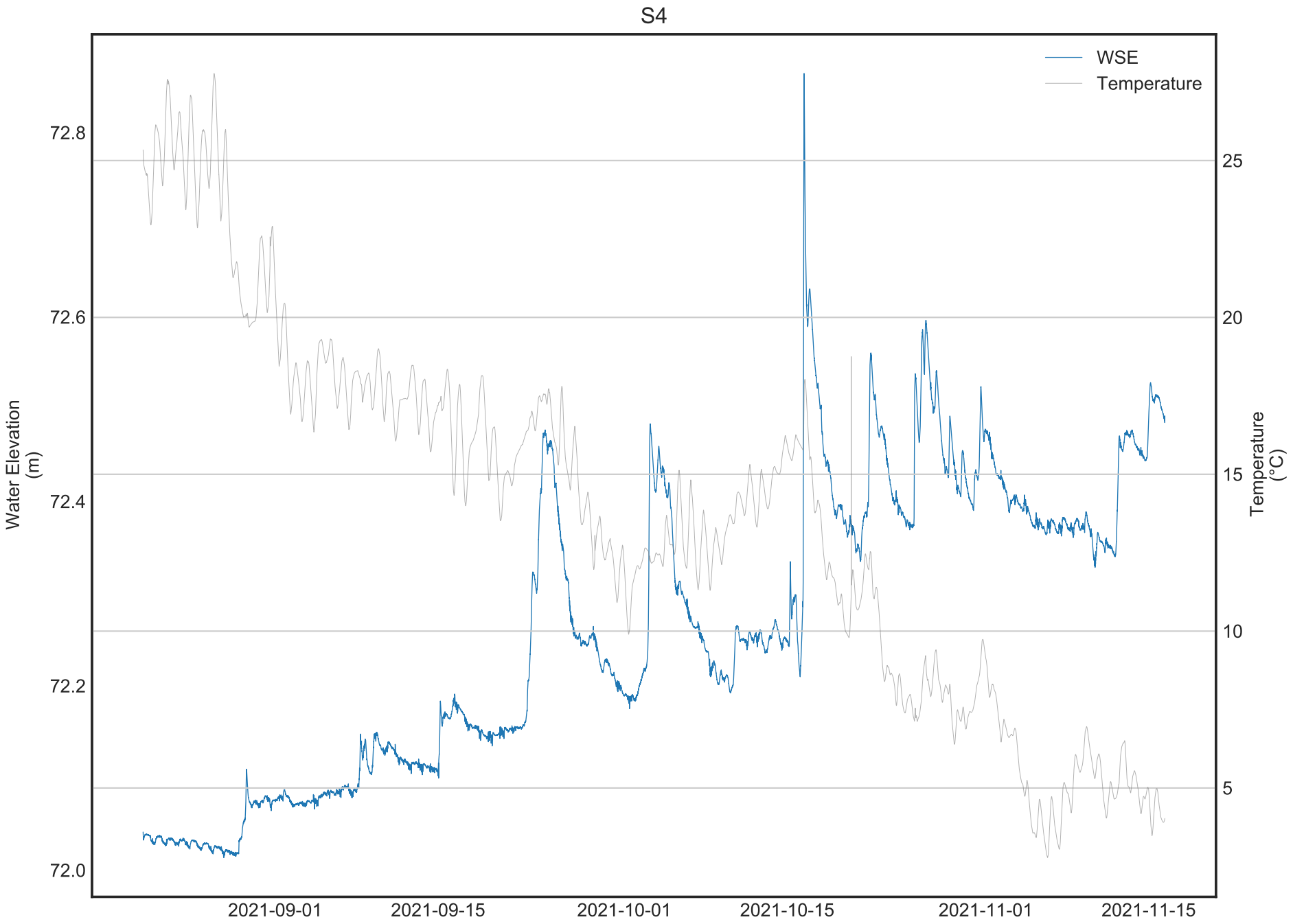
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WSE
Temperature
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72.4
72.2
72.0
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20
15
10
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2021-09-15
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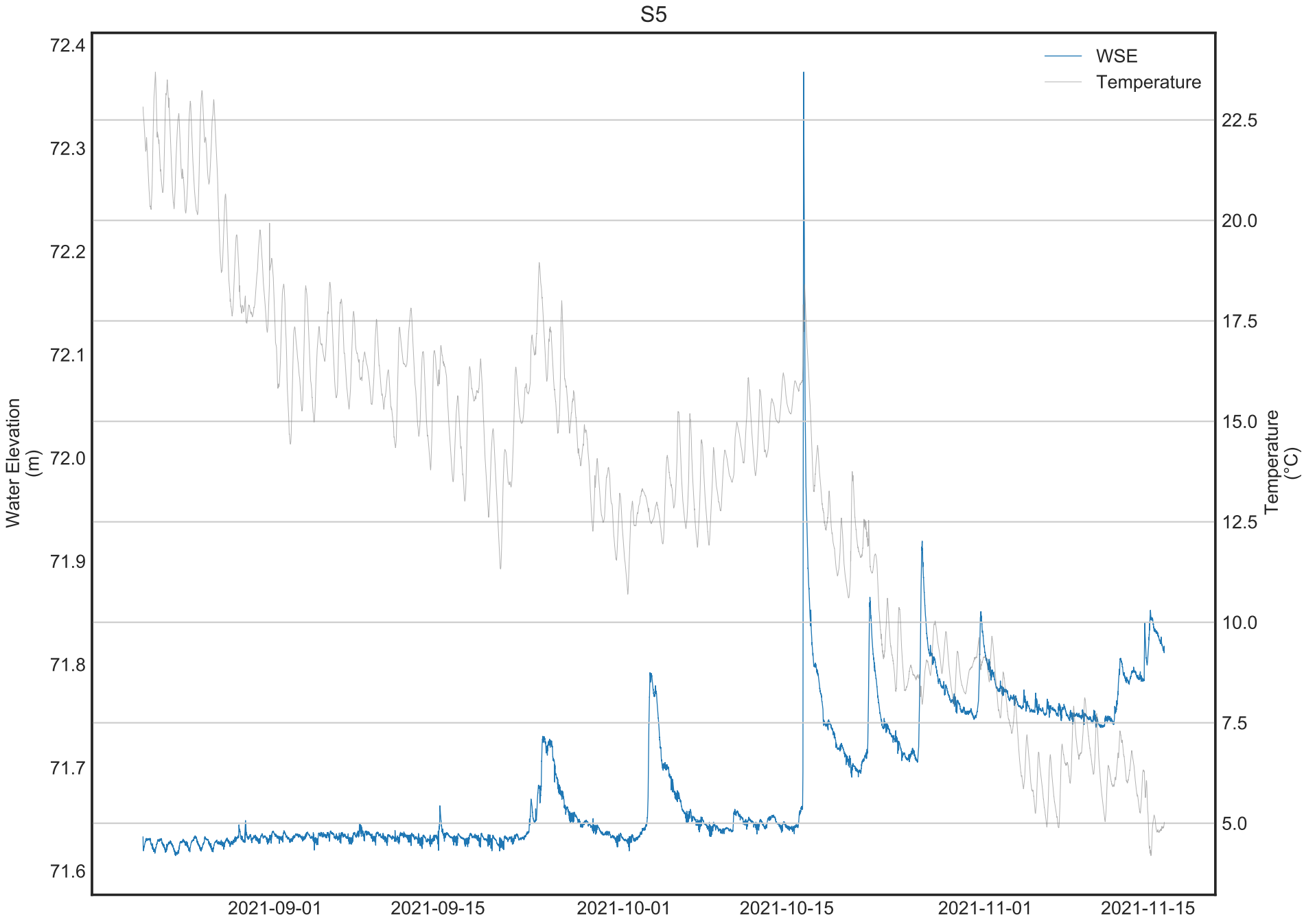
2021-10-15
2021-11-01
2021-11-15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WSE
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Water Elevation (m)
Temperature (°C)
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71.7
71.6
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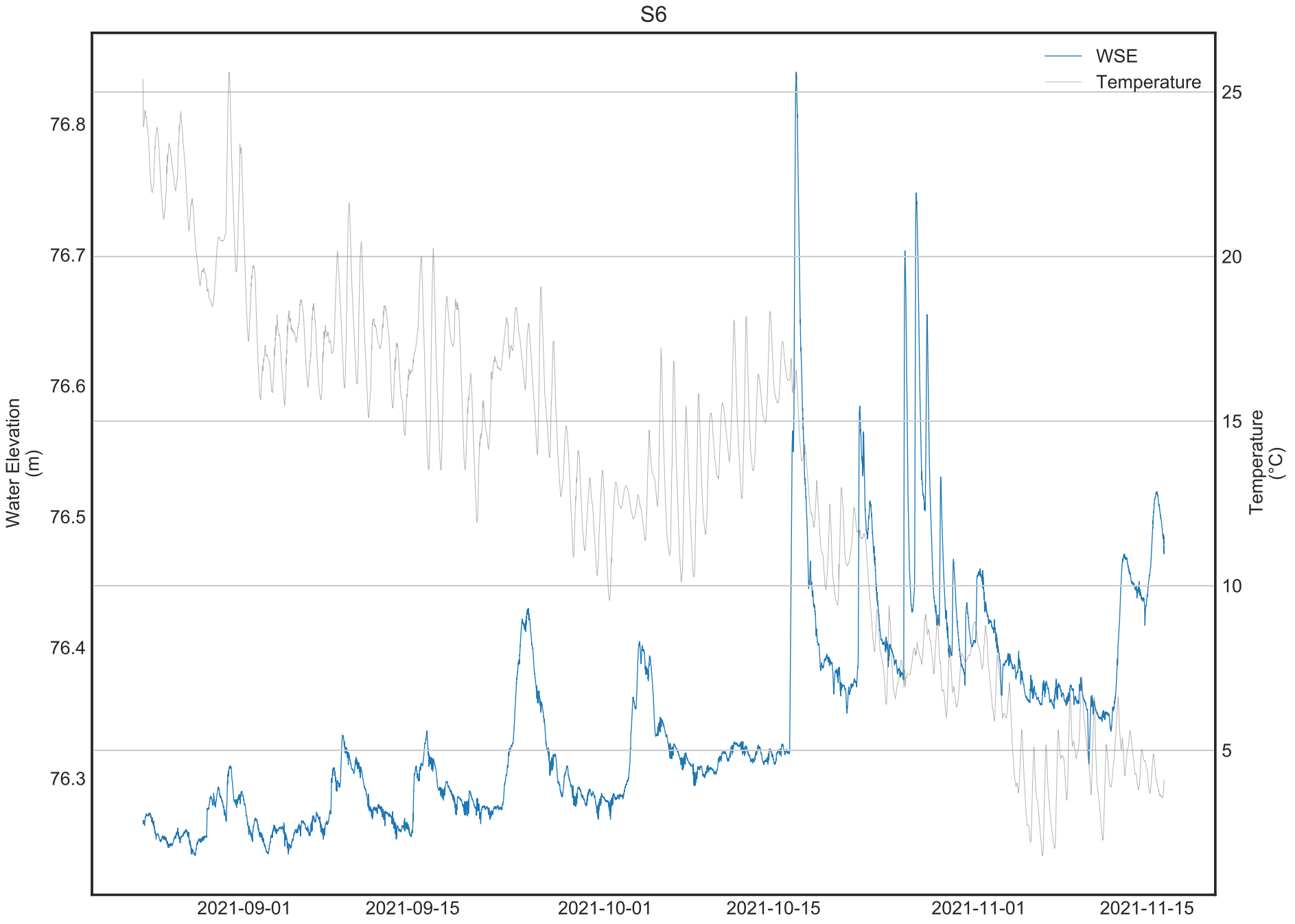
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Water Elevation (m)
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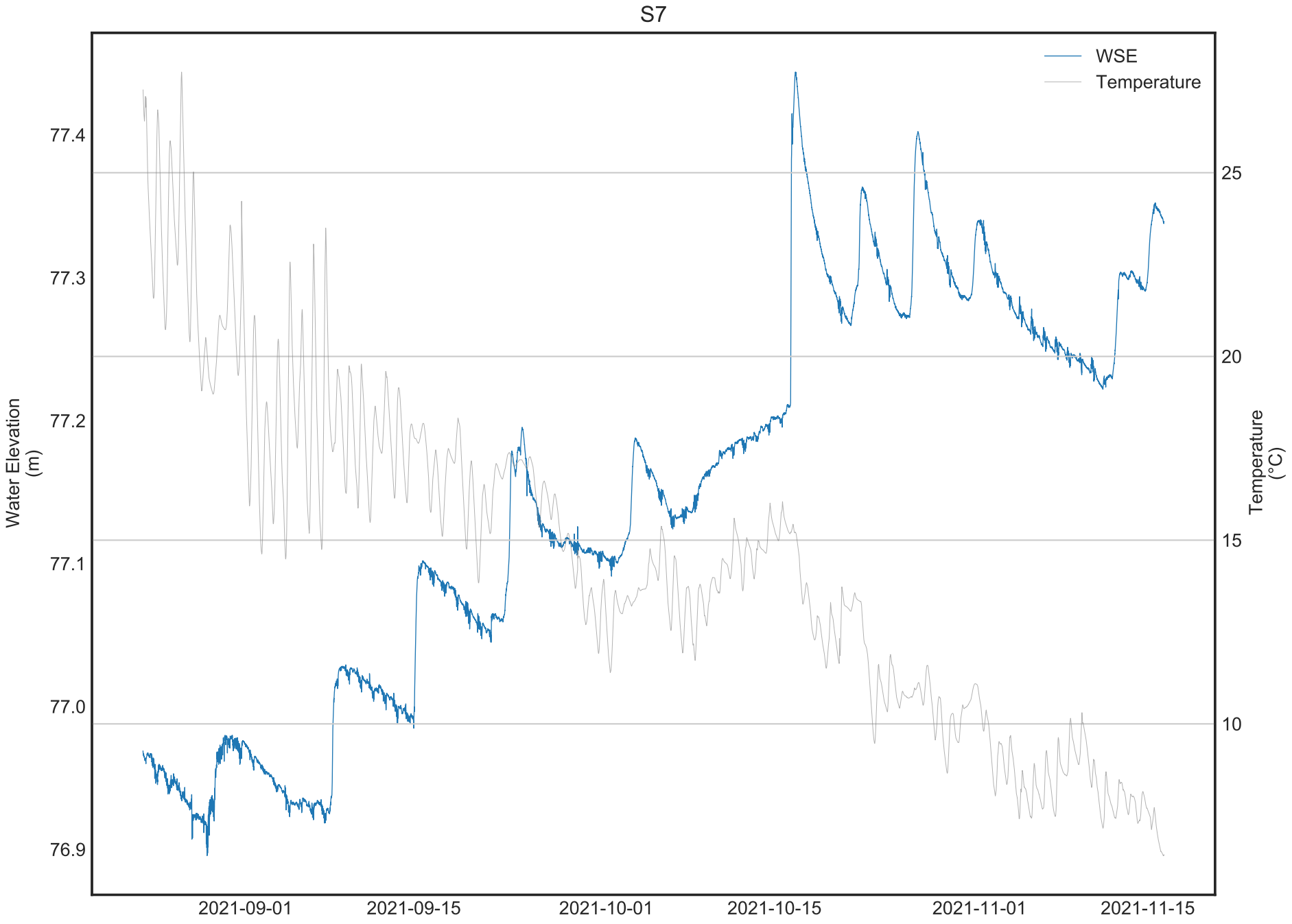
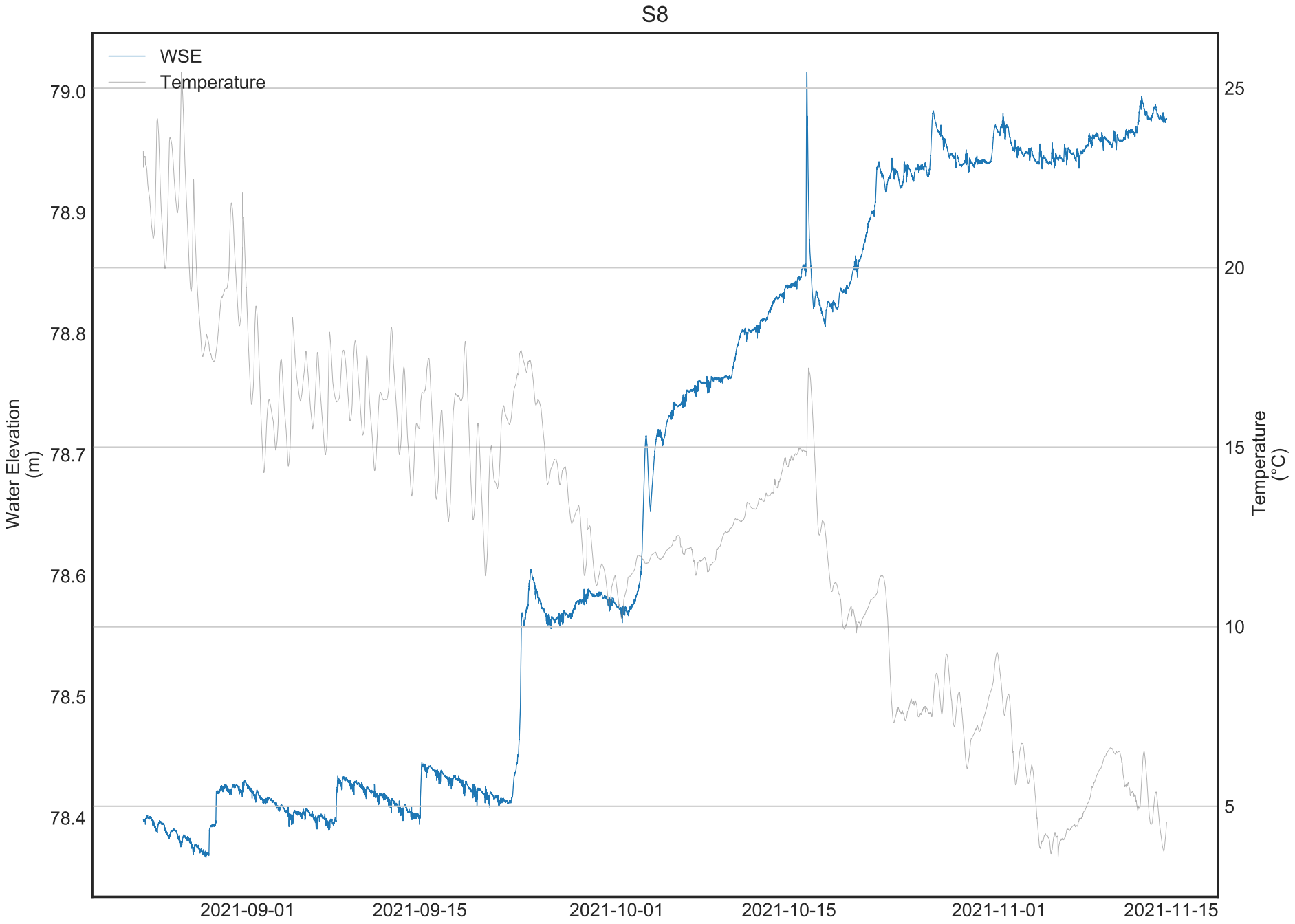
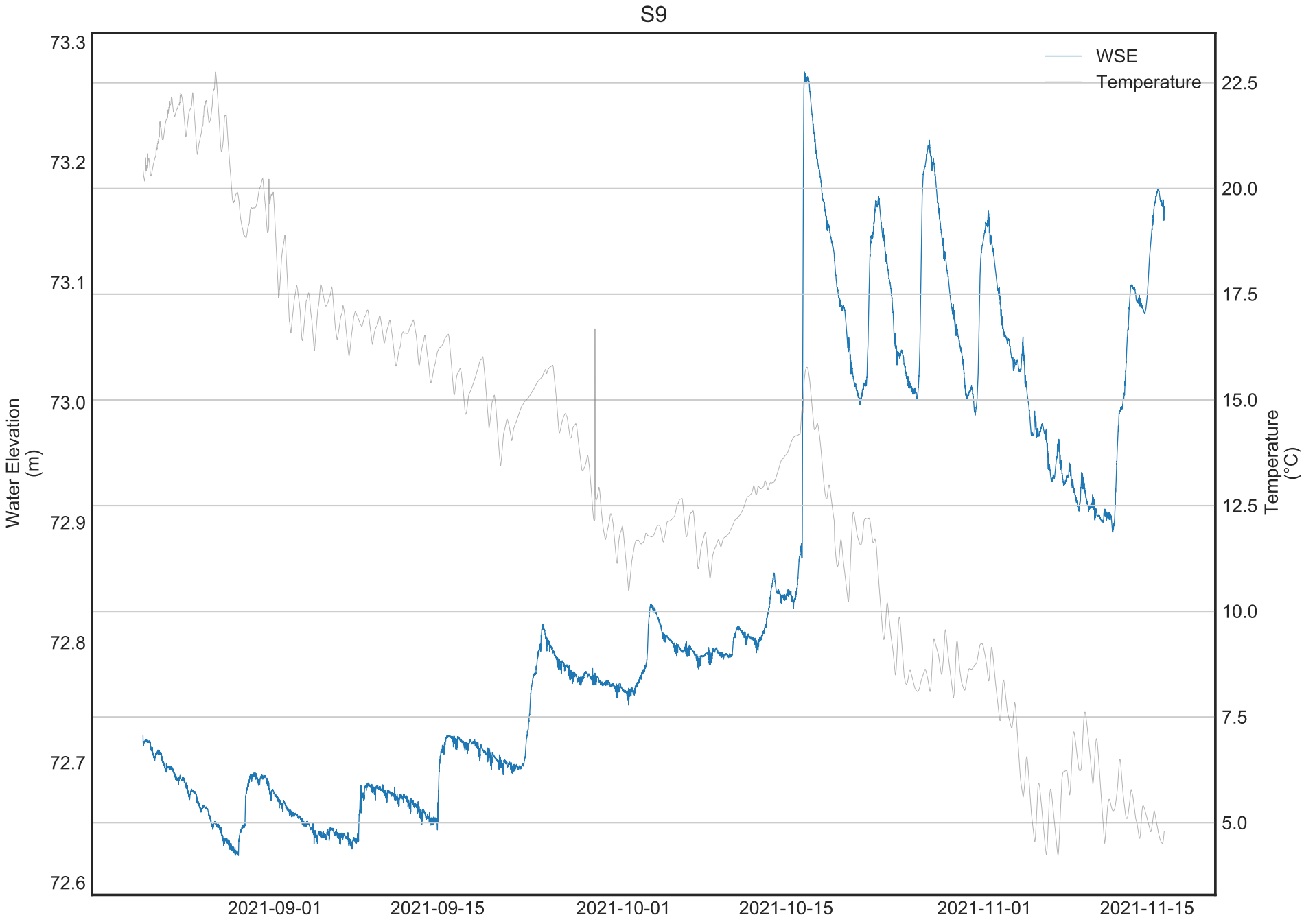
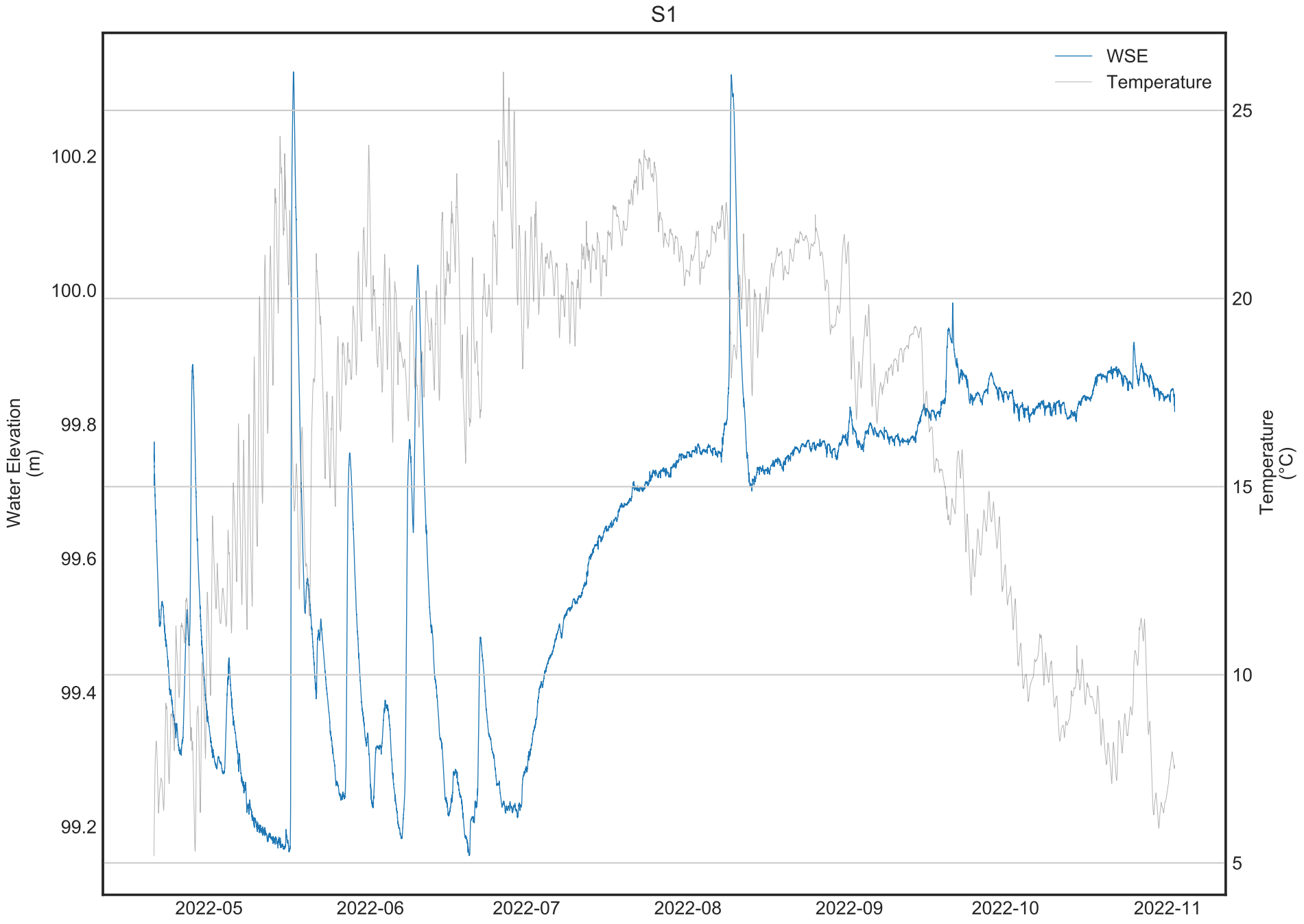
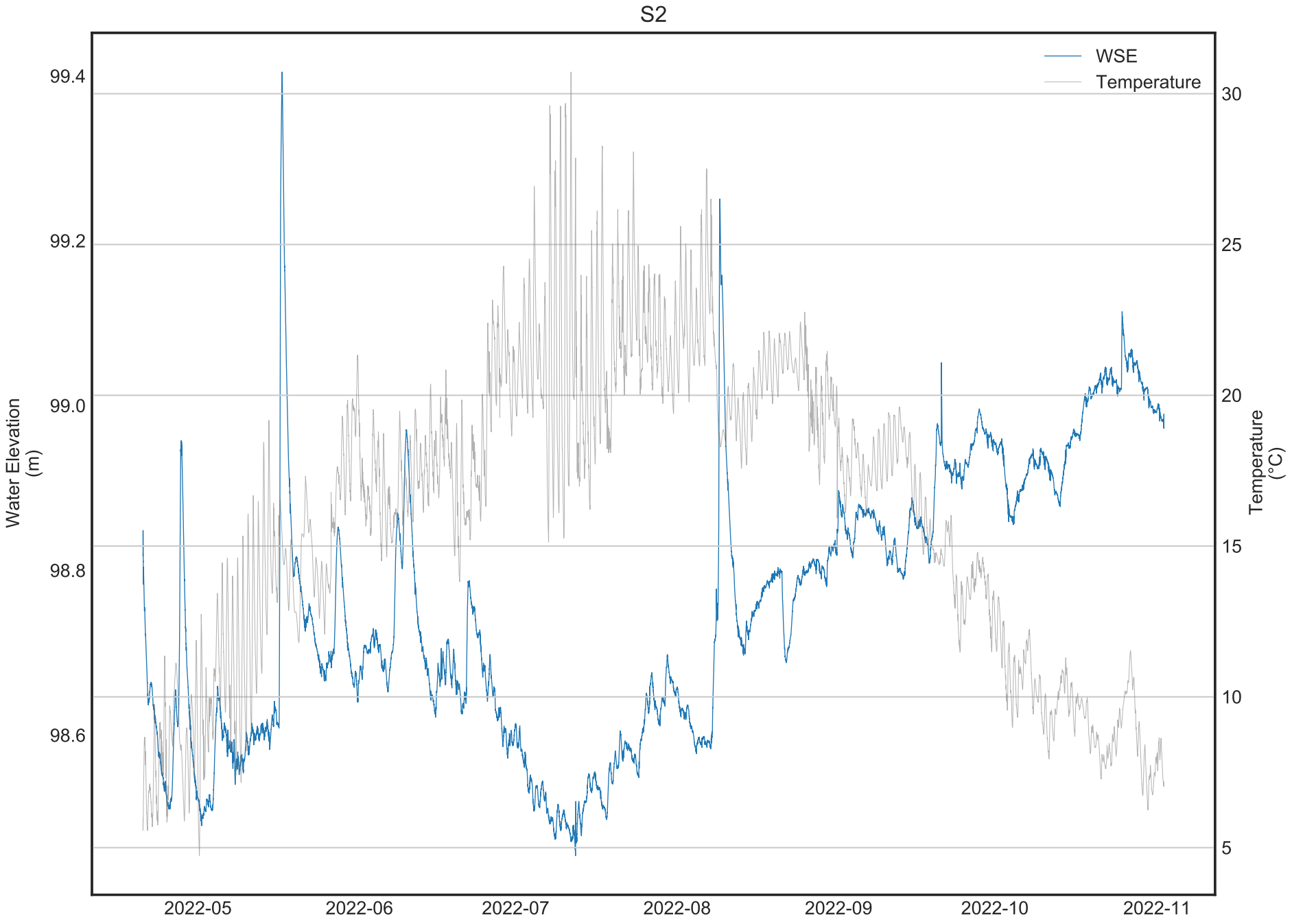
Temperature (°C)
2021-09-01
2021-09-15
2021-10-01
2021-10-15
2021-11-01
2021-11-15

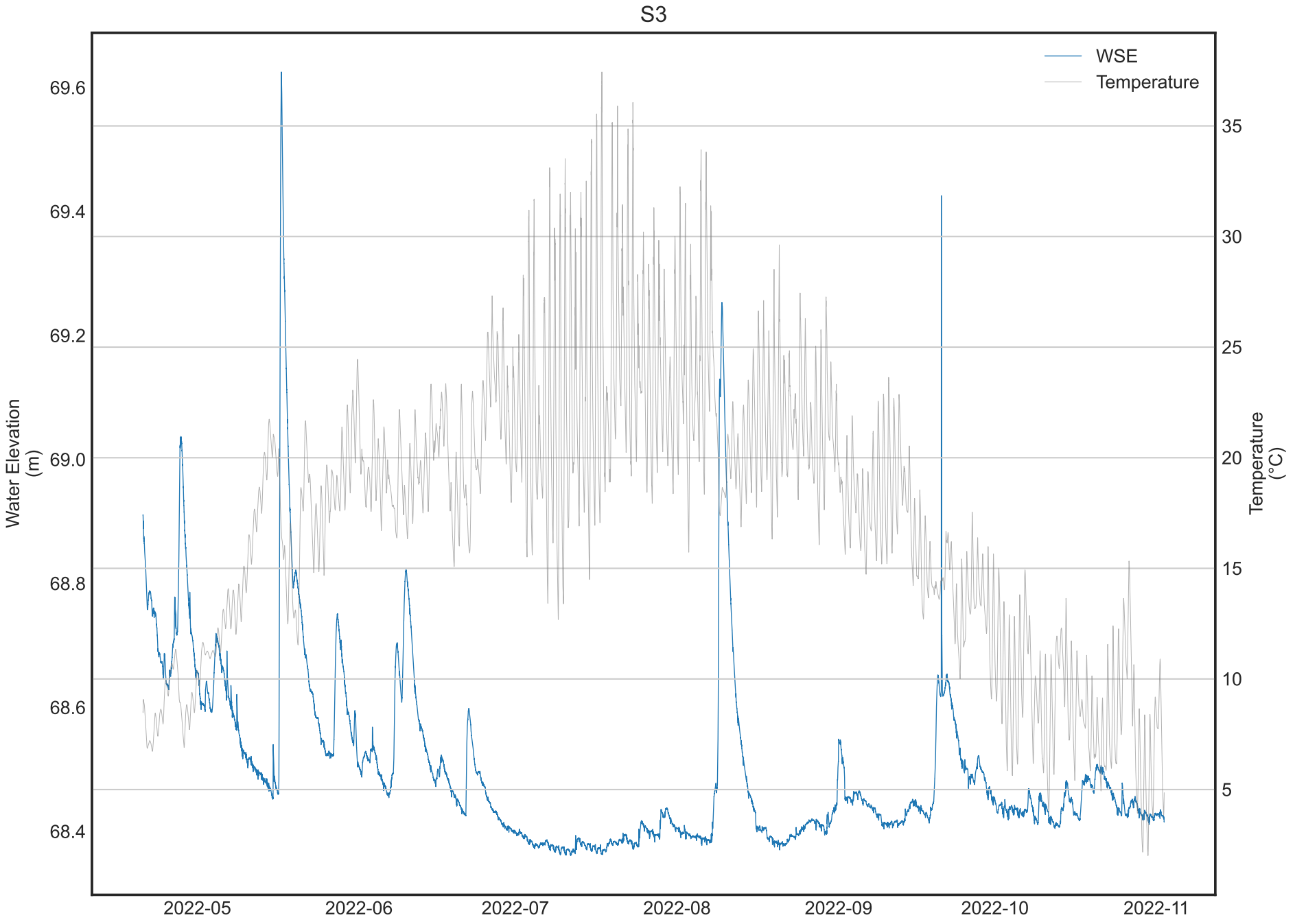

S7
WSE
Temperature
77.4
77.3
77.2
77.1
77.0
76.9
Water Elevation (m)
25
20
15
10
Temperature (°C)
2021-09-01
2021-09-15
2021-10-01
2021-10-15
2021-11-01
2021-11-15

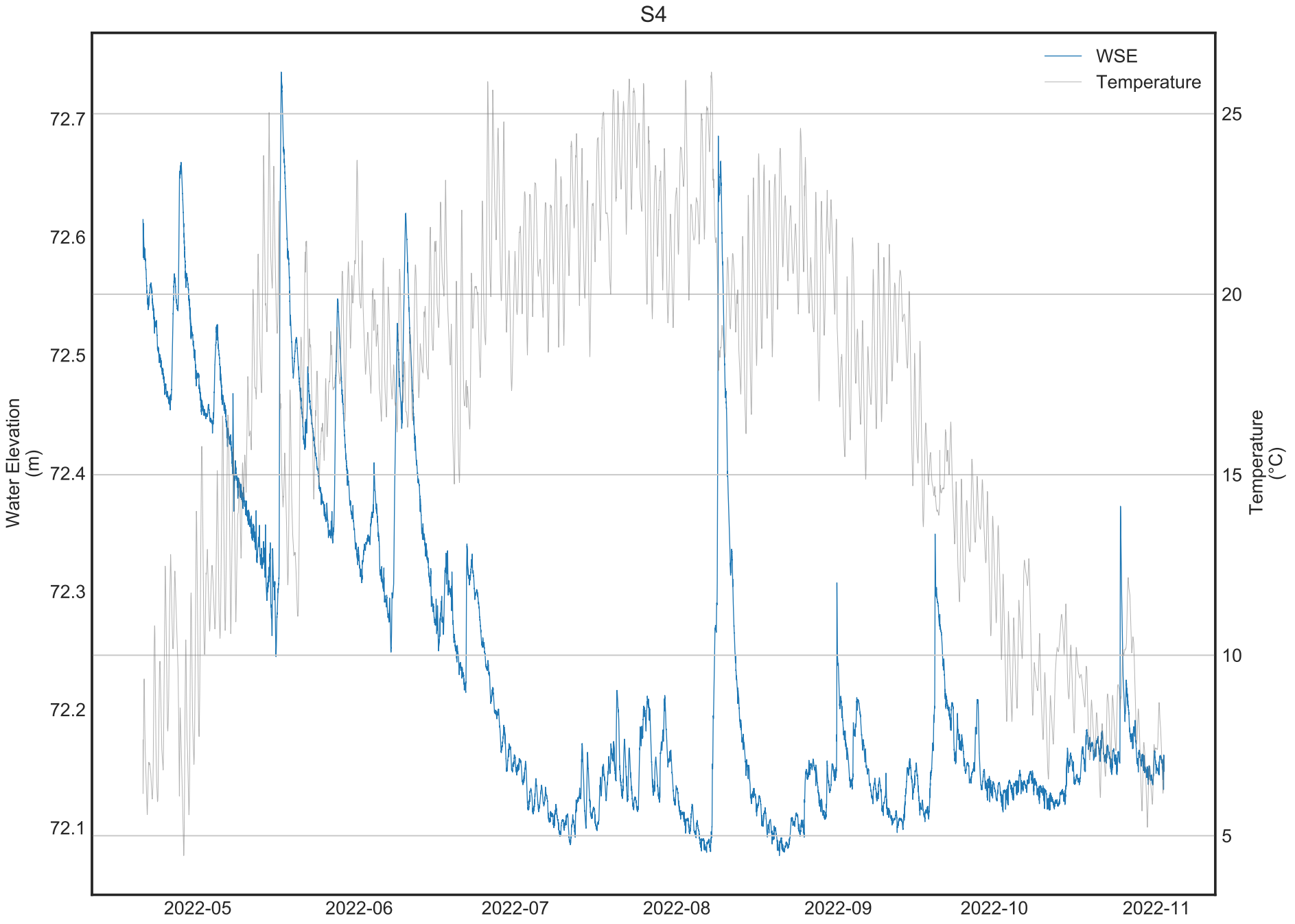

S8
WSE
Temperature
79.0
78.9
78.8
78.7
78.6
78.5
78.4
Water Elevation (m)
25
20
15
10
5
Temperature (°C)
2021-09-01
2021-09-15
2021-10-01
2021-10-15
2021-11-01
2021-11-15

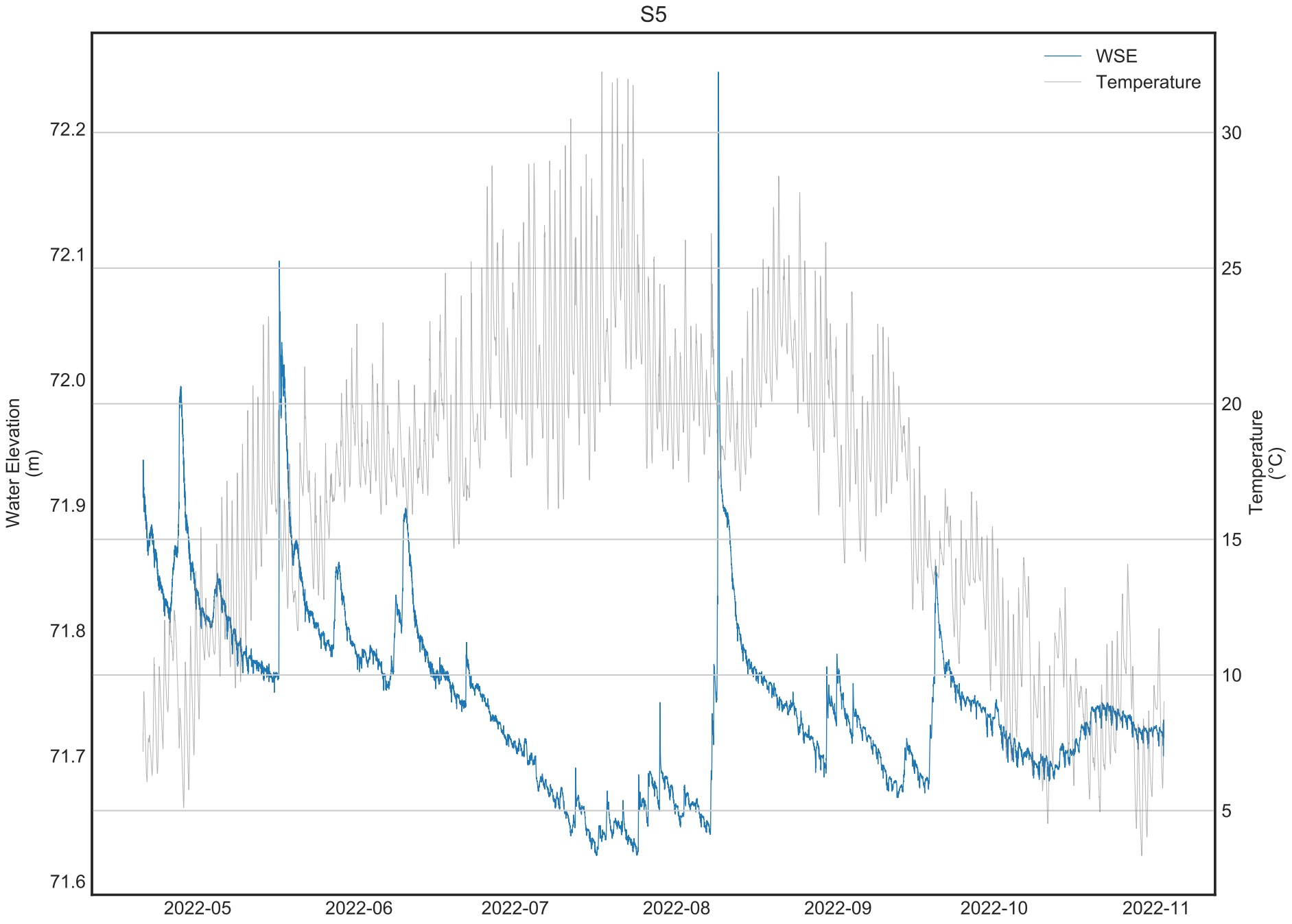

S9
WSE
Temperature
Water Elevation (m)
Temperature (°C)
73.3
73.2
73.1
73.0
72.9
72.8
72.7
72.6
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2021-09-01
2021-09-15
2021-10-01
2021-10-15
2021-11-01
2021-11-15

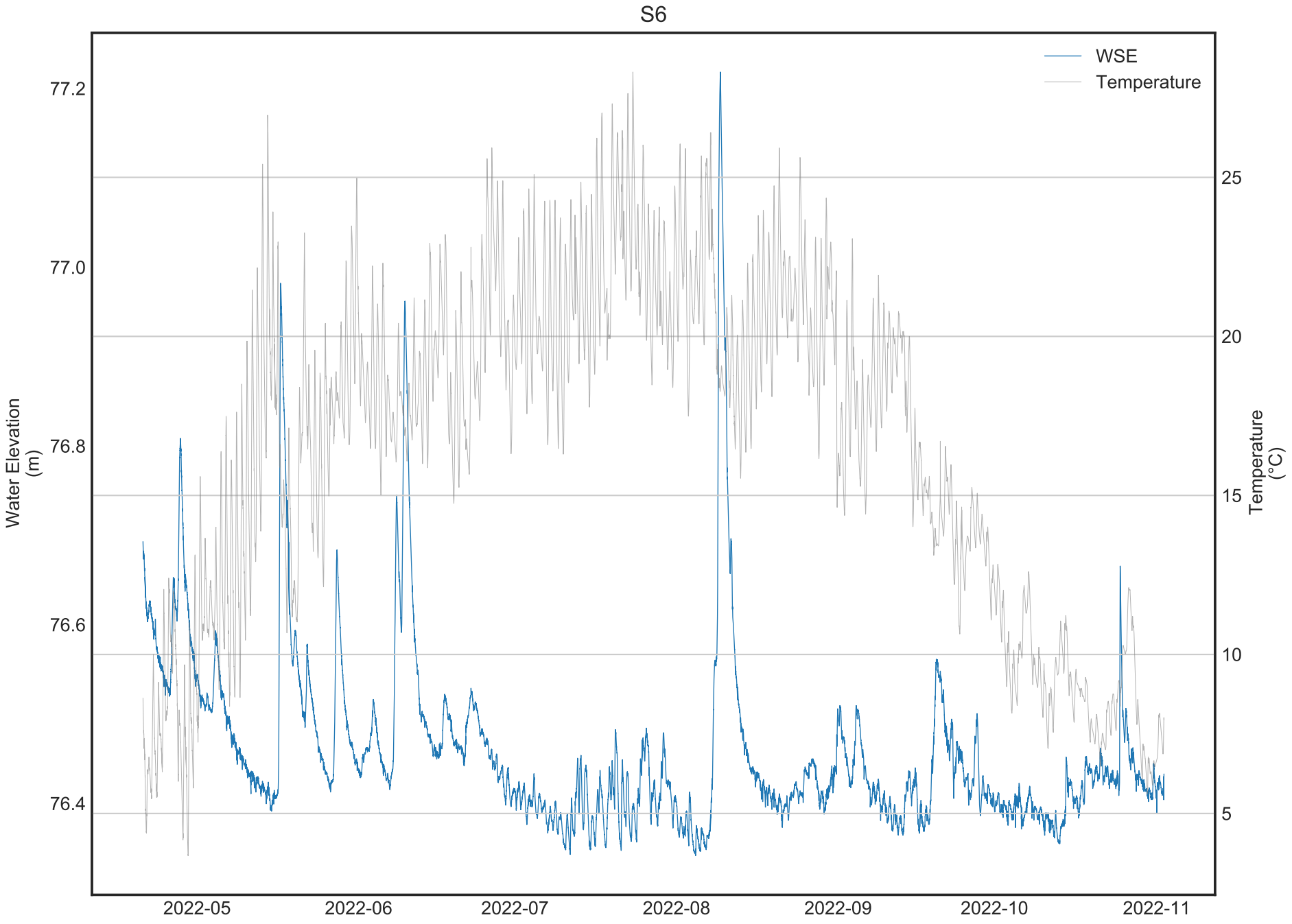

S1
WSE
Temperature
Water Elevation (m)
Temperature (°C)
100.2
100.0
99.8
99.6
99.4
99.2
25
20
15
10
5
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

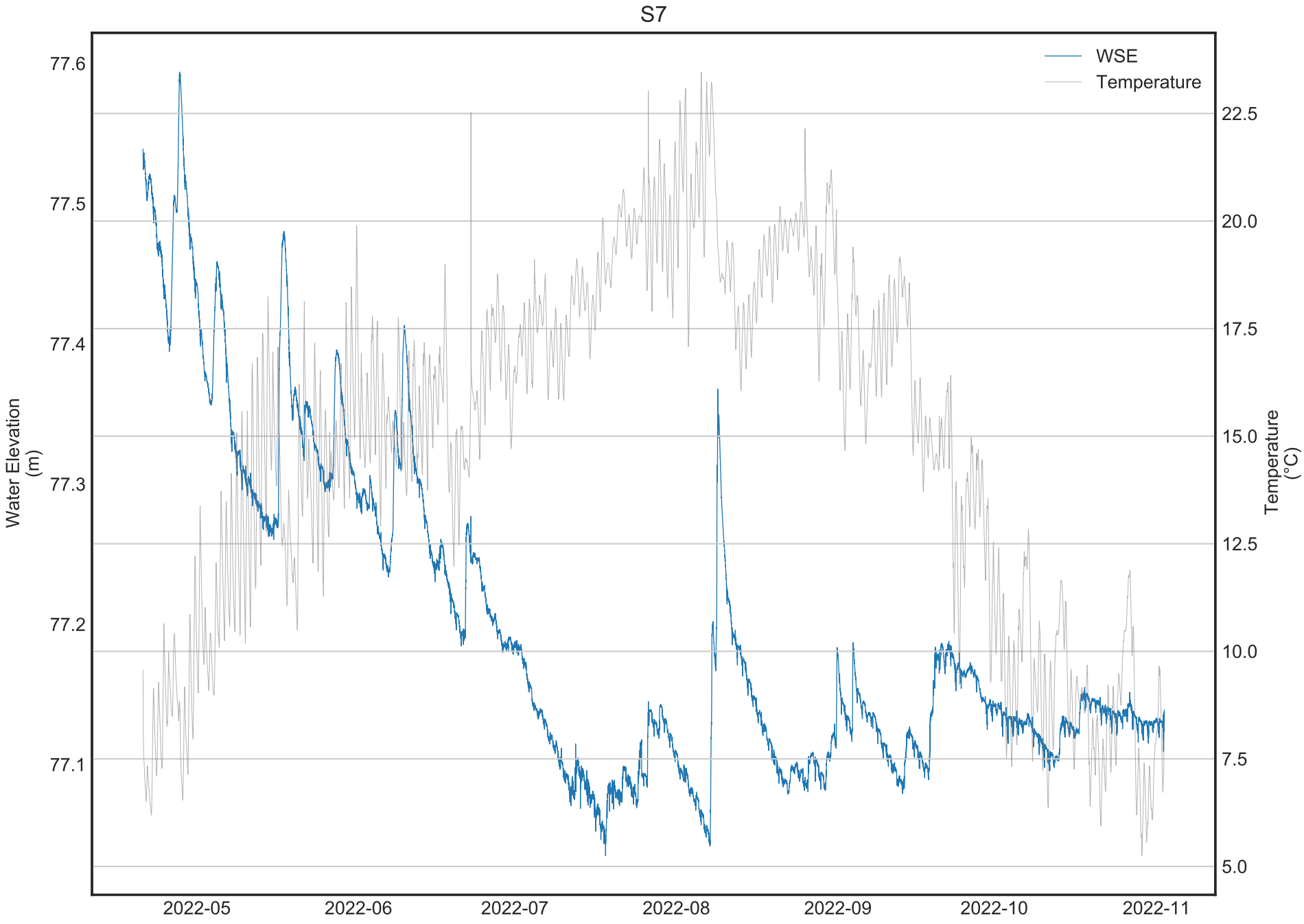

S2
WSE
Temperature
99.4
99.2
99.0
98.8
98.6
Water Elevation (m)
30
25
20
15
10
5
Temperature (°C)
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

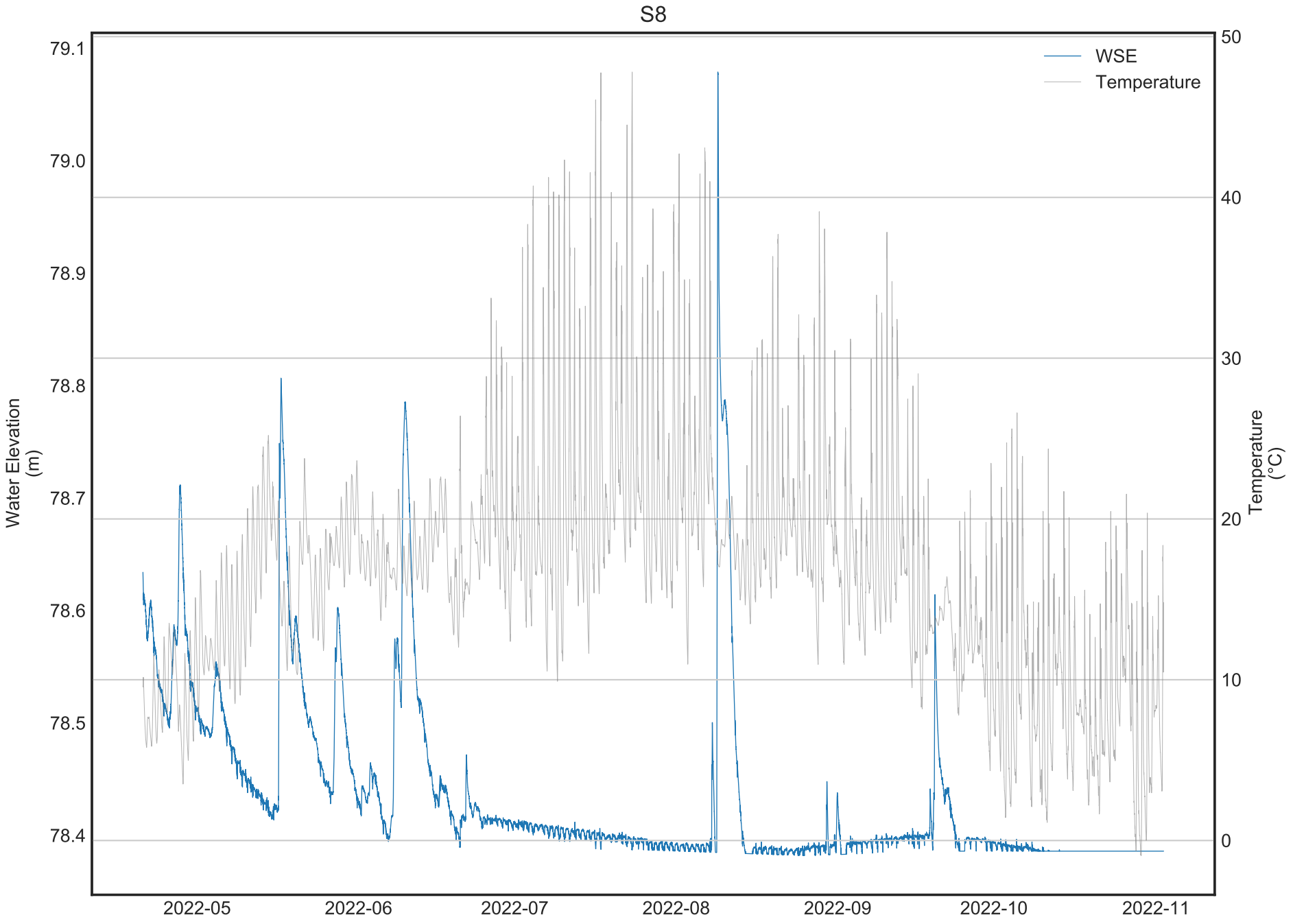

S3
WSE
Temperature
Water Elevation (m)
Temperature (°C)
69.6
69.4
69.2
69.0
68.8
68.6
68.4
35
30
25
20
15
10
5
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

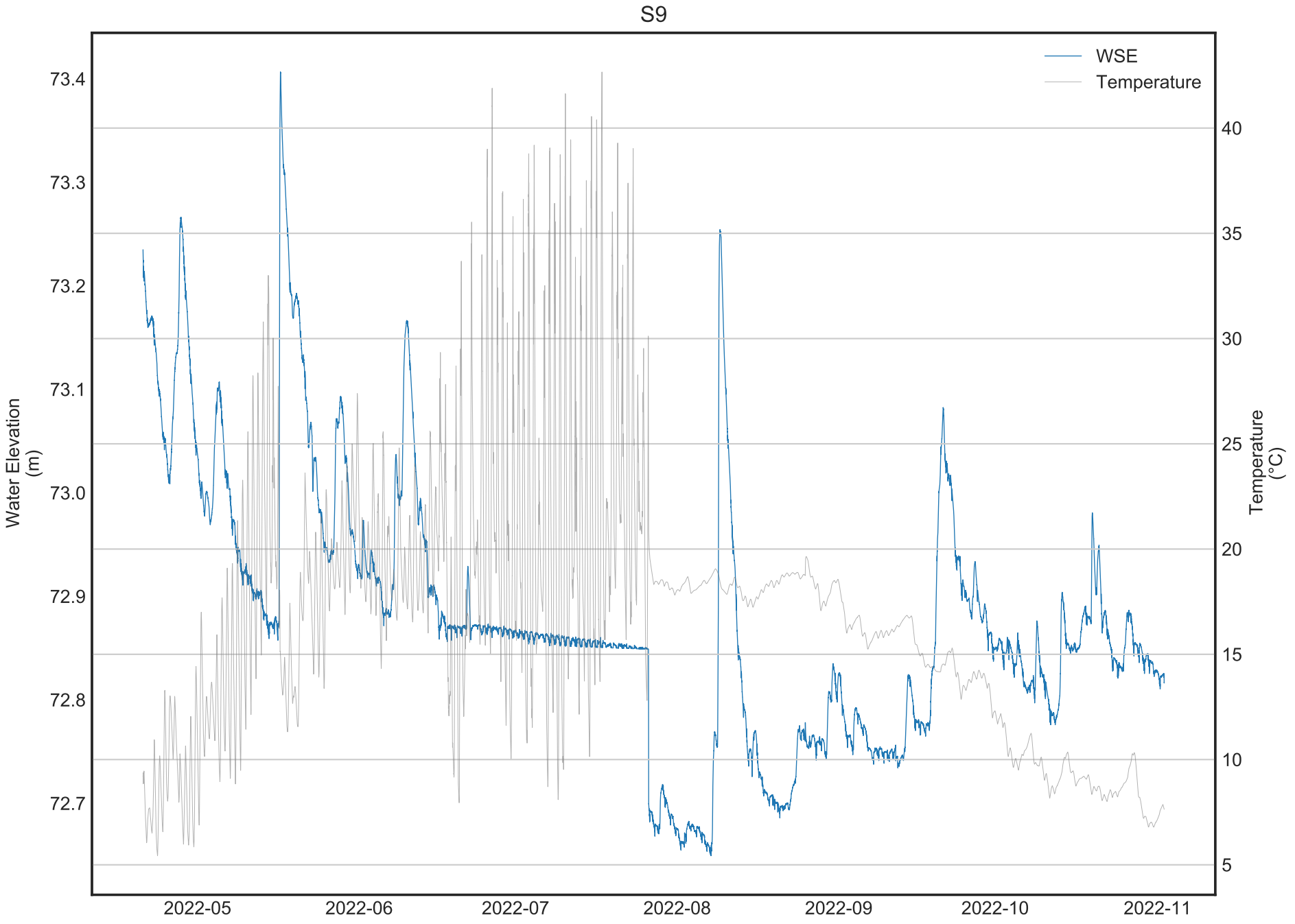

S4
WSE
Temperature
Water Elevation (m)
72.7
72.6
72.5
72.4
72.3
72.2
72.1
Temperature (°C)
25
20
15
10
5
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

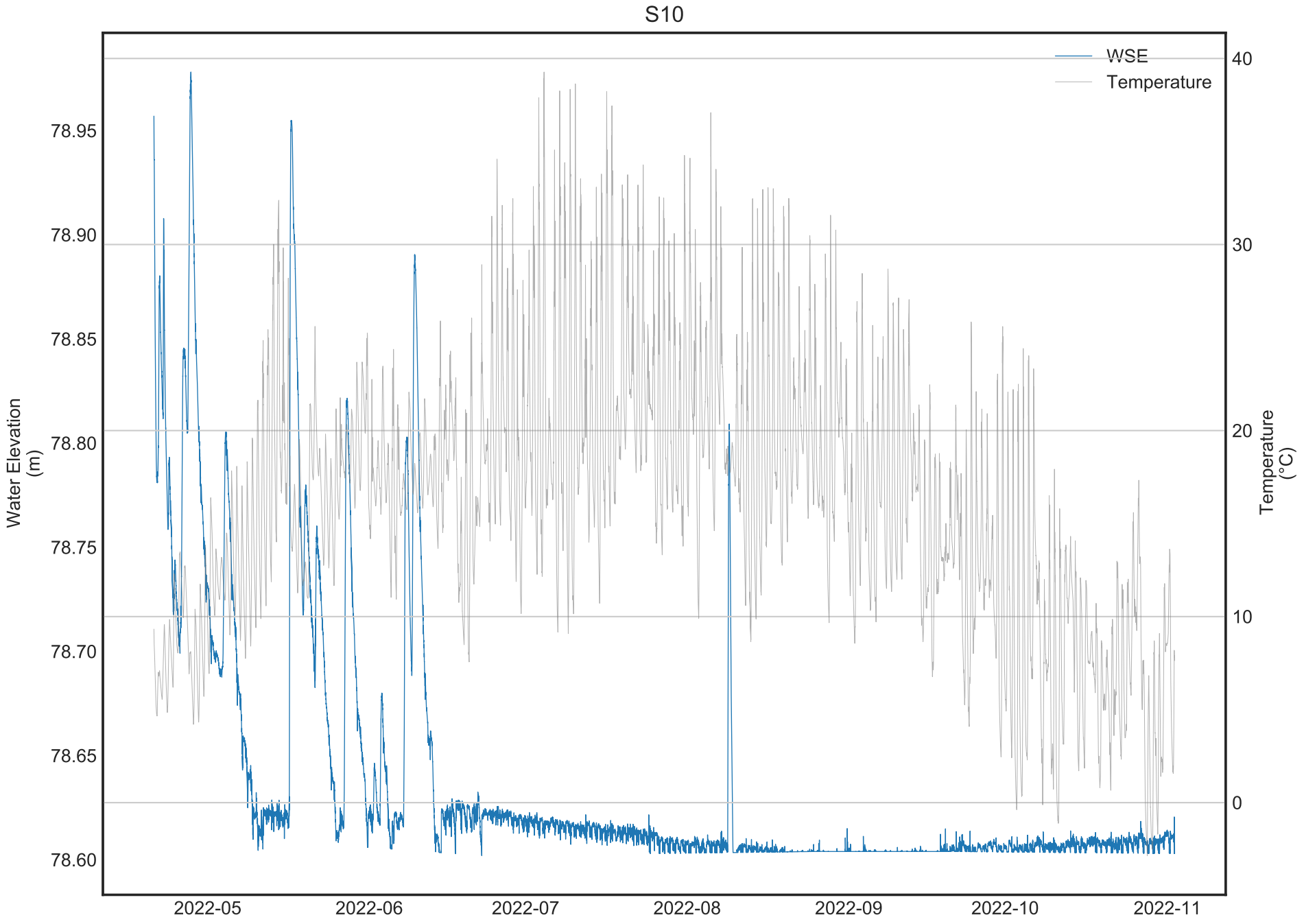

S5
WSE
Temperature
72.2
72.1
72.0
71.9
71.8
71.7
71.6
Water Elevation (m)
30
25
20
15
10
5
Temperature (°C)
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

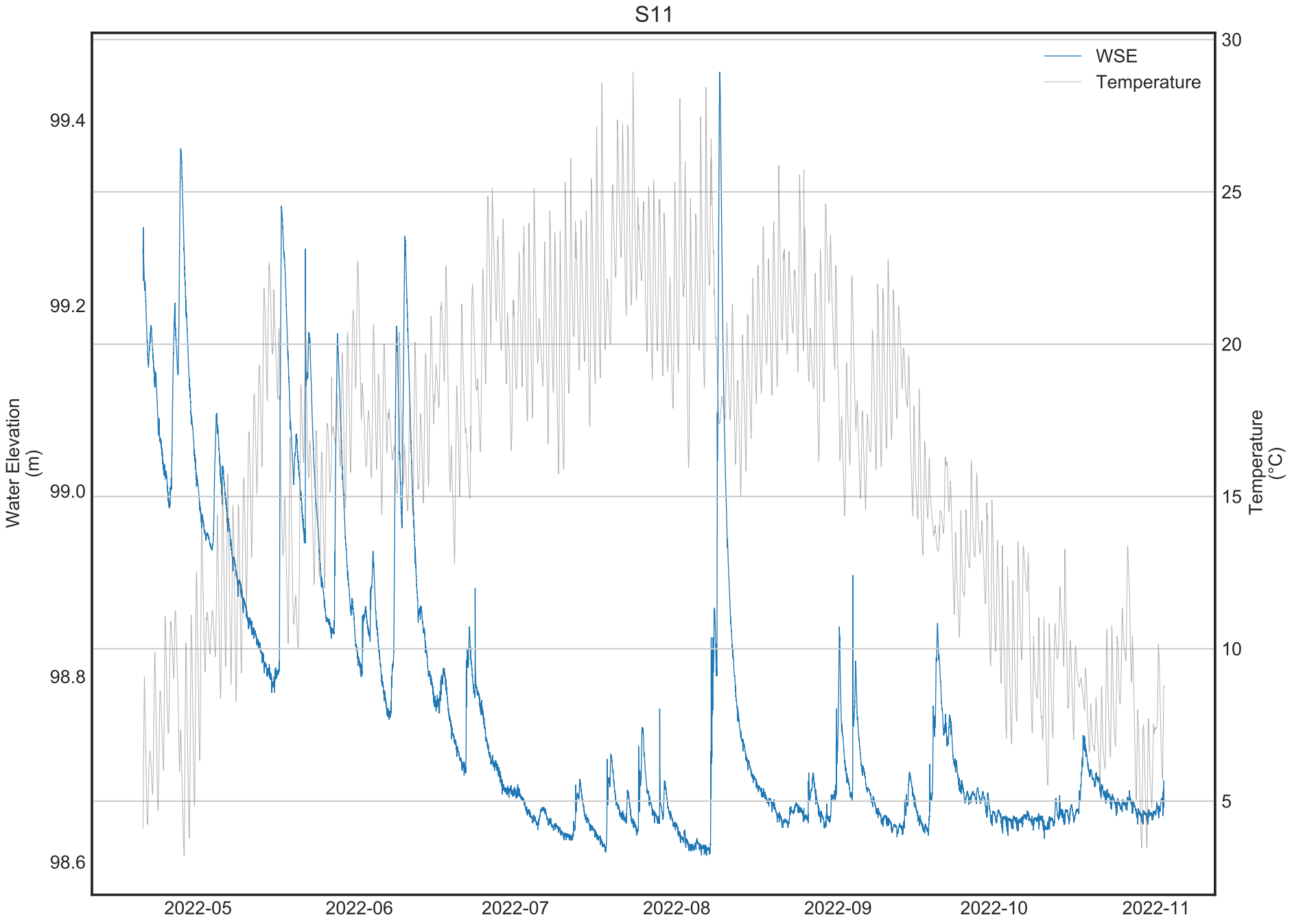

S6
WSE
Temperature
77.2
77.0
76.8
76.6
76.4
Water Elevation (m)
25
20
15
10
5
Temperature (°C)
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11


S7
WSE
Temperature
77.6
77.5
77.4
77.3
77.2
77.1
Water Elevation (m)
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
Temperature (°C)
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11


S8
WSE
Temperature
Water Elevation (m)
Temperature (°C)
79.1
79.0
78.9
78.8
78.7
78.6
78.5
78.4
50
40
30
20
10
0
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11


S9
WSE
Temperature
Water Elevation (m)
Temperature (°C)
73.4
73.3
73.2
73.1
73.0
72.9
72.8
72.7
40
35
30
25
20
15
10
5
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11


S10
WSE
Temperature
Water Elevation (m)
78.95
78.90
78.85
78.80
78.75
78.70
78.65
78.60
Temperature (°C)
40
30
20
10
0
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11


S11
WSE
Temperature
Water Elevation (m)
Temperature (°C)
99.4
99.2
99.0
98.8
98.6
30
25
20
15
10
5
2022-05
2022-06
2022-07
2022-08
2022-09
2022-10
2022-11

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Gatineau. QC
Montréal. QC
Québec. QC

Appendix B

2021-22 Water Level vs. Rainfall Figures

S1 - 2021 Field Data

Water Level (m)

100.2
100.1
100.0
99.9
99.8
99.7
99.6
99.5

Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00

Recorded Water Level

S2 - 2021 Field Data

Water Level (m)

68.0
67.8
67.6
67.4
67.2

Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00

Recorded Water Level

S3 - 2021 Field Data

Water Level (m)

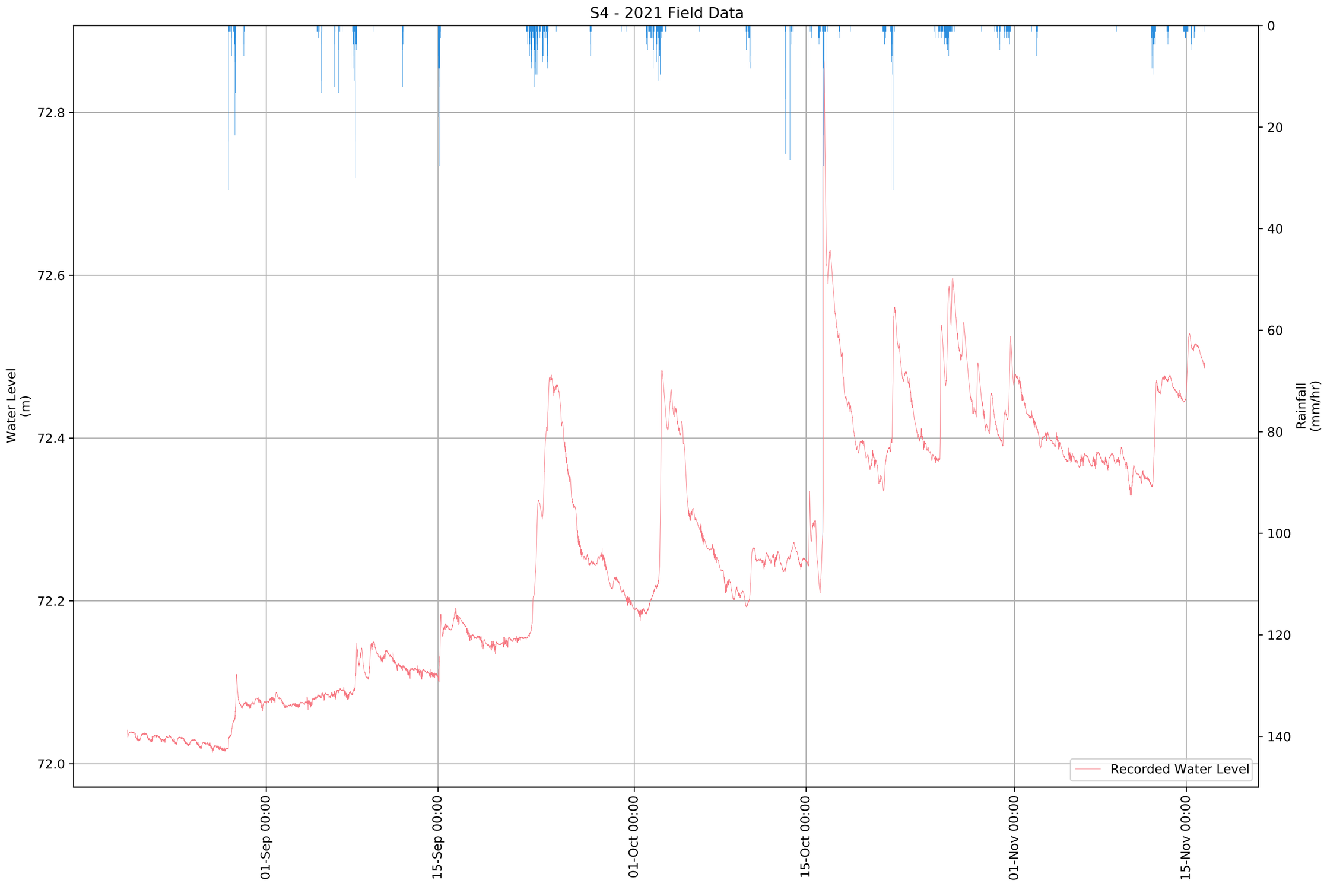
69.9
69.8
69.7
69.6
69.5
69.4

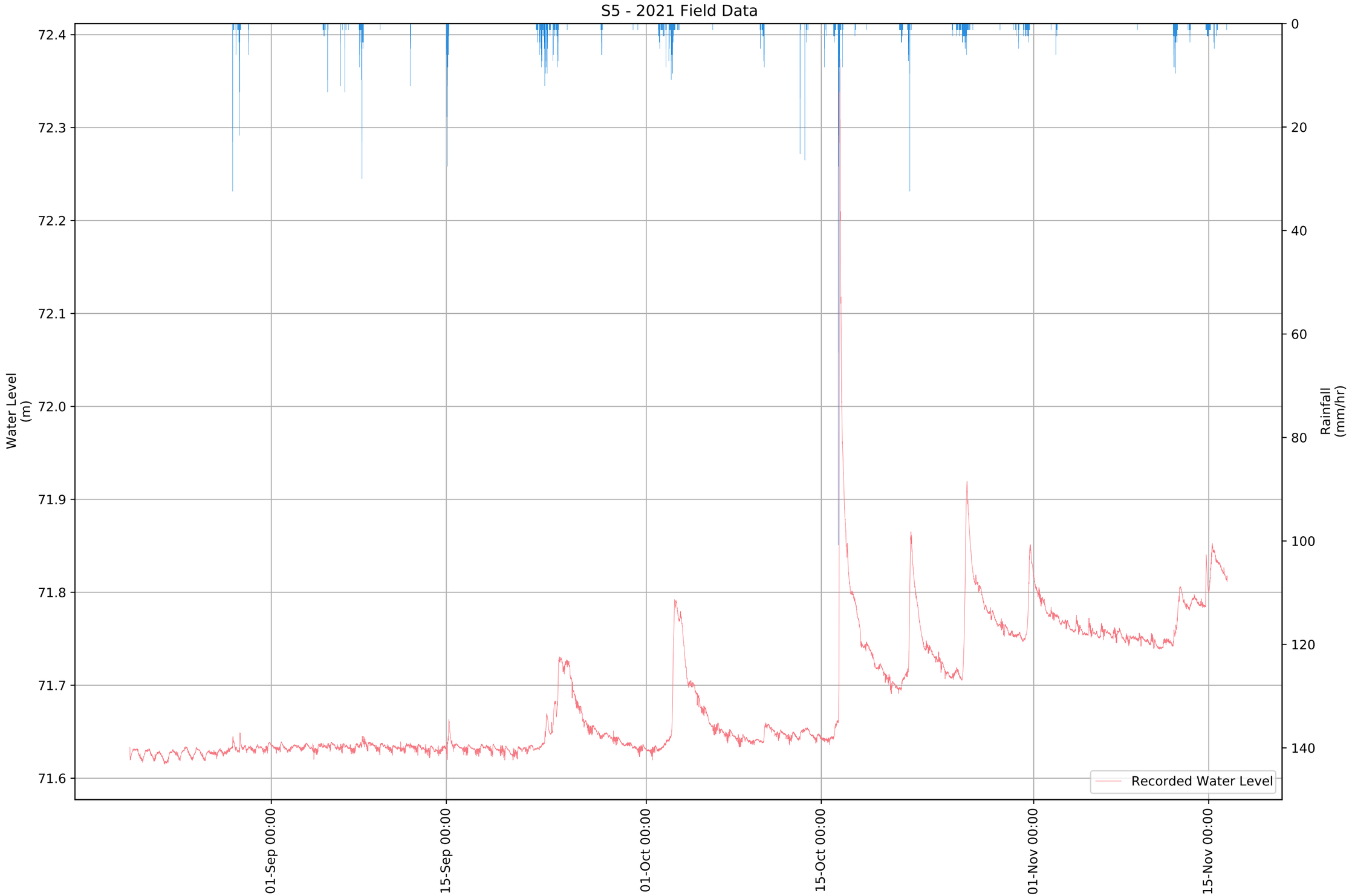
Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00

Recorded Water Level


S4 - 2021 Field Data
Water Level (m)
72.8
72.6
72.4
72.2
72.0
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00
Recorded Water Level


S5 - 2021 Field Data
Water Level (m)
72.4
72.3
72.2
72.1
72.0
71.9
71.8
71.7
71.6
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00
Recorded Water Level


S6 - 2021 Field Data
Water Level (m)
76.8
76.7
76.6
76.5
76.4
76.3
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00
Recorded Water Level

S7 - 2021 Field Data

Water Level (m)

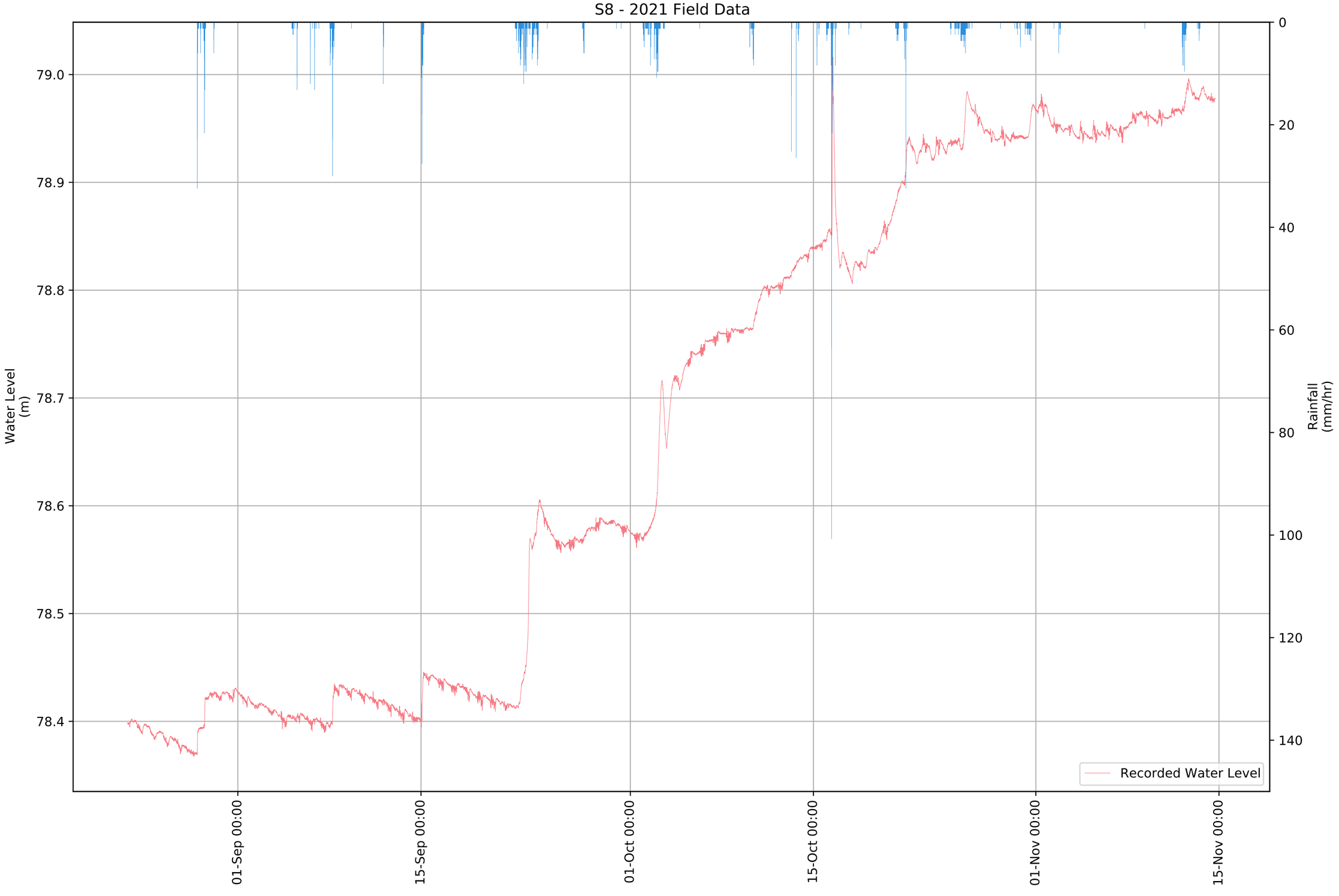
77.4
77.3
77.2
77.1
77.0
76.9

Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00

Recorded Water Level


S8 - 2021 Field Data
Water Level (m)
79.0
78.9
78.8
78.7
78.6
78.5
78.4
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00
Recorded Water Level

S9 - 2021 Field Data

Water Level (m)

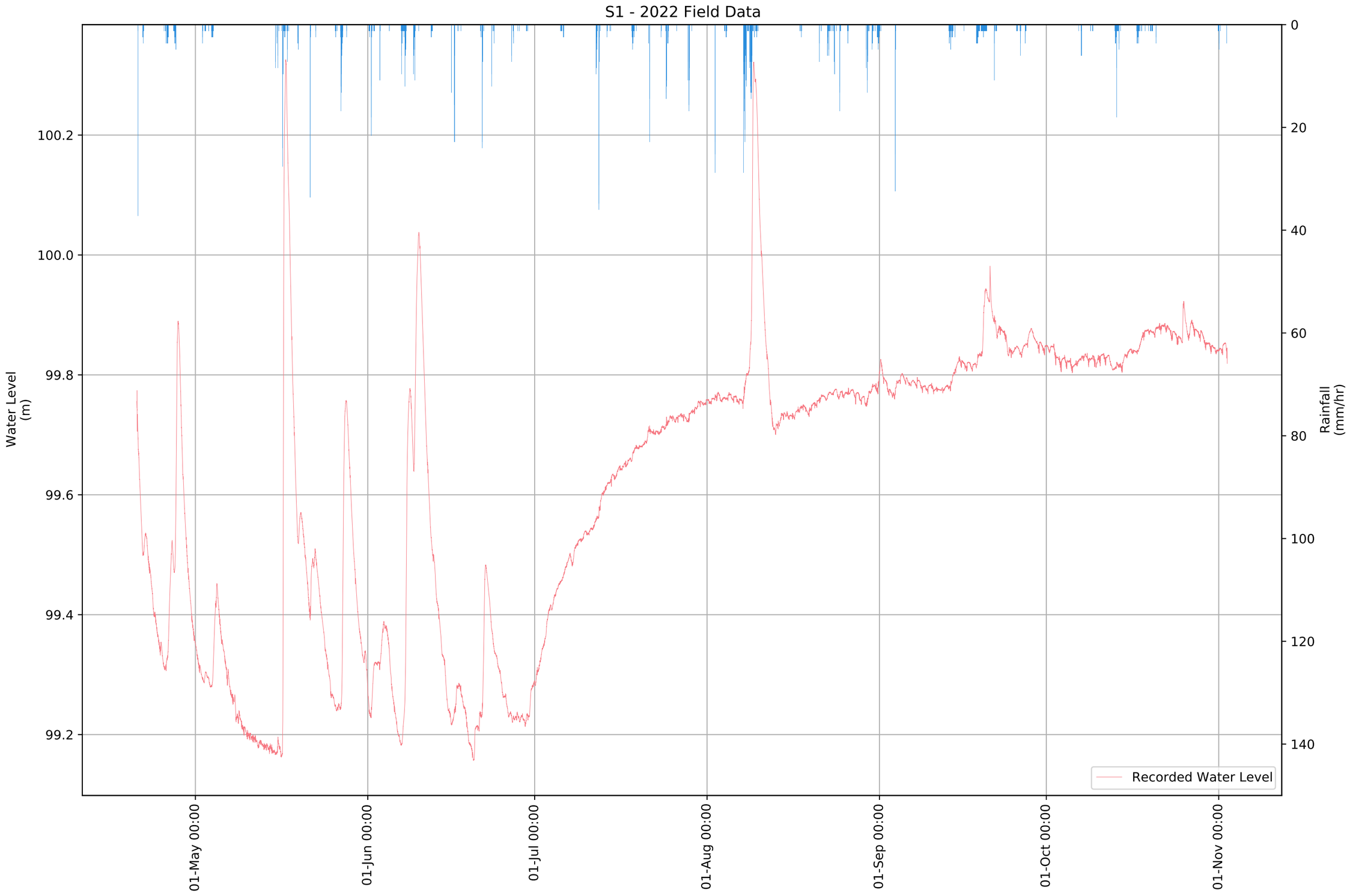
73.3
73.2
73.1
73.0
72.9
72.8
72.7
72.6

Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-Sep 00:00
15-Sep 00:00
01-Oct 00:00
15-Oct 00:00
01-Nov 00:00
15-Nov 00:00

Recorded Water Level


S1 - 2022 Field Data
Water Level (m)
Rainfall (mm/hr)
100.2
100.0
99.8
99.6
99.4
99.2
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level

S2 - 2022 Field Data

Water Level (m)

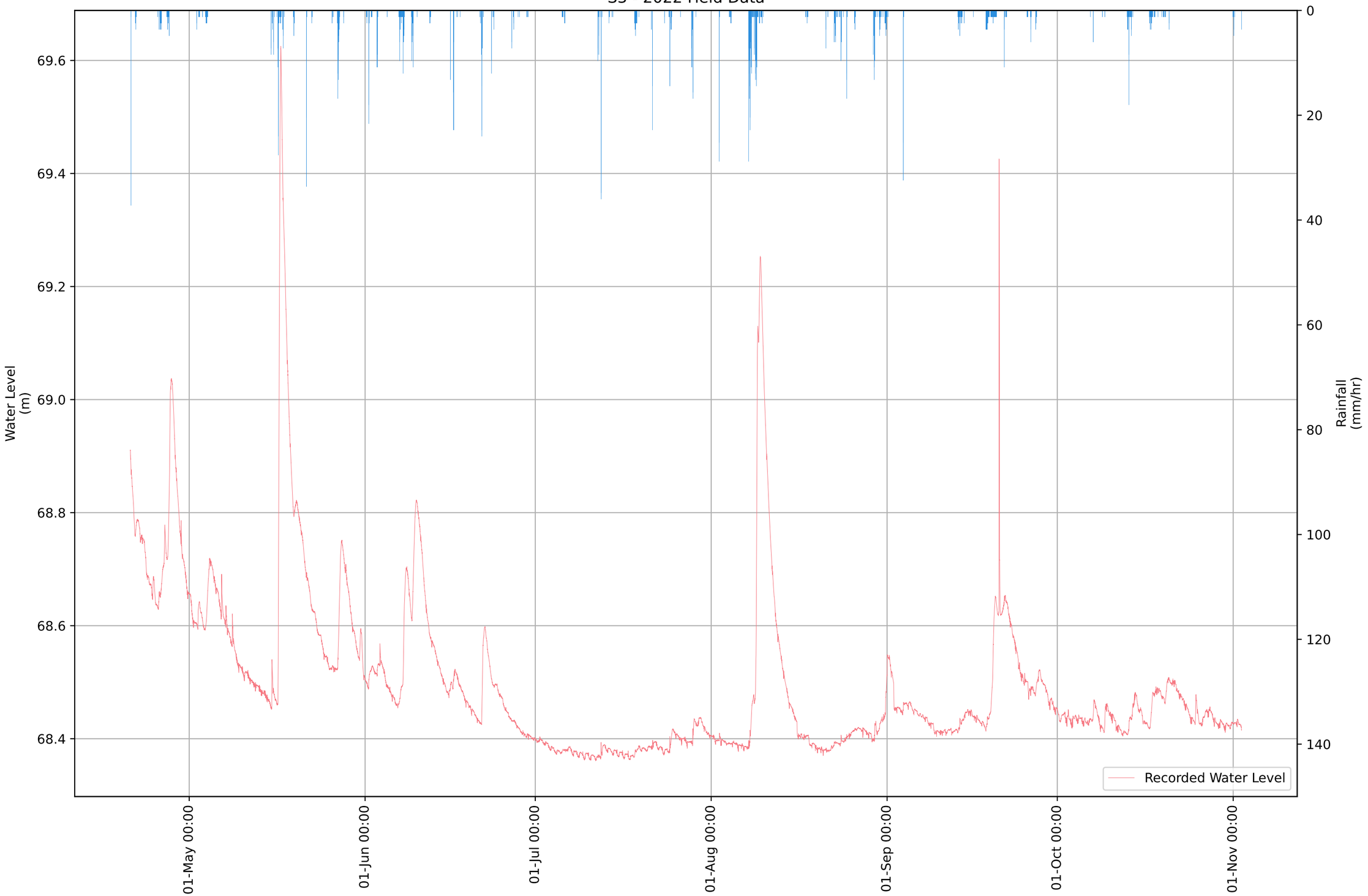
99.4
99.2
99.0
98.8
98.6

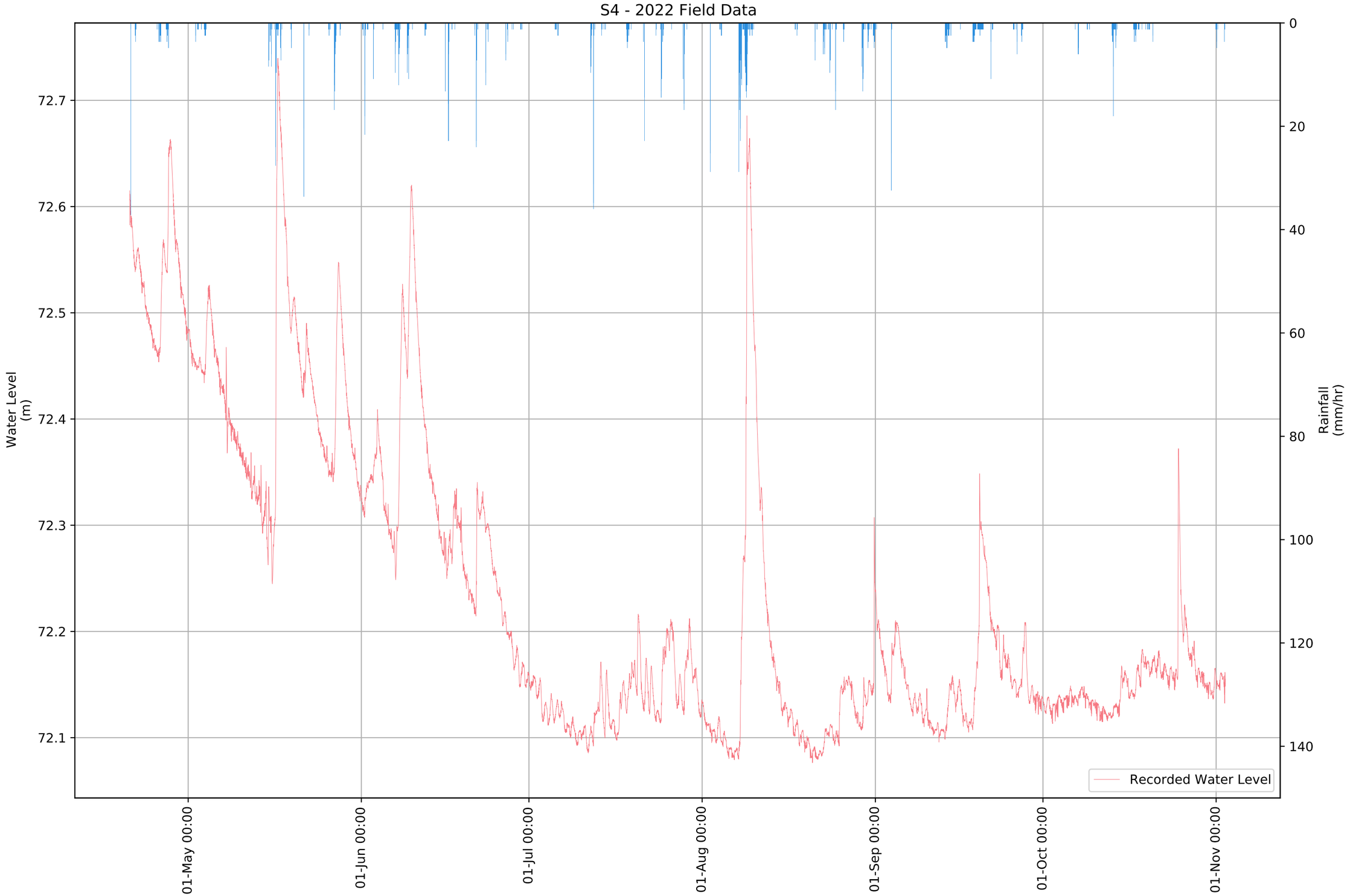
Rainfall (mm/hr)

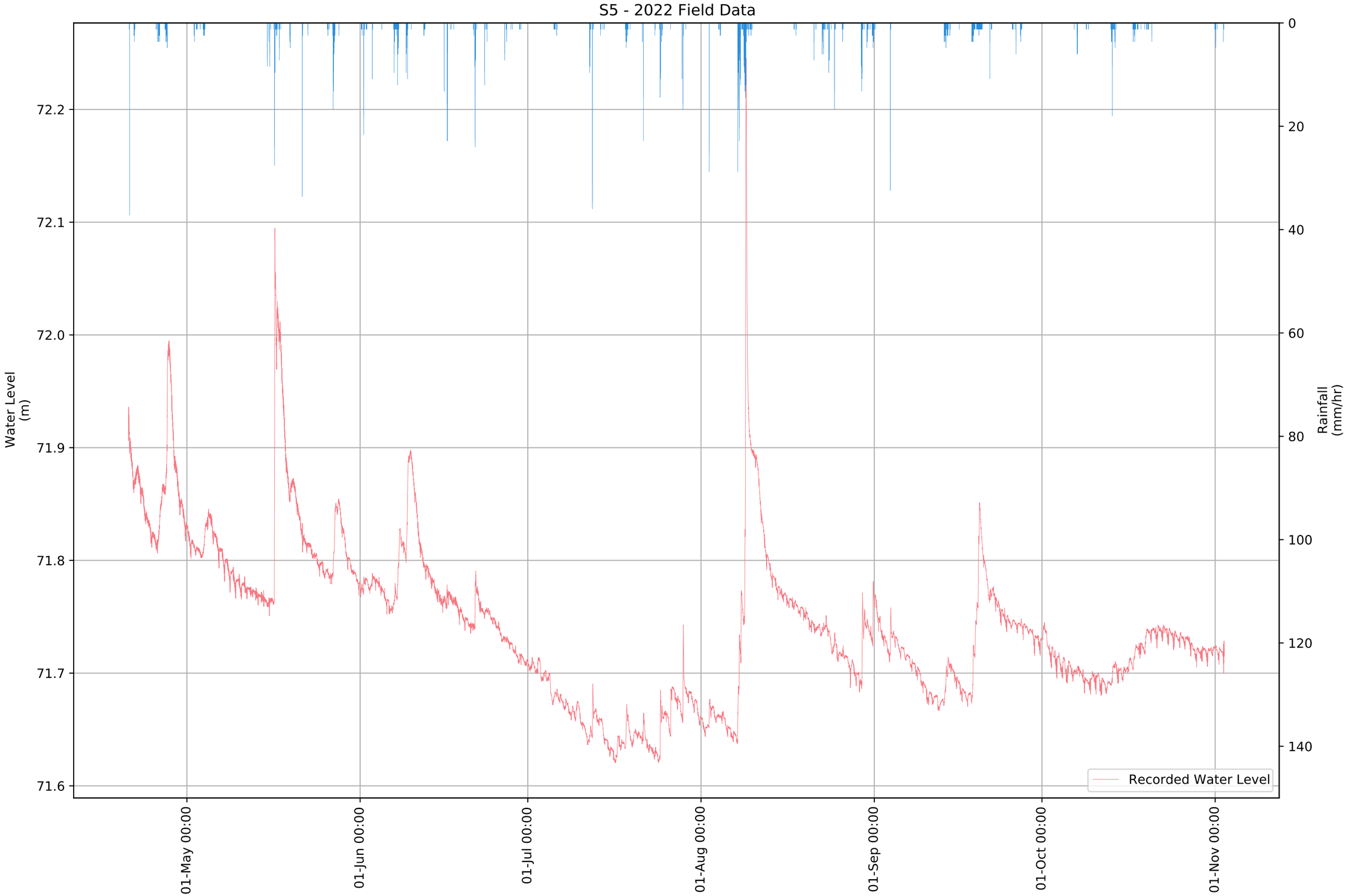
0
20
40
60
80
100
120
140

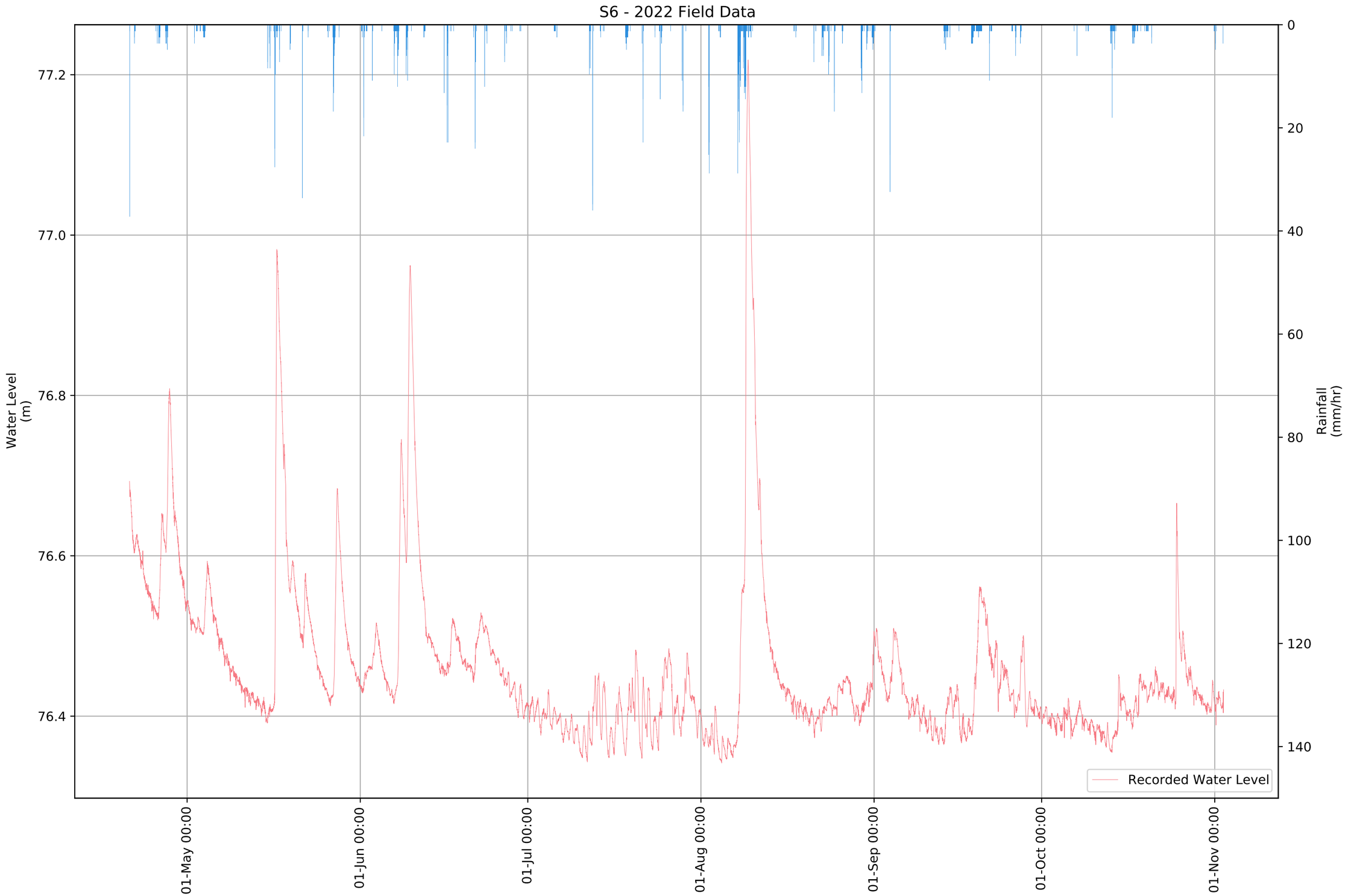
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00

Recorded Water Level


S3 - 2022 Field Data
Water Level (m)
69.6
69.4
69.2
69.0
68.8
68.6
68.4
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level


S4 - 2022 Field Data
Water Level (m)
72.7
72.6
72.5
72.4
72.3
72.2
72.1
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level


S5 - 2022 Field Data
Water Level (m)
Rainfall (mm/hr)
72.2
72.1
72.0
71.9
71.8
71.7
71.6
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level


S6 - 2022 Field Data
Water Level (m)
77.2
77.0
76.8
76.6
76.4
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level

S7 - 2022 Field Data

Water Level (m)

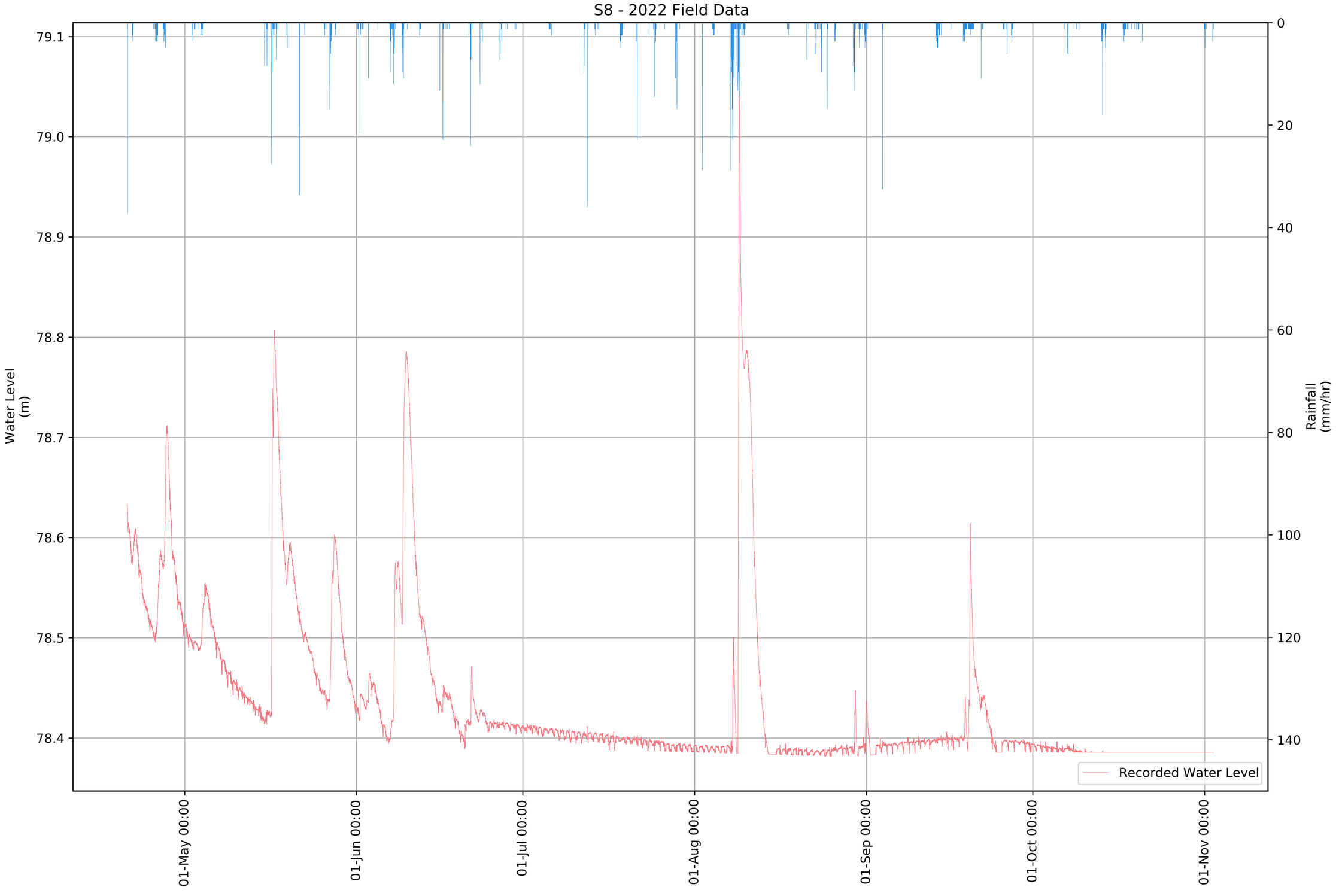
77.6
77.5
77.4
77.3
77.2
77.1

Rainfall (mm/hr)

0
20
40
60
80
100
120
140

01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00

Recorded Water Level


S8 - 2022 Field Data
Water Level (m)
79.1
79.0
78.9
78.8
78.7
78.6
78.5
78.4
Rainfall (mm/hr)
0
20
40
60
80
100
120
140
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level

S9 - 2022 Field Data

Water Level (m)

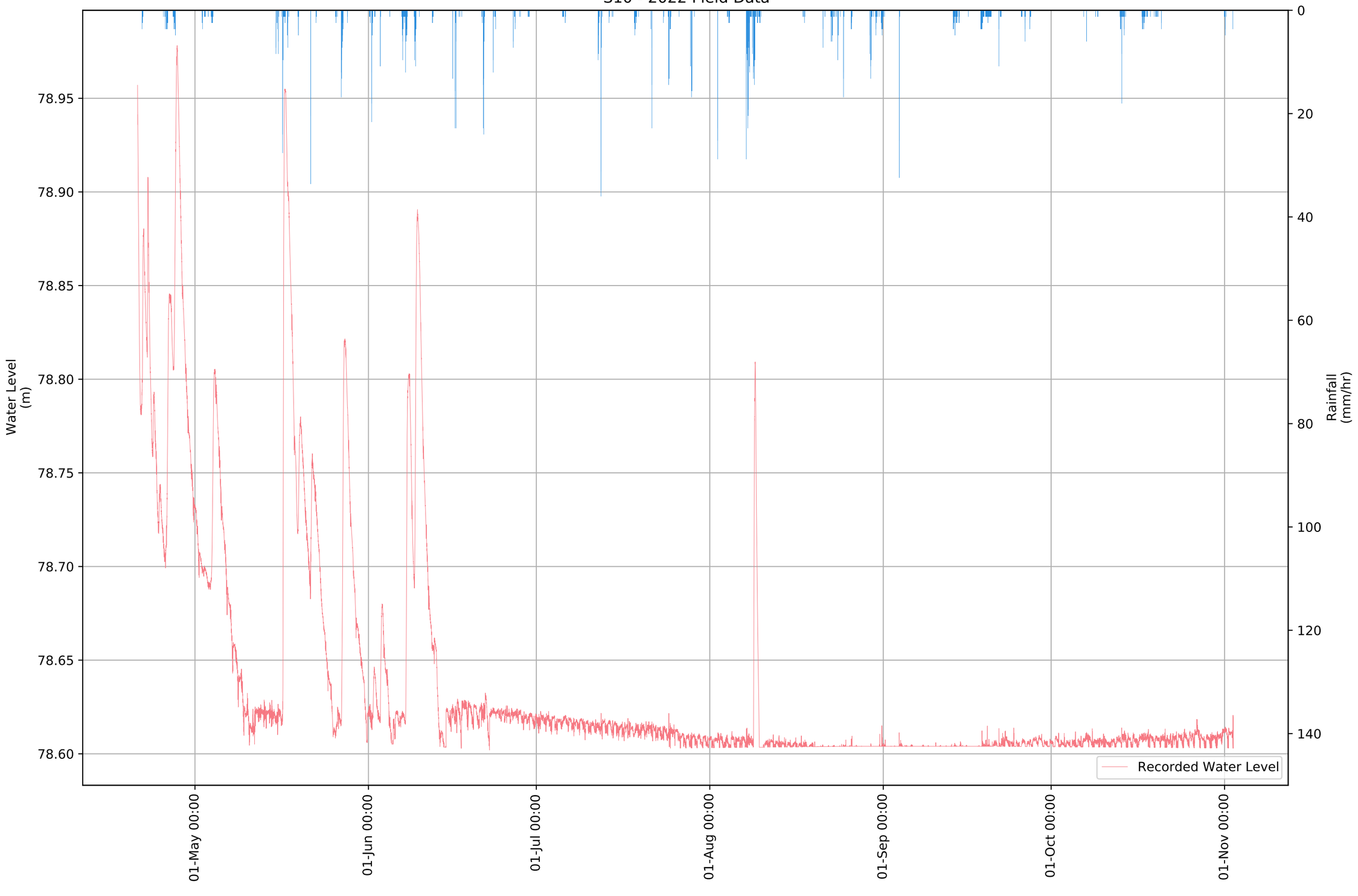
73.4
73.3
73.2
73.1
73.0
72.9
72.8
72.7

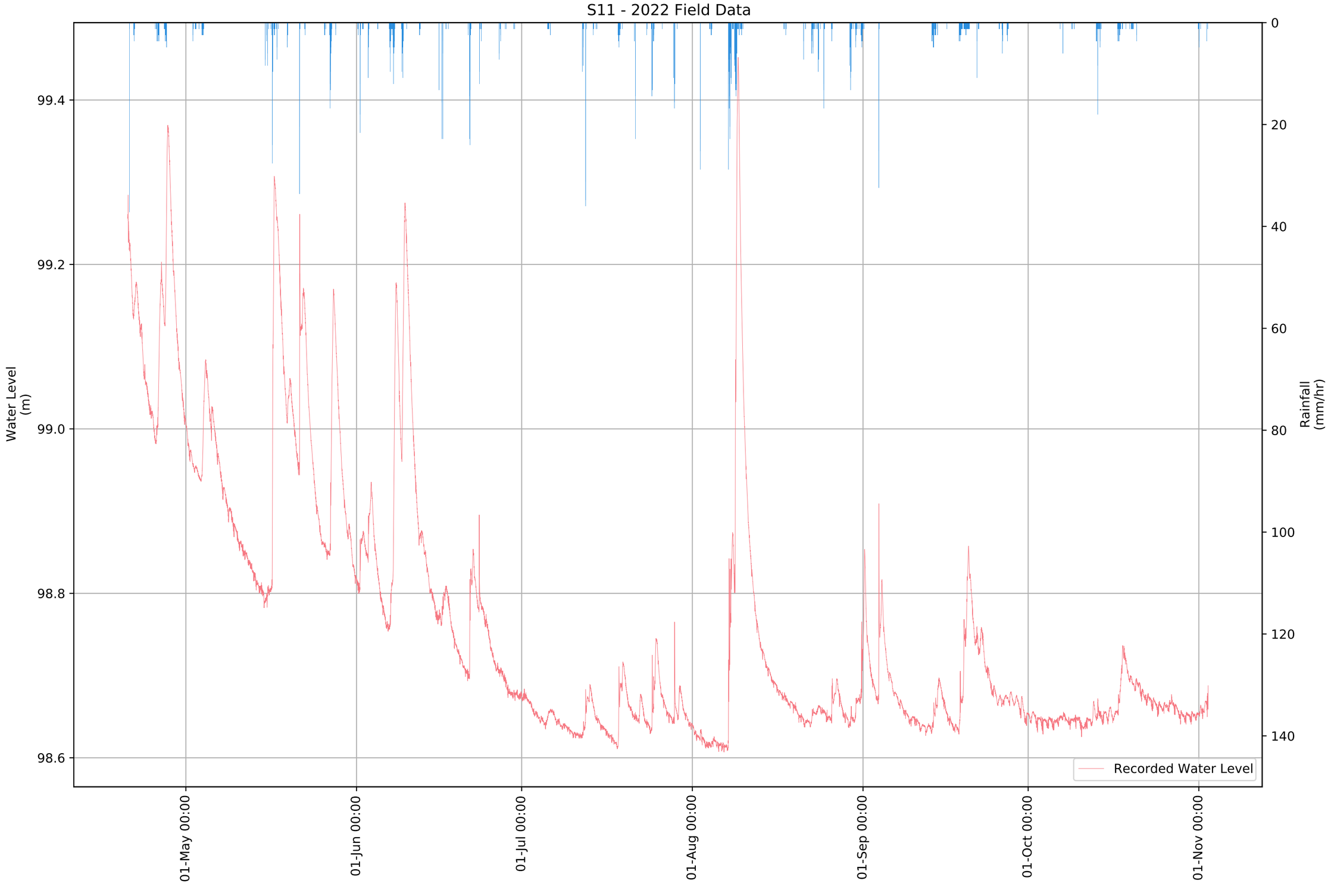
Rainfall (mm/hr)

0
20
40
60
80
100
120
140

Recorded Water Level

01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00


S10 - 2022 Field Data
Water Level (m)
78.95
78.90
78.85
78.80
78.75
78.70
78.65
78.60
0
20
40
60
80
100
120
140
Rainfall (mm/hr)
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level


S11 - 2022 Field Data
Water Level (m)
99.4
99.2
99.0
98.8
98.6
0
20
40
60
80
100
120
140
Rainfall (mm/hr)
01-May 00:00
01-Jun 00:00
01-Jul 00:00
01-Aug 00:00
01-Sep 00:00
01-Oct 00:00
01-Nov 00:00
Recorded Water Level

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Québec. QC

Appendix C

2021-22 Rainfall IDF Curves

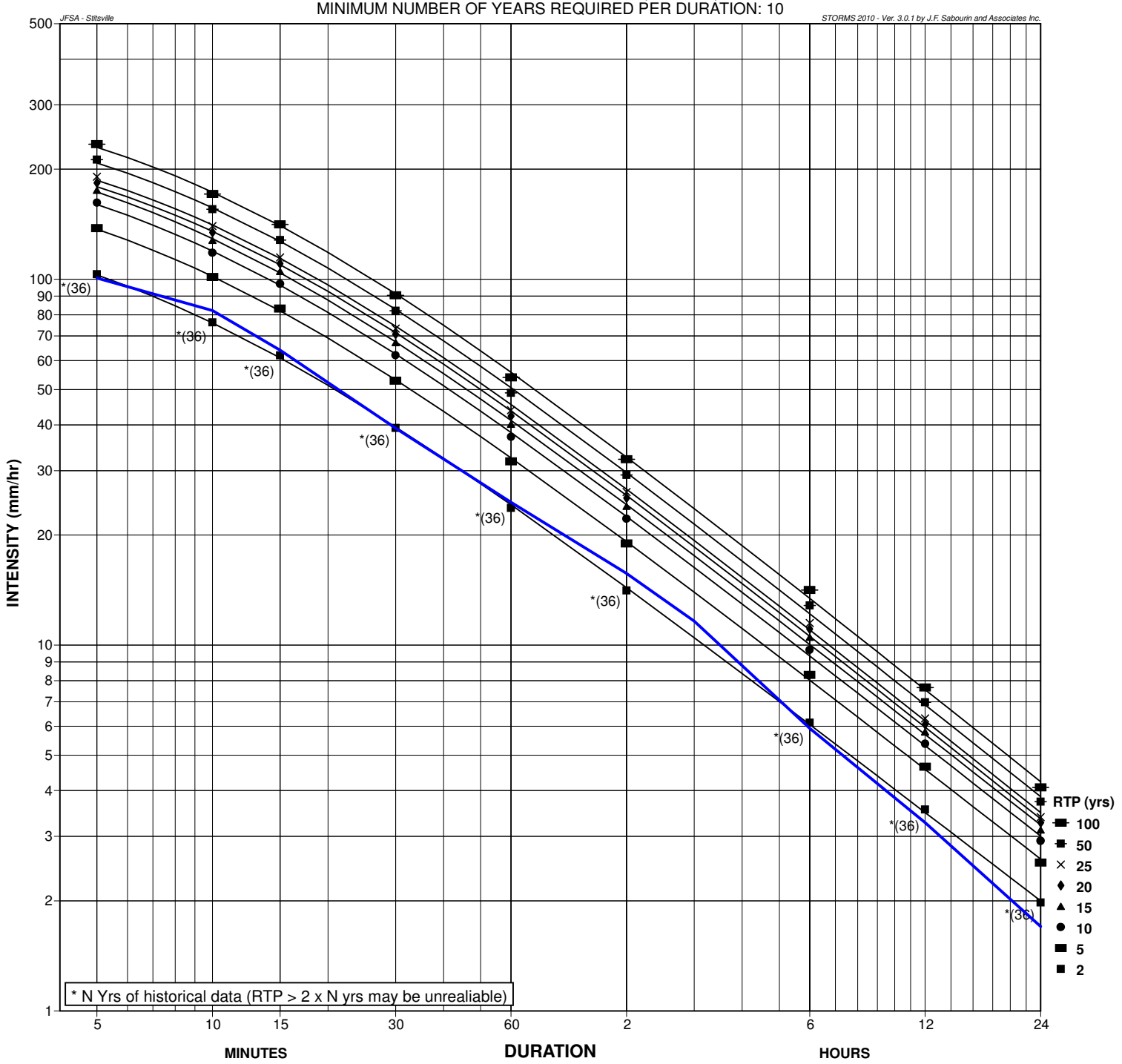
2021

OTTAWA MACDONAL -Station ID: 6106000

SHORT DURATION RAINFALL INTENSITY - DURATION FREQUENCY CHART
TYPE I EXTREMAL DISTRIBUTION (GUMBEL)
MINIMUM NUMBER OF YEARS REQUIRED PER DURATION: 10

JFSA - Stitsville

STORMS 2010 - Ver. 3.0.1 by J.F. Sabourin and Associates Inc.



Measured Precipitation Event:
DAY # 1 (00:05) to
DAY # 92 (02:00)

Measured Statistics:

Total Precip.	=	312.50 mm
Storm Duration	=	2186:00:00
Maximum Intensity	=	100.80 mm/hr
Average Intensity	=	0.14 mm/hr

Duration Max. Ave. Int. RTP

5 min	100.80 mm/hr	< 2.0 yr
10 min	82.20 mm/hr	= 2.4 yr
15 min	64.00 mm/hr	= 2.2 yr
30 min	39.20 mm/hr	= 2.0 yr
60 min	24.60 mm/hr	= 2.2 yr
2 hr	15.70 mm/hr	= 2.6 yr
6 hr	5.92 mm/hr	< 2.0 yr
12 hr	3.27 mm/hr	< 2.0 yr
24 hr	1.70 mm/hr	< 2.0 yr

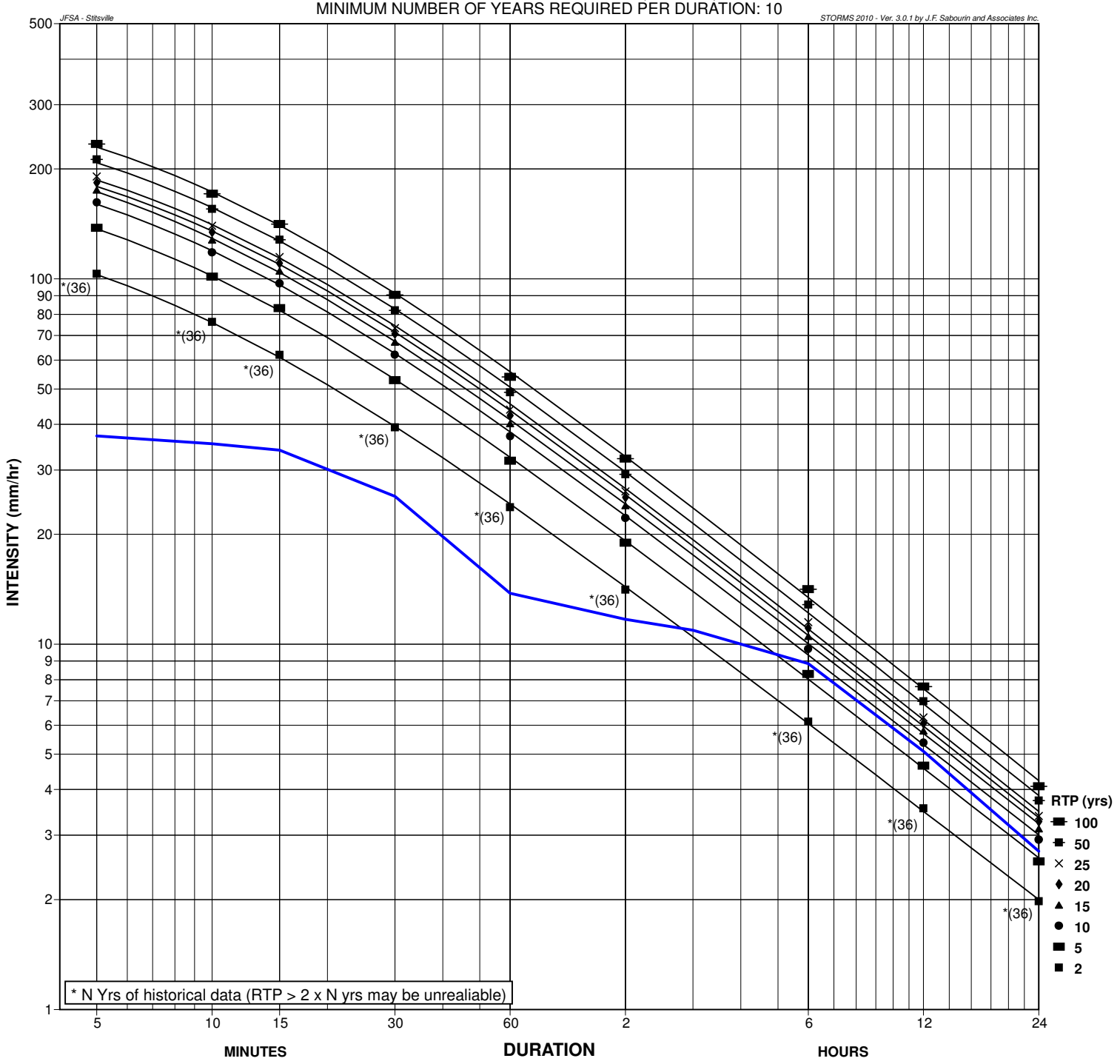
Storm Filename:
...\PROJ\0971(01)-21\Design\
Field\2021\NWRG-2021.stm

Storm Comment:
NWRG August 19, 2021 12:00 Hrs to Nov 18, 2021 13:55 Hrs

2022

OTTAWA MACDONAL -Station ID: 6106000

SHORT DURATION RAINFALL INTENSITY - DURATION FREQUENCY CHART
TYPE I EXTREMAL DISTRIBUTION (GUMBEL)
MINIMUM NUMBER OF YEARS REQUIRED PER DURATION: 10



Measured Precipitation Event:
DAY # 1 (00:05) to
DAY # 202 (00:55)

Measured Statistics:

Total Precip.	=	582.99 mm
Storm Duration	=	4824:55:00
Maximum Intensity	=	37.20 mm/hr
Average Intensity	=	0.12 mm/hr

Duration Max. Ave. Int. RTP

5 min	37.20 mm/hr	< 2.0 yr
10 min	35.40 mm/hr	< 2.0 yr
15 min	34.00 mm/hr	< 2.0 yr
30 min	25.40 mm/hr	< 2.0 yr
60 min	13.80 mm/hr	< 2.0 yr
2 hr	11.70 mm/hr	< 2.0 yr
6 hr	8.85 mm/hr	= 6.6 yr
12 hr	5.09 mm/hr	= 7.6 yr
24 hr	2.71 mm/hr	= 6.8 yr

Storm Filename:
...\Levelogger Data\
Final Processing\

Storm Comment:
NWRG April 20, 2022 11:00 Hrs to Nov 7, 2022 11:50 Hrs

JFSA
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS

Ottawa. ON
Paris. ON
Gatineau. QC
Montréal. QC
Québec. QC

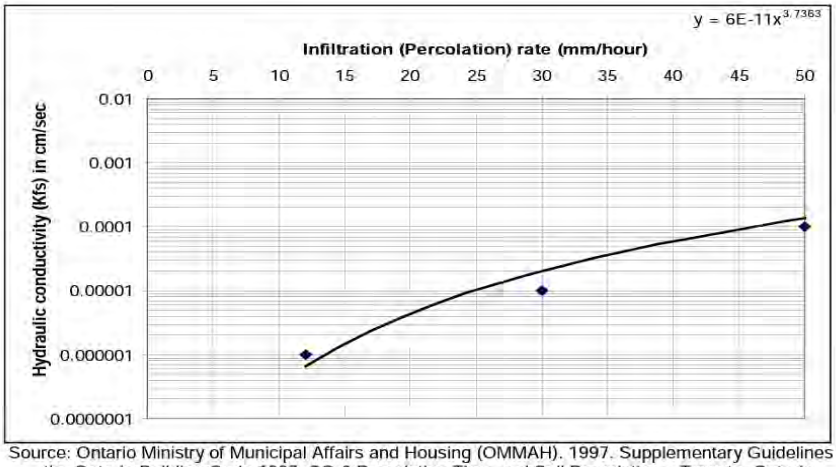
Appendix D

2022 Infiltration Results Analysis

Table 13: Infiltration Test Results, 2022

(Note: Results in red have error % beyond acceptable likely due to poor soil conditions)

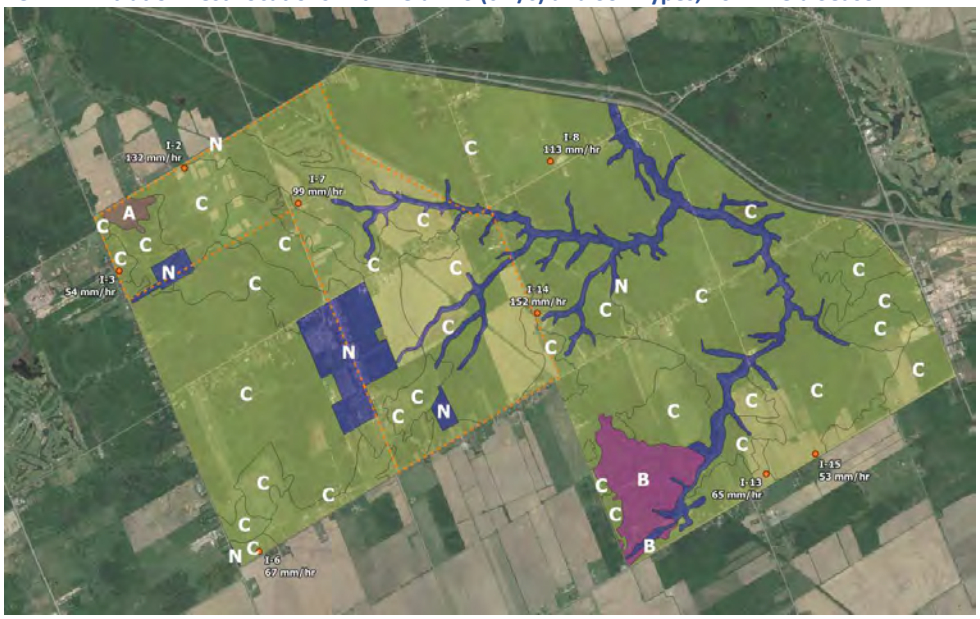
Label	Soil Group	Field kfs (cm/s)	Error (cm/s)	Error (%)	Calculated Infiltration Rate (mm/h)
I2		0.004981	0.000772	15.5%	132
I3		0.0001836	0.00006647	36.2%	54
I6		0.0004026	0.0001679	41.7%	67
I7		0.001684	0.0001843	10.9%	99
I8		0.002835	0.0005481	19.3%	113
I13		0.000352	0.00003717	10.6%	65
I14		0.008413	0.00444	52.8%	152
I15		0.0001668	0.00003241	19.4%	53
				Min	53
				Max	152
				Average	92



Source: Ontario Ministry of Municipal Affairs and Housing (OMMAH). 1997. Supplementary Guidelines to the Ontario Building Code 1997. SG-6 Percolation Time and Soil Descriptions. Toronto, Ontario.

https://sustainabletechnologies.ca/app/uploads/2013/02/LID-SWM-Guide-v1.0_2010_4_Appendix-C_Site-Evaluation-and-Soil-Testing-Protocol.pdf

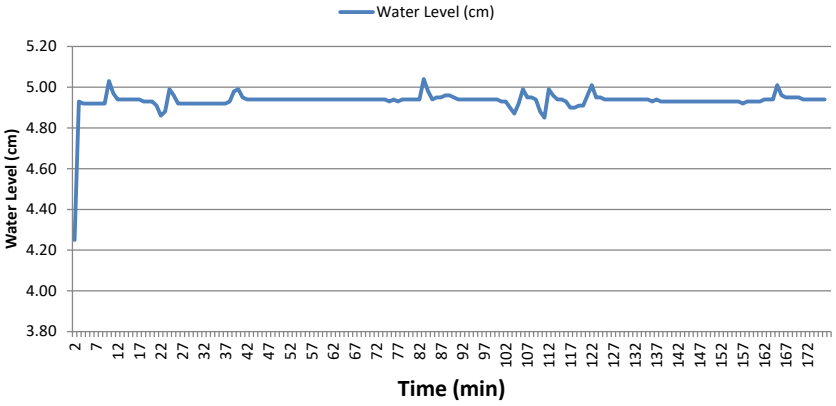
Tewin Infiltration Test Locations with field KFS (cm/s) and Soil Types, 2022 Field Season

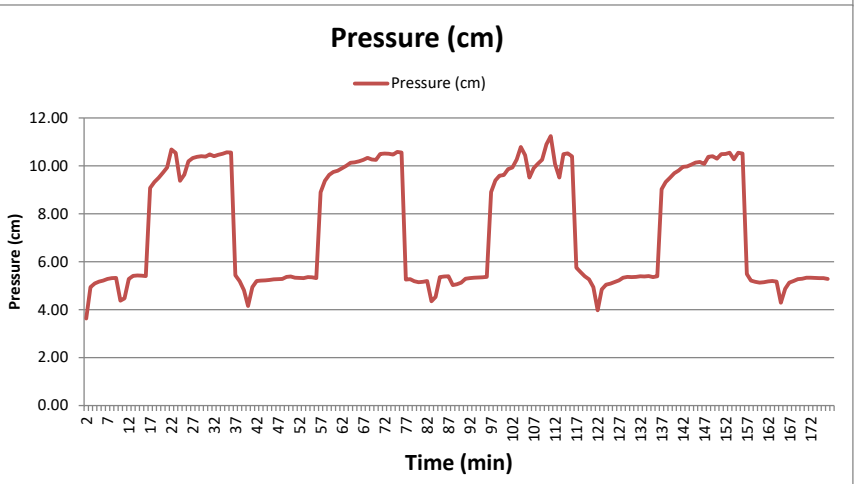


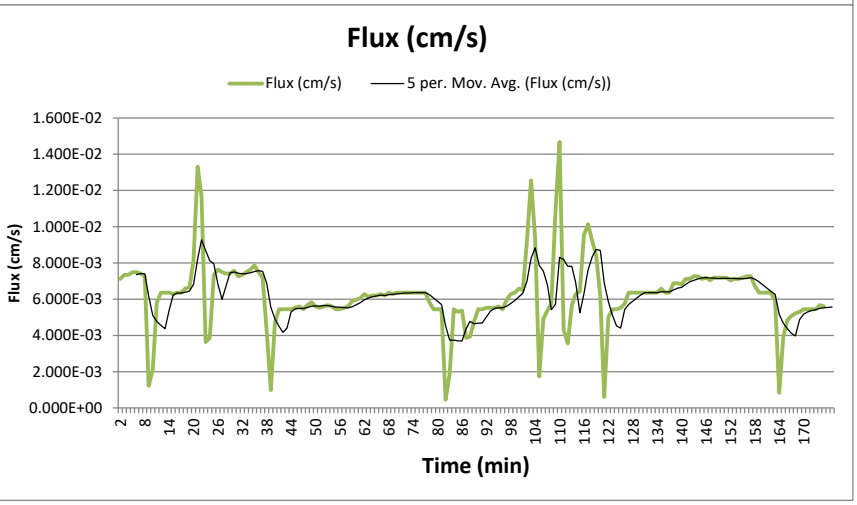
Test Settings	
Name	0971-I2
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	10.0
Soak Time (min)	15
Pressure Cycles	4
Hold Time (min)	20
Insertion Depth (cm)	10
Run Time (min)	175

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	175
First Record ID	1454
Start Time	30 Sep 2022 11:51 AM
Stop Time	30 Sep 2022 02:46 PM
Kfs (cm/s)	0.004981
Kfs Error (cm/s)	0.000772







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
1454	1	4.25	3.63	1.373E-03	0
1455	2	4.93	4.94	7.113E-03	1
1456	3	4.92	5.09	7.340E-03	1
1457	4	4.92	5.17	7.340E-03	1
1458	5	4.92	5.21	7.491E-03	1
1459	6	4.92	5.29	7.491E-03	1
1460	7	4.92	5.32	7.415E-03	1
1461	8	4.92	5.33	7.264E-03	1
1462	9	5.03	4.38	1.211E-03	0
1463	10	4.97	4.47	2.119E-03	0
1464	11	4.94	5.28	5.826E-03	1
1465	12	4.94	5.42	6.356E-03	1
1466	13	4.94	5.42	6.356E-03	1
1467	14	4.94	5.42	6.356E-03	1
1468	15	4.94	5.41	6.280E-03	1
1469	16	4.94	9.08	6.356E-03	1
1470	17	4.93	9.33	6.356E-03	1
1471	18	4.93	9.51	6.583E-03	1
1472	19	4.93	9.72	6.659E-03	1
1473	20	4.91	9.93	8.172E-03	1
1474	21	4.86	10.68	1.332E-02	2
1475	22	4.88	10.54	1.165E-02	2
1476	23	4.99	9.38	3.632E-03	1
1477	24	4.96	9.63	3.859E-03	1
1478	25	4.92	10.19	7.340E-03	1
1479	26	4.92	10.33	7.642E-03	1
1480	27	4.92	10.38	7.491E-03	1
1481	28	4.92	10.40	7.415E-03	1
1482	29	4.92	10.39	7.415E-03	1
1483	30	4.92	10.48	7.567E-03	1
1484	31	4.92	10.41	7.264E-03	1
1485	32	4.92	10.46	7.340E-03	1
1486	33	4.92	10.50	7.491E-03	1
1487	34	4.92	10.57	7.642E-03	1
1488	35	4.92	10.56	7.869E-03	1
1489	36	4.92	5.44	7.491E-03	1
1490	37	4.93	5.19	7.188E-03	1
1491	38	4.98	4.82	4.237E-03	1
1492	39	4.99	4.15	9.836E-04	0
1493	40	4.95	4.94	4.691E-03	1
1494	41	4.94	5.20	5.448E-03	1
1495	42	4.94	5.22	5.448E-03	1
1496	43	4.94	5.22	5.448E-03	1
1497	44	4.94	5.24	5.448E-03	1
1498	45	4.94	5.27	5.524E-03	1
1499	46	4.94	5.27	5.599E-03	1

1500	47	4.94	5.28	5.448E-03	1
1501	48	4.94	5.37	5.675E-03	1
1502	49	4.94	5.38	5.826E-03	1
1503	50	4.94	5.34	5.599E-03	1
1504	51	4.94	5.32	5.524E-03	1
1505	52	4.94	5.32	5.599E-03	1
1506	53	4.94	5.36	5.675E-03	1
1507	54	4.94	5.35	5.599E-03	1
1508	55	4.94	5.32	5.448E-03	1
1509	56	4.94	8.90	5.448E-03	1
1510	57	4.94	9.38	5.524E-03	1
1511	58	4.94	9.63	5.599E-03	1
1512	59	4.94	9.74	5.902E-03	1
1513	60	4.94	9.80	5.978E-03	1
1514	61	4.94	9.90	6.053E-03	1
1515	62	4.94	10.00	6.280E-03	1
1516	63	4.94	10.13	6.129E-03	1
1517	64	4.94	10.14	6.205E-03	1
1518	65	4.94	10.19	6.205E-03	1
1519	66	4.94	10.25	6.280E-03	1
1520	67	4.94	10.33	6.205E-03	1
1521	68	4.94	10.26	6.356E-03	1
1522	69	4.94	10.25	6.280E-03	1
1523	70	4.94	10.50	6.356E-03	1
1524	71	4.94	10.52	6.356E-03	1
1525	72	4.94	10.50	6.356E-03	1
1526	73	4.94	10.47	6.356E-03	1
1527	74	4.93	10.58	6.356E-03	1
1528	75	4.94	10.56	6.356E-03	1
1529	76	4.93	5.26	6.356E-03	1
1530	77	4.94	5.28	6.356E-03	1
1531	78	4.94	5.19	5.826E-03	1
1532	79	4.94	5.15	5.448E-03	1
1533	80	4.94	5.16	5.448E-03	1
1534	81	4.94	5.20	5.448E-03	1
1535	82	5.04	4.35	4.540E-04	0
1536	83	4.98	4.53	1.892E-03	0
1537	84	4.94	5.36	5.448E-03	1
1538	85	4.95	5.39	5.297E-03	1
1539	86	4.95	5.39	5.372E-03	1
1540	87	4.96	5.03	3.859E-03	1
1541	88	4.96	5.06	3.935E-03	1
1542	89	4.95	5.13	4.767E-03	1
1543	90	4.94	5.29	5.448E-03	1
1544	91	4.94	5.31	5.448E-03	1
1545	92	4.94	5.33	5.524E-03	1
1546	93	4.94	5.34	5.524E-03	1

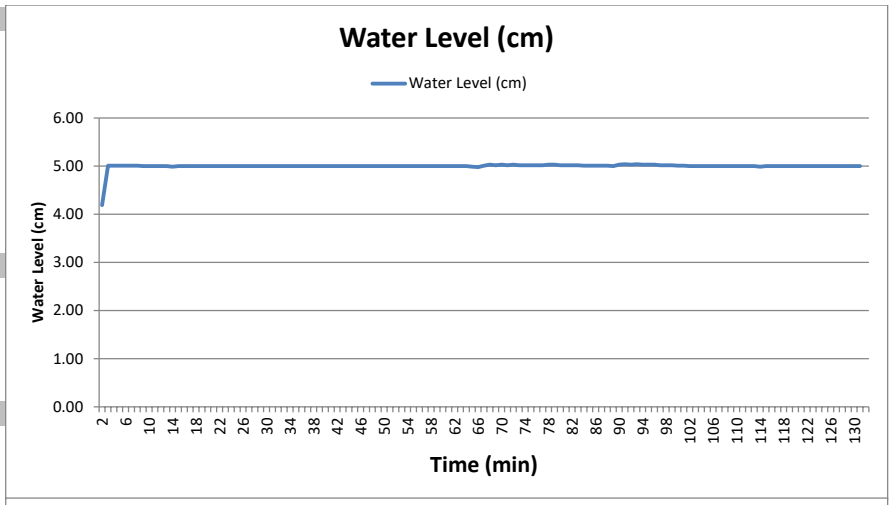
1547	94	4.94	5.35	5.524E-03	1
1548	95	4.94	5.37	5.599E-03	1
1549	96	4.94	8.90	5.448E-03	1
1550	97	4.94	9.39	5.978E-03	1
1551	98	4.94	9.59	6.280E-03	1
1552	99	4.94	9.62	6.356E-03	1
1553	100	4.93	9.87	6.583E-03	1
1554	101	4.93	9.93	6.507E-03	1
1555	102	4.90	10.27	9.231E-03	2
1556	103	4.87	10.79	1.256E-02	2
1557	104	4.92	10.44	9.307E-03	2
1558	105	4.99	9.51	1.740E-03	0
1559	106	4.95	9.91	4.918E-03	1
1560	107	4.95	10.10	5.372E-03	1
1561	108	4.94	10.26	5.751E-03	1
1562	109	4.88	10.90	1.082E-02	2
1563	110	4.85	11.24	1.468E-02	3
1564	111	4.99	10.08	4.313E-03	1
1565	112	4.96	9.52	3.556E-03	1
1566	113	4.94	10.49	5.675E-03	1
1567	114	4.94	10.53	6.280E-03	1
1568	115	4.93	10.40	6.432E-03	1
1569	116	4.90	5.76	9.534E-03	2
1570	117	4.90	5.56	1.014E-02	2
1571	118	4.91	5.39	9.231E-03	2
1572	119	4.91	5.27	8.399E-03	2
1573	120	4.96	4.94	6.129E-03	1
1574	121	5.01	3.97	6.053E-04	0
1575	122	4.95	4.85	4.994E-03	1
1576	123	4.95	5.04	5.448E-03	1
1577	124	4.94	5.09	5.448E-03	1
1578	125	4.94	5.16	5.524E-03	1
1579	126	4.94	5.22	5.751E-03	1
1580	127	4.94	5.34	6.356E-03	1
1581	128	4.94	5.37	6.356E-03	1
1582	129	4.94	5.36	6.356E-03	1
1583	130	4.94	5.37	6.356E-03	1
1584	131	4.94	5.39	6.356E-03	1
1585	132	4.94	5.39	6.356E-03	1
1586	133	4.94	5.40	6.356E-03	1
1587	134	4.94	5.36	6.356E-03	1
1588	135	4.93	5.40	6.583E-03	1
1589	136	4.94	9.03	6.356E-03	1
1590	137	4.93	9.33	6.356E-03	1
1591	138	4.93	9.50	6.886E-03	1
1592	139	4.93	9.70	6.886E-03	1
1593	140	4.93	9.81	6.810E-03	1

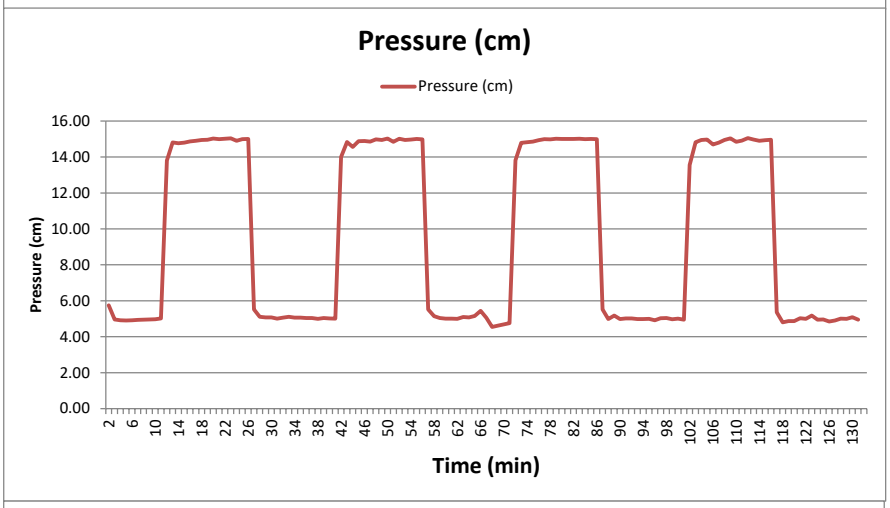
1594	141	4.93	9.96	7.113E-03	1
1595	142	4.93	9.97	7.113E-03	1
1596	143	4.93	10.05	7.264E-03	1
1597	144	4.93	10.14	7.264E-03	1
1598	145	4.93	10.16	7.113E-03	1
1599	146	4.93	10.08	7.188E-03	1
1600	147	4.93	10.37	7.037E-03	1
1601	148	4.93	10.41	7.188E-03	1
1602	149	4.93	10.30	7.188E-03	1
1603	150	4.93	10.49	7.188E-03	1
1604	151	4.93	10.50	7.188E-03	1
1605	152	4.93	10.55	7.037E-03	1
1606	153	4.93	10.28	7.113E-03	1
1607	154	4.93	10.55	7.113E-03	1
1608	155	4.93	10.51	7.188E-03	1
1609	156	4.92	5.49	7.264E-03	1
1610	157	4.93	5.22	7.264E-03	1
1611	158	4.93	5.16	6.734E-03	1
1612	159	4.93	5.13	6.356E-03	1
1613	160	4.93	5.14	6.356E-03	1
1614	161	4.94	5.18	6.356E-03	1
1615	162	4.94	5.20	6.356E-03	1
1616	163	4.94	5.18	5.902E-03	1
1617	164	5.01	4.29	8.323E-04	0
1618	165	4.96	4.87	3.935E-03	1
1619	166	4.95	5.13	4.843E-03	1
1620	167	4.95	5.20	5.070E-03	1
1621	168	4.95	5.27	5.221E-03	1
1622	169	4.95	5.29	5.297E-03	1
1623	170	4.94	5.33	5.448E-03	1
1624	171	4.94	5.34	5.448E-03	1
1625	172	4.94	5.33	5.448E-03	1
1626	173	4.94	5.32	5.448E-03	1
1627	174	4.94	5.32	5.675E-03	1
1628	175	4.94	5.29	5.599E-03	1

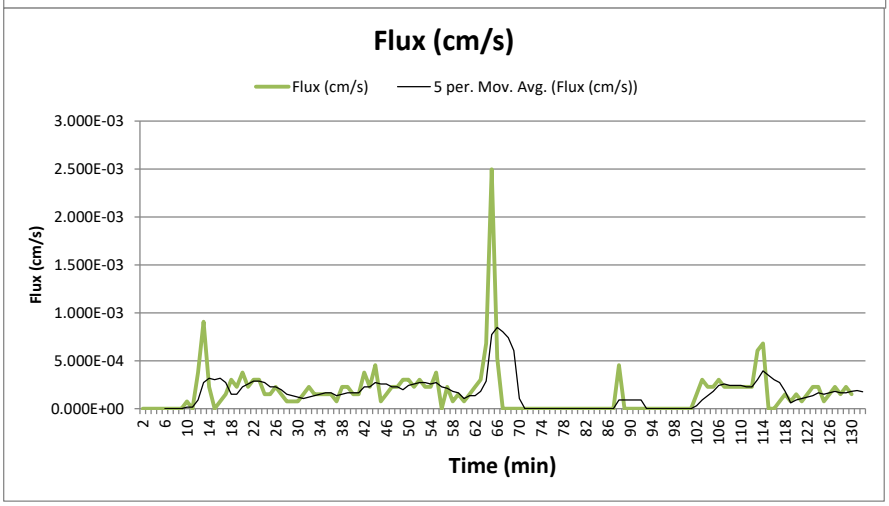
Test Settings	
Name	0971-T1
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	15.0
Soak Time (min)	10
Pressure Cycles	4
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	130

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	130
First Record ID	0
Start Time	22 Jul 2022 09:18 AM
Stop Time	22 Jul 2022 11:28 AM
Kfs (cm/s)	0.0001836
Kfs Error (cm/s)	0.00006647







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
0	1	4.19	5.75	8.305E-04	0
1	2	5.01	4.97	0.000E+00	0
2	3	5.01	4.92	0.000E+00	0
3	4	5.01	4.91	0.000E+00	0
4	5	5.01	4.91	0.000E+00	0
5	6	5.01	4.93	0.000E+00	0
6	7	5.01	4.95	0.000E+00	0
7	8	5.00	4.97	0.000E+00	0
8	9	5.00	4.98	0.000E+00	0
9	10	5.00	5.02	7.567E-05	0
10	11	5.00	13.81	0.000E+00	0
11	12	5.00	14.81	3.783E-04	0
12	13	4.99	14.77	9.080E-04	0
13	14	5.00	14.80	2.270E-04	0
14	15	5.00	14.86	0.000E+00	0
15	16	5.00	14.90	7.567E-05	0
16	17	5.00	14.95	1.513E-04	0
17	18	5.00	14.96	3.027E-04	0
18	19	5.00	15.02	2.270E-04	0
19	20	5.00	15.00	3.783E-04	0
20	21	5.00	15.01	2.270E-04	0
21	22	5.00	15.04	3.027E-04	0
22	23	5.00	14.90	3.027E-04	0
23	24	5.00	14.99	1.513E-04	0
24	25	5.00	15.00	1.513E-04	0
25	26	5.00	5.52	2.270E-04	0
26	27	5.00	5.11	1.513E-04	0
27	28	5.00	5.07	7.567E-05	0
28	29	5.00	5.08	7.567E-05	0
29	30	5.00	5.01	7.567E-05	0
30	31	5.00	5.06	1.513E-04	0
31	32	5.00	5.11	2.270E-04	0
32	33	5.00	5.06	1.513E-04	0
33	34	5.00	5.06	1.513E-04	0
34	35	5.00	5.04	1.513E-04	0
35	36	5.00	5.05	1.513E-04	0
36	37	5.00	5.00	7.567E-05	0
37	38	5.00	5.04	2.270E-04	0
38	39	5.00	5.02	2.270E-04	0
39	40	5.00	5.01	1.513E-04	0
40	41	5.00	14.00	1.513E-04	0
41	42	5.00	14.83	3.783E-04	0
42	43	5.00	14.56	2.270E-04	0
43	44	5.00	14.88	4.540E-04	0
44	45	5.00	14.89	7.567E-05	0
45	46	5.00	14.85	1.513E-04	0

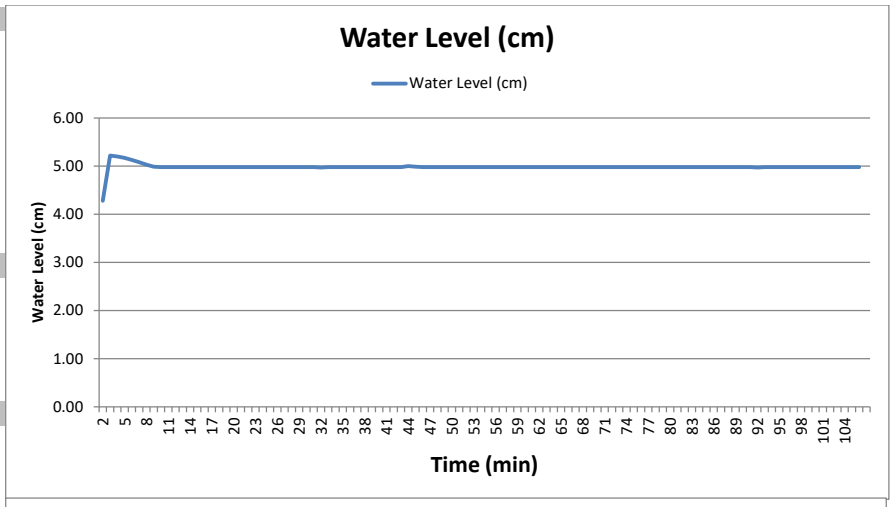
46	47	5.00	14.98	2.270E-04	0
47	48	5.00	14.94	2.270E-04	0
48	49	5.00	15.02	3.027E-04	0
49	50	5.00	14.85	3.027E-04	0
50	51	5.00	15.01	2.270E-04	0
51	52	5.00	14.94	3.027E-04	0
52	53	5.00	14.97	2.270E-04	0
53	54	5.00	15.01	2.270E-04	0
54	55	5.00	14.98	3.783E-04	0
55	56	5.00	5.52	0.000E+00	0
56	57	5.00	5.14	2.270E-04	0
57	58	5.00	5.04	7.567E-05	0
58	59	5.00	5.01	1.513E-04	0
59	60	5.00	5.01	7.567E-05	0
60	61	5.00	5.00	1.513E-04	0
61	62	5.00	5.10	2.270E-04	0
62	63	5.00	5.07	3.027E-04	0
63	64	4.99	5.16	6.810E-04	0
64	65	4.98	5.44	2.497E-03	0
65	66	5.01	5.05	5.297E-04	0
66	67	5.03	4.55	0.000E+00	0
67	68	5.02	4.62	0.000E+00	0
68	69	5.03	4.69	0.000E+00	0
69	70	5.02	4.76	0.000E+00	0
70	71	5.03	13.82	0.000E+00	0
71	72	5.02	14.79	0.000E+00	0
72	73	5.02	14.83	0.000E+00	0
73	74	5.02	14.85	0.000E+00	0
74	75	5.02	14.93	0.000E+00	0
75	76	5.02	14.99	0.000E+00	0
76	77	5.03	14.98	0.000E+00	0
77	78	5.03	15.01	0.000E+00	0
78	79	5.02	15.01	0.000E+00	0
79	80	5.02	15.01	0.000E+00	0
80	81	5.02	15.00	0.000E+00	0
81	82	5.02	15.01	0.000E+00	0
82	83	5.01	15.00	0.000E+00	0
83	84	5.01	15.00	0.000E+00	0
84	85	5.01	15.00	0.000E+00	0
85	86	5.01	5.52	0.000E+00	0
86	87	5.01	4.99	0.000E+00	0
87	88	5.00	5.18	4.540E-04	0
88	89	5.03	4.98	0.000E+00	0
89	90	5.04	5.02	0.000E+00	0
90	91	5.03	5.02	0.000E+00	0
91	92	5.04	4.99	0.000E+00	0
92	93	5.03	4.98	0.000E+00	0

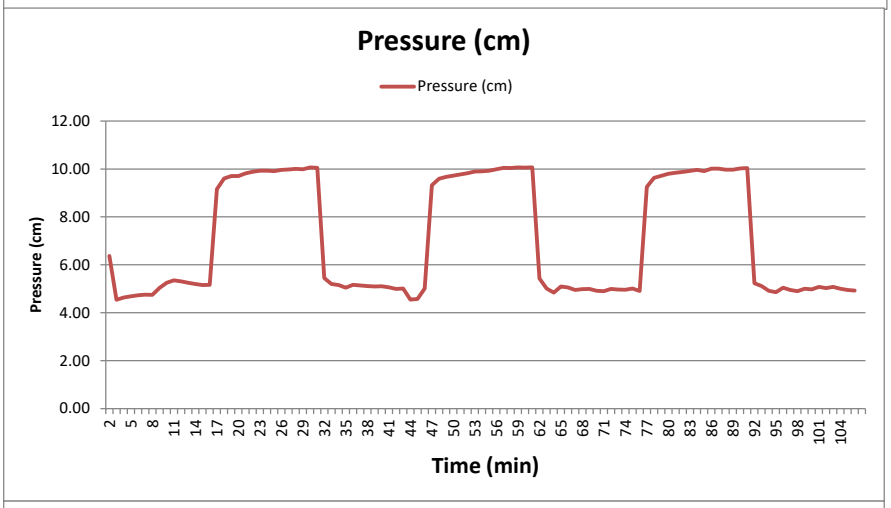
93	94	5.03	4.99	0.000E+00	0
94	95	5.03	4.92	0.000E+00	0
95	96	5.02	5.03	0.000E+00	0
96	97	5.02	5.05	0.000E+00	0
97	98	5.02	4.98	0.000E+00	0
98	99	5.01	5.01	0.000E+00	0
99	100	5.01	4.95	0.000E+00	0
100	101	5.00	13.56	0.000E+00	0
101	102	5.00	14.82	1.513E-04	0
102	103	5.00	14.95	3.027E-04	0
103	104	5.00	14.97	2.270E-04	0
104	105	5.00	14.69	2.270E-04	0
105	106	5.00	14.80	3.027E-04	0
106	107	5.00	14.95	2.270E-04	0
107	108	5.00	15.04	2.270E-04	0
108	109	5.00	14.85	2.270E-04	0
109	110	5.00	14.92	2.270E-04	0
110	111	5.00	15.05	2.270E-04	0
111	112	5.00	14.97	2.270E-04	0
112	113	4.99	14.91	6.053E-04	0
113	114	5.00	14.93	6.810E-04	0
114	115	5.00	14.96	0.000E+00	0
115	116	5.00	5.36	0.000E+00	0
116	117	5.00	4.80	7.567E-05	0
117	118	5.00	4.87	1.513E-04	0
118	119	5.00	4.88	7.567E-05	0
119	120	5.00	5.03	1.513E-04	0
120	121	5.00	4.99	7.567E-05	0
121	122	5.00	5.17	1.513E-04	0
122	123	5.00	4.95	2.270E-04	0
123	124	5.00	4.96	2.270E-04	0
124	125	5.00	4.85	7.567E-05	0
125	126	5.00	4.90	1.513E-04	0
126	127	5.00	5.01	2.270E-04	0
127	128	5.00	4.99	1.513E-04	0
128	129	5.00	5.09	2.270E-04	0
129	130	5.00	4.95	1.513E-04	0

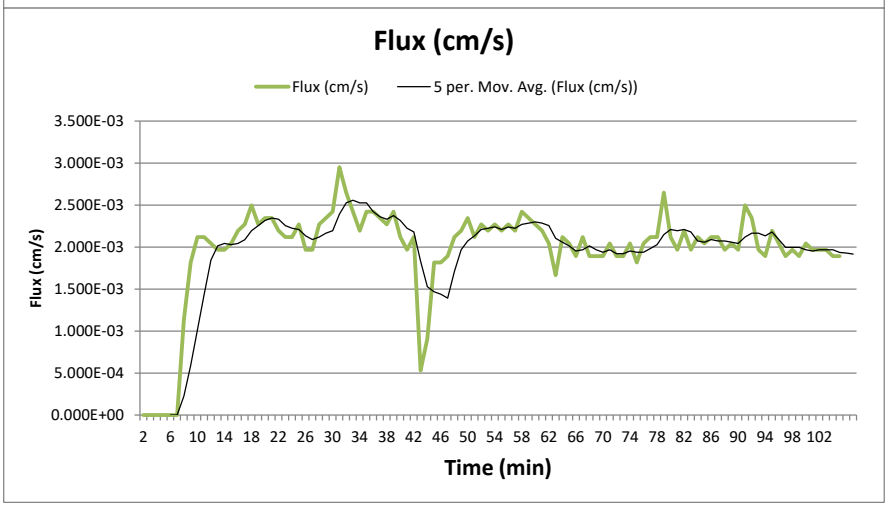
Test Settings	
Name	0971-I6
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	10.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	1629
Start Time	04 Oct 2022 02:18 PM
Stop Time	04 Oct 2022 04:03 PM
Kfs (cm/s)	0.0004026
Kfs Error (cm/s)	0.0001679







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
1629	1	4.28	6.37	8.702E-04	0
1630	2	5.22	4.54	0.000E+00	0
1631	3	5.20	4.63	0.000E+00	0
1632	4	5.17	4.69	0.000E+00	0
1633	5	5.13	4.73	0.000E+00	0
1634	6	5.08	4.75	0.000E+00	0
1635	7	5.03	4.75	0.000E+00	0
1636	8	4.99	5.04	1.135E-03	0
1637	9	4.98	5.25	1.816E-03	0
1638	10	4.98	5.36	2.119E-03	0
1639	11	4.98	5.31	2.119E-03	0
1640	12	4.98	5.25	2.043E-03	0
1641	13	4.98	5.20	1.967E-03	0
1642	14	4.98	5.16	1.967E-03	0
1643	15	4.98	5.16	2.043E-03	0
1644	16	4.98	9.15	2.194E-03	0
1645	17	4.98	9.60	2.270E-03	0
1646	18	4.98	9.71	2.497E-03	0
1647	19	4.98	9.71	2.270E-03	0
1648	20	4.98	9.82	2.346E-03	0
1649	21	4.98	9.89	2.346E-03	0
1650	22	4.98	9.93	2.194E-03	0
1651	23	4.98	9.93	2.119E-03	0
1652	24	4.98	9.91	2.119E-03	0
1653	25	4.98	9.96	2.270E-03	0
1654	26	4.98	9.98	1.967E-03	0
1655	27	4.98	10.01	1.967E-03	0
1656	28	4.98	9.99	2.270E-03	0
1657	29	4.98	10.07	2.346E-03	0
1658	30	4.98	10.05	2.421E-03	0
1659	31	4.97	5.45	2.951E-03	1
1660	32	4.98	5.20	2.648E-03	0
1661	33	4.98	5.16	2.421E-03	0
1662	34	4.98	5.05	2.194E-03	0
1663	35	4.98	5.16	2.421E-03	0
1664	36	4.98	5.14	2.421E-03	0
1665	37	4.98	5.12	2.346E-03	0
1666	38	4.98	5.10	2.270E-03	0
1667	39	4.98	5.11	2.421E-03	0
1668	40	4.98	5.06	2.119E-03	0
1669	41	4.98	5.00	1.967E-03	0
1670	42	4.98	5.01	2.119E-03	0
1671	43	5.00	4.55	5.297E-04	0
1672	44	4.99	4.58	9.080E-04	0
1673	45	4.98	5.01	1.816E-03	0
1674	46	4.98	9.32	1.816E-03	0

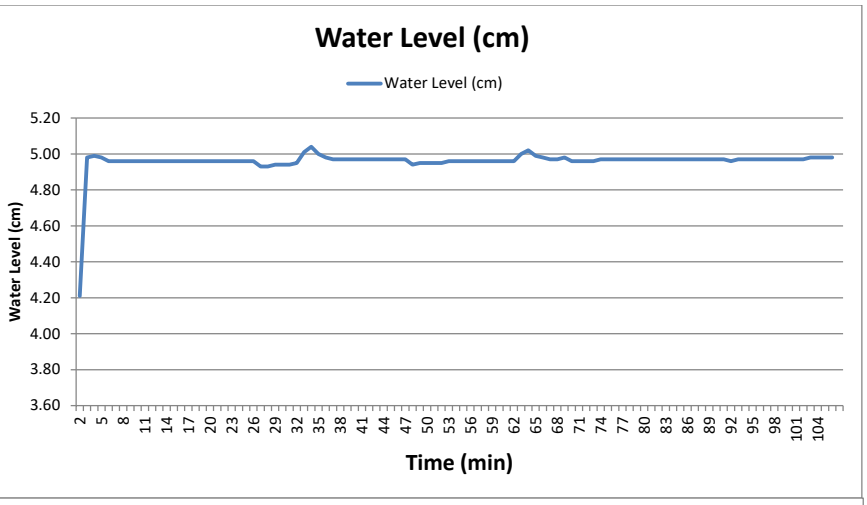
1675	47	4.98	9.59	1.892E-03	0
1676	48	4.98	9.67	2.119E-03	0
1677	49	4.98	9.73	2.194E-03	0
1678	50	4.98	9.78	2.346E-03	0
1679	51	4.98	9.83	2.119E-03	0
1680	52	4.98	9.89	2.270E-03	0
1681	53	4.98	9.90	2.194E-03	0
1682	54	4.98	9.93	2.270E-03	0
1683	55	4.98	9.99	2.194E-03	0
1684	56	4.98	10.05	2.270E-03	0
1685	57	4.98	10.04	2.194E-03	0
1686	58	4.98	10.06	2.421E-03	0
1687	59	4.98	10.06	2.346E-03	0
1688	60	4.98	10.07	2.270E-03	0
1689	61	4.98	5.44	2.194E-03	0
1690	62	4.98	5.01	2.043E-03	0
1691	63	4.98	4.84	1.665E-03	0
1692	64	4.98	5.10	2.119E-03	0
1693	65	4.98	5.05	2.043E-03	0
1694	66	4.98	4.96	1.892E-03	0
1695	67	4.98	4.99	2.119E-03	0
1696	68	4.98	4.99	1.892E-03	0
1697	69	4.98	4.92	1.892E-03	0
1698	70	4.98	4.91	1.892E-03	0
1699	71	4.98	4.99	2.043E-03	0
1700	72	4.98	4.97	1.892E-03	0
1701	73	4.98	4.97	1.892E-03	0
1702	74	4.98	5.01	2.043E-03	0
1703	75	4.98	4.91	1.816E-03	0
1704	76	4.98	9.25	2.043E-03	0
1705	77	4.98	9.63	2.119E-03	0
1706	78	4.98	9.72	2.119E-03	0
1707	79	4.98	9.80	2.648E-03	0
1708	80	4.98	9.85	2.119E-03	0
1709	81	4.98	9.88	1.967E-03	0
1710	82	4.98	9.92	2.194E-03	0
1711	83	4.98	9.96	1.967E-03	0
1712	84	4.98	9.91	2.119E-03	0
1713	85	4.98	10.01	2.043E-03	0
1714	86	4.98	10.01	2.119E-03	0
1715	87	4.98	9.97	2.119E-03	0
1716	88	4.98	9.97	1.967E-03	0
1717	89	4.98	10.02	2.043E-03	0
1718	90	4.98	10.04	1.967E-03	0
1719	91	4.97	5.23	2.497E-03	0
1720	92	4.98	5.11	2.346E-03	0
1721	93	4.98	4.92	1.967E-03	0

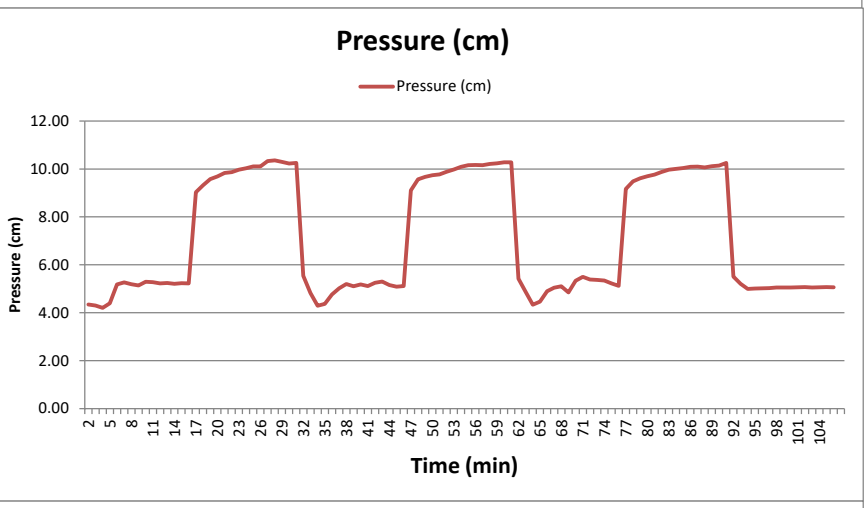
1722	94	4.98	4.86	1.892E-03	0
1723	95	4.98	5.04	2.194E-03	0
1724	96	4.98	4.95	2.043E-03	0
1725	97	4.98	4.91	1.892E-03	0
1726	98	4.98	5.00	1.967E-03	0
1727	99	4.98	4.98	1.892E-03	0
1728	100	4.98	5.08	2.043E-03	0
1729	101	4.98	5.03	1.967E-03	0
1730	102	4.98	5.08	1.967E-03	0
1731	103	4.98	5.01	1.967E-03	0
1732	104	4.98	4.95	1.892E-03	0
1733	105	4.98	4.93	1.892E-03	0

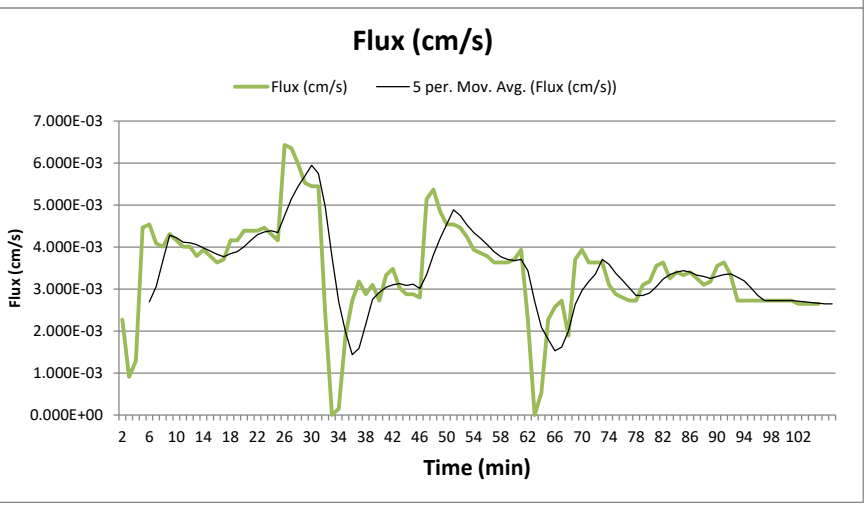
Test Settings	
Name	0971-I7
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	10.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	1349
Start Time	28 Sep 2022 02:37 PM
Stop Time	28 Sep 2022 04:22 PM
Kfs (cm/s)	0.001684
Kfs Error (cm/s)	0.0001843







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
1349	1	4.21	4.35	1.319E-03	0
1350	2	4.98	4.30	2.270E-03	0
1351	3	4.99	4.21	9.080E-04	0
1352	4	4.98	4.40	1.286E-03	0
1353	5	4.96	5.18	4.464E-03	1
1354	6	4.96	5.27	4.540E-03	1
1355	7	4.96	5.19	4.086E-03	1
1356	8	4.96	5.14	4.010E-03	1
1357	9	4.96	5.29	4.313E-03	1
1358	10	4.96	5.28	4.162E-03	1
1359	11	4.96	5.23	4.010E-03	1
1360	12	4.96	5.25	4.010E-03	1
1361	13	4.96	5.21	3.783E-03	1
1362	14	4.96	5.23	3.935E-03	1
1363	15	4.96	5.22	3.783E-03	1
1364	16	4.96	9.03	3.632E-03	1
1365	17	4.96	9.32	3.708E-03	1
1366	18	4.96	9.57	4.162E-03	1
1367	19	4.96	9.69	4.162E-03	1
1368	20	4.96	9.84	4.389E-03	1
1369	21	4.96	9.87	4.389E-03	1
1370	22	4.96	9.97	4.389E-03	1
1371	23	4.96	10.03	4.464E-03	1
1372	24	4.96	10.11	4.313E-03	1
1373	25	4.96	10.11	4.162E-03	1
1374	26	4.93	10.33	6.432E-03	1
1375	27	4.93	10.36	6.356E-03	1
1376	28	4.94	10.30	5.978E-03	1
1377	29	4.94	10.23	5.524E-03	1
1378	30	4.94	10.25	5.448E-03	1
1379	31	4.95	5.54	5.448E-03	1
1380	32	5.01	4.83	2.421E-03	0
1381	33	5.04	4.30	0.000E+00	0
1382	34	5.00	4.37	1.513E-04	0
1383	35	4.98	4.77	1.892E-03	0
1384	36	4.97	5.02	2.724E-03	0
1385	37	4.97	5.20	3.178E-03	1
1386	38	4.97	5.11	2.875E-03	1
1387	39	4.97	5.18	3.102E-03	1
1388	40	4.97	5.12	2.724E-03	0
1389	41	4.97	5.25	3.329E-03	1
1390	42	4.97	5.31	3.481E-03	1
1391	43	4.97	5.16	3.027E-03	1
1392	44	4.97	5.09	2.875E-03	1
1393	45	4.97	5.12	2.875E-03	1
1394	46	4.97	9.11	2.800E-03	1

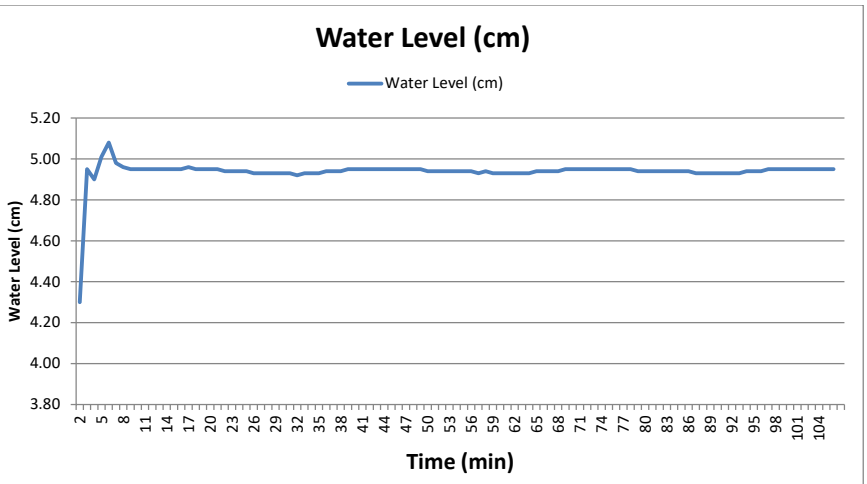
1395	47	4.94	9.57	5.145E-03	1
1396	48	4.95	9.67	5.372E-03	1
1397	49	4.95	9.74	4.843E-03	1
1398	50	4.95	9.77	4.540E-03	1
1399	51	4.95	9.89	4.540E-03	1
1400	52	4.96	9.98	4.464E-03	1
1401	53	4.96	10.09	4.237E-03	1
1402	54	4.96	10.16	3.935E-03	1
1403	55	4.96	10.17	3.859E-03	1
1404	56	4.96	10.16	3.783E-03	1
1405	57	4.96	10.21	3.632E-03	1
1406	58	4.96	10.24	3.632E-03	1
1407	59	4.96	10.28	3.632E-03	1
1408	60	4.96	10.28	3.708E-03	1
1409	61	4.96	5.43	3.935E-03	1
1410	62	5.00	4.87	2.270E-03	0
1411	63	5.02	4.33	0.000E+00	0
1412	64	4.99	4.47	5.297E-04	0
1413	65	4.98	4.90	2.270E-03	0
1414	66	4.97	5.04	2.573E-03	0
1415	67	4.97	5.11	2.724E-03	0
1416	68	4.98	4.85	1.892E-03	0
1417	69	4.96	5.33	3.708E-03	1
1418	70	4.96	5.50	3.935E-03	1
1419	71	4.96	5.39	3.632E-03	1
1420	72	4.96	5.37	3.632E-03	1
1421	73	4.97	5.34	3.632E-03	1
1422	74	4.97	5.22	3.102E-03	1
1423	75	4.97	5.12	2.875E-03	1
1424	76	4.97	9.16	2.800E-03	1
1425	77	4.97	9.49	2.724E-03	0
1426	78	4.97	9.61	2.724E-03	0
1427	79	4.97	9.69	3.102E-03	1
1428	80	4.97	9.76	3.178E-03	1
1429	81	4.97	9.88	3.556E-03	1
1430	82	4.97	9.97	3.632E-03	1
1431	83	4.97	10.00	3.254E-03	1
1432	84	4.97	10.04	3.405E-03	1
1433	85	4.97	10.09	3.329E-03	1
1434	86	4.97	10.10	3.405E-03	1
1435	87	4.97	10.07	3.254E-03	1
1436	88	4.97	10.12	3.102E-03	1
1437	89	4.97	10.14	3.178E-03	1
1438	90	4.97	10.26	3.556E-03	1
1439	91	4.96	5.51	3.632E-03	1
1440	92	4.97	5.21	3.329E-03	1
1441	93	4.97	5.00	2.724E-03	0

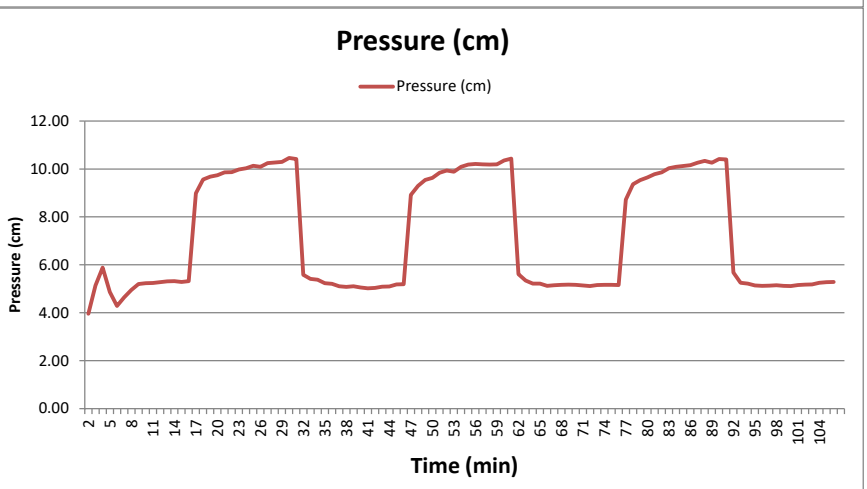
1442	94	4.97	5.01	2.724E-03	0
1443	95	4.97	5.02	2.724E-03	0
1444	96	4.97	5.03	2.724E-03	0
1445	97	4.97	5.06	2.724E-03	0
1446	98	4.97	5.06	2.724E-03	0
1447	99	4.97	5.05	2.724E-03	0
1448	100	4.97	5.07	2.724E-03	0
1449	101	4.97	5.08	2.724E-03	0
1450	102	4.98	5.06	2.648E-03	0
1451	103	4.98	5.06	2.648E-03	0
1452	104	4.98	5.07	2.648E-03	0
1453	105	4.98	5.07	2.648E-03	0

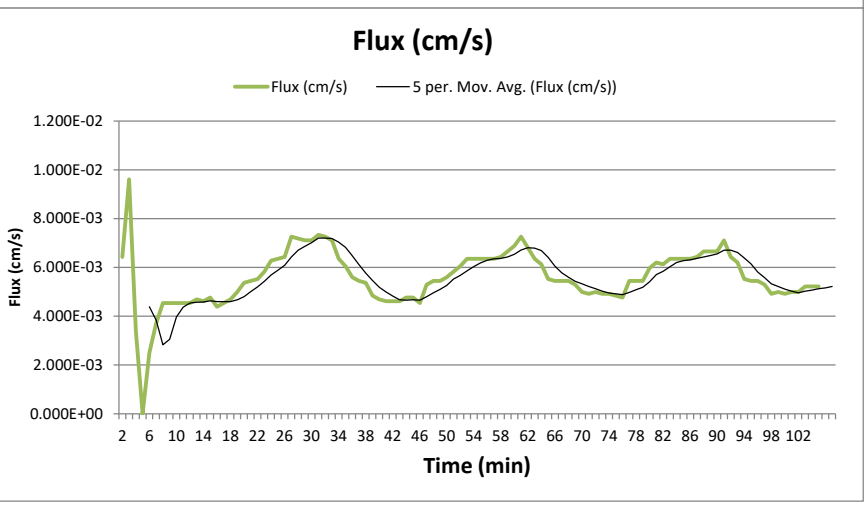
Test Settings	
Name	0971-I8
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	10.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	2049
Start Time	06 Oct 2022 12:51 PM
Stop Time	06 Oct 2022 02:36 PM
Kfs (cm/s)	0.002835
Kfs Error (cm/s)	0.0005481







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
2049	1	4.30	3.96	1.809E-05	0
2050	2	4.95	5.14	6.432E-03	1
2051	3	4.90	5.89	9.610E-03	2
2052	4	5.01	4.87	3.405E-03	1
2053	5	5.08	4.28	0.000E+00	0
2054	6	4.98	4.64	2.497E-03	0
2055	7	4.96	4.95	3.708E-03	1
2056	8	4.95	5.20	4.540E-03	1
2057	9	4.95	5.23	4.540E-03	1
2058	10	4.95	5.24	4.540E-03	1
2059	11	4.95	5.28	4.540E-03	1
2060	12	4.95	5.31	4.540E-03	1
2061	13	4.95	5.32	4.691E-03	1
2062	14	4.95	5.29	4.616E-03	1
2063	15	4.95	5.32	4.767E-03	1
2064	16	4.96	8.99	4.389E-03	1
2065	17	4.95	9.56	4.540E-03	1
2066	18	4.95	9.68	4.691E-03	1
2067	19	4.95	9.74	4.994E-03	1
2068	20	4.95	9.86	5.372E-03	1
2069	21	4.94	9.86	5.448E-03	1
2070	22	4.94	9.98	5.524E-03	1
2071	23	4.94	10.03	5.826E-03	1
2072	24	4.94	10.13	6.280E-03	1
2073	25	4.93	10.09	6.356E-03	1
2074	26	4.93	10.24	6.432E-03	1
2075	27	4.93	10.27	7.264E-03	1
2076	28	4.93	10.29	7.188E-03	1
2077	29	4.93	10.46	7.113E-03	1
2078	30	4.93	10.42	7.113E-03	1
2079	31	4.92	5.58	7.340E-03	1
2080	32	4.93	5.41	7.264E-03	1
2081	33	4.93	5.38	7.113E-03	1
2082	34	4.93	5.23	6.356E-03	1
2083	35	4.94	5.21	6.053E-03	1
2084	36	4.94	5.10	5.599E-03	1
2085	37	4.94	5.08	5.448E-03	1
2086	38	4.95	5.11	5.372E-03	1
2087	39	4.95	5.06	4.843E-03	1
2088	40	4.95	5.02	4.691E-03	1
2089	41	4.95	5.04	4.616E-03	1
2090	42	4.95	5.09	4.616E-03	1
2091	43	4.95	5.10	4.616E-03	1
2092	44	4.95	5.19	4.767E-03	1
2093	45	4.95	5.19	4.767E-03	1
2094	46	4.95	8.92	4.540E-03	1

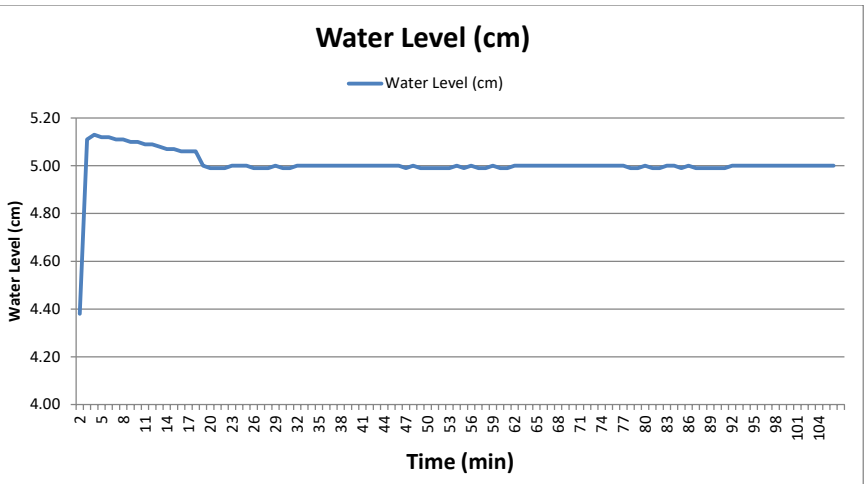
2095	47	4.95	9.30	5.297E-03	1
2096	48	4.95	9.54	5.448E-03	1
2097	49	4.94	9.63	5.448E-03	1
2098	50	4.94	9.84	5.599E-03	1
2099	51	4.94	9.93	5.826E-03	1
2100	52	4.94	9.89	6.053E-03	1
2101	53	4.94	10.09	6.356E-03	1
2102	54	4.94	10.18	6.356E-03	1
2103	55	4.94	10.21	6.356E-03	1
2104	56	4.93	10.20	6.356E-03	1
2105	57	4.94	10.19	6.356E-03	1
2106	58	4.93	10.20	6.432E-03	1
2107	59	4.93	10.36	6.659E-03	1
2108	60	4.93	10.43	6.886E-03	1
2109	61	4.93	5.61	7.264E-03	1
2110	62	4.93	5.34	6.810E-03	1
2111	63	4.93	5.21	6.356E-03	1
2112	64	4.94	5.22	6.129E-03	1
2113	65	4.94	5.12	5.524E-03	1
2114	66	4.94	5.15	5.448E-03	1
2115	67	4.94	5.16	5.448E-03	1
2116	68	4.95	5.18	5.448E-03	1
2117	69	4.95	5.16	5.297E-03	1
2118	70	4.95	5.14	4.994E-03	1
2119	71	4.95	5.11	4.918E-03	1
2120	72	4.95	5.16	4.994E-03	1
2121	73	4.95	5.17	4.918E-03	1
2122	74	4.95	5.16	4.918E-03	1
2123	75	4.95	5.16	4.843E-03	1
2124	76	4.95	8.72	4.767E-03	1
2125	77	4.95	9.36	5.448E-03	1
2126	78	4.94	9.54	5.448E-03	1
2127	79	4.94	9.65	5.448E-03	1
2128	80	4.94	9.78	5.978E-03	1
2129	81	4.94	9.86	6.205E-03	1
2130	82	4.94	10.03	6.129E-03	1
2131	83	4.94	10.09	6.356E-03	1
2132	84	4.94	10.12	6.356E-03	1
2133	85	4.94	10.16	6.356E-03	1
2134	86	4.93	10.26	6.356E-03	1
2135	87	4.93	10.34	6.432E-03	1
2136	88	4.93	10.26	6.659E-03	1
2137	89	4.93	10.42	6.659E-03	1
2138	90	4.93	10.39	6.659E-03	1
2139	91	4.93	5.68	7.113E-03	1
2140	92	4.93	5.25	6.432E-03	1
2141	93	4.94	5.22	6.205E-03	1

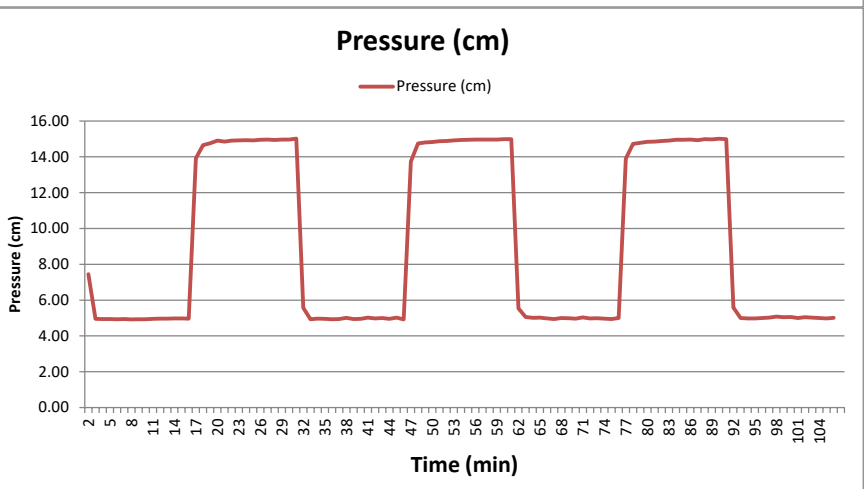
2142	94	4.94	5.14	5.524E-03	1
2143	95	4.94	5.12	5.448E-03	1
2144	96	4.95	5.13	5.448E-03	1
2145	97	4.95	5.15	5.297E-03	1
2146	98	4.95	5.12	4.918E-03	1
2147	99	4.95	5.11	4.994E-03	1
2148	100	4.95	5.16	4.918E-03	1
2149	101	4.95	5.18	4.994E-03	1
2150	102	4.95	5.18	4.994E-03	1
2151	103	4.95	5.25	5.221E-03	1
2152	104	4.95	5.28	5.221E-03	1
2153	105	4.95	5.28	5.221E-03	1

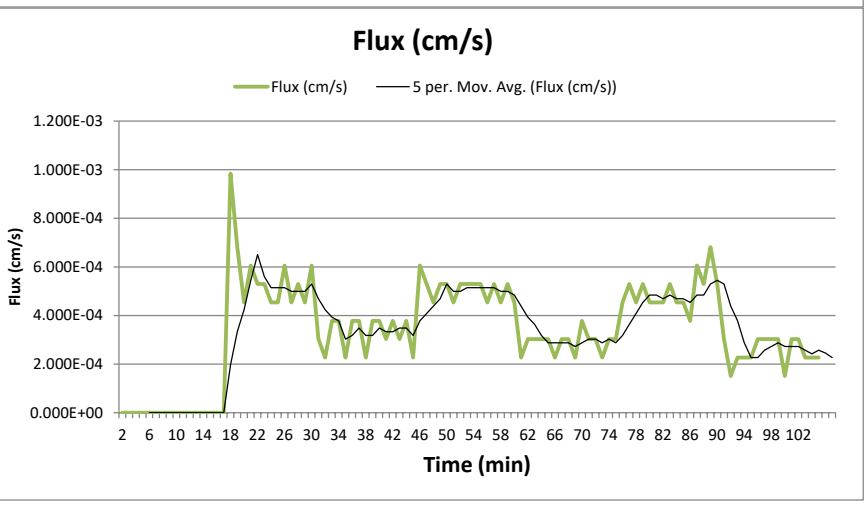
Test Settings	
Name	0971-I13
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	15.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	2364
Start Time	14 Oct 2022 11:46 AM
Stop Time	14 Oct 2022 01:31 PM
Kfs (cm/s)	0.000352
Kfs Error (cm/s)	0.00003717







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
2364	1	4.38	7.45	4.673E-04	0
2365	2	5.11	4.96	0.000E+00	0
2366	3	5.13	4.94	0.000E+00	0
2367	4	5.12	4.94	0.000E+00	0
2368	5	5.12	4.94	0.000E+00	0
2369	6	5.11	4.94	0.000E+00	0
2370	7	5.11	4.92	0.000E+00	0
2371	8	5.10	4.93	0.000E+00	0
2372	9	5.10	4.93	0.000E+00	0
2373	10	5.09	4.95	0.000E+00	0
2374	11	5.09	4.97	0.000E+00	0
2375	12	5.08	4.97	0.000E+00	0
2376	13	5.07	4.98	0.000E+00	0
2377	14	5.07	4.97	0.000E+00	0
2378	15	5.06	4.96	0.000E+00	0
2379	16	5.06	13.93	0.000E+00	0
2380	17	5.06	14.66	0.000E+00	0
2381	18	5.00	14.76	9.836E-04	0
2382	19	4.99	14.91	6.810E-04	0
2383	20	4.99	14.85	4.540E-04	0
2384	21	4.99	14.91	6.053E-04	0
2385	22	5.00	14.92	5.297E-04	0
2386	23	5.00	14.93	5.297E-04	0
2387	24	5.00	14.92	4.540E-04	0
2388	25	4.99	14.95	4.540E-04	0
2389	26	4.99	14.97	6.053E-04	0
2390	27	4.99	14.94	4.540E-04	0
2391	28	5.00	14.97	5.297E-04	0
2392	29	4.99	14.97	4.540E-04	0
2393	30	4.99	15.02	6.053E-04	0
2394	31	5.00	5.57	3.027E-04	0
2395	32	5.00	4.94	2.270E-04	0
2396	33	5.00	4.97	3.783E-04	0
2397	34	5.00	4.96	3.783E-04	0
2398	35	5.00	4.93	2.270E-04	0
2399	36	5.00	4.94	3.783E-04	0
2400	37	5.00	5.01	3.783E-04	0
2401	38	5.00	4.95	2.270E-04	0
2402	39	5.00	4.95	3.783E-04	0
2403	40	5.00	5.02	3.783E-04	0
2404	41	5.00	4.98	3.027E-04	0
2405	42	5.00	5.00	3.783E-04	0
2406	43	5.00	4.95	3.027E-04	0
2407	44	5.00	5.02	3.783E-04	0
2408	45	5.00	4.92	2.270E-04	0
2409	46	4.99	13.74	6.053E-04	0

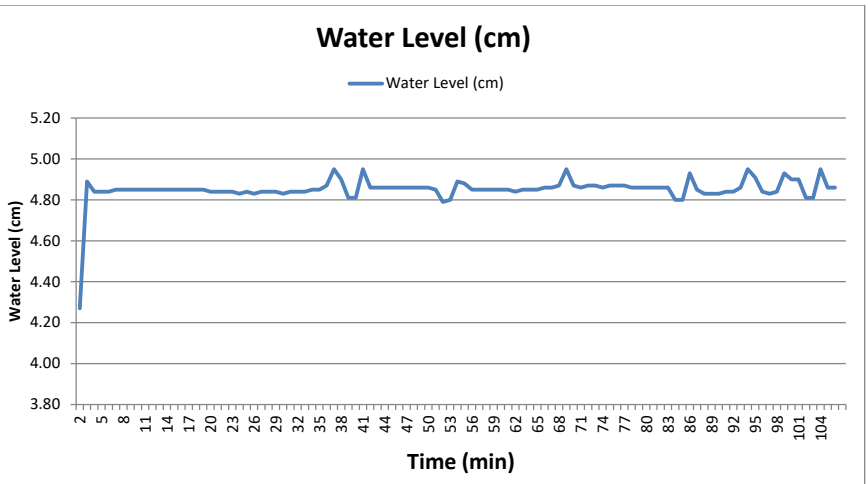
2410	47	5.00	14.74	5.297E-04	0
2411	48	4.99	14.81	4.540E-04	0
2412	49	4.99	14.83	5.297E-04	0
2413	50	4.99	14.87	5.297E-04	0
2414	51	4.99	14.88	4.540E-04	0
2415	52	4.99	14.92	5.297E-04	0
2416	53	5.00	14.94	5.297E-04	0
2417	54	4.99	14.95	5.297E-04	0
2418	55	5.00	14.96	5.297E-04	0
2419	56	4.99	14.97	4.540E-04	0
2420	57	4.99	14.97	5.297E-04	0
2421	58	5.00	14.97	4.540E-04	0
2422	59	4.99	14.99	5.297E-04	0
2423	60	4.99	14.99	4.540E-04	0
2424	61	5.00	5.54	2.270E-04	0
2425	62	5.00	5.06	3.027E-04	0
2426	63	5.00	5.01	3.027E-04	0
2427	64	5.00	5.02	3.027E-04	0
2428	65	5.00	4.98	3.027E-04	0
2429	66	5.00	4.95	2.270E-04	0
2430	67	5.00	5.01	3.027E-04	0
2431	68	5.00	4.99	3.027E-04	0
2432	69	5.00	4.97	2.270E-04	0
2433	70	5.00	5.04	3.783E-04	0
2434	71	5.00	4.98	3.027E-04	0
2435	72	5.00	4.98	3.027E-04	0
2436	73	5.00	4.97	2.270E-04	0
2437	74	5.00	4.94	3.027E-04	0
2438	75	5.00	5.00	3.027E-04	0
2439	76	5.00	13.90	4.540E-04	0
2440	77	4.99	14.73	5.297E-04	0
2441	78	4.99	14.78	4.540E-04	0
2442	79	5.00	14.84	5.297E-04	0
2443	80	4.99	14.85	4.540E-04	0
2444	81	4.99	14.88	4.540E-04	0
2445	82	5.00	14.91	4.540E-04	0
2446	83	5.00	14.95	5.297E-04	0
2447	84	4.99	14.95	4.540E-04	0
2448	85	5.00	14.97	4.540E-04	0
2449	86	4.99	14.93	3.783E-04	0
2450	87	4.99	14.99	6.053E-04	0
2451	88	4.99	14.98	5.297E-04	0
2452	89	4.99	15.01	6.810E-04	0
2453	90	4.99	14.99	5.297E-04	0
2454	91	5.00	5.59	3.027E-04	0
2455	92	5.00	4.99	1.513E-04	0
2456	93	5.00	4.97	2.270E-04	0

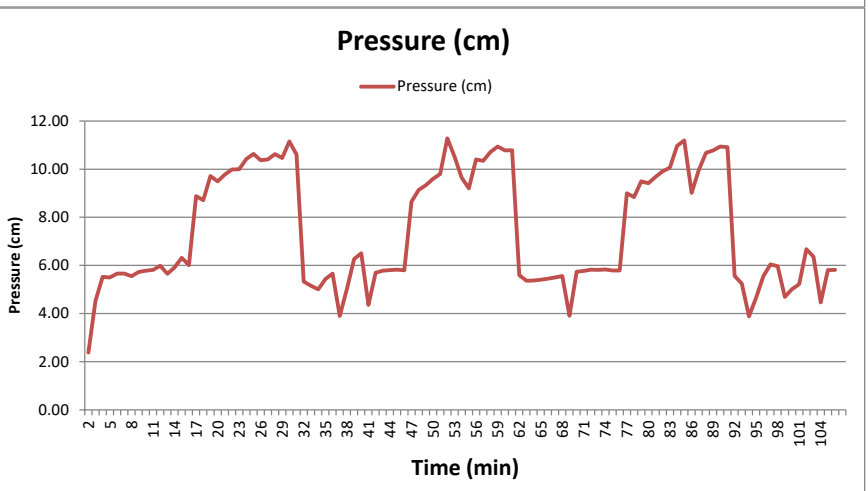
2457	94	5.00	4.98	2.270E-04	0
2458	95	5.00	5.01	2.270E-04	0
2459	96	5.00	5.03	3.027E-04	0
2460	97	5.00	5.08	3.027E-04	0
2461	98	5.00	5.05	3.027E-04	0
2462	99	5.00	5.06	3.027E-04	0
2463	100	5.00	5.00	1.513E-04	0
2464	101	5.00	5.05	3.027E-04	0
2465	102	5.00	5.03	3.027E-04	0
2466	103	5.00	5.00	2.270E-04	0
2467	104	5.00	4.98	2.270E-04	0
2468	105	5.00	5.01	2.270E-04	0

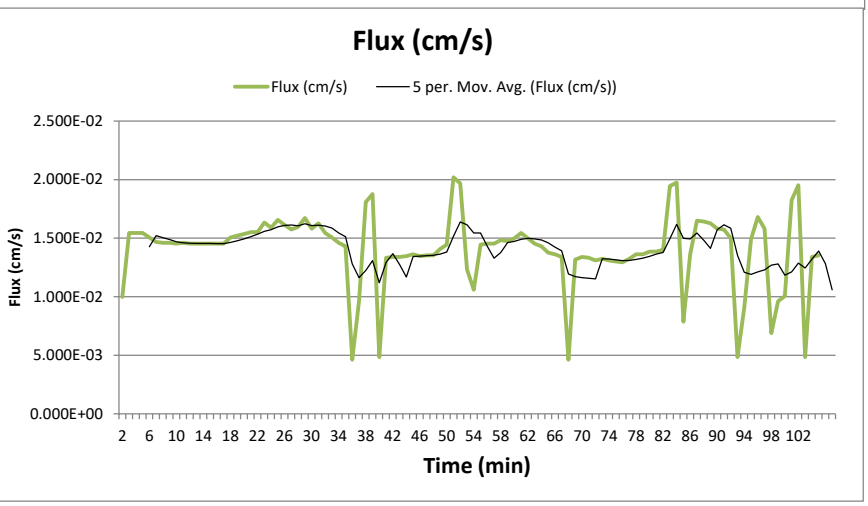
Test Settings	
Name	0971-I14
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	10.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	2154
Start Time	06 Oct 2022 03:11 PM
Stop Time	06 Oct 2022 04:56 PM
Kfs (cm/s)	0.008413
Kfs Error (cm/s)	0.00444







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
2154	1	4.27	2.38	5.565E-04	0
2155	2	4.89	4.53	9.988E-03	2
2156	3	4.84	5.53	1.544E-02	3
2157	4	4.84	5.50	1.544E-02	3
2158	5	4.84	5.66	1.544E-02	3
2159	6	4.85	5.66	1.506E-02	3
2160	7	4.85	5.56	1.468E-02	3
2161	8	4.85	5.73	1.460E-02	3
2162	9	4.85	5.79	1.460E-02	3
2163	10	4.85	5.82	1.453E-02	3
2164	11	4.85	5.98	1.460E-02	3
2165	12	4.85	5.66	1.453E-02	3
2166	13	4.85	5.92	1.453E-02	3
2167	14	4.85	6.32	1.453E-02	3
2168	15	4.85	6.01	1.453E-02	3
2169	16	4.85	8.88	1.453E-02	3
2170	17	4.85	8.71	1.453E-02	3
2171	18	4.85	9.72	1.506E-02	3
2172	19	4.84	9.49	1.521E-02	3
2173	20	4.84	9.77	1.536E-02	3
2174	21	4.84	9.99	1.551E-02	3
2175	22	4.84	9.99	1.551E-02	3
2176	23	4.83	10.42	1.634E-02	3
2177	24	4.84	10.64	1.589E-02	3
2178	25	4.83	10.37	1.657E-02	3
2179	26	4.84	10.40	1.612E-02	3
2180	27	4.84	10.63	1.574E-02	3
2181	28	4.84	10.47	1.597E-02	3
2182	29	4.83	11.16	1.672E-02	3
2183	30	4.84	10.61	1.581E-02	3
2184	31	4.84	5.34	1.627E-02	3
2185	32	4.84	5.15	1.544E-02	3
2186	33	4.85	5.00	1.506E-02	3
2187	34	4.85	5.43	1.460E-02	3
2188	35	4.87	5.67	1.430E-02	3
2189	36	4.95	3.90	4.616E-03	1
2190	37	4.90	5.03	9.610E-03	2
2191	38	4.81	6.27	1.808E-02	3
2192	39	4.81	6.51	1.877E-02	3
2193	40	4.95	4.37	4.843E-03	1
2194	41	4.86	5.70	1.332E-02	2
2195	42	4.86	5.78	1.339E-02	2
2196	43	4.86	5.81	1.339E-02	2
2197	44	4.86	5.83	1.347E-02	2
2198	45	4.86	5.80	1.362E-02	2
2199	46	4.86	8.65	1.347E-02	2

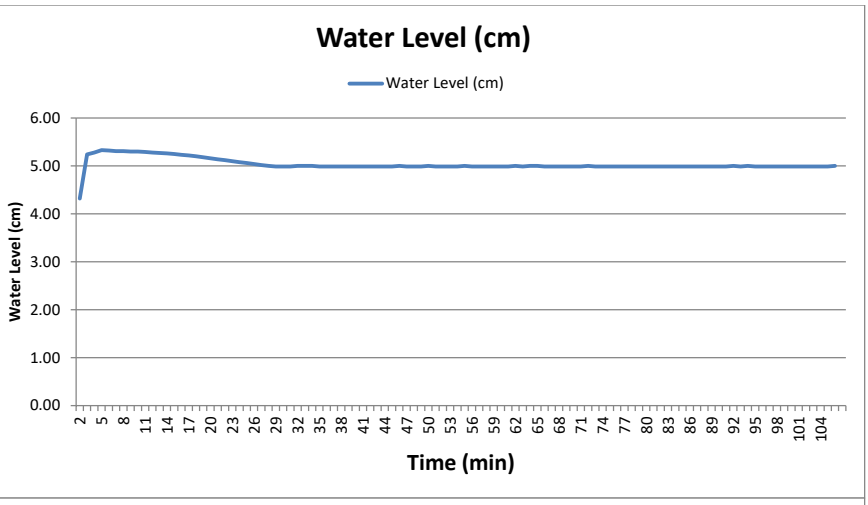
2200	47	4.86	9.13	1.354E-02	2
2201	48	4.86	9.34	1.354E-02	2
2202	49	4.86	9.59	1.407E-02	3
2203	50	4.85	9.80	1.445E-02	3
2204	51	4.79	11.28	2.020E-02	4
2205	52	4.80	10.52	1.967E-02	4
2206	53	4.89	9.65	1.233E-02	2
2207	54	4.88	9.21	1.059E-02	2
2208	55	4.85	10.40	1.445E-02	3
2209	56	4.85	10.35	1.453E-02	3
2210	57	4.85	10.71	1.453E-02	3
2211	58	4.85	10.94	1.483E-02	3
2212	59	4.85	10.78	1.475E-02	3
2213	60	4.85	10.79	1.498E-02	3
2214	61	4.84	5.60	1.544E-02	3
2215	62	4.85	5.36	1.498E-02	3
2216	63	4.85	5.37	1.453E-02	3
2217	64	4.85	5.41	1.430E-02	3
2218	65	4.86	5.45	1.377E-02	3
2219	66	4.86	5.50	1.362E-02	2
2220	67	4.87	5.56	1.339E-02	2
2221	68	4.95	3.91	4.616E-03	1
2222	69	4.87	5.74	1.317E-02	2
2223	70	4.86	5.77	1.339E-02	2
2224	71	4.87	5.82	1.332E-02	2
2225	72	4.87	5.82	1.309E-02	2
2226	73	4.86	5.83	1.324E-02	2
2227	74	4.87	5.79	1.309E-02	2
2228	75	4.87	5.79	1.301E-02	2
2229	76	4.87	9.00	1.294E-02	2
2230	77	4.86	8.84	1.324E-02	2
2231	78	4.86	9.50	1.362E-02	2
2232	79	4.86	9.41	1.362E-02	2
2233	80	4.86	9.68	1.385E-02	3
2234	81	4.86	9.91	1.385E-02	3
2235	82	4.86	10.07	1.400E-02	3
2236	83	4.80	10.97	1.945E-02	4
2237	84	4.80	11.20	1.975E-02	4
2238	85	4.93	9.02	7.869E-03	1
2239	86	4.85	9.96	1.362E-02	2
2240	87	4.83	10.68	1.650E-02	3
2241	88	4.83	10.78	1.642E-02	3
2242	89	4.83	10.94	1.627E-02	3
2243	90	4.84	10.91	1.581E-02	3
2244	91	4.84	5.56	1.574E-02	3
2245	92	4.86	5.25	1.498E-02	3
2246	93	4.95	3.88	4.843E-03	1

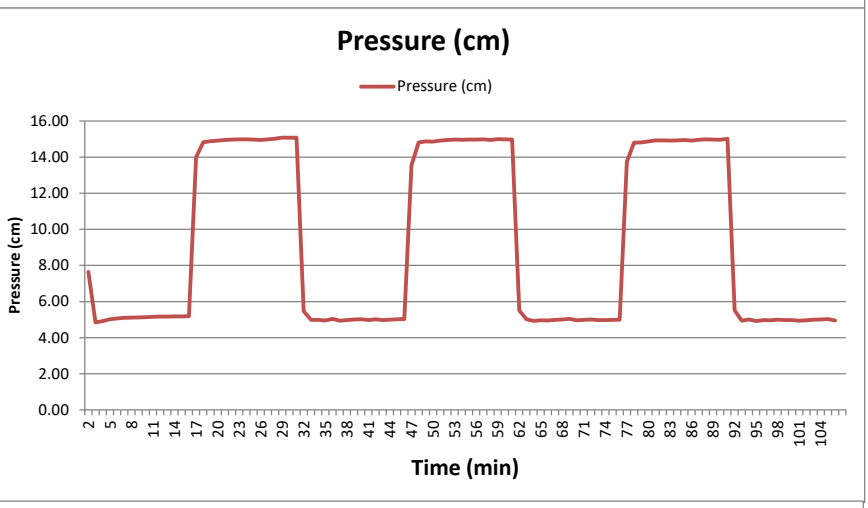
2247	94	4.91	4.66	9.080E-03	2
2248	95	4.84	5.55	1.491E-02	3
2249	96	4.83	6.05	1.680E-02	3
2250	97	4.84	5.97	1.581E-02	3
2251	98	4.93	4.70	6.886E-03	1
2252	99	4.90	5.02	9.610E-03	2
2253	100	4.90	5.22	1.006E-02	2
2254	101	4.81	6.68	1.824E-02	3
2255	102	4.81	6.36	1.952E-02	4
2256	103	4.95	4.46	4.843E-03	1
2257	104	4.86	5.81	1.339E-02	2
2258	105	4.86	5.82	1.354E-02	2

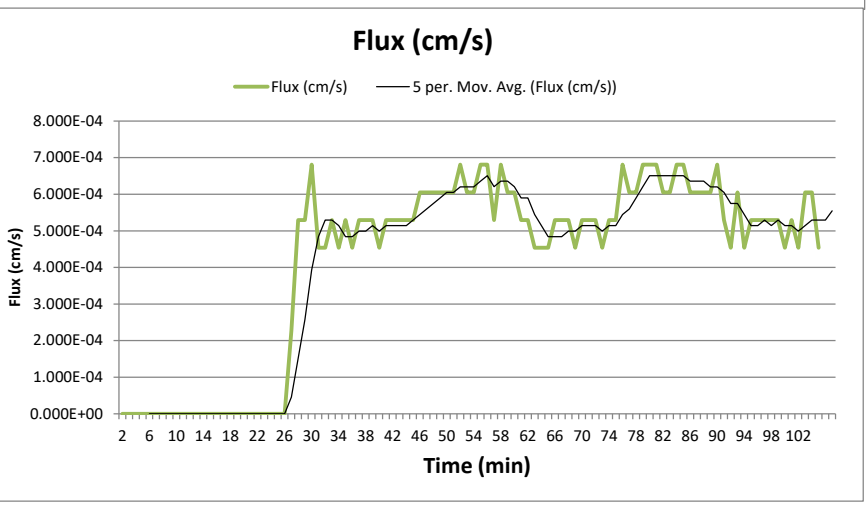
Test Settings	
Name	0971-I15
Pressure Head 1 (cm)	5.0
Pressure Head 2 (cm)	15.0
Soak Time (min)	15
Pressure Cycles	3
Hold Time (min)	15
Insertion Depth (cm)	10
Run Time (min)	105

Infiltrometer Settings	
SATURO Serial	SAT00002825
Firmware Version	DHI 1.08.00 f33c526f
Hardware Version	1
Battery	91%

Test Results	
Raw Records	105
First Record ID	2259
Start Time	12 Oct 2022 03:12 PM
Stop Time	12 Oct 2022 04:57 PM
Kfs (cm/s)	0.0001668
Kfs Error (cm/s)	0.00003241







Record ID	Time (min)	Water Level (cm)	Pressure (cm)	Flux (cm/s)	Volume (mL/s)
2259	1	4.32	7.65	1.282E-03	0
2260	2	5.24	4.85	0.000E+00	0
2261	3	5.28	4.92	0.000E+00	0
2262	4	5.33	5.02	0.000E+00	0
2263	5	5.32	5.06	0.000E+00	0
2264	6	5.31	5.10	0.000E+00	0
2265	7	5.31	5.11	0.000E+00	0
2266	8	5.30	5.12	0.000E+00	0
2267	9	5.30	5.13	0.000E+00	0
2268	10	5.29	5.15	0.000E+00	0
2269	11	5.28	5.17	0.000E+00	0
2270	12	5.27	5.17	0.000E+00	0
2271	13	5.26	5.18	0.000E+00	0
2272	14	5.25	5.18	0.000E+00	0
2273	15	5.23	5.19	0.000E+00	0
2274	16	5.22	14.00	0.000E+00	0
2275	17	5.20	14.83	0.000E+00	0
2276	18	5.18	14.89	0.000E+00	0
2277	19	5.16	14.92	0.000E+00	0
2278	20	5.14	14.95	0.000E+00	0
2279	21	5.12	14.98	0.000E+00	0
2280	22	5.10	14.99	0.000E+00	0
2281	23	5.08	14.98	0.000E+00	0
2282	24	5.06	14.98	0.000E+00	0
2283	25	5.04	14.96	0.000E+00	0
2284	26	5.02	14.98	0.000E+00	0
2285	27	5.00	15.02	2.270E-04	0
2286	28	4.99	15.08	5.297E-04	0
2287	29	4.99	15.08	5.297E-04	0
2288	30	4.99	15.08	6.810E-04	0
2289	31	5.00	5.46	4.540E-04	0
2290	32	5.00	4.98	4.540E-04	0
2291	33	5.00	4.99	5.297E-04	0
2292	34	4.99	4.96	4.540E-04	0
2293	35	4.99	5.05	5.297E-04	0
2294	36	4.99	4.95	4.540E-04	0
2295	37	4.99	4.98	5.297E-04	0
2296	38	4.99	5.01	5.297E-04	0
2297	39	4.99	5.02	5.297E-04	0
2298	40	4.99	4.97	4.540E-04	0
2299	41	4.99	5.02	5.297E-04	0
2300	42	4.99	4.98	5.297E-04	0
2301	43	4.99	4.99	5.297E-04	0
2302	44	4.99	5.02	5.297E-04	0
2303	45	5.00	5.03	5.297E-04	0
2304	46	4.99	13.56	6.053E-04	0

2305	47	4.99	14.82	6.053E-04	0
2306	48	4.99	14.87	6.053E-04	0
2307	49	5.00	14.86	6.053E-04	0
2308	50	4.99	14.92	6.053E-04	0
2309	51	4.99	14.95	6.053E-04	0
2310	52	4.99	14.98	6.810E-04	0
2311	53	4.99	14.96	6.053E-04	0
2312	54	5.00	14.97	6.053E-04	0
2313	55	4.99	14.98	6.810E-04	0
2314	56	4.99	14.98	6.810E-04	0
2315	57	4.99	14.95	5.297E-04	0
2316	58	4.99	14.99	6.810E-04	0
2317	59	4.99	14.99	6.053E-04	0
2318	60	4.99	14.98	6.053E-04	0
2319	61	5.00	5.51	5.297E-04	0
2320	62	4.99	5.02	5.297E-04	0
2321	63	5.00	4.93	4.540E-04	0
2322	64	5.00	4.96	4.540E-04	0
2323	65	4.99	4.95	4.540E-04	0
2324	66	4.99	4.98	5.297E-04	0
2325	67	4.99	5.01	5.297E-04	0
2326	68	4.99	5.04	5.297E-04	0
2327	69	4.99	4.96	4.540E-04	0
2328	70	4.99	4.99	5.297E-04	0
2329	71	5.00	5.01	5.297E-04	0
2330	72	4.99	4.97	5.297E-04	0
2331	73	4.99	4.98	4.540E-04	0
2332	74	4.99	4.99	5.297E-04	0
2333	75	4.99	5.00	5.297E-04	0
2334	76	4.99	13.74	6.810E-04	0
2335	77	4.99	14.80	6.053E-04	0
2336	78	4.99	14.82	6.053E-04	0
2337	79	4.99	14.88	6.810E-04	0
2338	80	4.99	14.92	6.810E-04	0
2339	81	4.99	14.92	6.810E-04	0
2340	82	4.99	14.92	6.053E-04	0
2341	83	4.99	14.93	6.053E-04	0
2342	84	4.99	14.95	6.810E-04	0
2343	85	4.99	14.92	6.810E-04	0
2344	86	4.99	14.96	6.053E-04	0
2345	87	4.99	14.98	6.053E-04	0
2346	88	4.99	14.98	6.053E-04	0
2347	89	4.99	14.97	6.053E-04	0
2348	90	4.99	15.02	6.810E-04	0
2349	91	5.00	5.51	5.297E-04	0
2350	92	4.99	4.94	4.540E-04	0
2351	93	5.00	5.01	6.053E-04	0

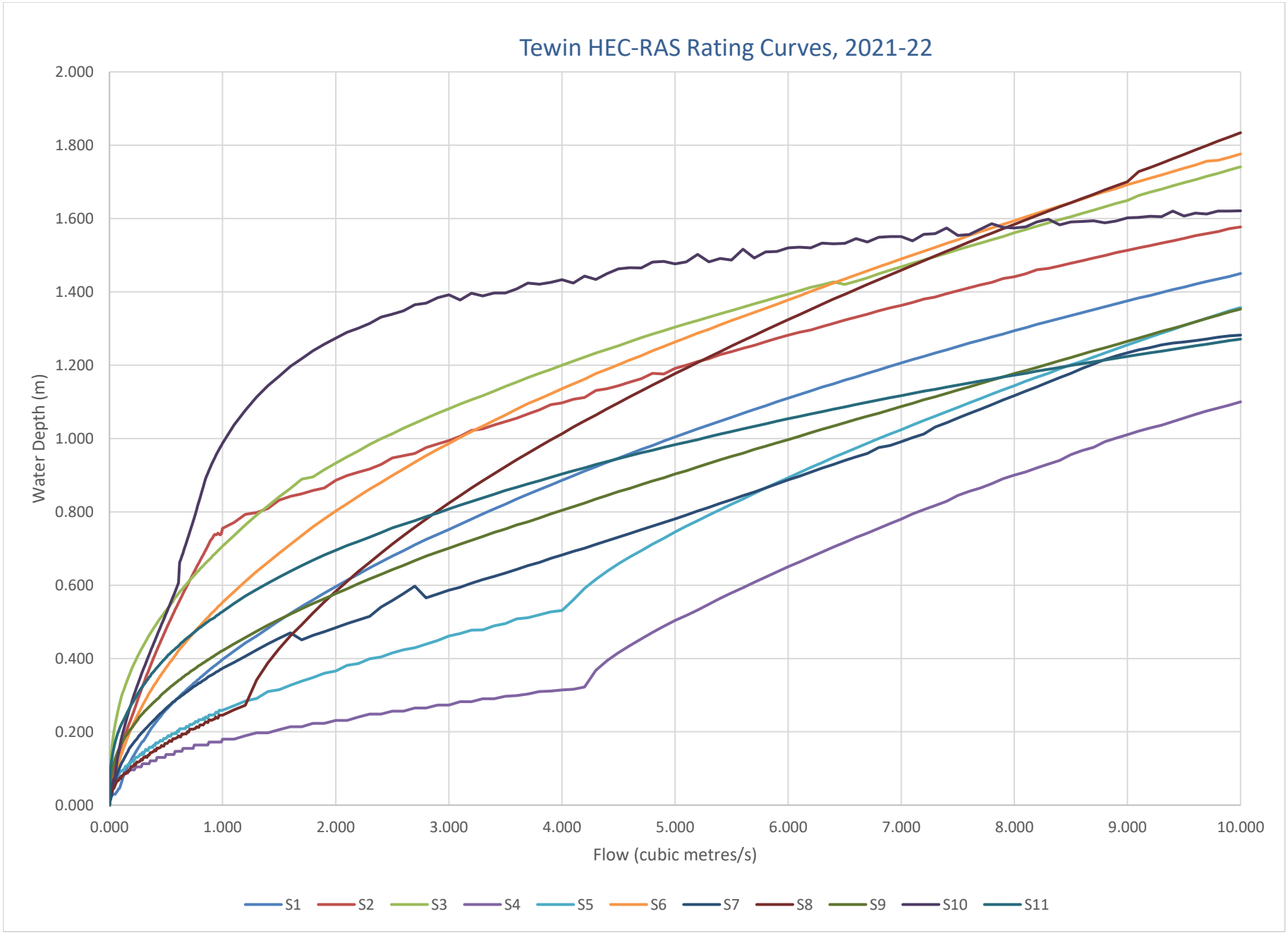
2352	94	4.99	4.92	4.540E-04	0
2353	95	4.99	4.97	5.297E-04	0
2354	96	4.99	4.97	5.297E-04	0
2355	97	4.99	5.00	5.297E-04	0
2356	98	4.99	4.97	5.297E-04	0
2357	99	4.99	4.97	5.297E-04	0
2358	100	4.99	4.94	4.540E-04	0
2359	101	4.99	4.97	5.297E-04	0
2360	102	4.99	5.00	4.540E-04	0
2361	103	4.99	5.01	6.053E-04	0
2362	104	4.99	5.04	6.053E-04	0
2363	105	5.00	4.95	4.540E-04	0

JFSA
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS

Ottawa. ON
Paris. ON
Gatineau. QC
Montréal. QC
Québec. QC

Appendix E

2021-22 HEC-RAS Rating Curve Data & Figures


Tewin HEC-RAS Rating Curves, 2021-22
Water Depth (m)
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
0.000
1.000
2.000
3.000
4.000
5.000
6.000
7.000
8.000
9.000
10.000
Flow (cubic metres/s)
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow	Water Depth (m)										
(m^3/s)	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
Reach:	*Main R-0-DS-0*	*Main R-0-DS-0*	*Main R-0-DS-0-1*	*Main R-0*	*bWR R-02-DS*	*Main R-0*	*Main R6*	*Trib WR R-02*	*TribEL R-0*	*Trib8c R1*	*Main R1*
Station:	*60071*	*62894*	*82364*	*68271*	*106462*	*70640*	*4505*	*109379*	*121086*	*580*	*580*
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.001	0.008	0.024	0.053	0.020	0.014	0.013	0.007	0.013	0.034	0.016	0.052
0.002	0.008	0.023	0.064	0.028	0.017	0.020	0.008	0.016	0.041	0.020	0.061
0.003	0.015	0.026	0.077	0.028	0.017	0.020	0.009	0.017	0.044	0.024	0.069
0.004	0.015	0.029	0.084	0.037	0.022	0.028	0.012	0.023	0.051	0.026	0.074
0.005	0.014	0.031	0.089	0.037	0.030	0.028	0.012	0.021	0.052	0.029	0.078
0.006	0.017	0.033	0.095	0.037	0.026	0.028	0.013	0.025	0.058	0.030	0.084
0.007	0.016	0.034	0.100	0.037	0.028	0.028	0.015	0.027	0.062	0.033	0.087
0.008	0.016	0.036	0.104	0.037	0.030	0.028	0.014	0.027	0.065	0.036	0.091
0.009	0.016	0.037	0.109	0.037	0.030	0.037	0.015	0.029	0.067	0.036	0.095
0.010	0.016	0.037	0.113	0.045	0.033	0.037	0.018	0.029	0.071	0.038	0.099
0.020	0.026	0.076	0.152	0.054	0.045	0.045	0.026	0.038	0.089	0.052	0.123
0.030	0.029	0.085	0.179	0.054	0.054	0.054	0.044	0.044	0.102	0.063	0.142
0.040	0.030	0.091	0.200	0.062	0.060	0.062	0.056	0.046	0.115	0.071	0.157
0.050	0.029	0.105	0.219	0.062	0.068	0.067	0.067	0.054	0.126	0.079	0.171
0.060	0.034	0.116	0.234	0.071	0.073	0.088	0.076	0.061	0.135	0.102	0.182
0.070	0.038	0.126	0.249	0.071	0.078	0.101	0.086	0.067	0.143	0.125	0.192
0.080	0.044	0.136	0.263	0.071	0.083	0.112	0.094	0.067	0.150	0.142	0.200
0.090	0.046	0.146	0.276	0.079	0.088	0.123	0.102	0.074	0.157	0.158	0.209
0.100	0.055	0.156	0.288	0.079	0.093	0.133	0.109	0.072	0.164	0.173	0.216
0.110	0.065	0.166	0.300	0.079	0.093	0.142	0.116	0.079	0.170	0.187	0.223
0.120	0.078	0.176	0.310	0.079	0.096	0.152	0.122	0.082	0.176	0.200	0.230
0.130	0.086	0.185	0.318	0.087	0.098	0.160	0.128	0.087	0.182	0.212	0.236
0.140	0.093	0.194	0.327	0.087	0.106	0.169	0.134	0.085	0.188	0.223	0.242
0.150	0.099	0.203	0.336	0.087	0.106	0.177	0.140	0.089	0.191	0.234	0.249
0.160	0.105	0.212	0.344	0.087	0.109	0.185	0.145	0.092	0.195	0.245	0.255
0.170	0.111	0.220	0.352	0.096	0.113	0.193	0.152	0.092	0.201	0.256	0.261
0.180	0.117	0.228	0.359	0.096	0.111	0.201	0.157	0.097	0.205	0.266	0.267
0.190	0.123	0.236	0.367	0.096	0.118	0.208	0.161	0.105	0.208	0.275	0.273
0.200	0.129	0.244	0.375	0.096	0.119	0.215	0.165	0.104	0.212	0.285	0.278
0.210	0.134	0.252	0.381	0.096	0.119	0.222	0.169	0.107	0.216	0.295	0.282
0.220	0.139	0.261	0.388	0.096	0.124	0.228	0.173	0.112	0.221	0.304	0.288
0.230	0.144	0.270	0.394	0.104	0.131	0.234	0.177	0.110	0.225	0.313	0.293

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow (m^3/s)	Water Depth (m)										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
0.240	0.149	0.279	0.401	0.104	0.131	0.241	0.180	0.118	0.229	0.322	0.299
0.250	0.154	0.288	0.407	0.104	0.131	0.247	0.184	0.117	0.233	0.330	0.304
0.260	0.159	0.297	0.413	0.104	0.134	0.253	0.189	0.118	0.239	0.339	0.309
0.270	0.164	0.306	0.419	0.104	0.139	0.259	0.192	0.120	0.242	0.347	0.314
0.280	0.169	0.314	0.425	0.104	0.137	0.265	0.196	0.125	0.246	0.356	0.319
0.290	0.173	0.323	0.430	0.113	0.144	0.271	0.199	0.123	0.249	0.364	0.323
0.300	0.175	0.331	0.436	0.113	0.138	0.277	0.202	0.130	0.252	0.372	0.328
0.310	0.180	0.339	0.441	0.113	0.146	0.282	0.206	0.130	0.256	0.379	0.331
0.320	0.185	0.348	0.447	0.113	0.152	0.288	0.209	0.133	0.259	0.387	0.336
0.330	0.190	0.356	0.452	0.113	0.149	0.293	0.212	0.130	0.262	0.395	0.340
0.340	0.195	0.363	0.458	0.113	0.149	0.300	0.215	0.136	0.265	0.403	0.344
0.350	0.200	0.371	0.463	0.113	0.157	0.305	0.219	0.136	0.268	0.410	0.349
0.360	0.205	0.379	0.468	0.121	0.157	0.310	0.222	0.143	0.271	0.418	0.352
0.370	0.210	0.387	0.473	0.121	0.159	0.315	0.225	0.143	0.274	0.426	0.358
0.380	0.214	0.394	0.478	0.121	0.157	0.320	0.228	0.145	0.277	0.433	0.361
0.390	0.218	0.402	0.483	0.121	0.164	0.325	0.231	0.146	0.280	0.441	0.364
0.400	0.222	0.409	0.487	0.121	0.162	0.330	0.234	0.151	0.283	0.448	0.368
0.410	0.226	0.417	0.492	0.121	0.170	0.334	0.237	0.148	0.286	0.456	0.372
0.420	0.230	0.424	0.497	0.130	0.169	0.339	0.241	0.156	0.289	0.463	0.375
0.430	0.234	0.431	0.501	0.130	0.170	0.344	0.244	0.155	0.291	0.471	0.379
0.440	0.238	0.438	0.506	0.130	0.173	0.348	0.247	0.156	0.294	0.478	0.382
0.450	0.241	0.445	0.510	0.130	0.177	0.353	0.250	0.157	0.298	0.485	0.386
0.460	0.245	0.452	0.514	0.130	0.175	0.357	0.252	0.163	0.301	0.493	0.389
0.470	0.250	0.459	0.518	0.130	0.175	0.362	0.255	0.161	0.304	0.500	0.393
0.480	0.253	0.466	0.522	0.130	0.182	0.366	0.258	0.161	0.307	0.507	0.396
0.490	0.257	0.473	0.527	0.130	0.182	0.371	0.261	0.168	0.309	0.515	0.399
0.500	0.260	0.480	0.531	0.138	0.182	0.375	0.264	0.168	0.312	0.522	0.403
0.510	0.263	0.487	0.535	0.138	0.186	0.379	0.267	0.168	0.315	0.529	0.406
0.520	0.266	0.493	0.539	0.138	0.190	0.383	0.270	0.172	0.317	0.537	0.410
0.530	0.270	0.500	0.543	0.138	0.188	0.388	0.272	0.176	0.320	0.544	0.412
0.540	0.273	0.506	0.548	0.138	0.188	0.392	0.275	0.174	0.323	0.552	0.415
0.550	0.276	0.513	0.551	0.138	0.195	0.395	0.278	0.174	0.325	0.559	0.418
0.560	0.279	0.520	0.555	0.138	0.194	0.399	0.281	0.181	0.327	0.567	0.421
0.570	0.282	0.526	0.561	0.138	0.195	0.404	0.283	0.181	0.330	0.574	0.423
0.580	0.285	0.533	0.566	0.147	0.197	0.408	0.284	0.181	0.332	0.582	0.426

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow (m^3/s)	Water Depth (m)										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
0.590	0.288	0.539	0.569	0.147	0.195	0.412	0.288	0.183	0.335	0.590	0.429
0.600	0.291	0.545	0.573	0.147	0.203	0.417	0.290	0.184	0.337	0.598	0.431
0.610	0.294	0.552	0.577	0.147	0.200	0.421	0.292	0.189	0.340	0.606	0.434
0.620	0.297	0.558	0.581	0.147	0.208	0.425	0.294	0.186	0.342	0.662	0.437
0.630	0.300	0.564	0.585	0.147	0.208	0.429	0.297	0.186	0.344	0.670	0.441
0.640	0.303	0.570	0.588	0.147	0.208	0.432	0.299	0.194	0.347	0.679	0.444
0.650	0.306	0.577	0.592	0.155	0.208	0.436	0.301	0.193	0.349	0.687	0.446
0.660	0.308	0.583	0.595	0.155	0.209	0.440	0.303	0.194	0.351	0.698	0.449
0.670	0.311	0.589	0.599	0.155	0.208	0.443	0.306	0.195	0.354	0.707	0.452
0.680	0.314	0.595	0.603	0.155	0.215	0.447	0.308	0.194	0.356	0.716	0.454
0.690	0.317	0.601	0.606	0.155	0.213	0.451	0.310	0.201	0.358	0.726	0.457
0.700	0.320	0.607	0.610	0.155	0.213	0.454	0.313	0.199	0.360	0.735	0.459
0.710	0.323	0.613	0.613	0.155	0.220	0.458	0.315	0.207	0.363	0.745	0.462
0.720	0.325	0.619	0.617	0.155	0.220	0.461	0.317	0.207	0.365	0.755	0.464
0.730	0.328	0.625	0.620	0.155	0.220	0.465	0.320	0.207	0.367	0.764	0.467
0.740	0.331	0.631	0.624	0.155	0.222	0.468	0.322	0.207	0.369	0.774	0.469
0.750	0.334	0.637	0.627	0.164	0.223	0.472	0.324	0.208	0.371	0.784	0.472
0.760	0.336	0.643	0.630	0.164	0.228	0.475	0.326	0.209	0.373	0.794	0.474
0.770	0.339	0.649	0.634	0.164	0.228	0.479	0.328	0.214	0.375	0.805	0.477
0.780	0.342	0.655	0.637	0.164	0.226	0.482	0.330	0.212	0.378	0.817	0.479
0.790	0.344	0.660	0.640	0.164	0.233	0.486	0.333	0.212	0.380	0.827	0.482
0.800	0.347	0.666	0.644	0.164	0.233	0.489	0.333	0.219	0.382	0.837	0.484
0.810	0.350	0.672	0.647	0.164	0.233	0.492	0.336	0.219	0.384	0.848	0.486
0.820	0.352	0.678	0.650	0.164	0.233	0.496	0.338	0.219	0.386	0.858	0.489
0.830	0.355	0.683	0.653	0.164	0.237	0.499	0.340	0.219	0.388	0.869	0.491
0.840	0.357	0.689	0.657	0.164	0.233	0.502	0.342	0.223	0.390	0.880	0.493
0.850	0.360	0.695	0.660	0.164	0.241	0.506	0.344	0.227	0.392	0.890	0.496
0.860	0.363	0.701	0.663	0.164	0.238	0.509	0.346	0.227	0.394	0.898	0.498
0.870	0.365	0.707	0.666	0.164	0.238	0.512	0.349	0.225	0.396	0.905	0.500
0.880	0.368	0.713	0.669	0.172	0.246	0.515	0.351	0.232	0.398	0.913	0.503
0.890	0.370	0.720	0.672	0.172	0.246	0.519	0.353	0.232	0.400	0.920	0.505
0.900	0.373	0.725	0.675	0.172	0.246	0.522	0.354	0.231	0.402	0.927	0.507
0.910	0.375	0.728	0.679	0.172	0.246	0.525	0.356	0.232	0.404	0.934	0.508
0.920	0.378	0.734	0.682	0.172	0.247	0.528	0.358	0.234	0.406	0.940	0.510
0.930	0.380	0.738	0.685	0.172	0.246	0.531	0.360	0.235	0.408	0.946	0.512

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow (m^3/s)	Water Depth (m)										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
0.940	0.382	0.737	0.688	0.172	0.253	0.534	0.362	0.240	0.410	0.953	0.515
0.950	0.385	0.738	0.691	0.172	0.254	0.537	0.364	0.237	0.412	0.959	0.517
0.960	0.387	0.742	0.694	0.172	0.251	0.541	0.365	0.237	0.414	0.965	0.519
0.970	0.390	0.739	0.697	0.172	0.259	0.544	0.367	0.245	0.416	0.970	0.521
0.980	0.392	0.737	0.700	0.172	0.259	0.546	0.370	0.245	0.418	0.976	0.524
0.990	0.395	0.741	0.703	0.172	0.258	0.549	0.371	0.245	0.420	0.981	0.526
1.000	0.397	0.755	0.706	0.180	0.259	0.553	0.373	0.245	0.421	0.987	0.528
1.100	0.420	0.771	0.735	0.180	0.271	0.582	0.389	0.260	0.440	1.037	0.550
1.200	0.442	0.793	0.764	0.189	0.284	0.610	0.406	0.272	0.457	1.077	0.570
1.300	0.461	0.798	0.791	0.197	0.291	0.637	0.423	0.341	0.474	1.113	0.588
1.400	0.482	0.809	0.816	0.197	0.310	0.662	0.440	0.388	0.491	1.144	0.605
1.500	0.503	0.832	0.841	0.206	0.315	0.687	0.455	0.427	0.506	1.170	0.622
1.600	0.523	0.842	0.864	0.214	0.327	0.711	0.470	0.462	0.521	1.197	0.638
1.700	0.542	0.849	0.889	0.214	0.338	0.735	0.451	0.492	0.536	1.218	0.653
1.800	0.560	0.858	0.895	0.223	0.348	0.759	0.463	0.524	0.550	1.239	0.668
1.900	0.578	0.865	0.915	0.223	0.360	0.781	0.473	0.554	0.563	1.257	0.682
2.000	0.596	0.886	0.933	0.231	0.366	0.802	0.484	0.583	0.577	1.274	0.695
2.100	0.613	0.899	0.950	0.231	0.381	0.822	0.495	0.610	0.590	1.290	0.708
2.200	0.630	0.908	0.966	0.240	0.386	0.842	0.505	0.637	0.604	1.301	0.719
2.300	0.647	0.917	0.984	0.248	0.399	0.862	0.515	0.662	0.617	1.314	0.731
2.400	0.663	0.929	0.999	0.248	0.404	0.880	0.540	0.687	0.629	1.331	0.743
2.500	0.679	0.947	1.013	0.256	0.415	0.899	0.558	0.712	0.642	1.339	0.756
2.600	0.694	0.953	1.028	0.256	0.424	0.917	0.577	0.735	0.654	1.348	0.766
2.700	0.710	0.959	1.042	0.265	0.429	0.935	0.597	0.758	0.667	1.365	0.776
2.800	0.725	0.975	1.055	0.265	0.439	0.953	0.565	0.780	0.679	1.369	0.787
2.900	0.738	0.985	1.069	0.273	0.449	0.970	0.576	0.802	0.690	1.384	0.797
3.000	0.752	0.994	1.081	0.273	0.461	0.986	0.586	0.824	0.701	1.392	0.808
3.100	0.766	1.006	1.094	0.282	0.468	1.003	0.594	0.844	0.712	1.378	0.818
3.200	0.780	1.022	1.106	0.282	0.477	1.019	0.605	0.865	0.722	1.396	0.828
3.300	0.794	1.026	1.117	0.290	0.478	1.034	0.615	0.885	0.733	1.389	0.838
3.400	0.808	1.037	1.129	0.290	0.489	1.049	0.624	0.904	0.744	1.397	0.848
3.500	0.821	1.046	1.142	0.297	0.495	1.064	0.633	0.923	0.753	1.397	0.858
3.600	0.835	1.055	1.154	0.299	0.508	1.080	0.643	0.942	0.764	1.408	0.867
3.700	0.848	1.067	1.166	0.303	0.511	1.095	0.653	0.960	0.773	1.424	0.876
3.800	0.861	1.078	1.178	0.310	0.519	1.108	0.662	0.978	0.783	1.421	0.885

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow (m^3/s)	Water Depth (m)										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
3.900	0.873	1.092	1.188	0.311	0.527	1.122	0.673	0.996	0.794	1.426	0.894
4.000	0.886	1.097	1.200	0.314	0.531	1.136	0.682	1.013	0.804	1.433	0.903
4.100	0.898	1.107	1.211	0.316	0.560	1.149	0.692	1.031	0.814	1.424	0.912
4.200	0.911	1.112	1.222	0.322	0.591	1.162	0.701	1.048	0.824	1.443	0.920
4.300	0.923	1.131	1.233	0.368	0.616	1.177	0.711	1.064	0.835	1.434	0.929
4.400	0.935	1.136	1.243	0.394	0.638	1.189	0.721	1.081	0.845	1.450	0.937
4.500	0.946	1.144	1.253	0.416	0.658	1.201	0.731	1.097	0.855	1.463	0.945
4.600	0.958	1.154	1.264	0.435	0.677	1.214	0.741	1.114	0.864	1.466	0.953
4.700	0.970	1.163	1.275	0.453	0.694	1.226	0.751	1.130	0.874	1.465	0.961
4.800	0.981	1.178	1.285	0.471	0.712	1.239	0.761	1.146	0.884	1.481	0.968
4.900	0.993	1.176	1.294	0.488	0.728	1.251	0.771	1.161	0.893	1.483	0.976
5.000	1.004	1.191	1.304	0.504	0.745	1.263	0.781	1.177	0.903	1.476	0.983
5.100	1.015	1.200	1.313	0.517	0.761	1.275	0.791	1.192	0.912	1.482	0.990
5.200	1.026	1.210	1.322	0.532	0.776	1.287	0.802	1.207	0.922	1.502	0.997
5.300	1.037	1.218	1.331	0.548	0.791	1.298	0.812	1.222	0.932	1.482	1.005
5.400	1.047	1.229	1.340	0.564	0.806	1.310	0.823	1.237	0.942	1.491	1.012
5.500	1.058	1.237	1.349	0.579	0.821	1.322	0.833	1.252	0.951	1.487	1.019
5.600	1.069	1.246	1.358	0.593	0.835	1.333	0.844	1.267	0.960	1.516	1.026
5.700	1.079	1.254	1.367	0.608	0.850	1.344	0.854	1.281	0.970	1.492	1.033
5.800	1.089	1.264	1.376	0.622	0.865	1.355	0.865	1.296	0.979	1.509	1.040
5.900	1.100	1.273	1.385	0.636	0.879	1.366	0.876	1.310	0.988	1.510	1.047
6.000	1.110	1.282	1.394	0.650	0.893	1.378	0.887	1.324	0.997	1.520	1.054
6.100	1.120	1.290	1.403	0.663	0.907	1.389	0.897	1.338	1.006	1.522	1.060
6.200	1.130	1.296	1.412	0.677	0.921	1.401	0.908	1.352	1.016	1.520	1.067
6.300	1.140	1.305	1.419	0.690	0.934	1.412	0.919	1.366	1.025	1.533	1.073
6.400	1.149	1.314	1.427	0.704	0.948	1.424	0.929	1.380	1.034	1.531	1.080
6.500	1.159	1.323	1.420	0.717	0.961	1.435	0.940	1.393	1.043	1.532	1.086
6.600	1.168	1.331	1.429	0.730	0.974	1.446	0.950	1.407	1.052	1.545	1.093
6.700	1.178	1.339	1.438	0.742	0.987	1.457	0.959	1.420	1.061	1.536	1.099
6.800	1.187	1.348	1.449	0.755	1.000	1.468	0.975	1.433	1.069	1.549	1.105
6.900	1.197	1.356	1.459	0.768	1.012	1.479	0.981	1.446	1.078	1.551	1.111
7.000	1.206	1.363	1.468	0.780	1.024	1.490	0.991	1.459	1.087	1.551	1.117
7.100	1.215	1.371	1.478	0.794	1.037	1.500	1.002	1.472	1.096	1.539	1.123
7.200	1.224	1.380	1.487	0.806	1.049	1.511	1.012	1.485	1.106	1.557	1.129
7.300	1.233	1.386	1.496	0.817	1.061	1.521	1.031	1.498	1.114	1.559	1.134

Rating Curves for 2021-2022 Monitoring Stations based on HEC-RAS Modelling

Flow (m^3/s)	Water Depth (m)										
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
7.400	1.242	1.395	1.505	0.829	1.073	1.532	1.043	1.511	1.123	1.574	1.140
7.500	1.251	1.403	1.515	0.845	1.085	1.542	1.056	1.523	1.132	1.554	1.146
7.600	1.260	1.411	1.524	0.856	1.097	1.554	1.068	1.536	1.141	1.556	1.151
7.700	1.268	1.419	1.533	0.865	1.109	1.564	1.080	1.548	1.150	1.571	1.157
7.800	1.277	1.426	1.542	0.877	1.121	1.574	1.092	1.560	1.159	1.586	1.162
7.900	1.285	1.436	1.551	0.890	1.133	1.584	1.105	1.572	1.168	1.576	1.168
8.000	1.294	1.441	1.561	0.900	1.144	1.594	1.117	1.584	1.177	1.574	1.173
8.100	1.302	1.449	1.570	0.909	1.156	1.604	1.129	1.596	1.185	1.577	1.178
8.200	1.311	1.460	1.579	0.920	1.167	1.614	1.141	1.608	1.194	1.591	1.184
8.300	1.319	1.464	1.588	0.930	1.178	1.624	1.154	1.620	1.203	1.598	1.189
8.400	1.327	1.471	1.597	0.940	1.190	1.634	1.166	1.632	1.212	1.583	1.194
8.500	1.335	1.478	1.605	0.956	1.201	1.643	1.178	1.643	1.221	1.591	1.199
8.600	1.343	1.485	1.614	0.967	1.211	1.653	1.191	1.655	1.230	1.592	1.204
8.700	1.351	1.492	1.623	0.976	1.222	1.664	1.203	1.666	1.239	1.594	1.209
8.800	1.359	1.499	1.632	0.991	1.233	1.673	1.215	1.678	1.247	1.588	1.214
8.900	1.367	1.507	1.641	1.001	1.244	1.682	1.225	1.689	1.256	1.593	1.219
9.000	1.375	1.513	1.649	1.010	1.255	1.692	1.234	1.700	1.265	1.602	1.224
9.100	1.383	1.520	1.663	1.020	1.266	1.701	1.242	1.728	1.274	1.603	1.229
9.200	1.390	1.526	1.672	1.029	1.277	1.710	1.248	1.739	1.283	1.606	1.234
9.300	1.398	1.533	1.680	1.036	1.287	1.719	1.255	1.751	1.292	1.605	1.238
9.400	1.406	1.539	1.689	1.046	1.297	1.728	1.260	1.763	1.300	1.620	1.243
9.500	1.413	1.546	1.698	1.056	1.308	1.737	1.263	1.775	1.309	1.607	1.248
9.600	1.421	1.553	1.706	1.066	1.318	1.746	1.267	1.787	1.318	1.615	1.253
9.700	1.428	1.559	1.715	1.075	1.328	1.756	1.271	1.799	1.327	1.612	1.257
9.800	1.435	1.564	1.723	1.083	1.338	1.759	1.276	1.811	1.336	1.620	1.262
9.900	1.442	1.572	1.732	1.091	1.348	1.767	1.280	1.822	1.345	1.620	1.267
10.000	1.450	1.577	1.741	1.100	1.357	1.776	1.282	1.834	1.353	1.621	1.271

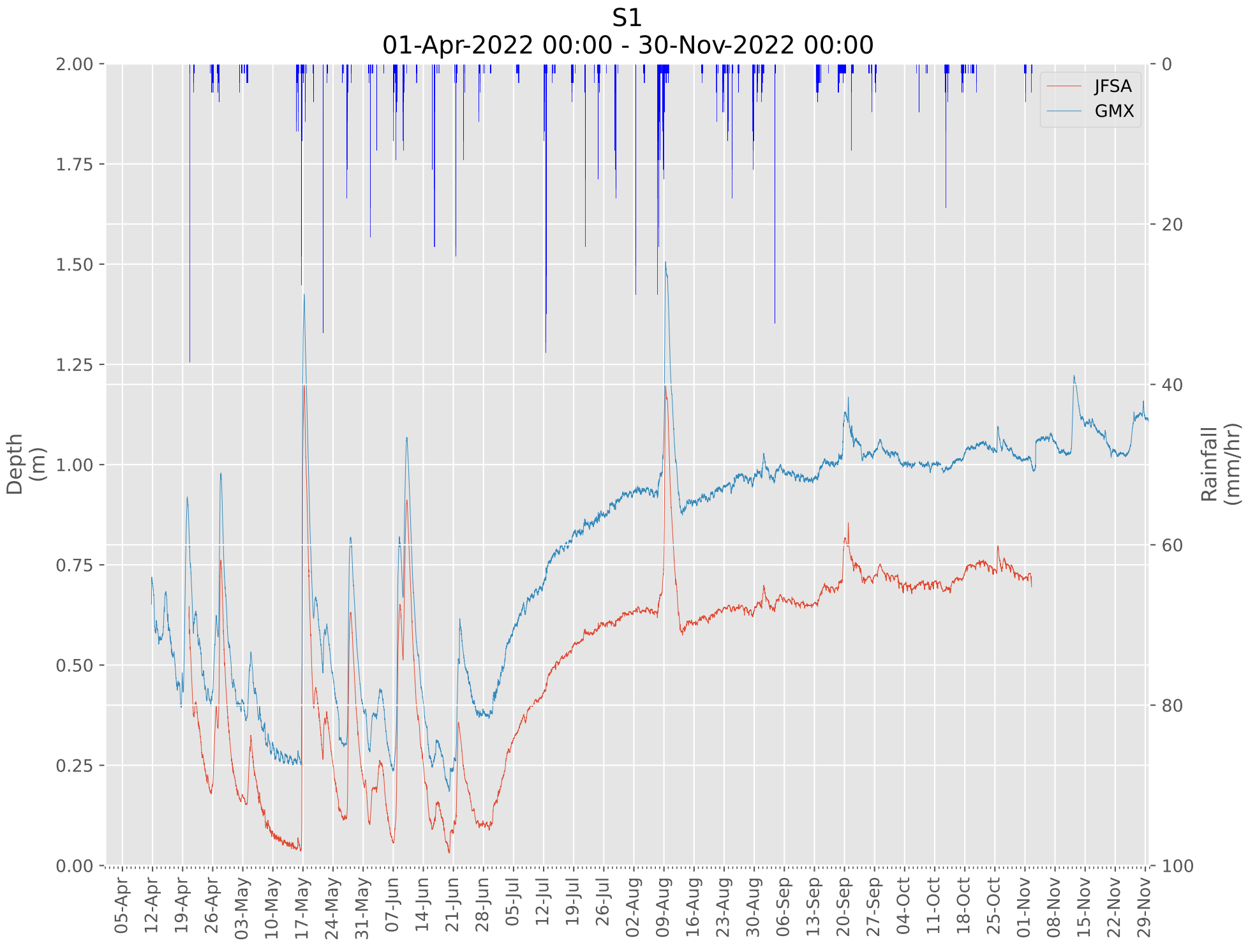
S1	Bearbrook Creek station
S7	Ramsay Creek station

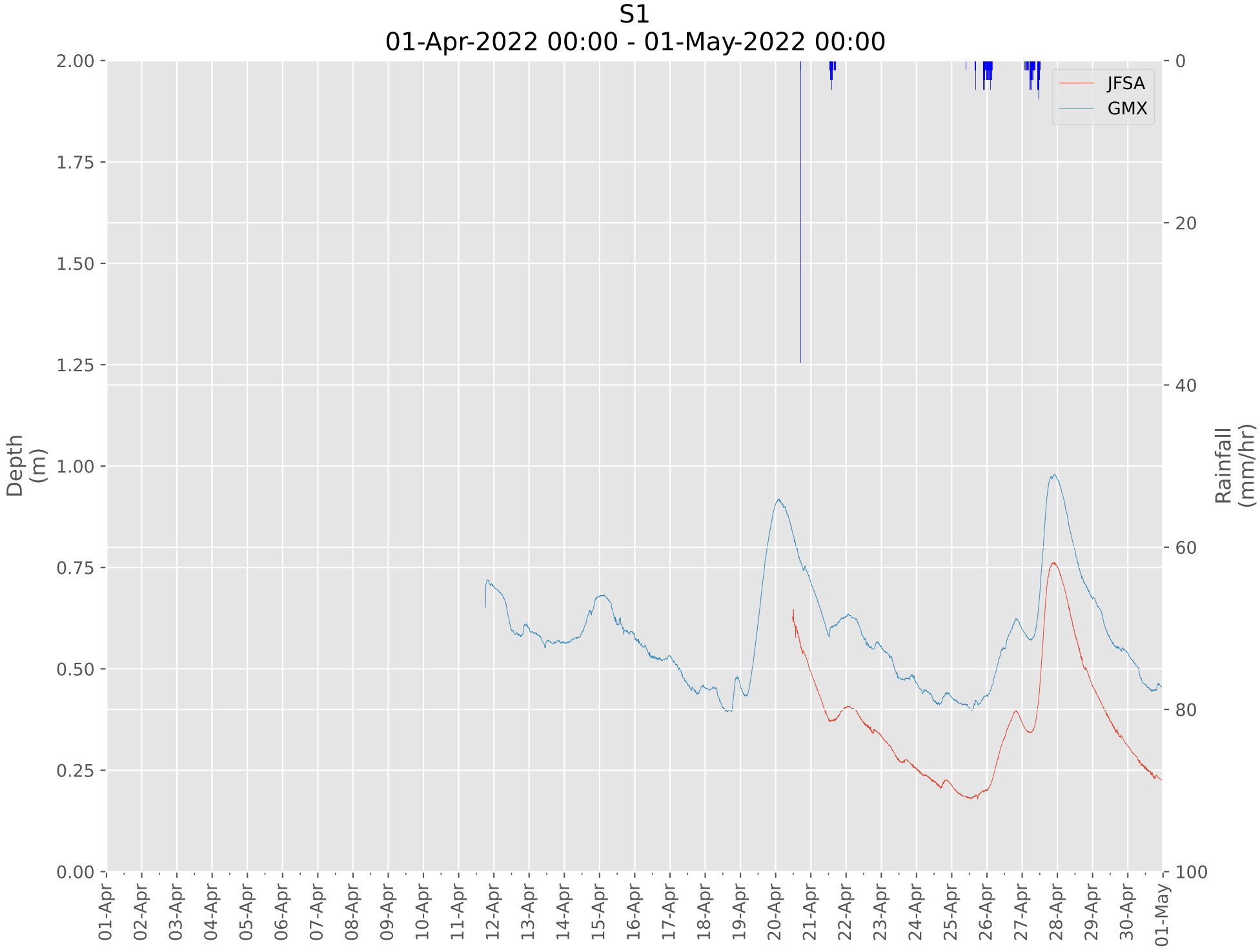
JFSA
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS

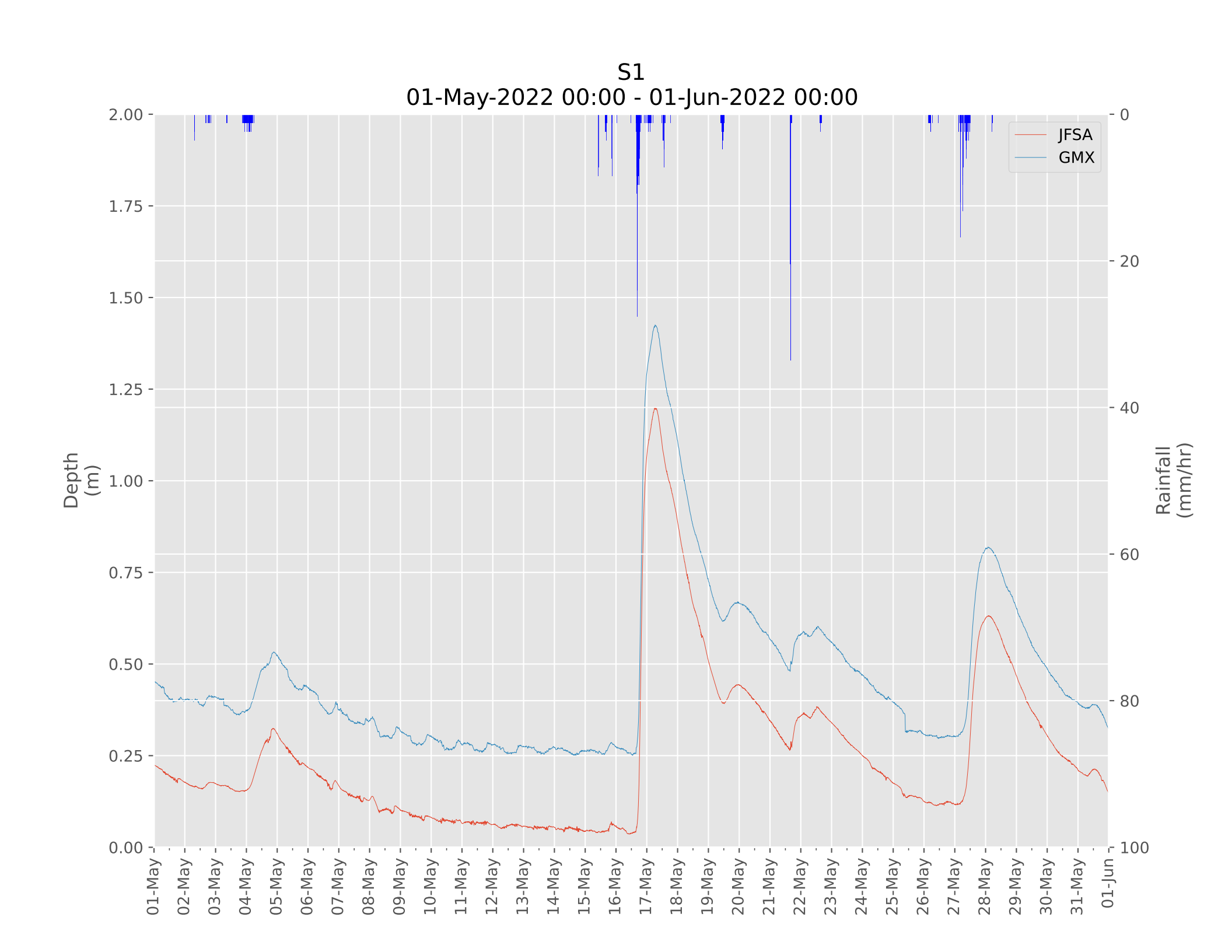
Ottawa. ON
Paris. ON
Gatineau. QC
Montréal. QC
Québec. QC

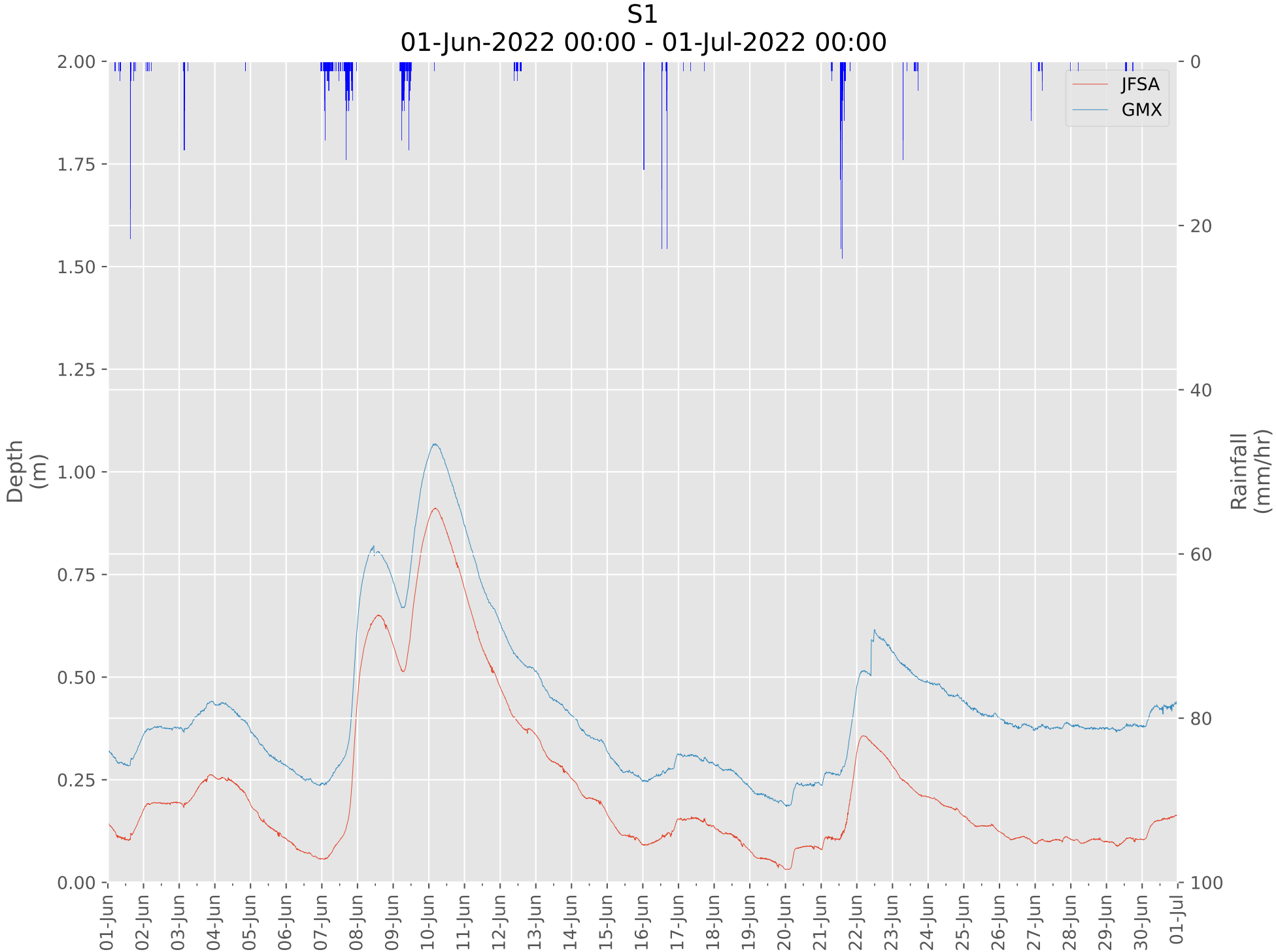
Appendix F

2022 GEO Morphix Depth & Flows vs. JFSA Depth & Derived Flows


S1
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S1
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
20-Apr
21-Apr
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S1
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
01-Jun


S1
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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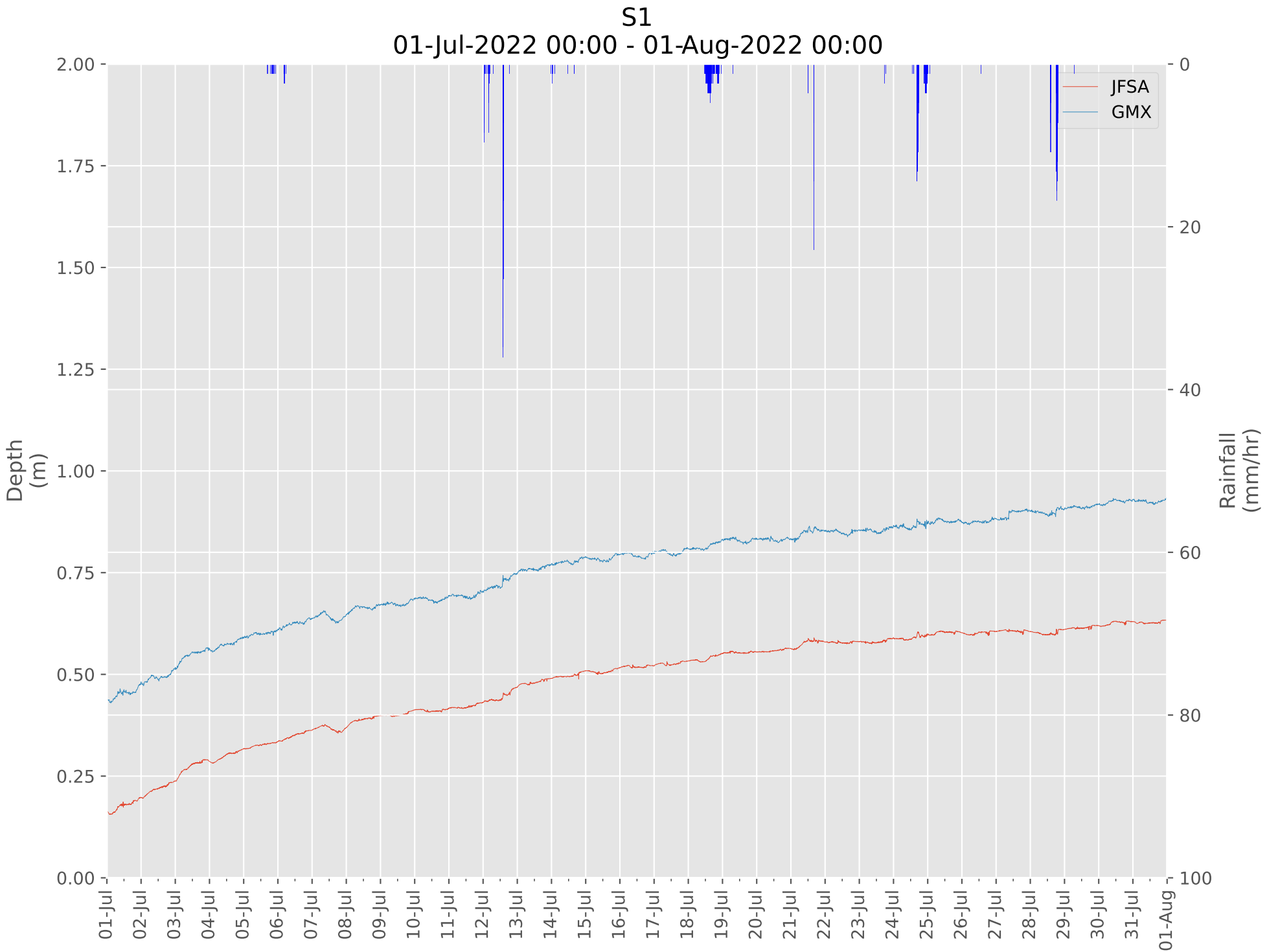
29-Jun
30-Jun
01-Jul


S1
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
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20-Jul
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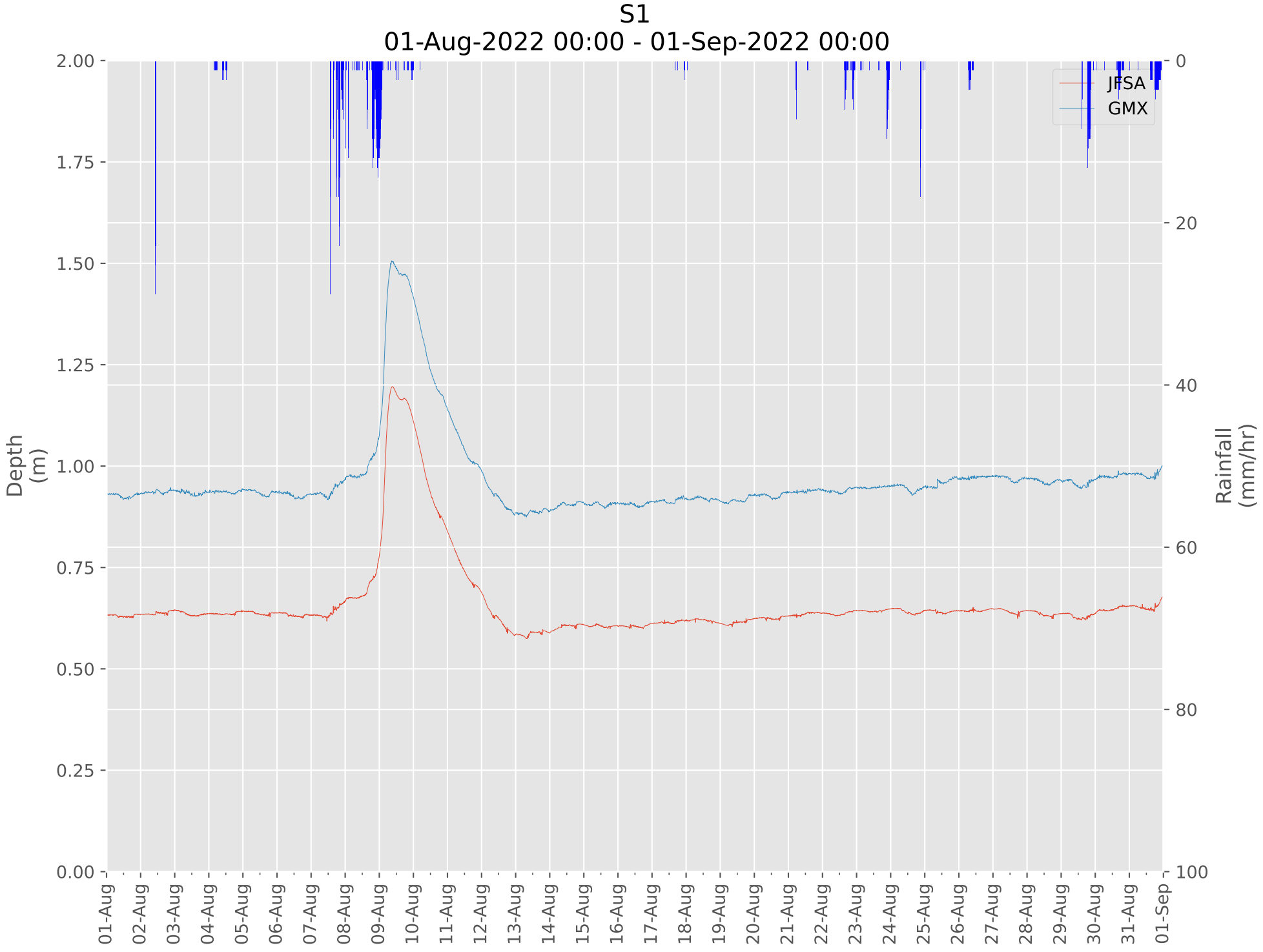
27-Jul
28-Jul
29-Jul
30-Jul
31-Jul
01-Aug


S1
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
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20-Aug
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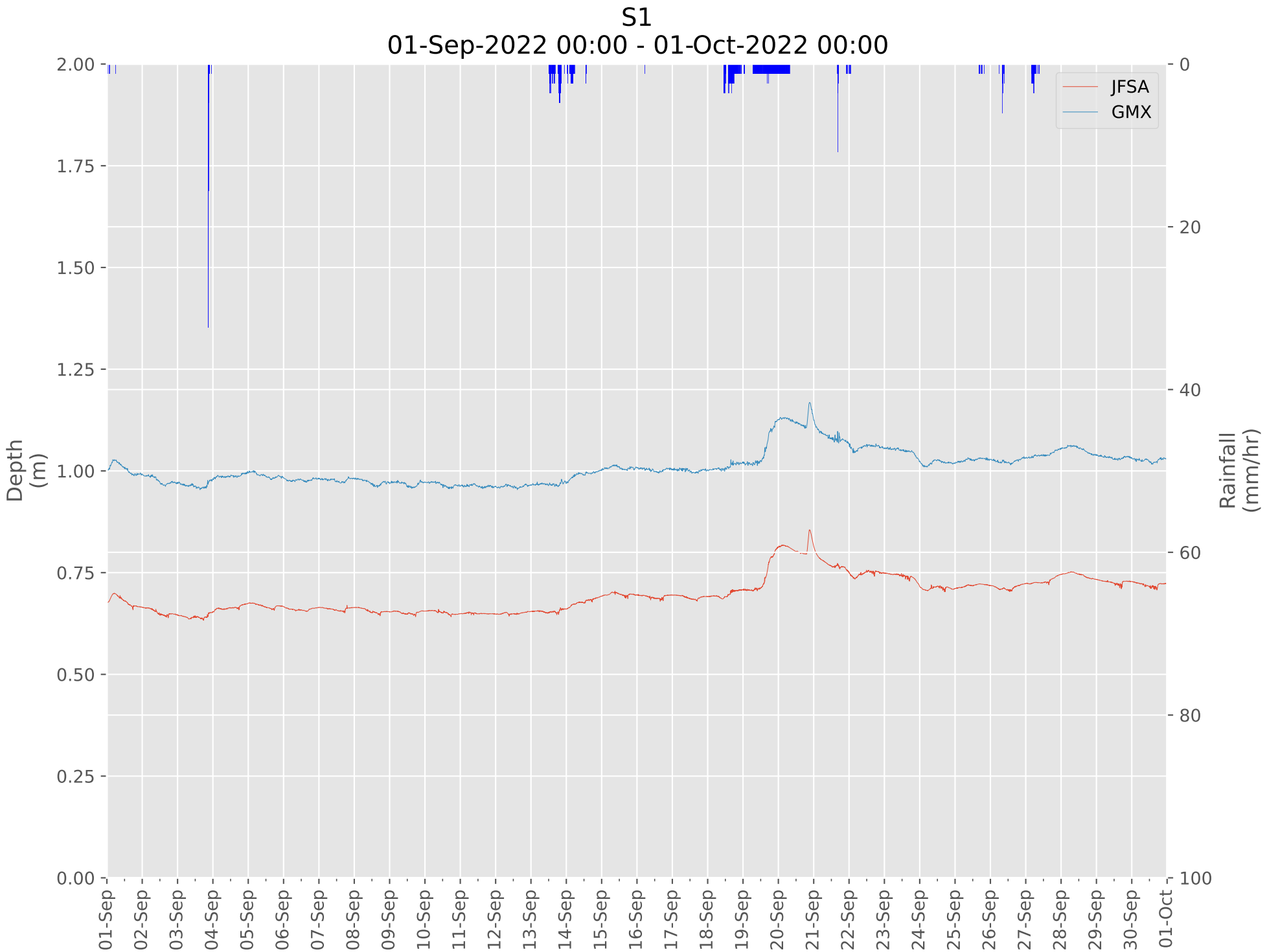
27-Aug
28-Aug
29-Aug
30-Aug
31-Aug
01-Sep


S1
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
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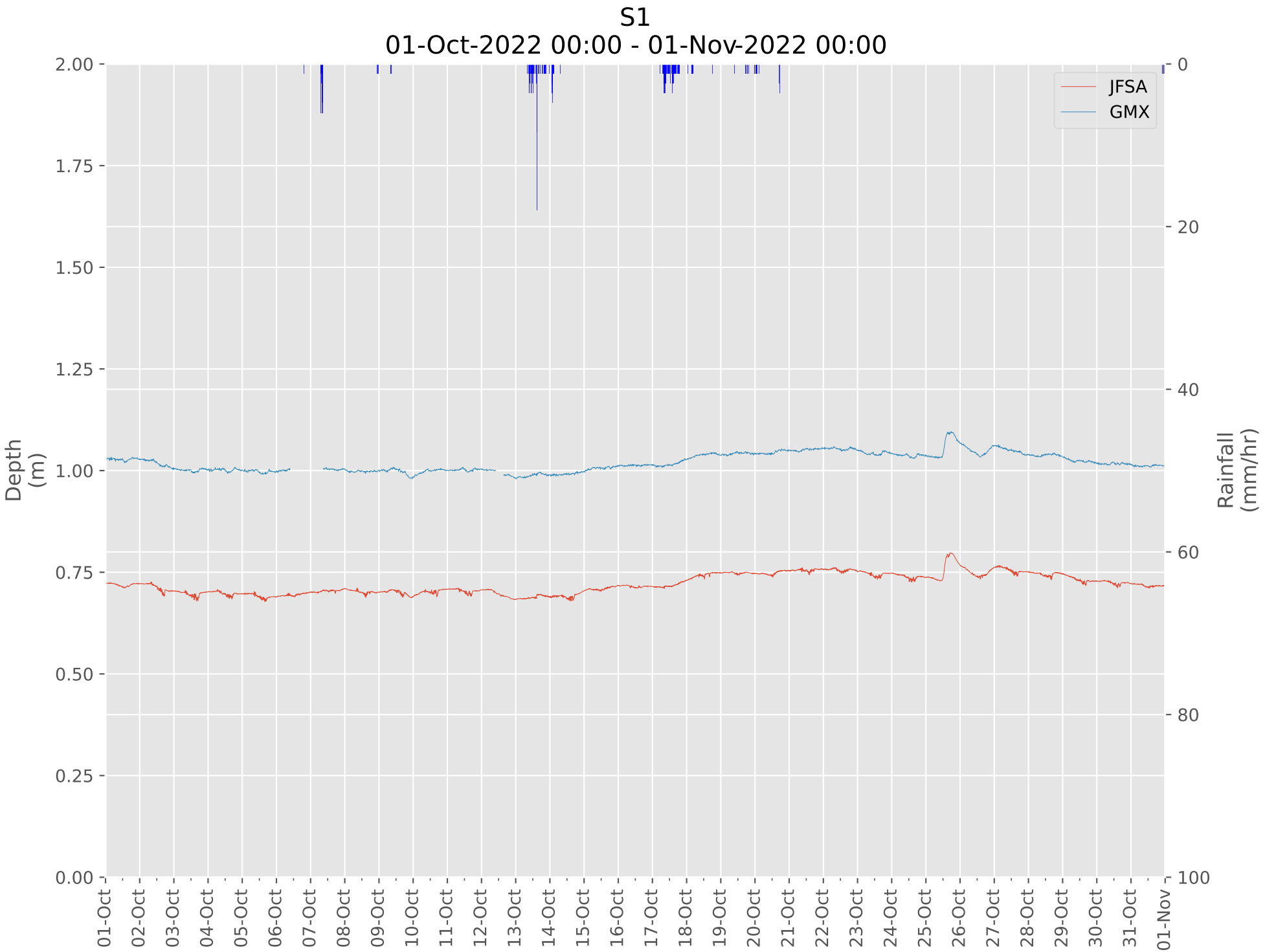
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S1
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
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20-Oct
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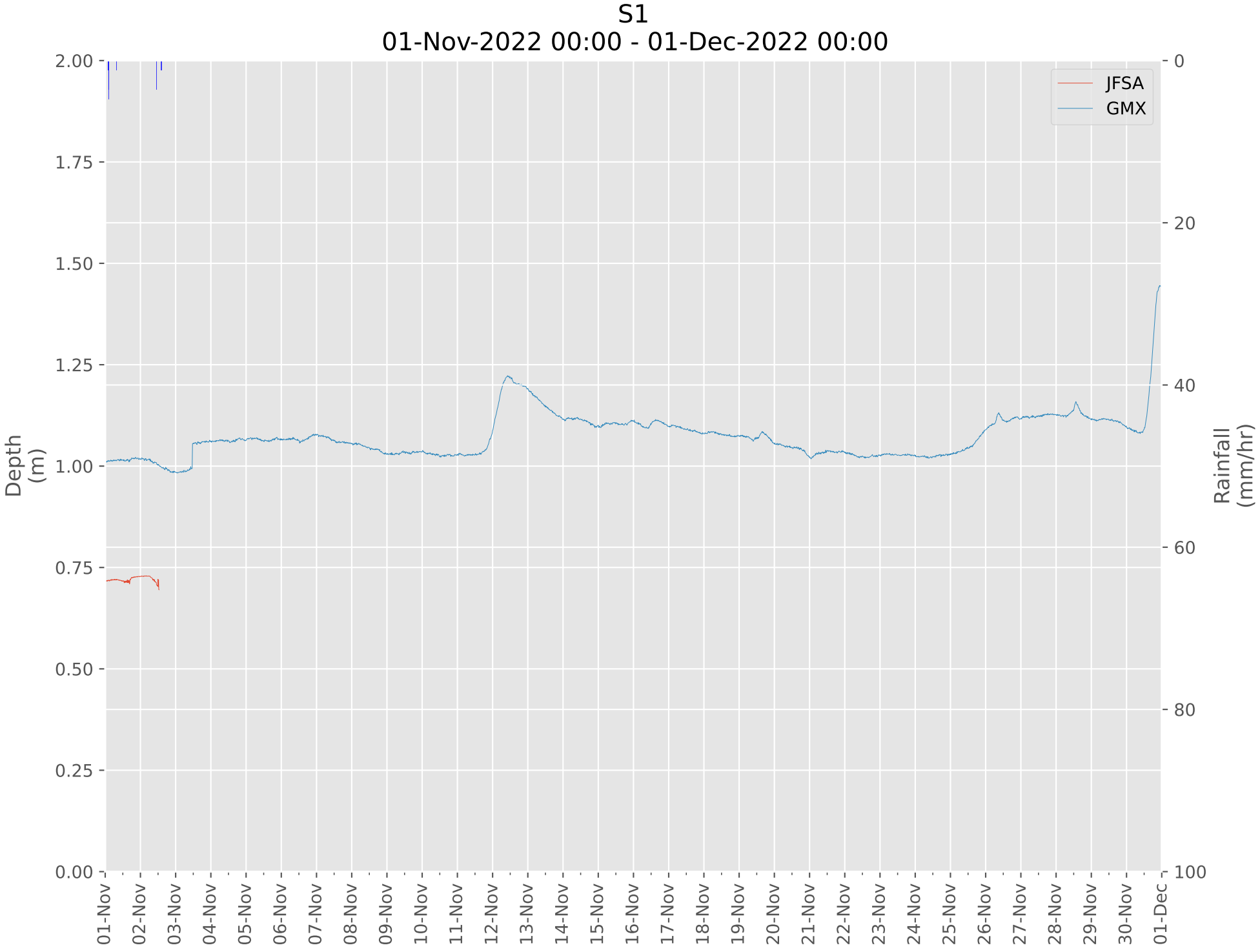
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov


S1
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
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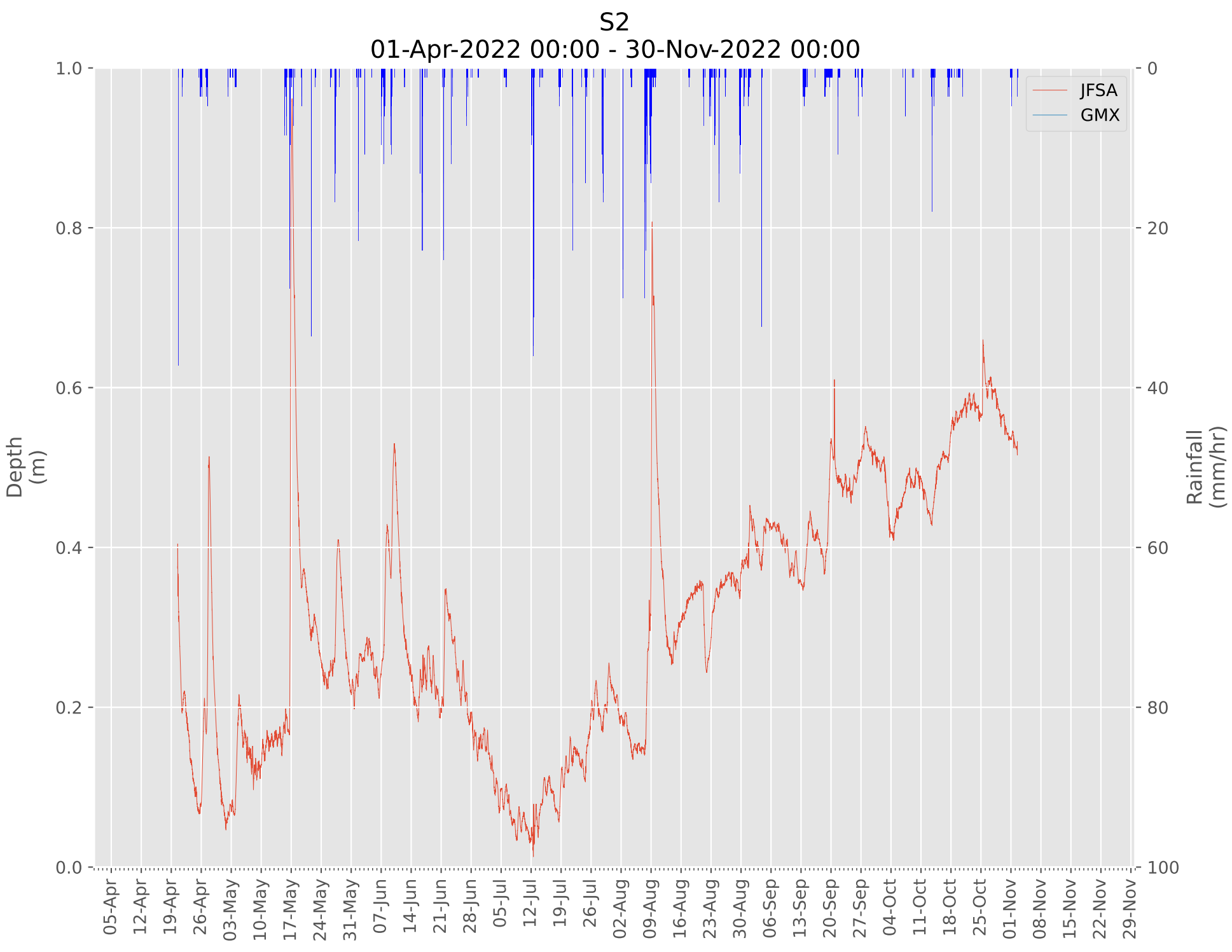
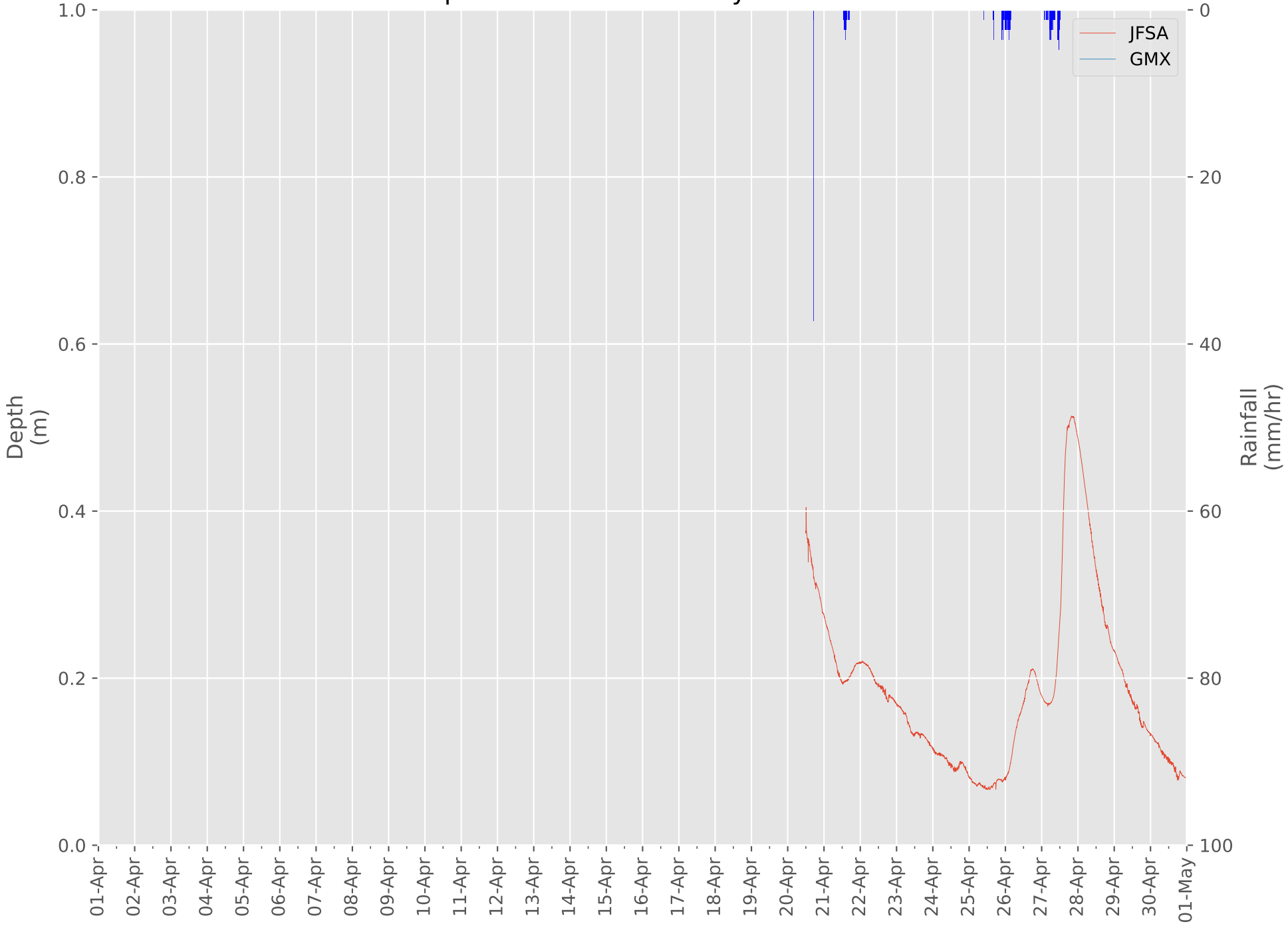
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S2
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S2
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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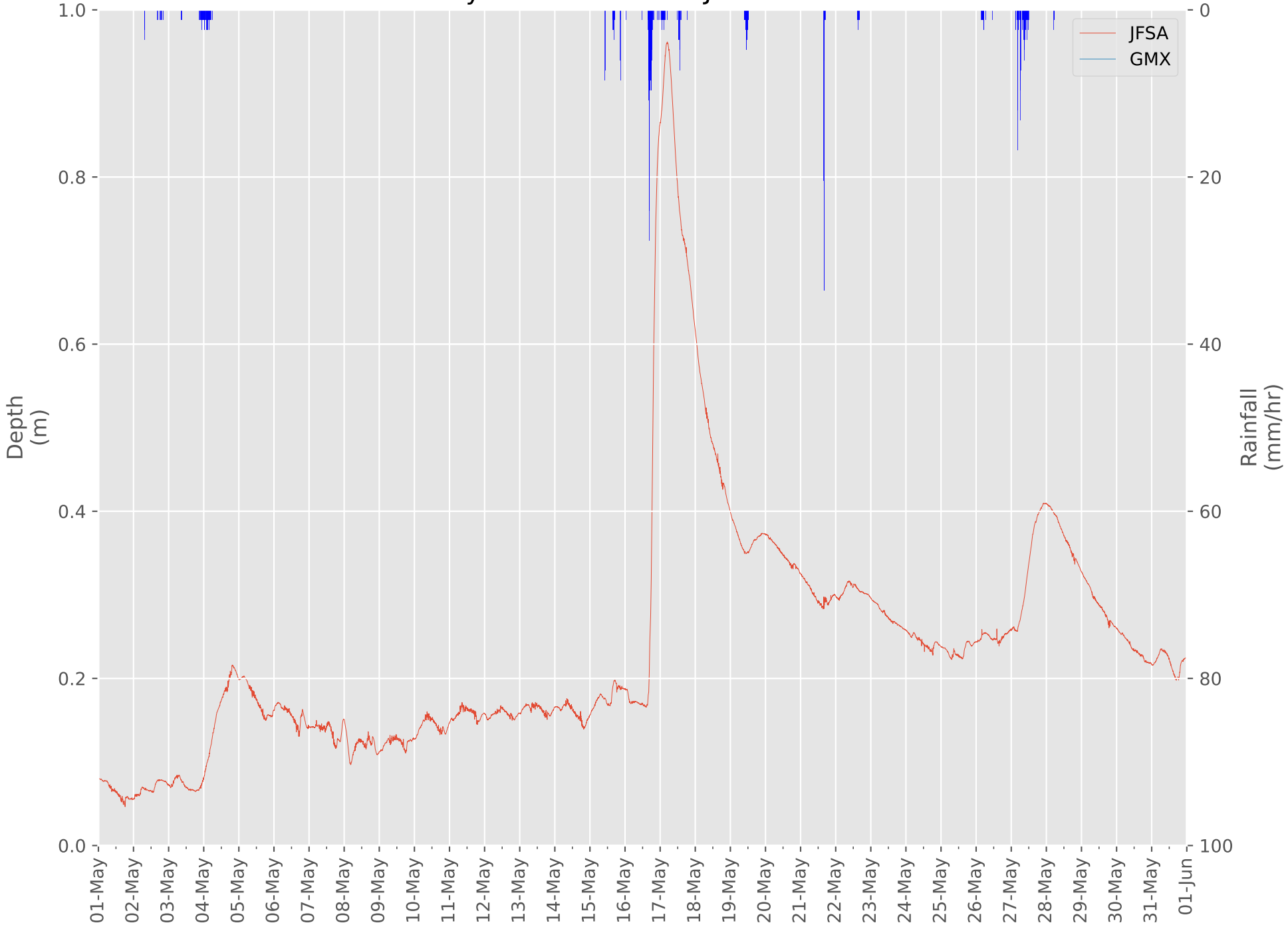
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S2
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
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21-May
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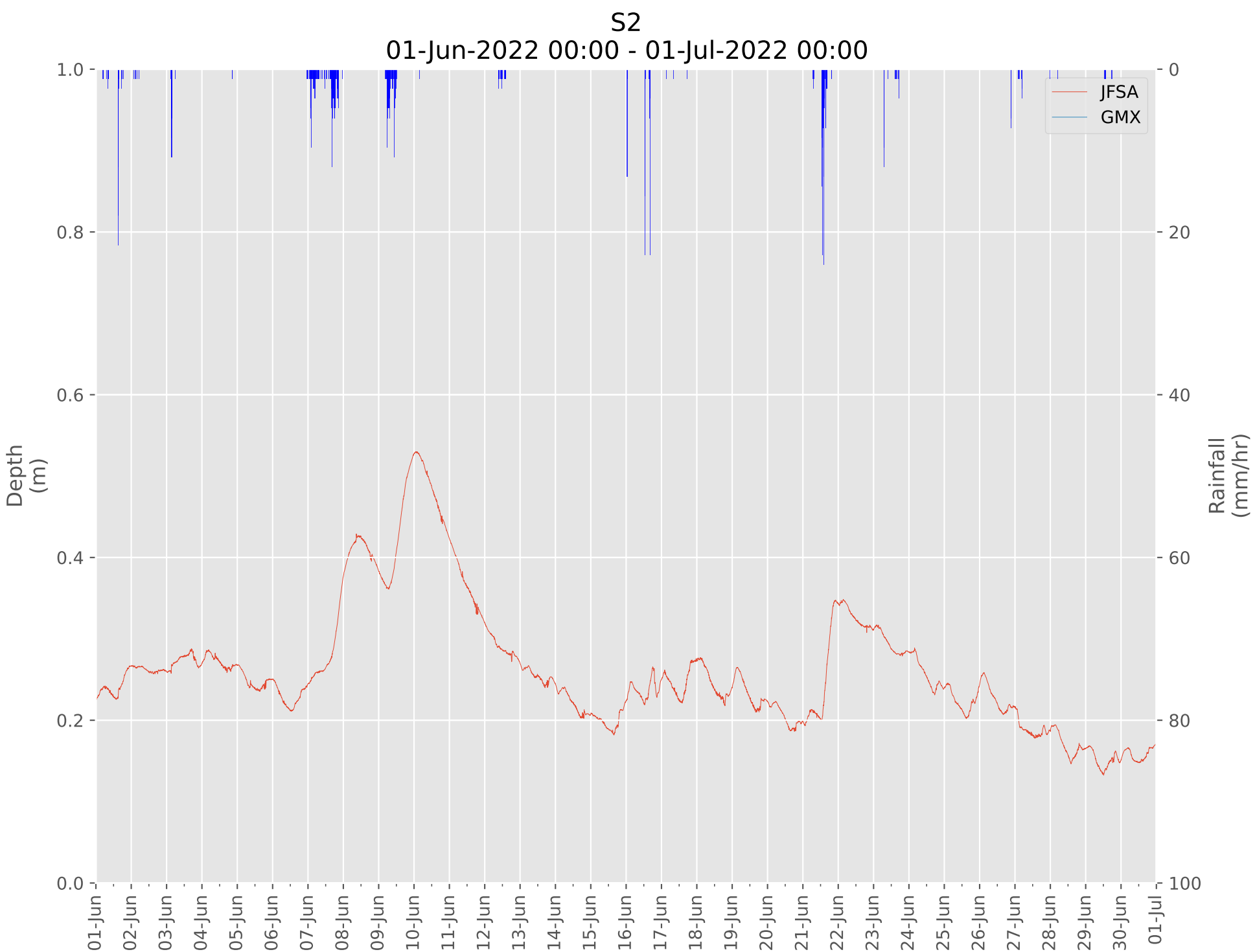
27-May
28-May
29-May
30-May
31-May
01-Jun


S2
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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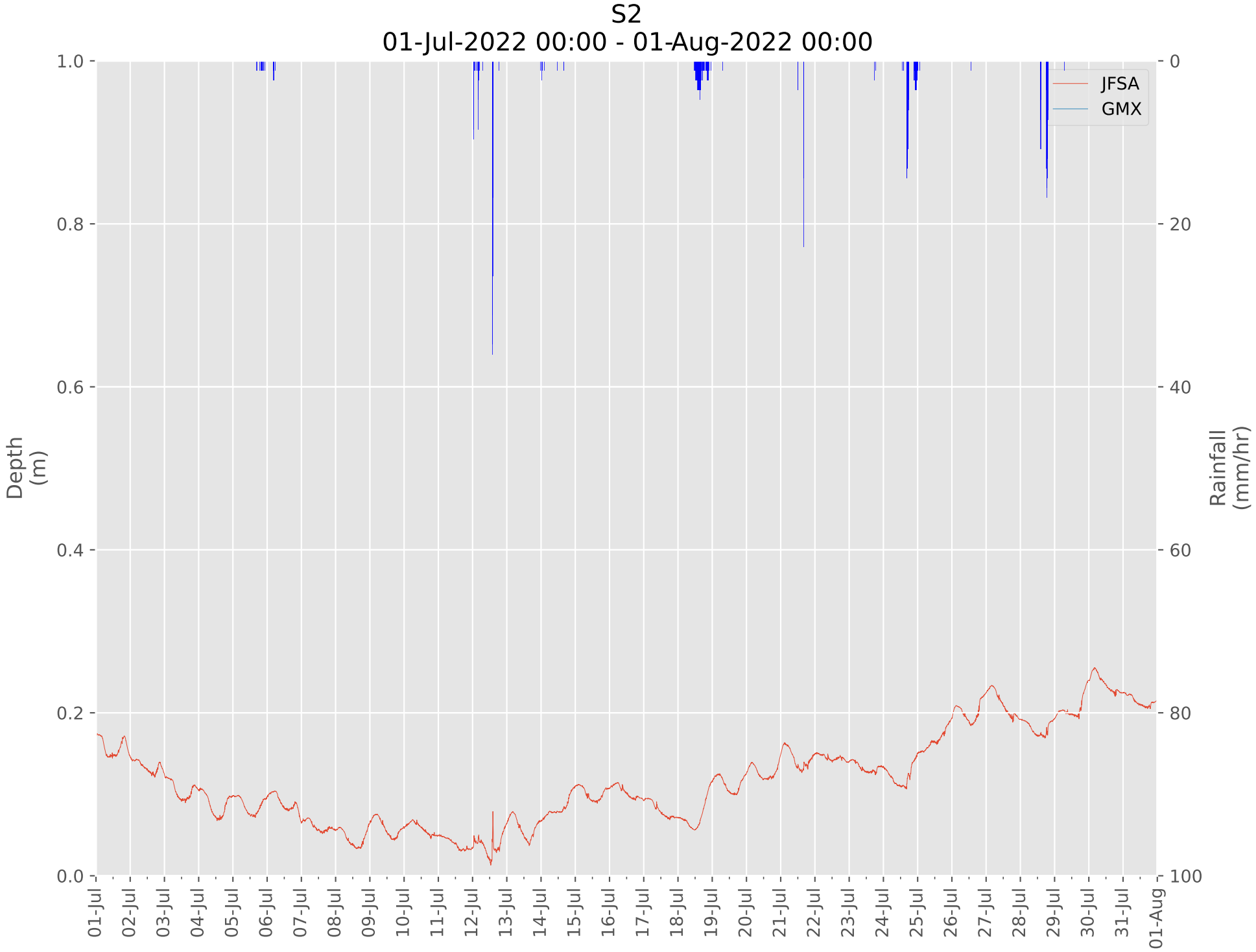
26-Jun
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S2
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
20-Jul
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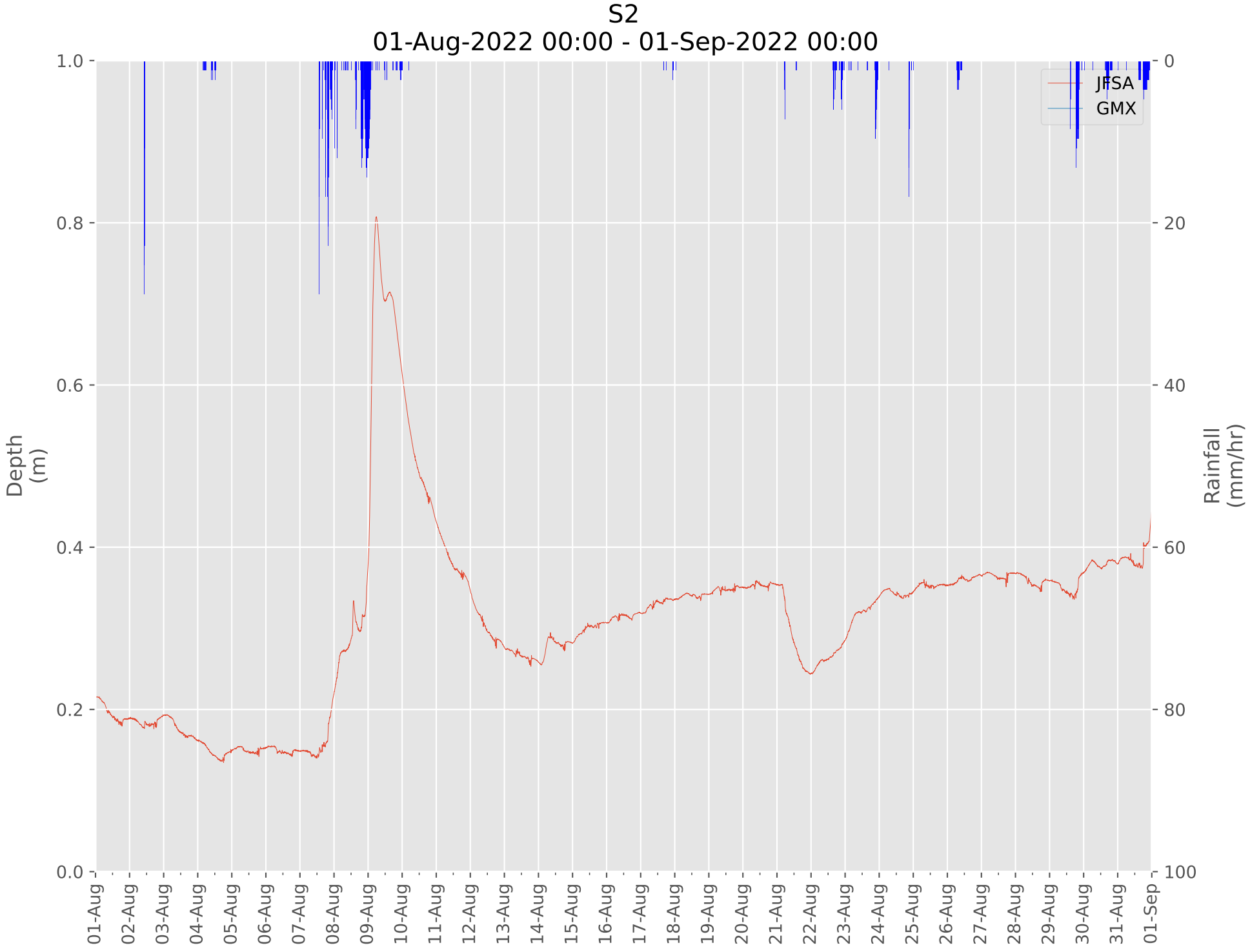
27-Jul
28-Jul
29-Jul
30-Jul
31-Jul
01-Aug


S2
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
20-Aug
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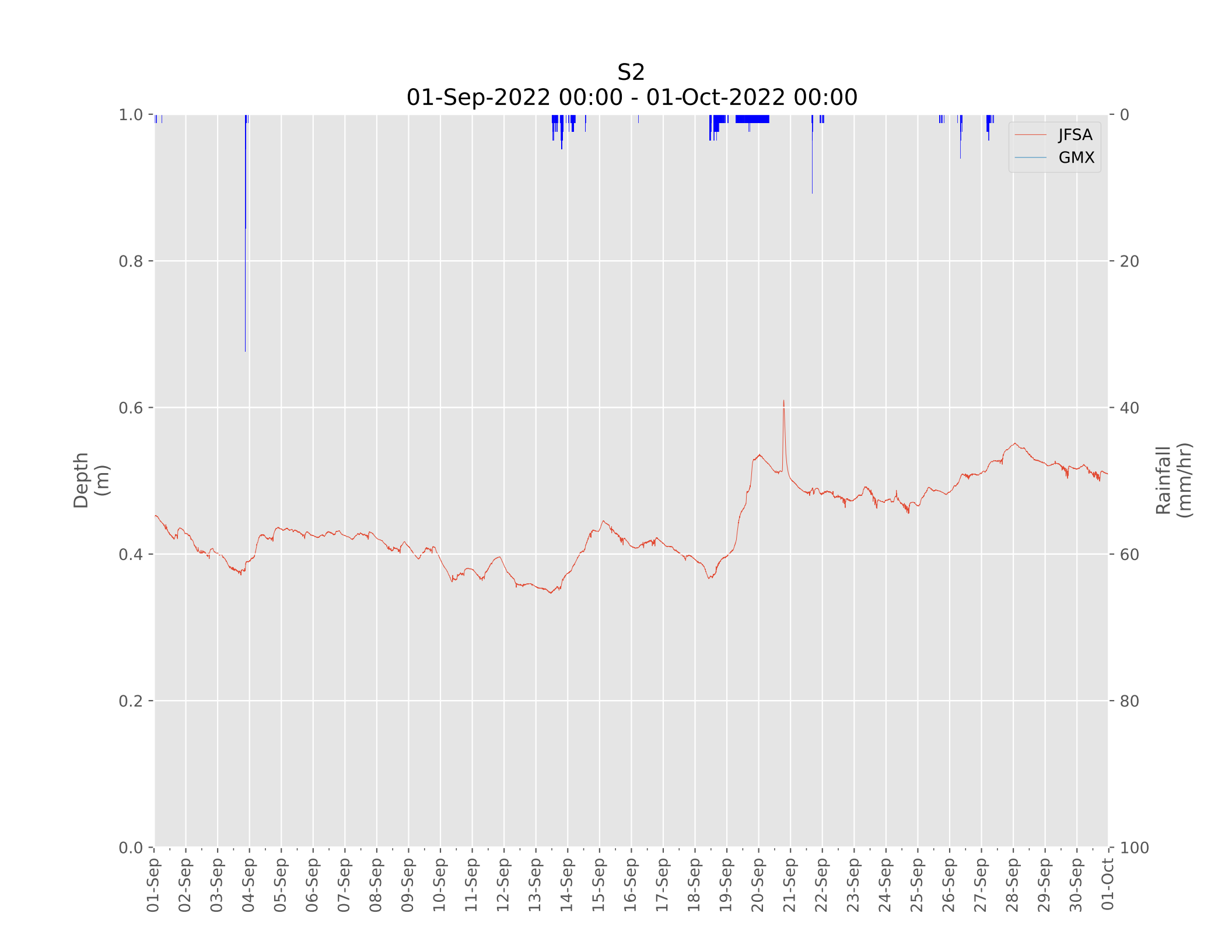
30-Aug
31-Aug
01-Sep


S2
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
20-Sep
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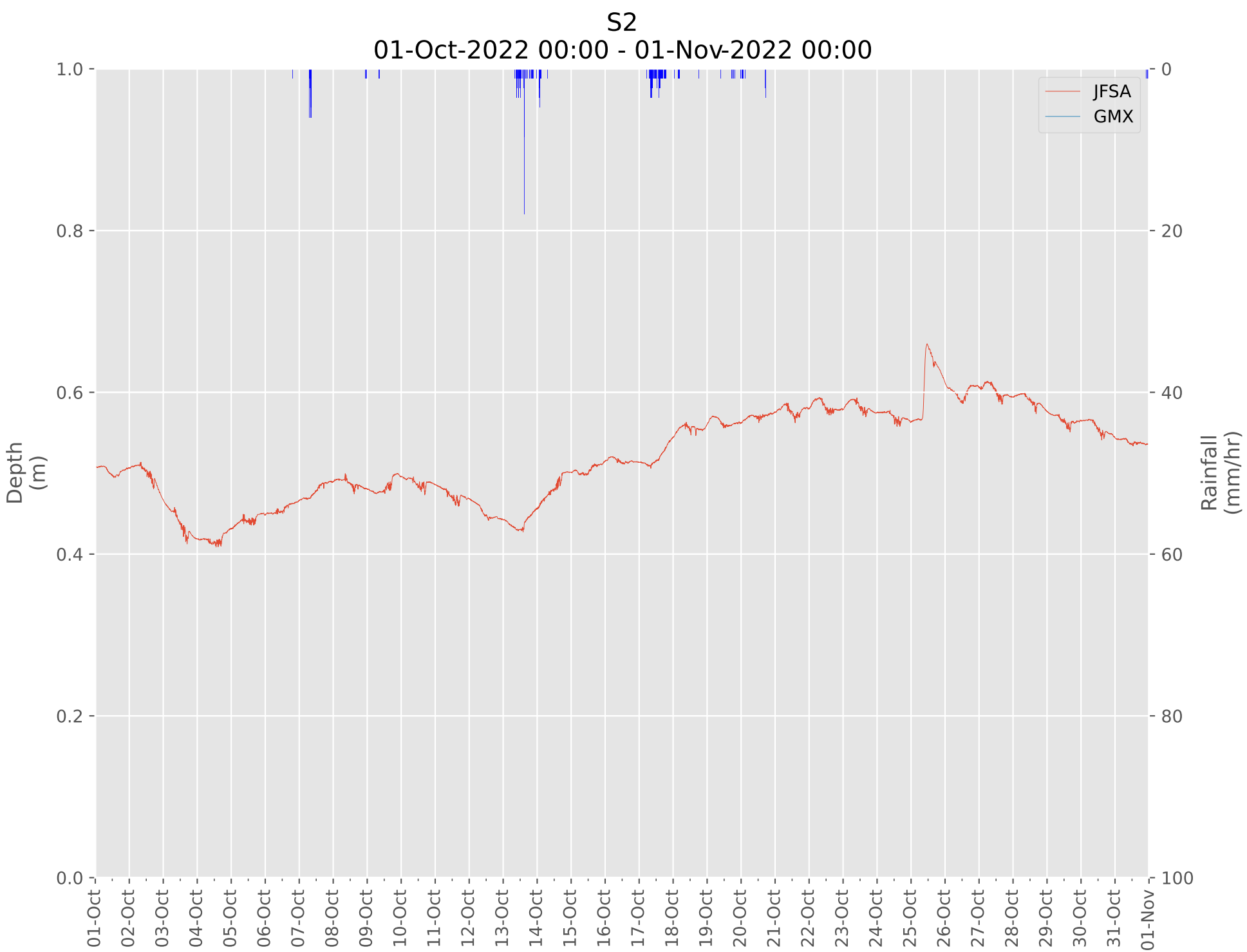
22-Sep
23-Sep
24-Sep
25-Sep
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S2
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
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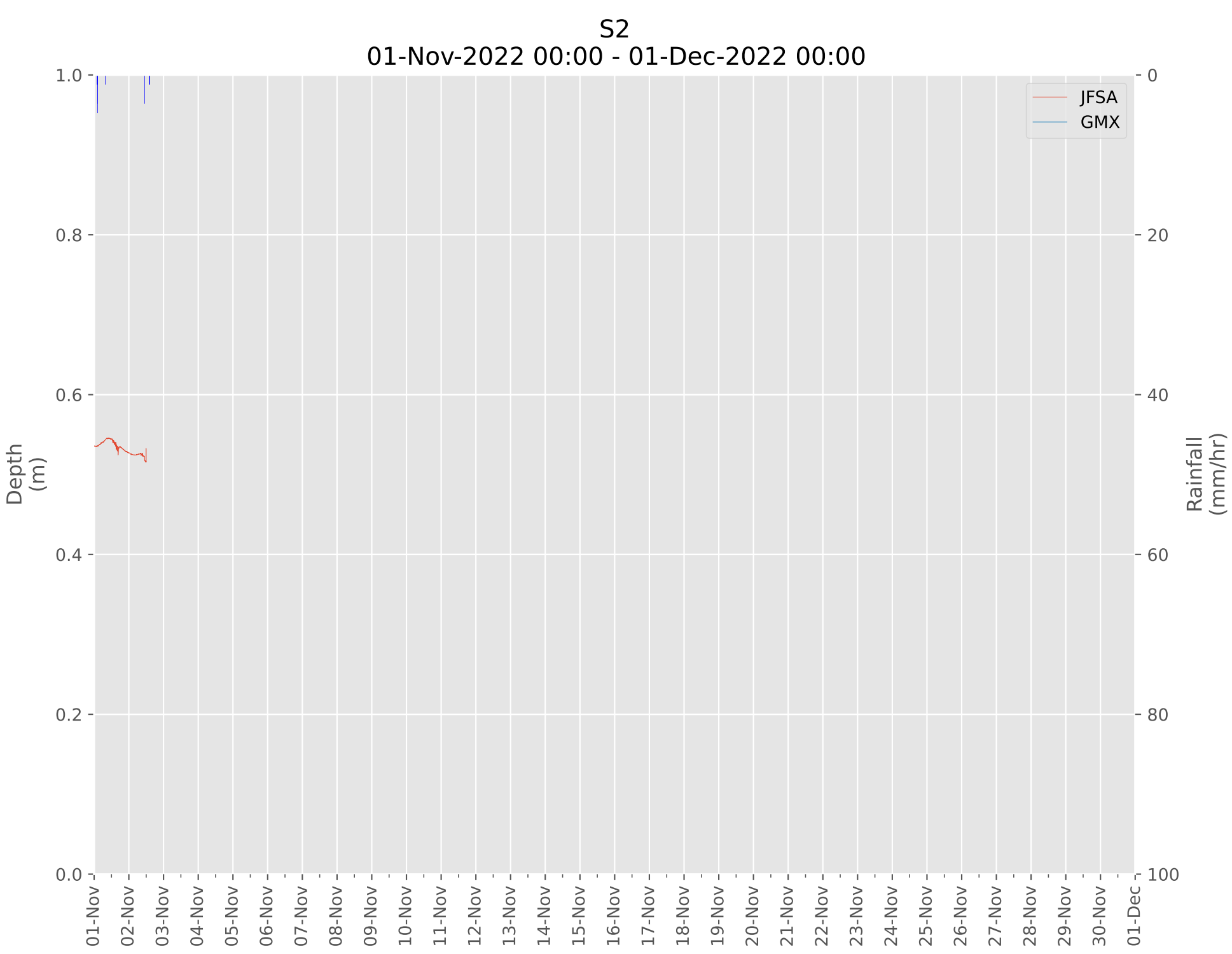
27-Oct
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov


S2
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
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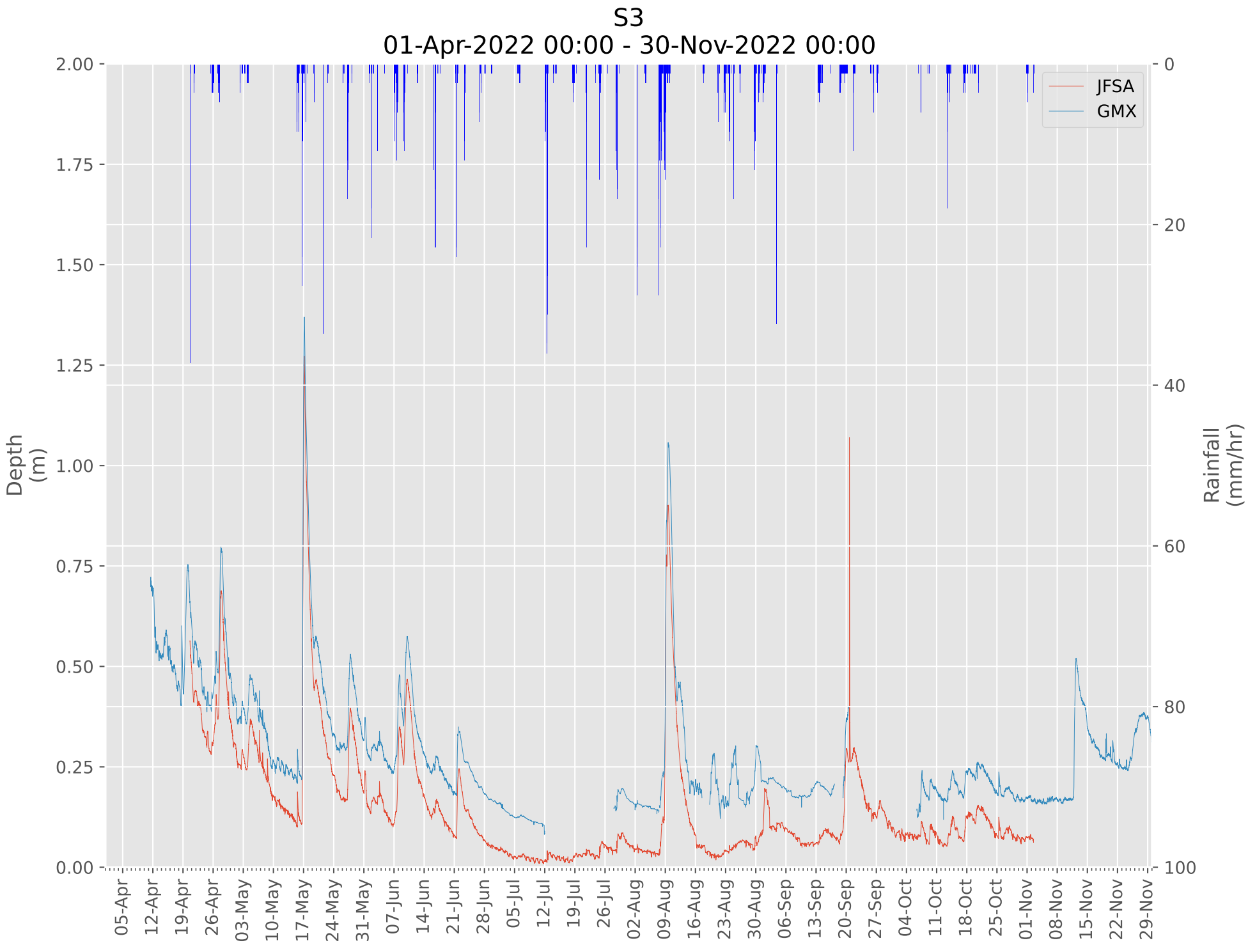
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S3
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
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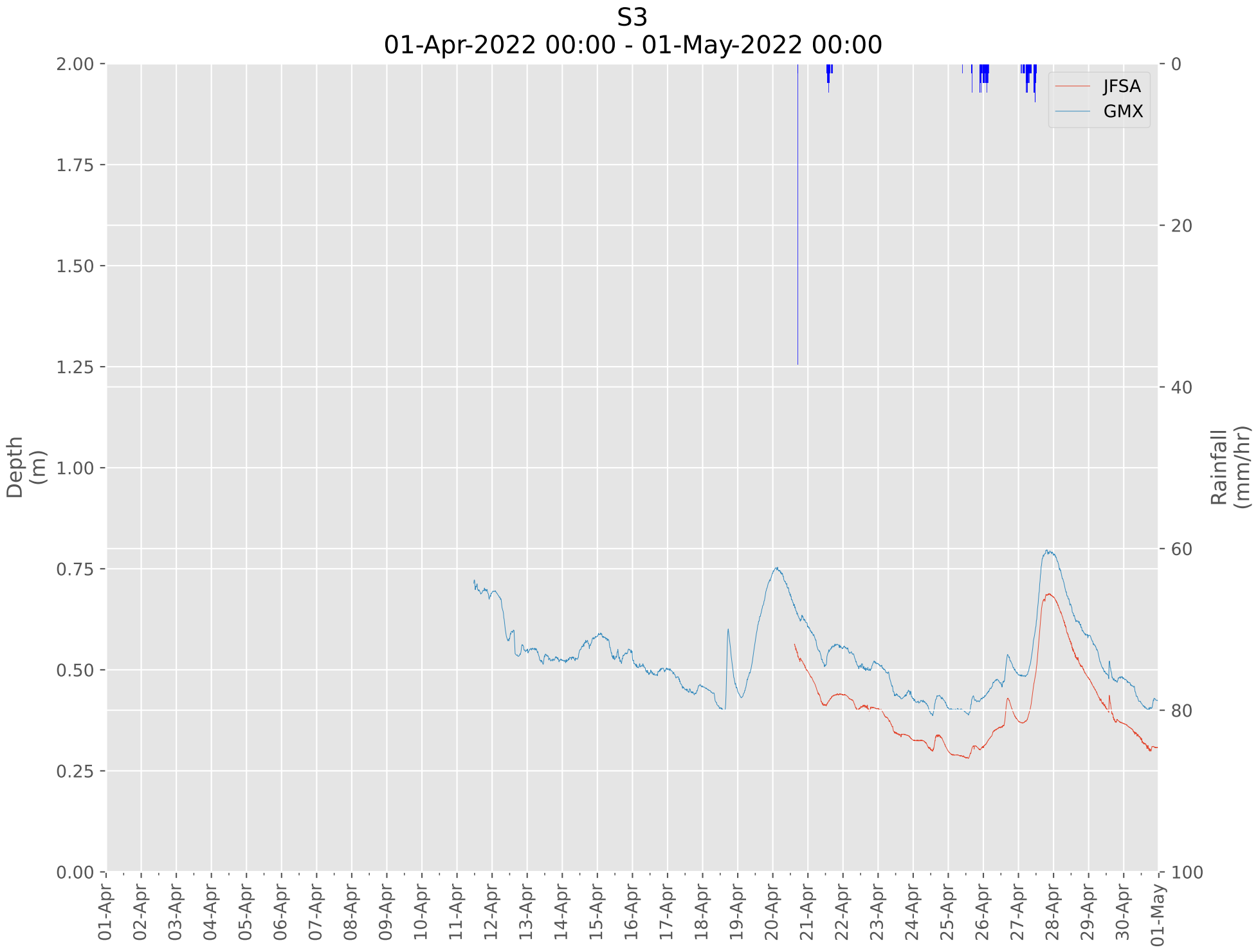
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S3
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
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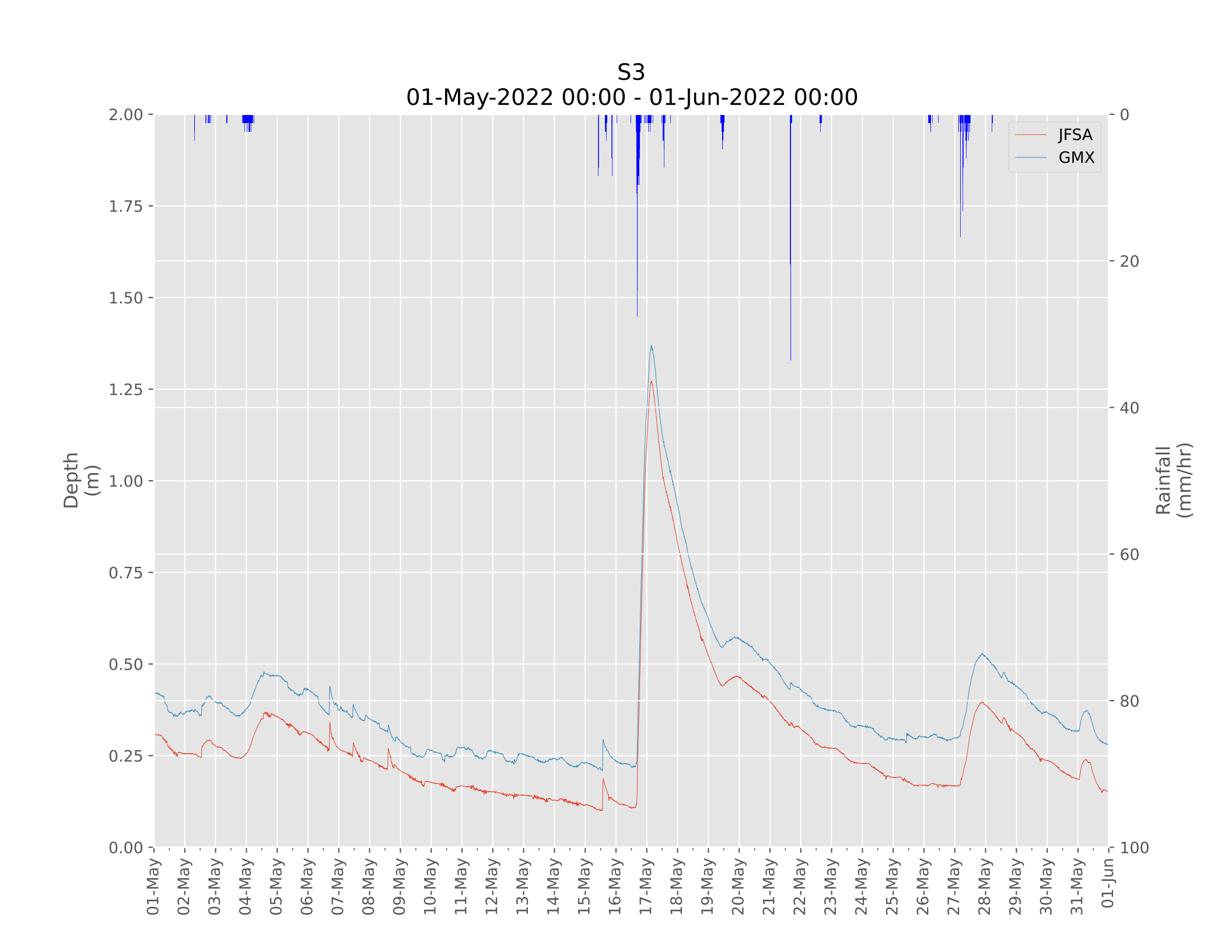
28-Apr
29-Apr
30-Apr
01-May


S3
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-May
02-May
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04-May
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09-May
10-May
11-May
12-May
13-May
14-May
15-May
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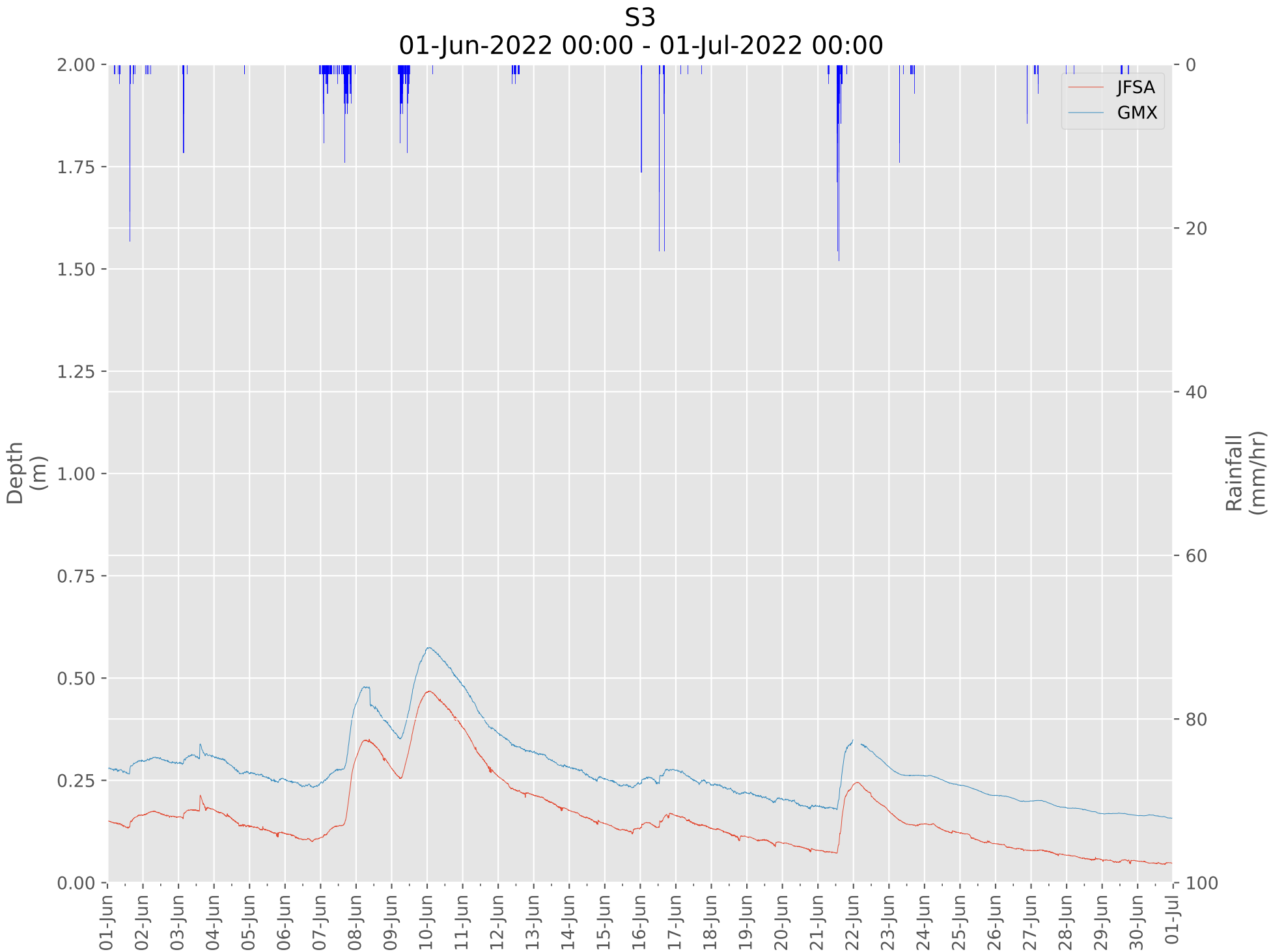
30-May
31-May
01-Jun


S3
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jun
02-Jun
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09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
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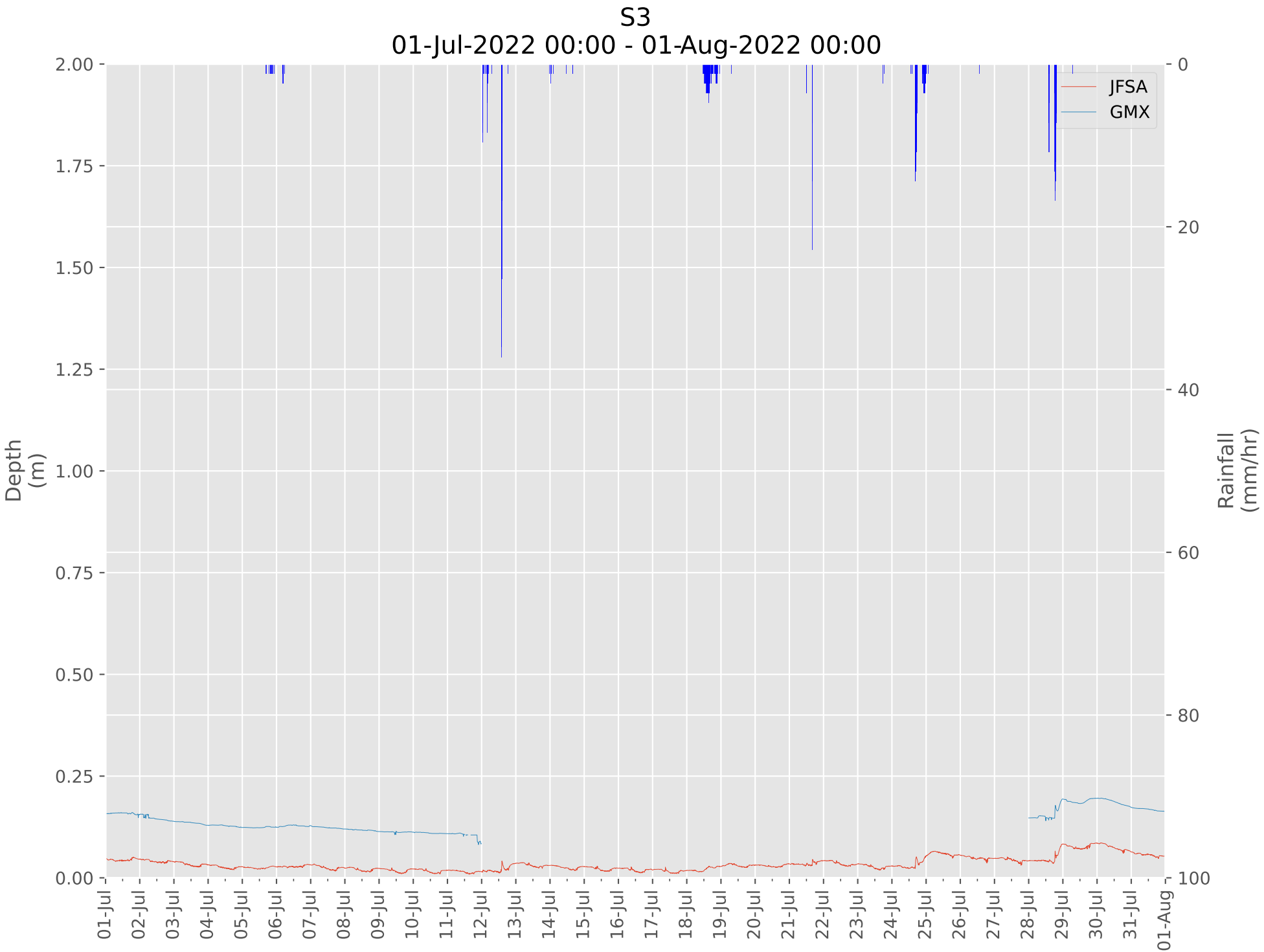
30-Jun
01-Jul


S3
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jul
02-Jul
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09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
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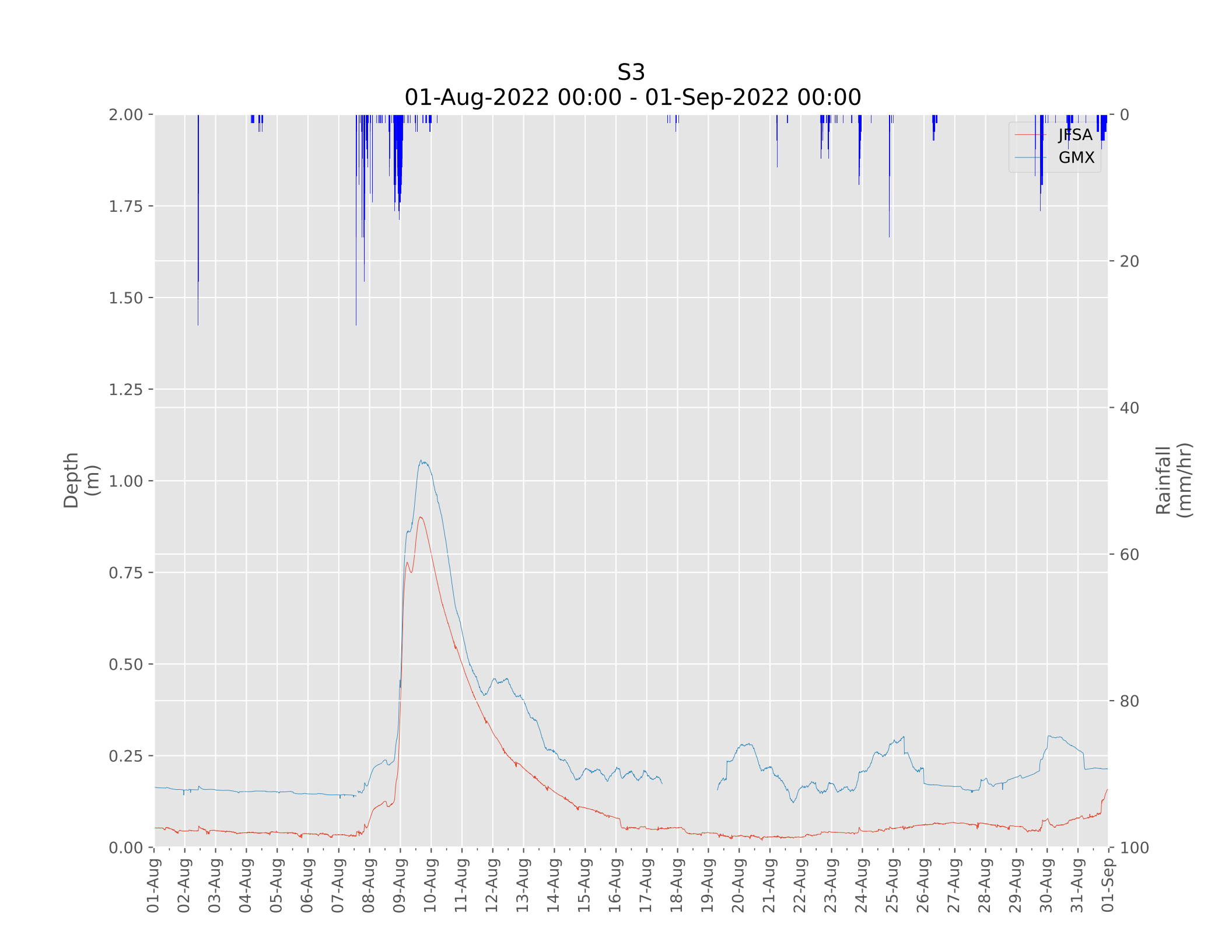
30-Jul
31-Jul
01-Aug


S3
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Aug
02-Aug
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13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
20-Aug
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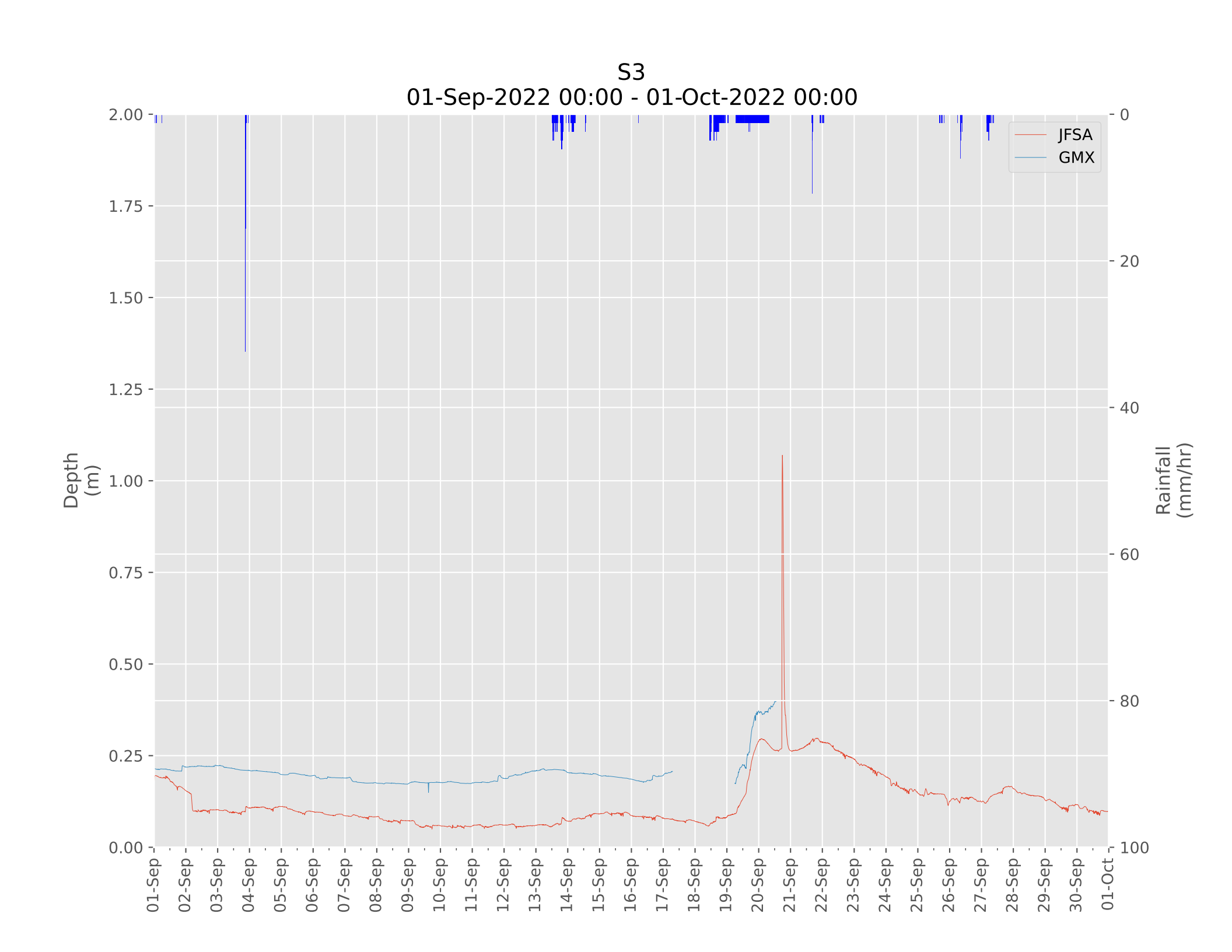
30-Aug
31-Aug
01-Sep


S3
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
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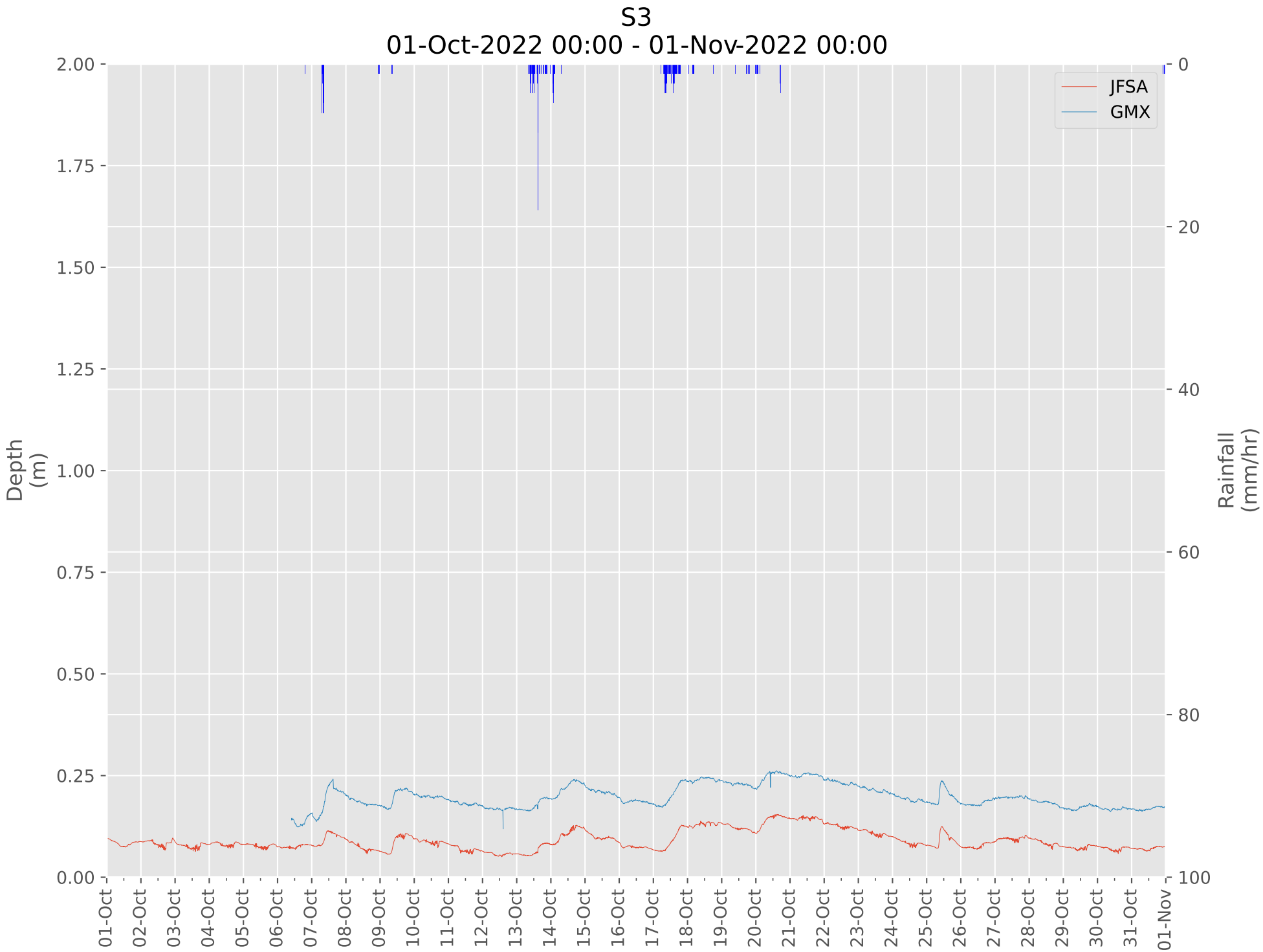
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S3
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
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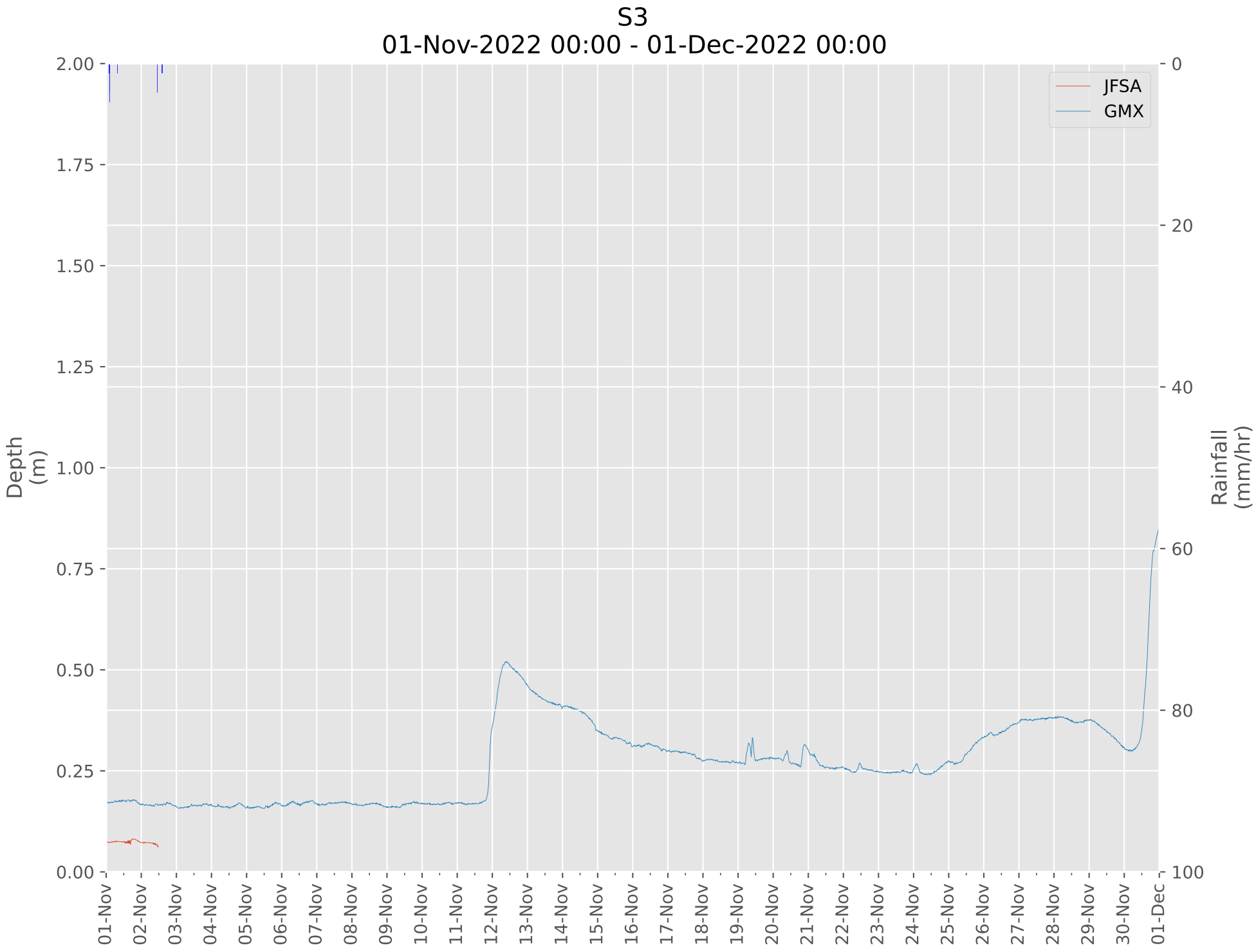
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov


S3
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
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27-Nov
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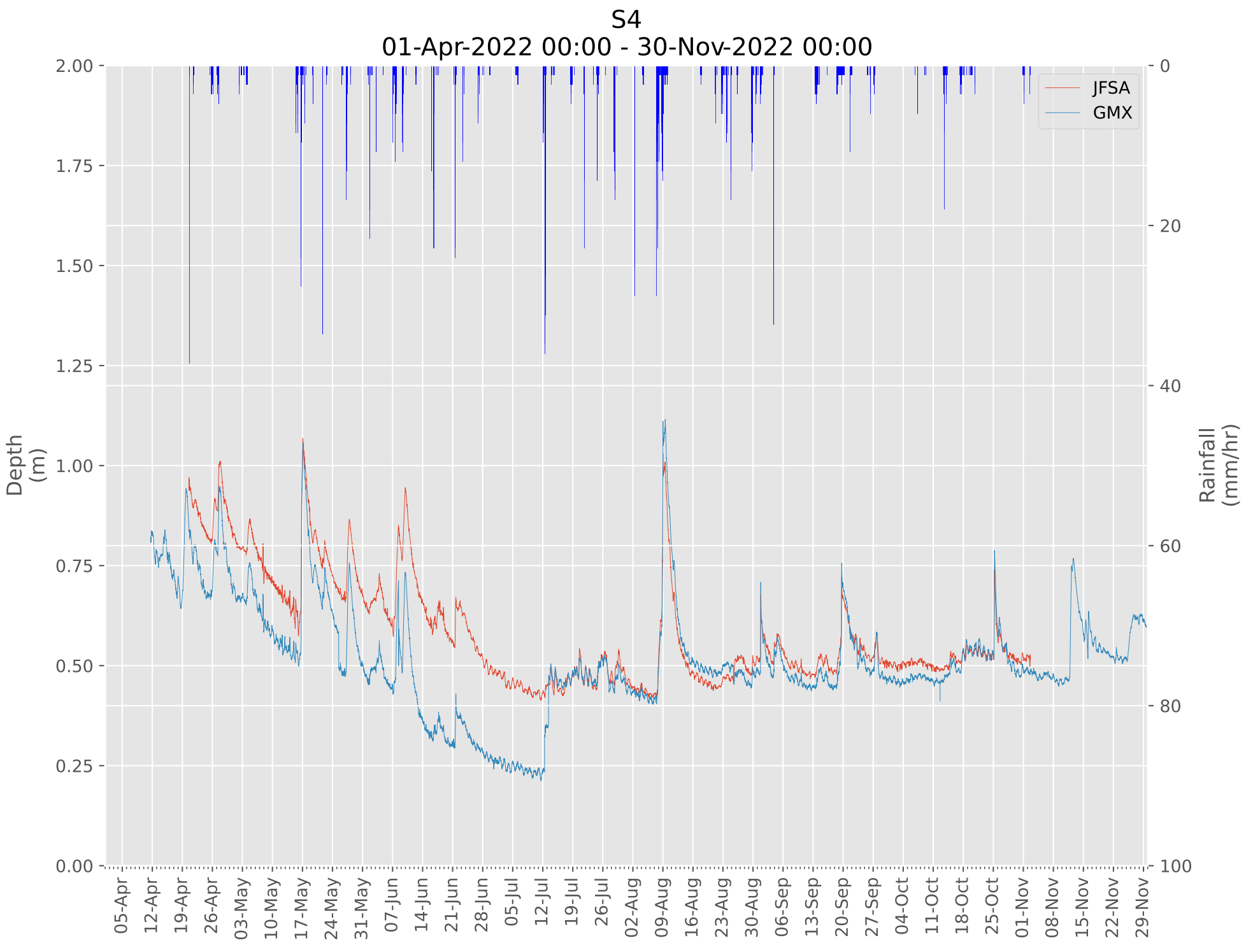
29-Nov
30-Nov
01-Dec


S4
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
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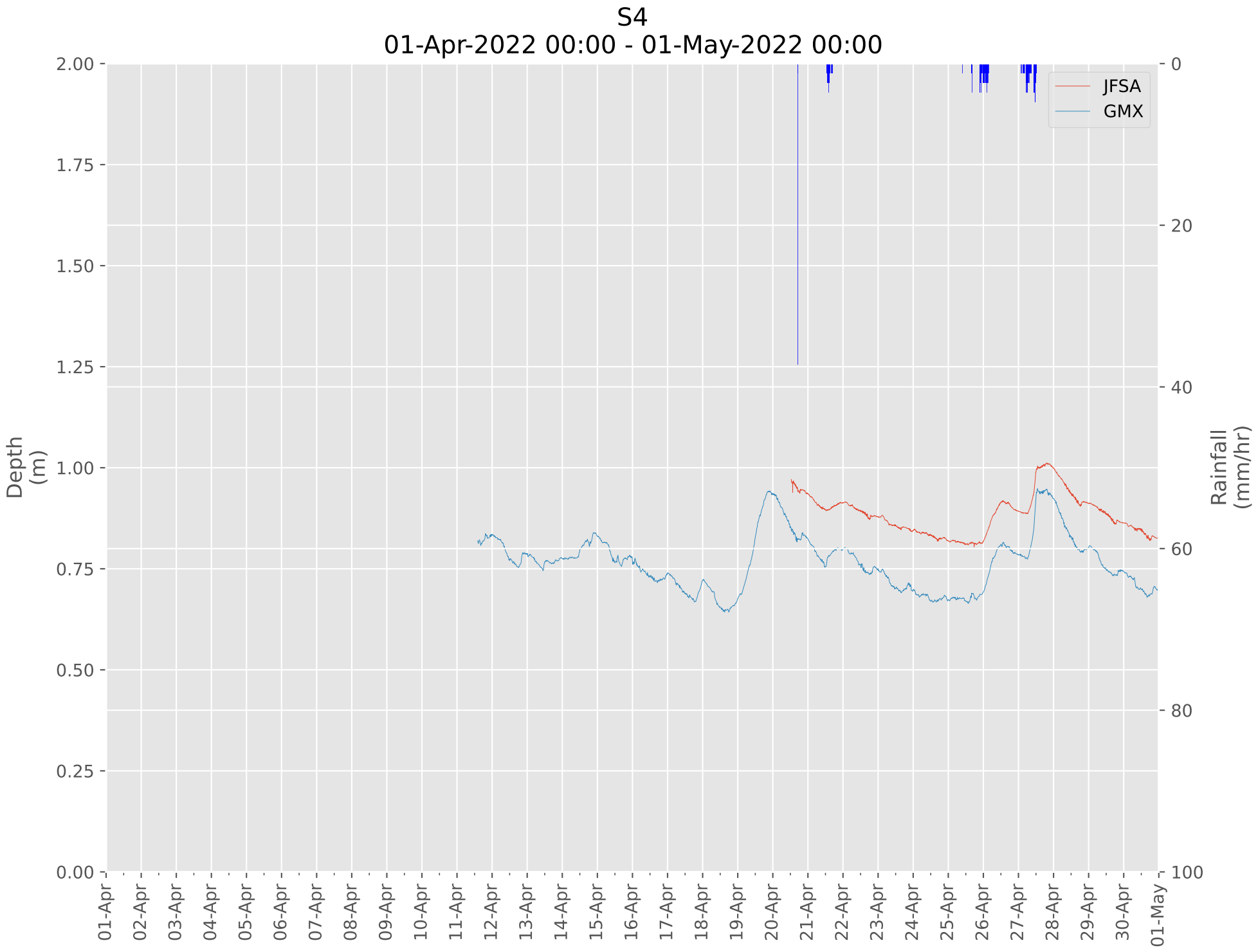
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S4
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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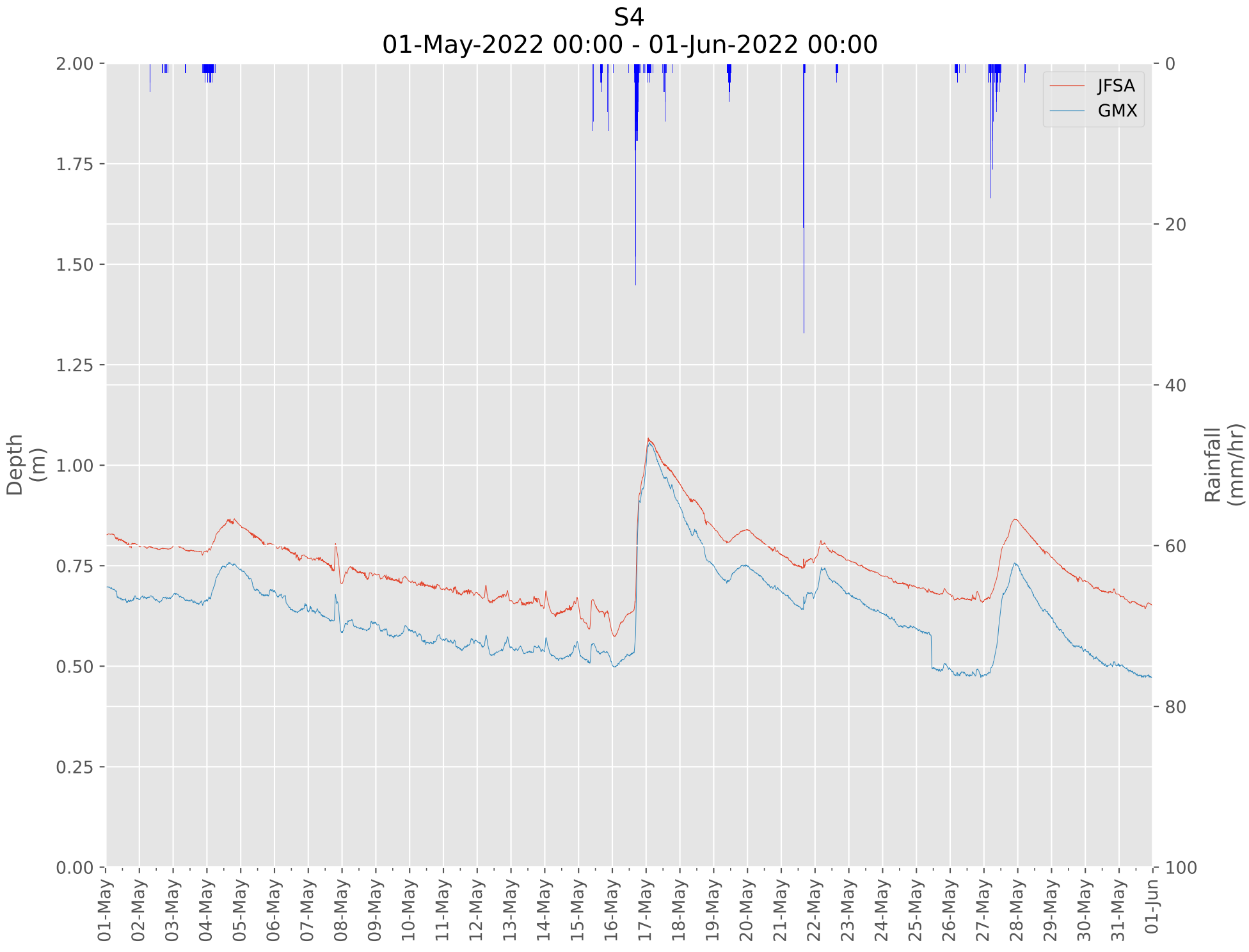
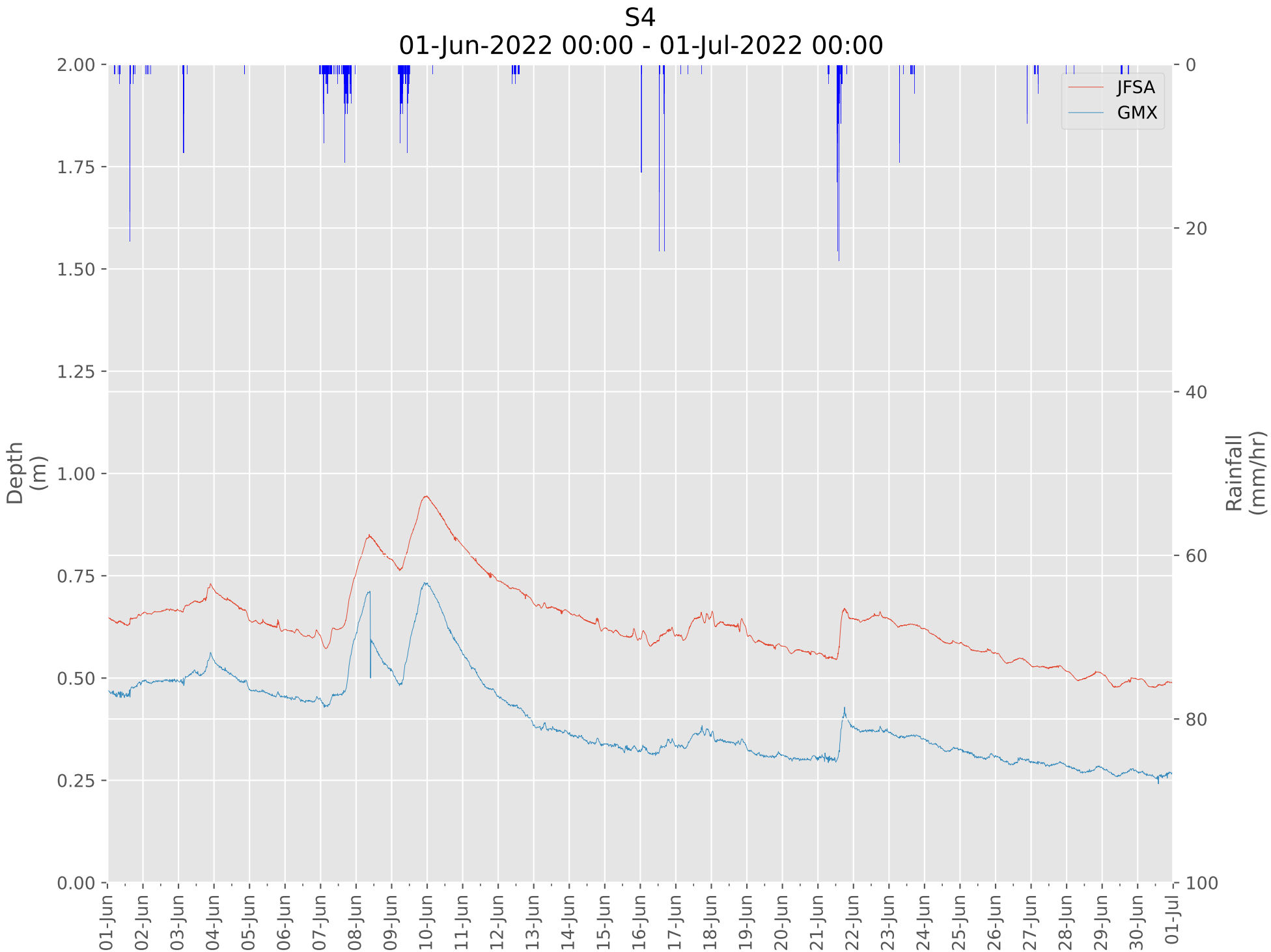
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S4
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
01-Jun


S4
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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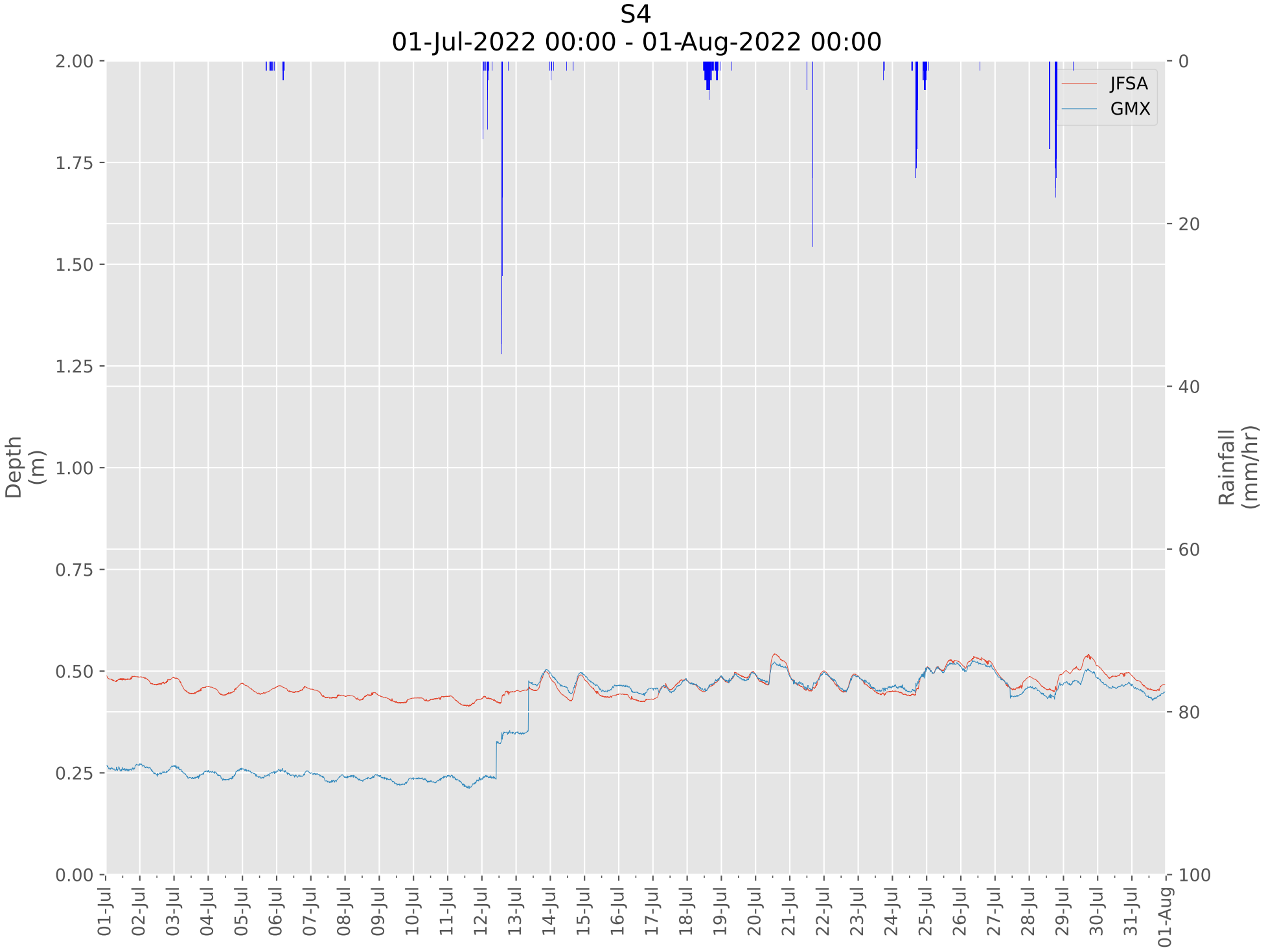
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S4
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
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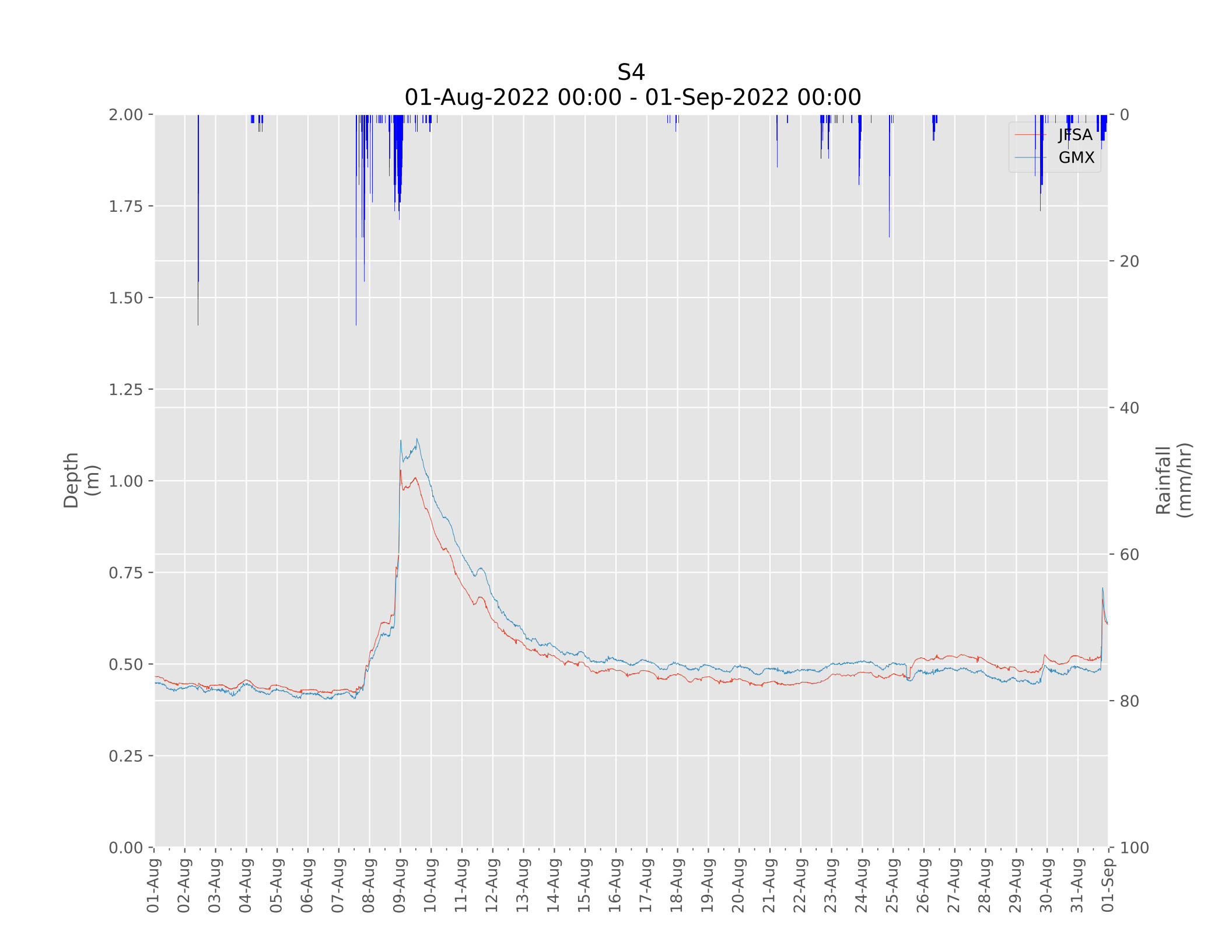
29-Jul
30-Jul
31-Jul
01-Aug


S4
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
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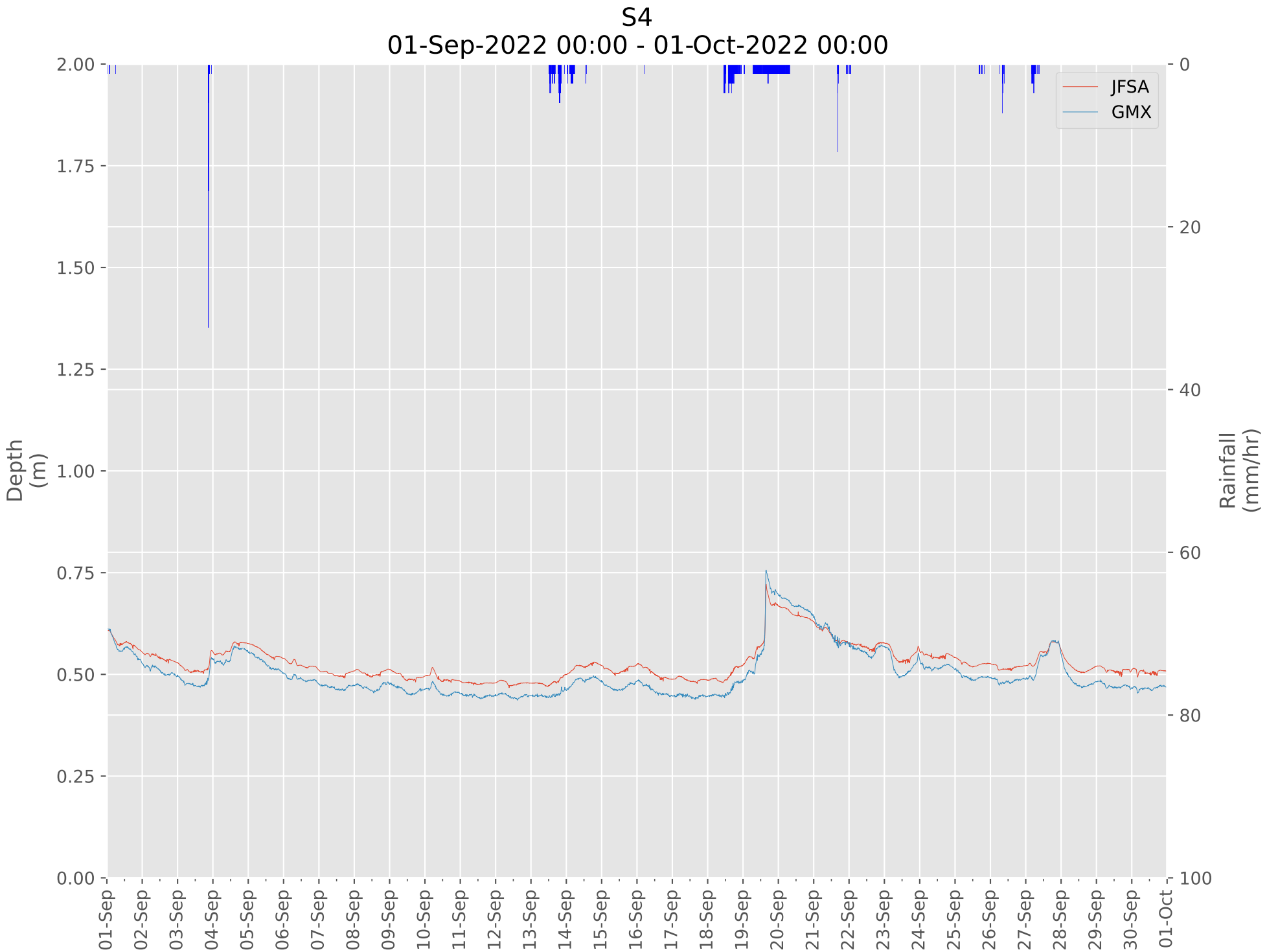
30-Aug
31-Aug
01-Sep


S4
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
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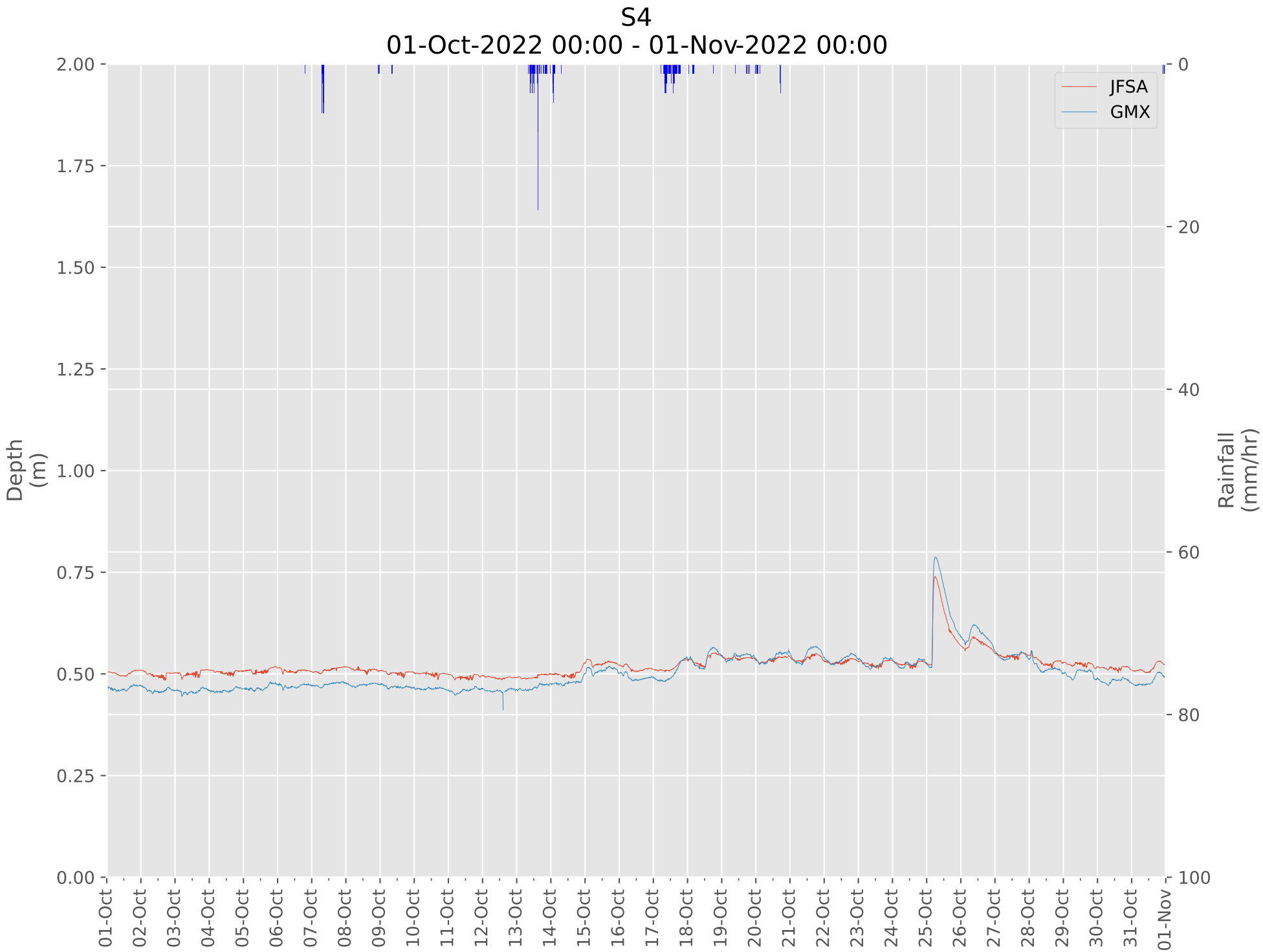
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S4
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
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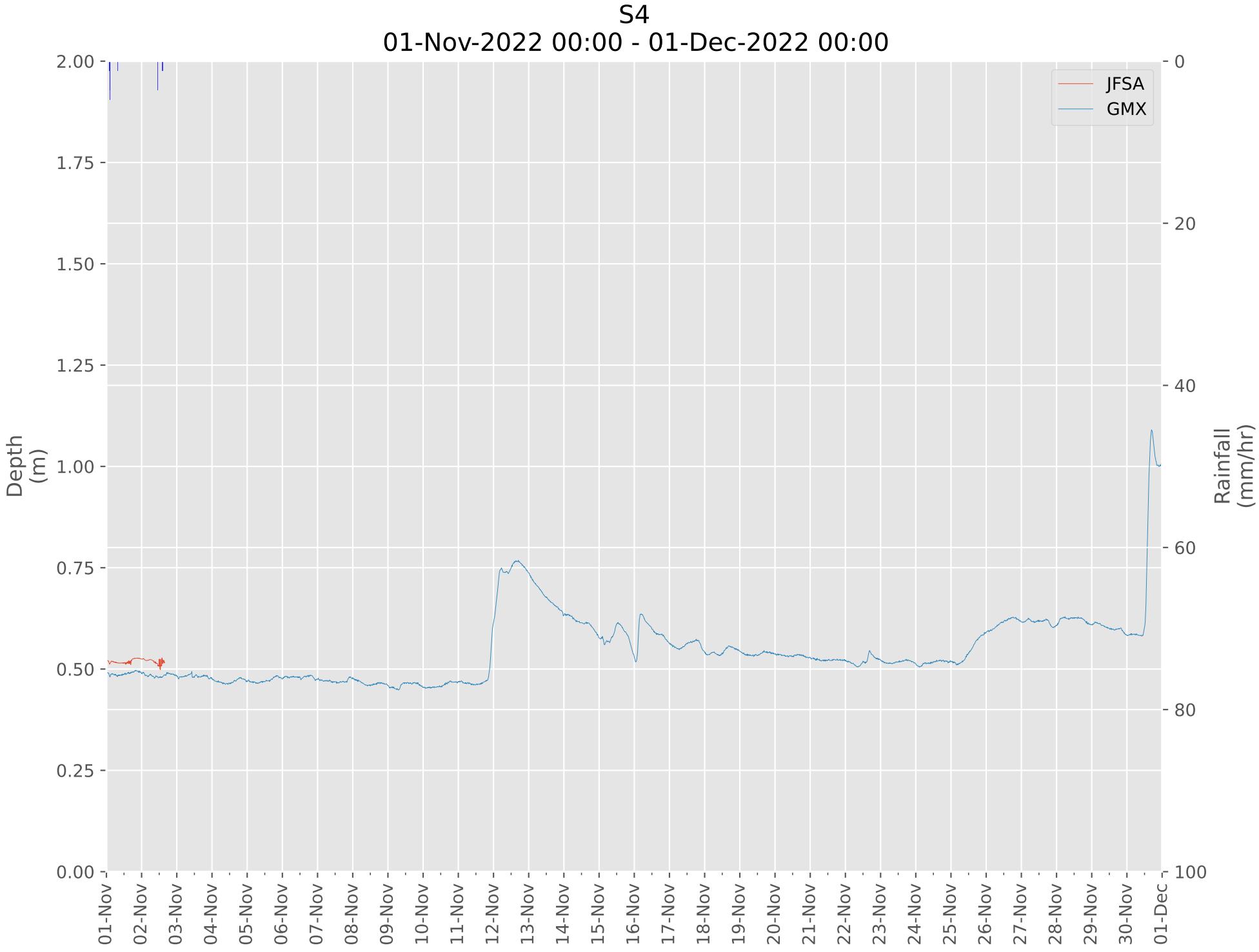
30-Oct
31-Oct
01-Nov


S4
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
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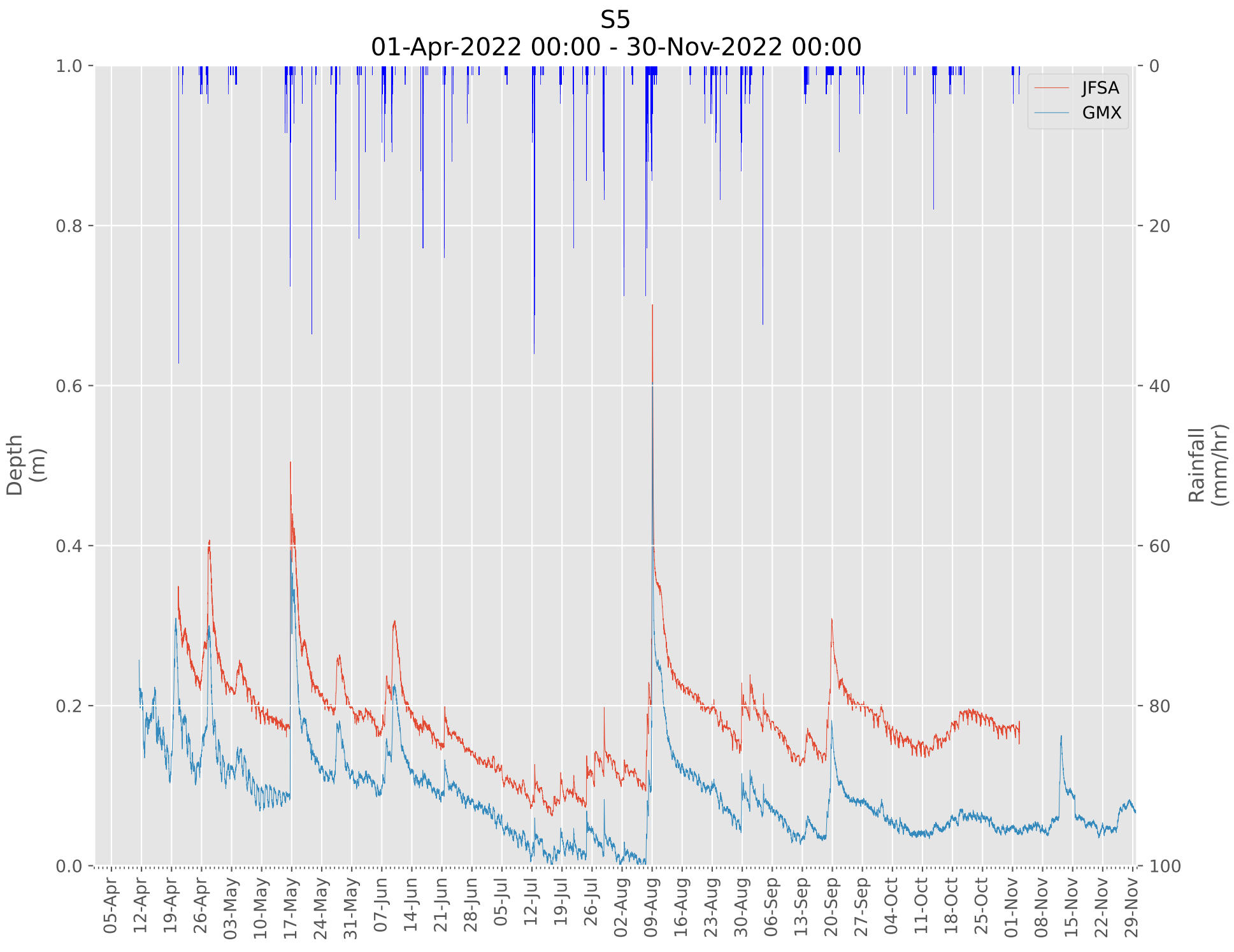
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S5
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
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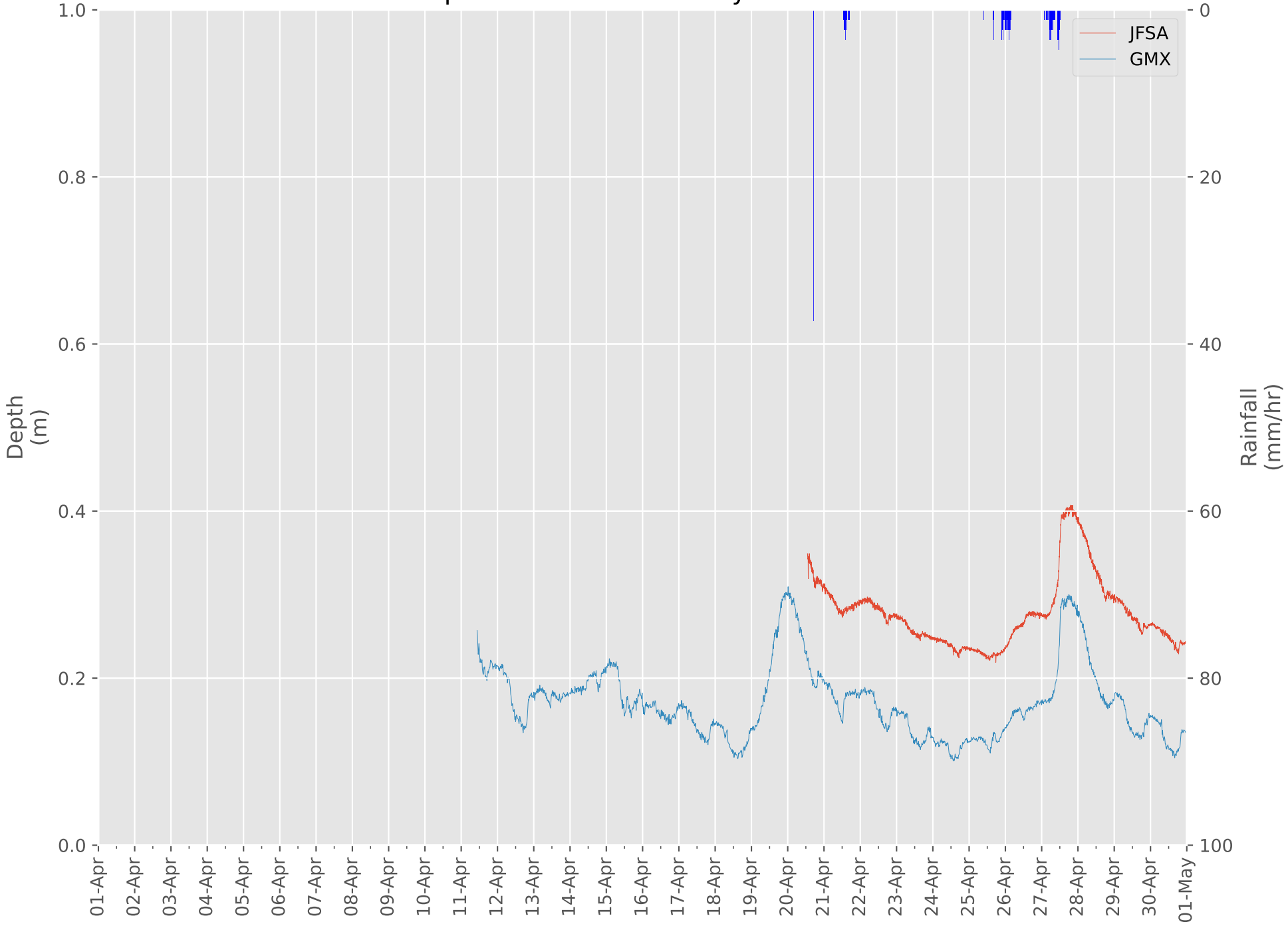
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S5
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
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18-Apr
19-Apr
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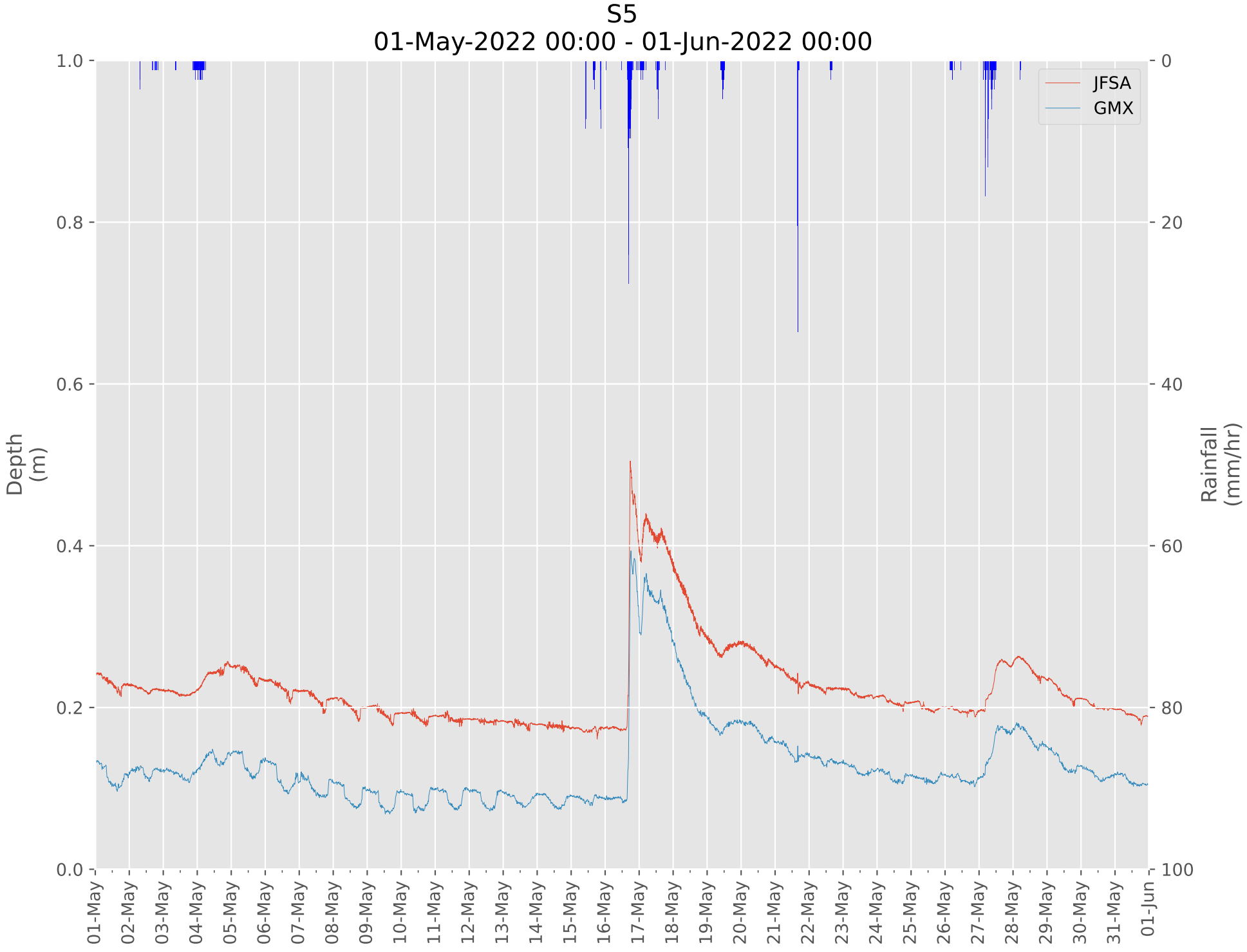
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S5
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
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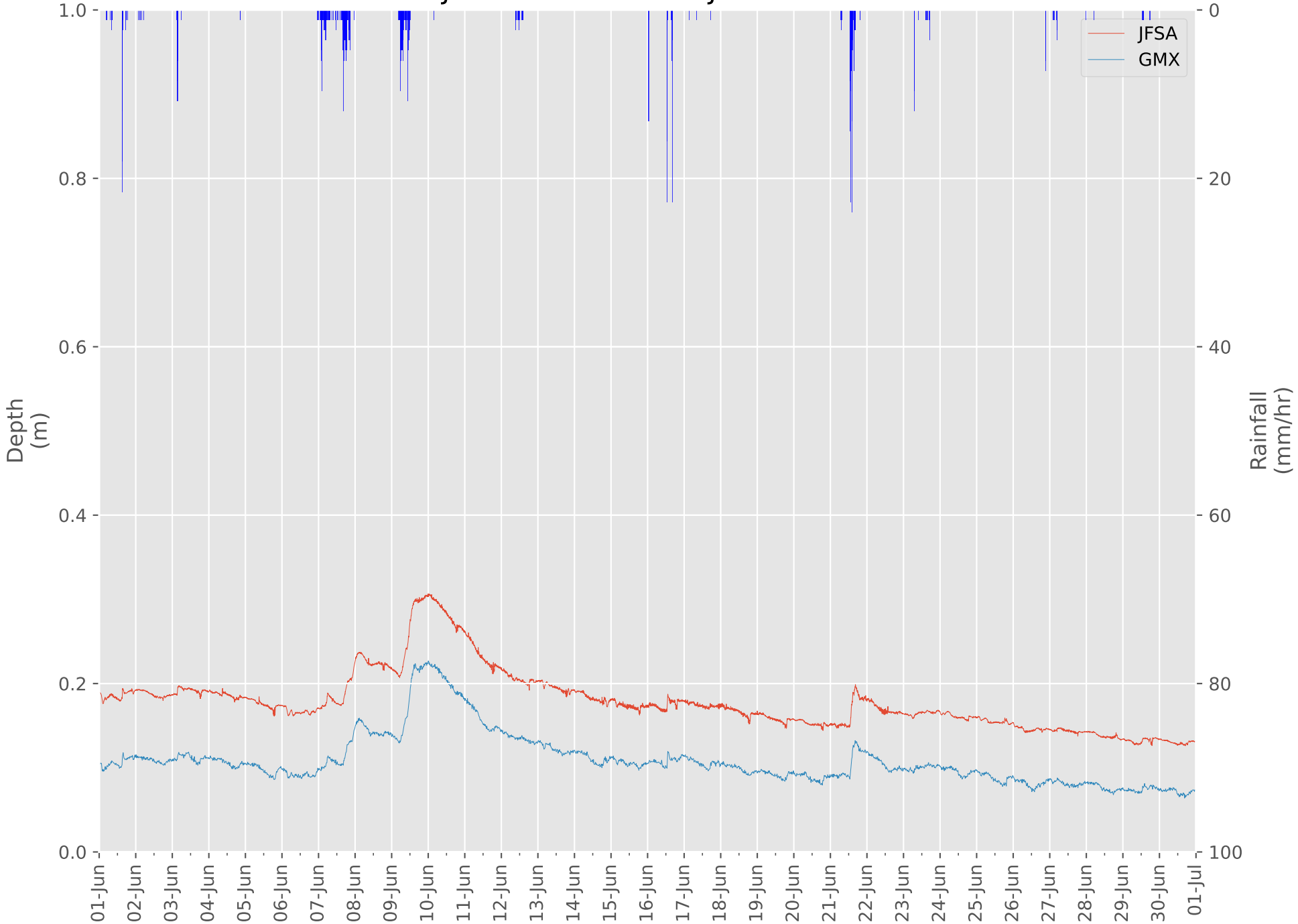
28-May
29-May
30-May
31-May
01-Jun


S5
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
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27-Jun
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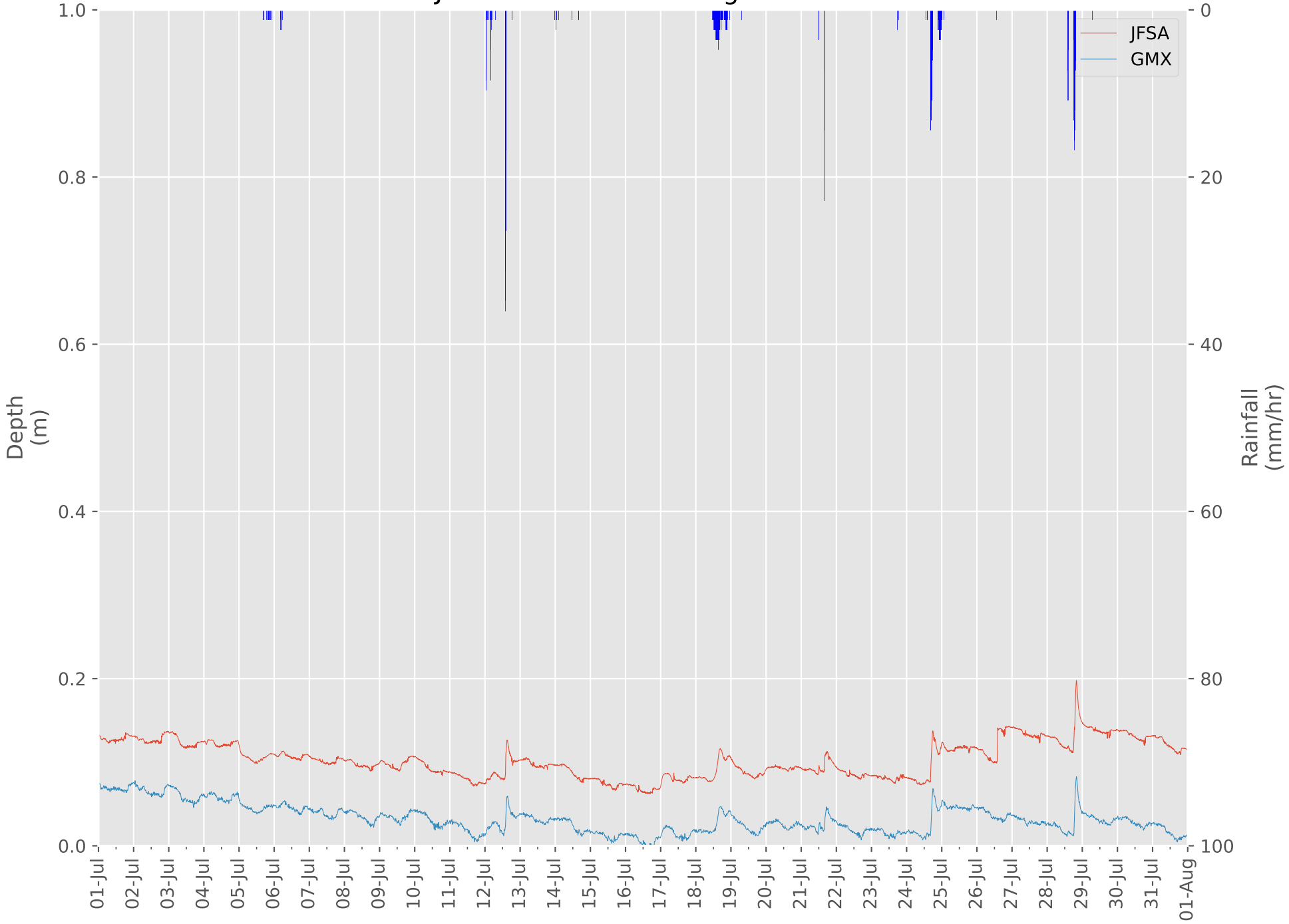
30-Jun
01-Jul


S5
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
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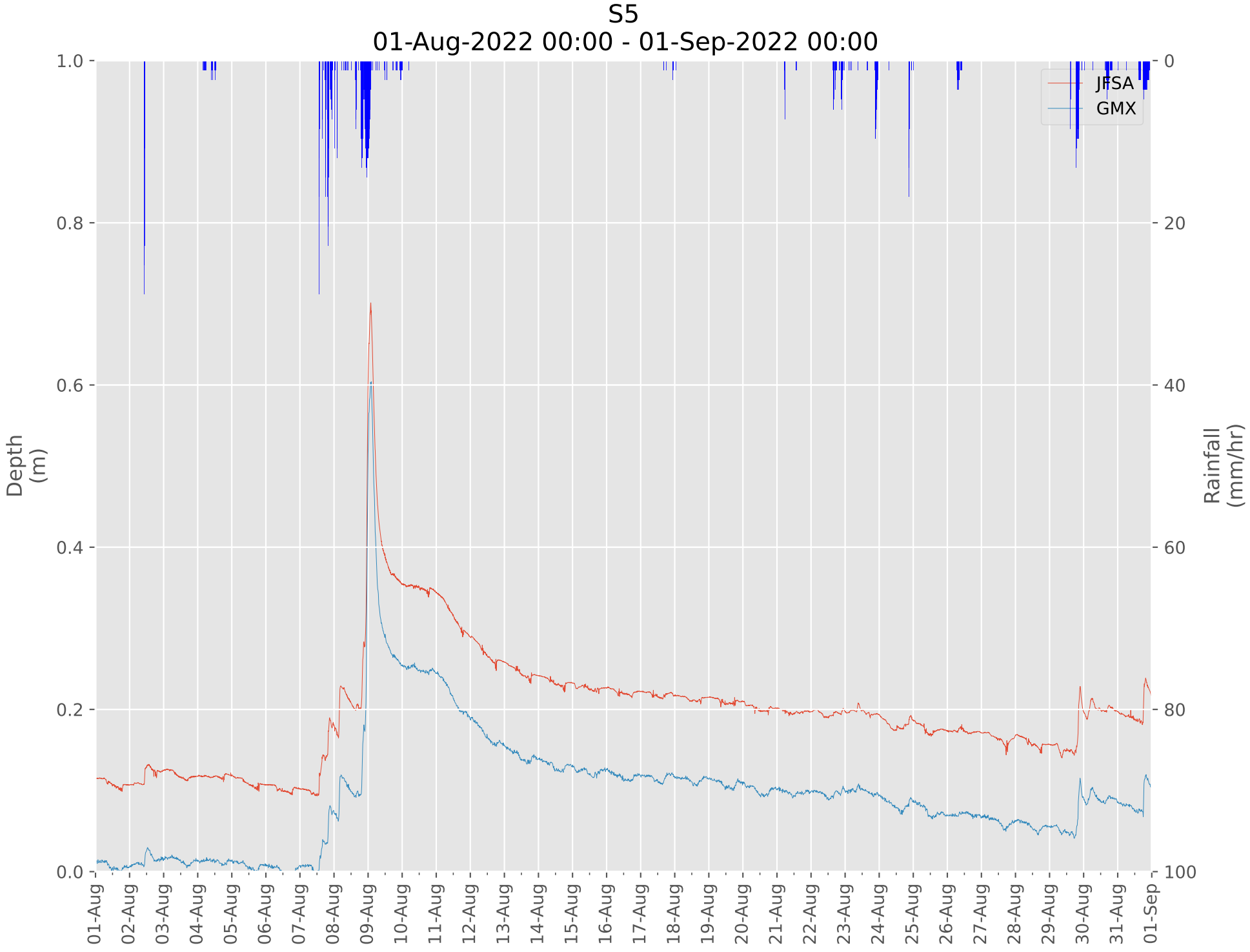
30-Jul
31-Jul
01-Aug


S5
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
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09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
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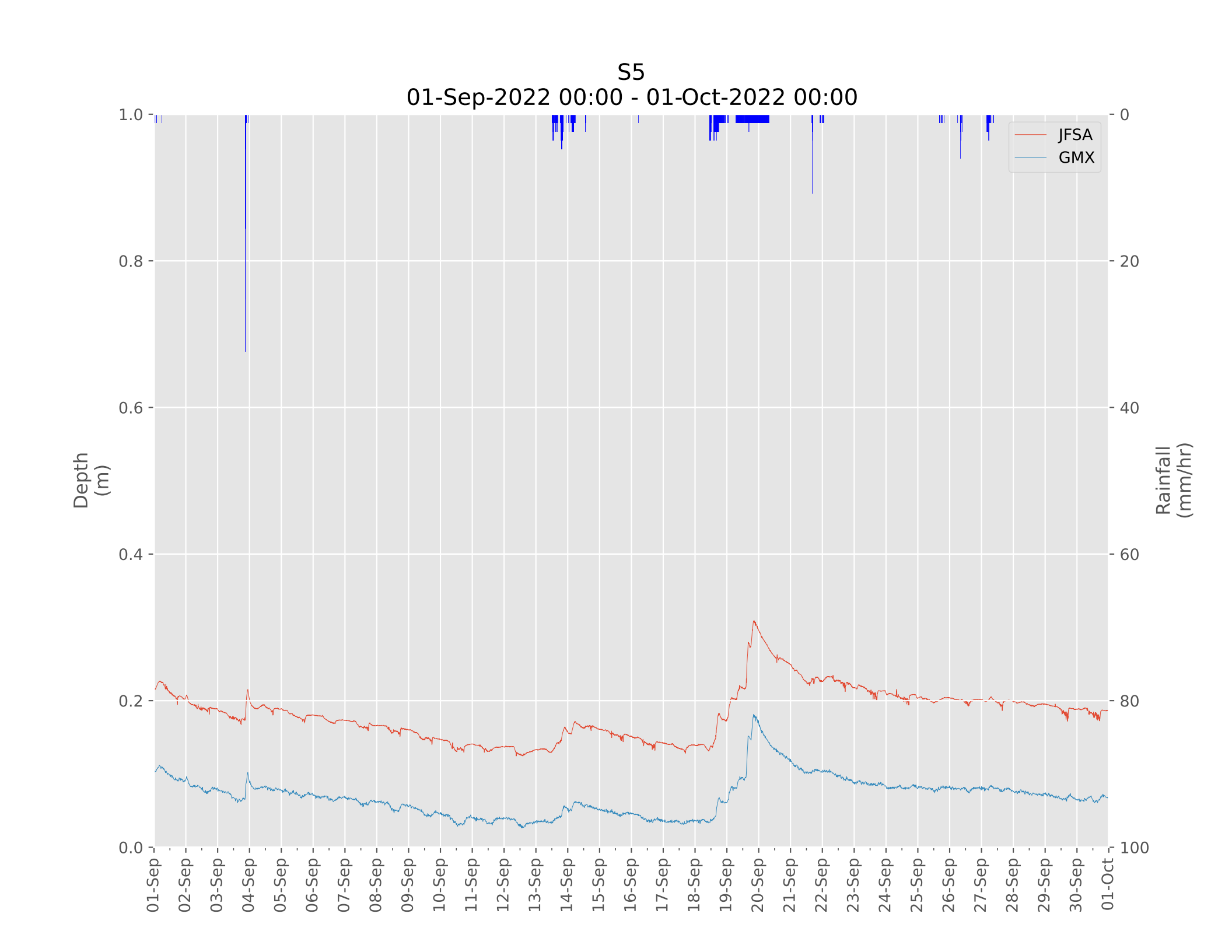
31-Aug
01-Sep


S5
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
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07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
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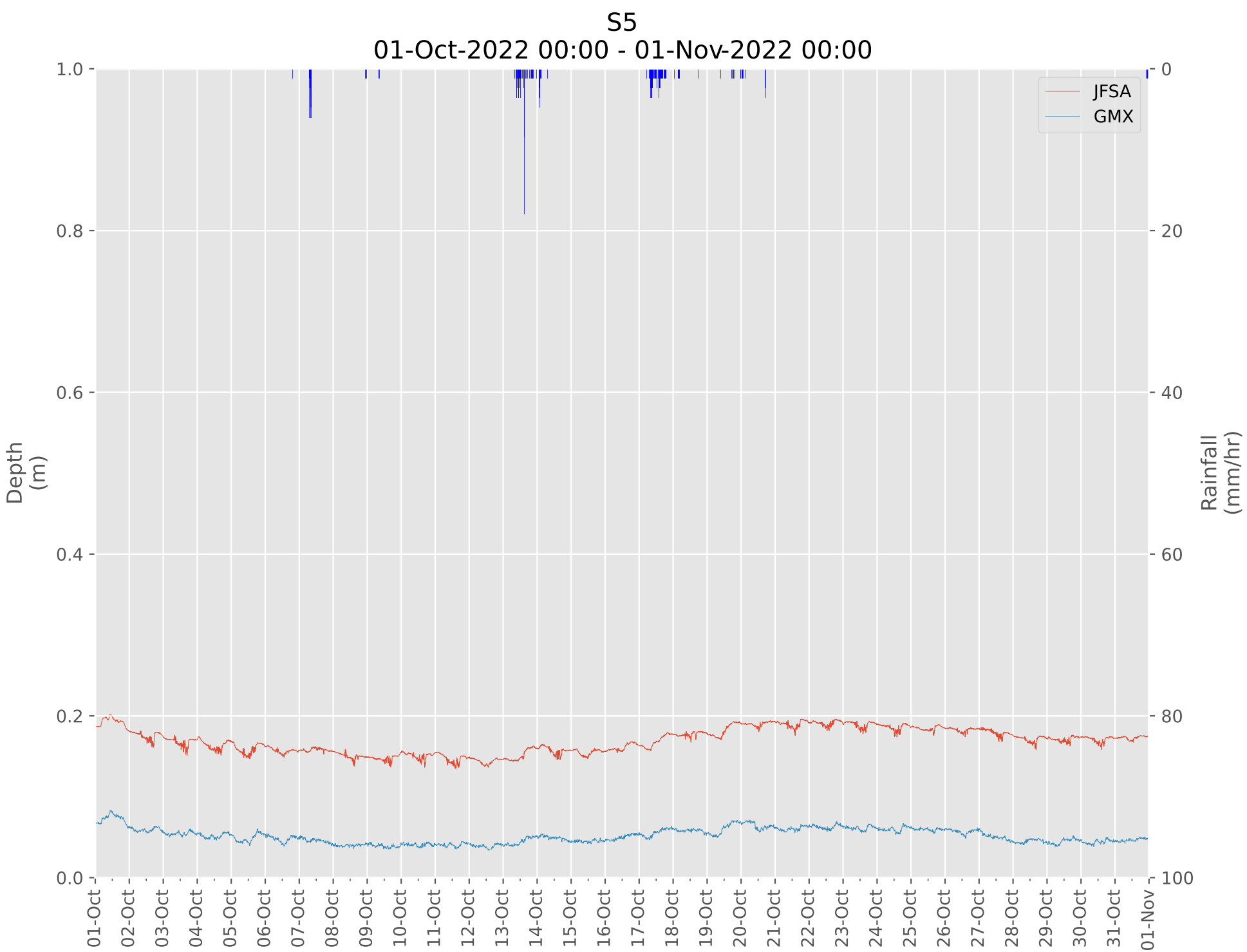
29-Sep
30-Sep
01-Oct


S5
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
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08-Oct
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10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
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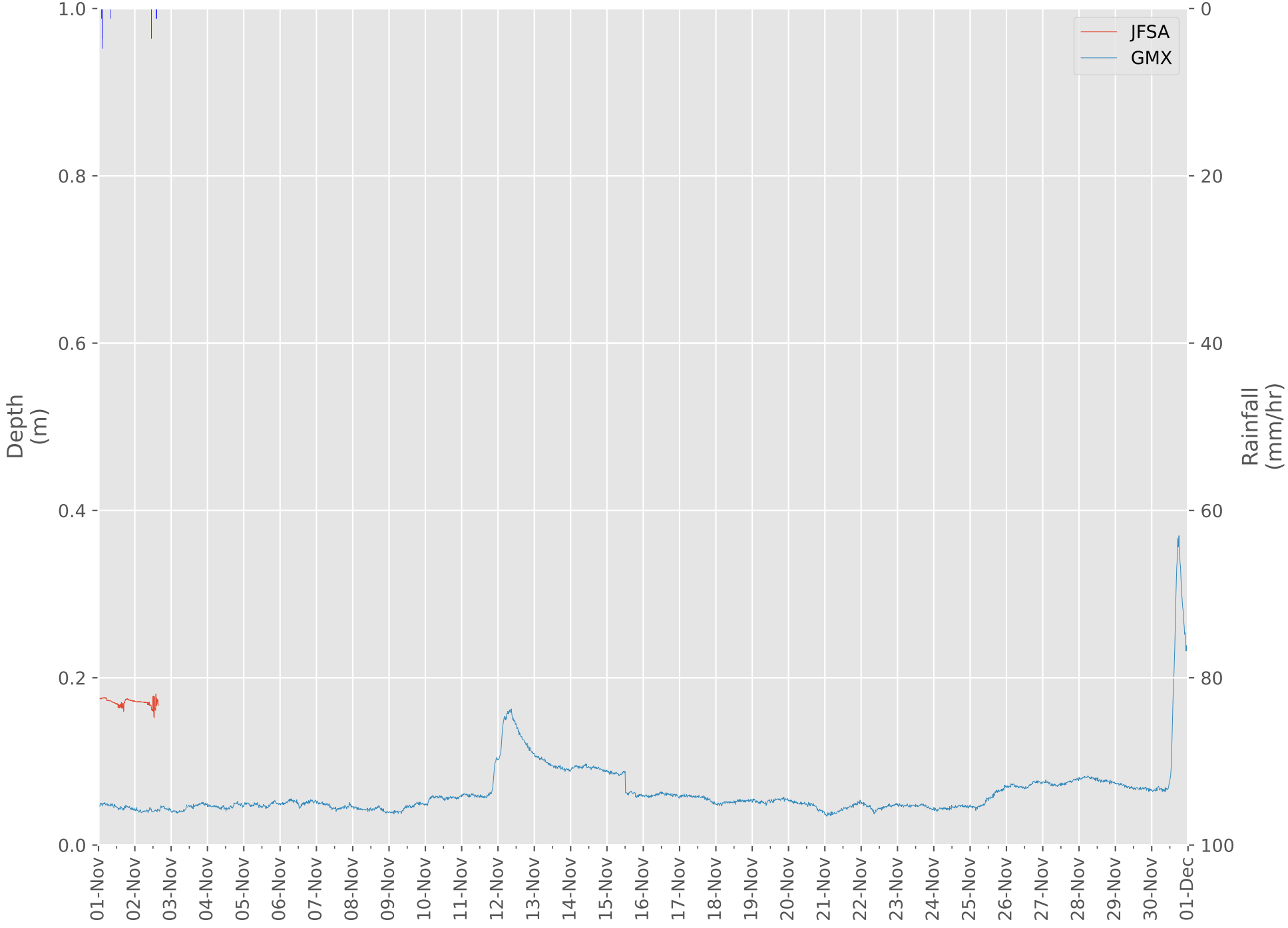
31-Oct
01-Nov


S5
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
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23-Nov
24-Nov
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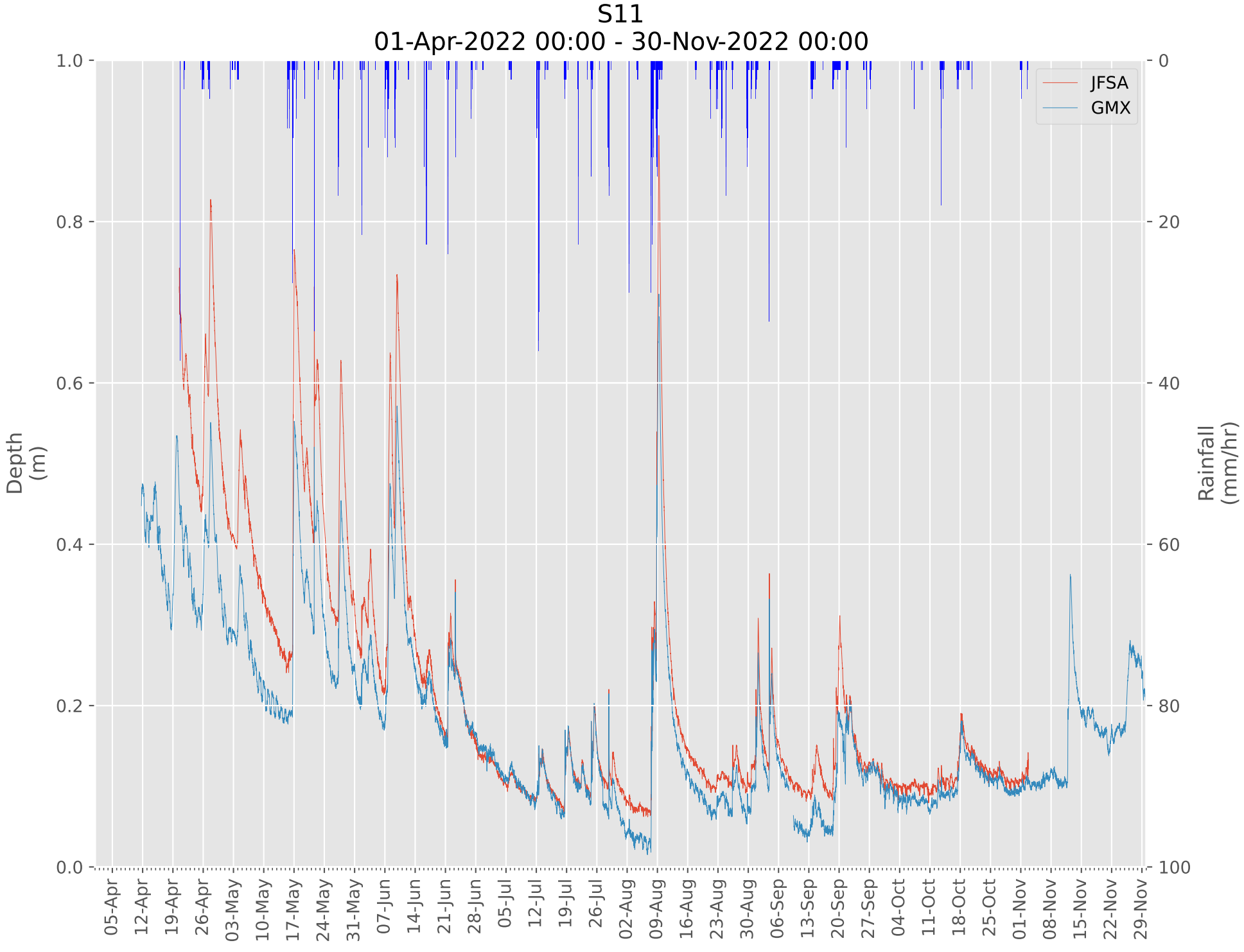
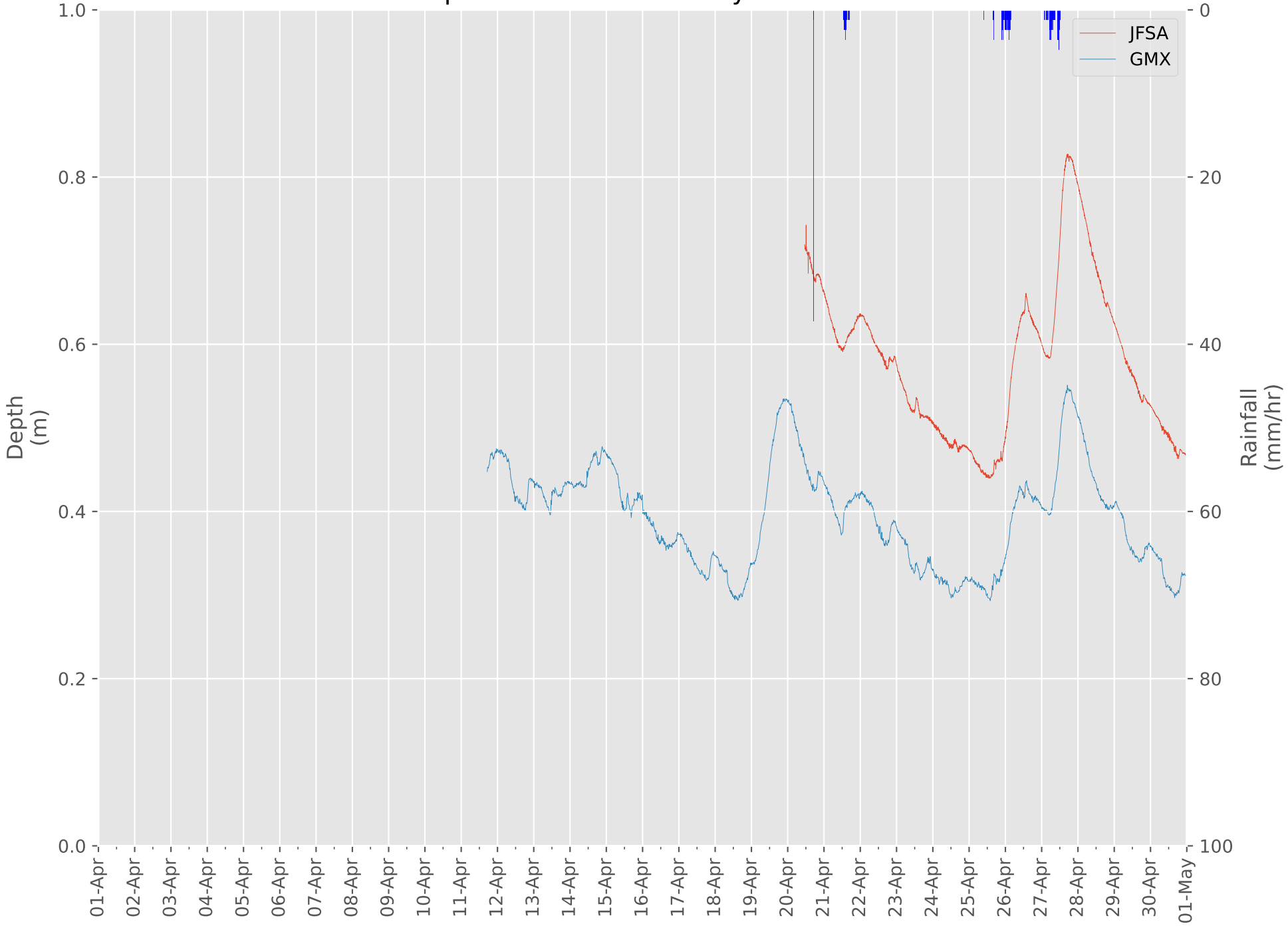
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S11
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S11
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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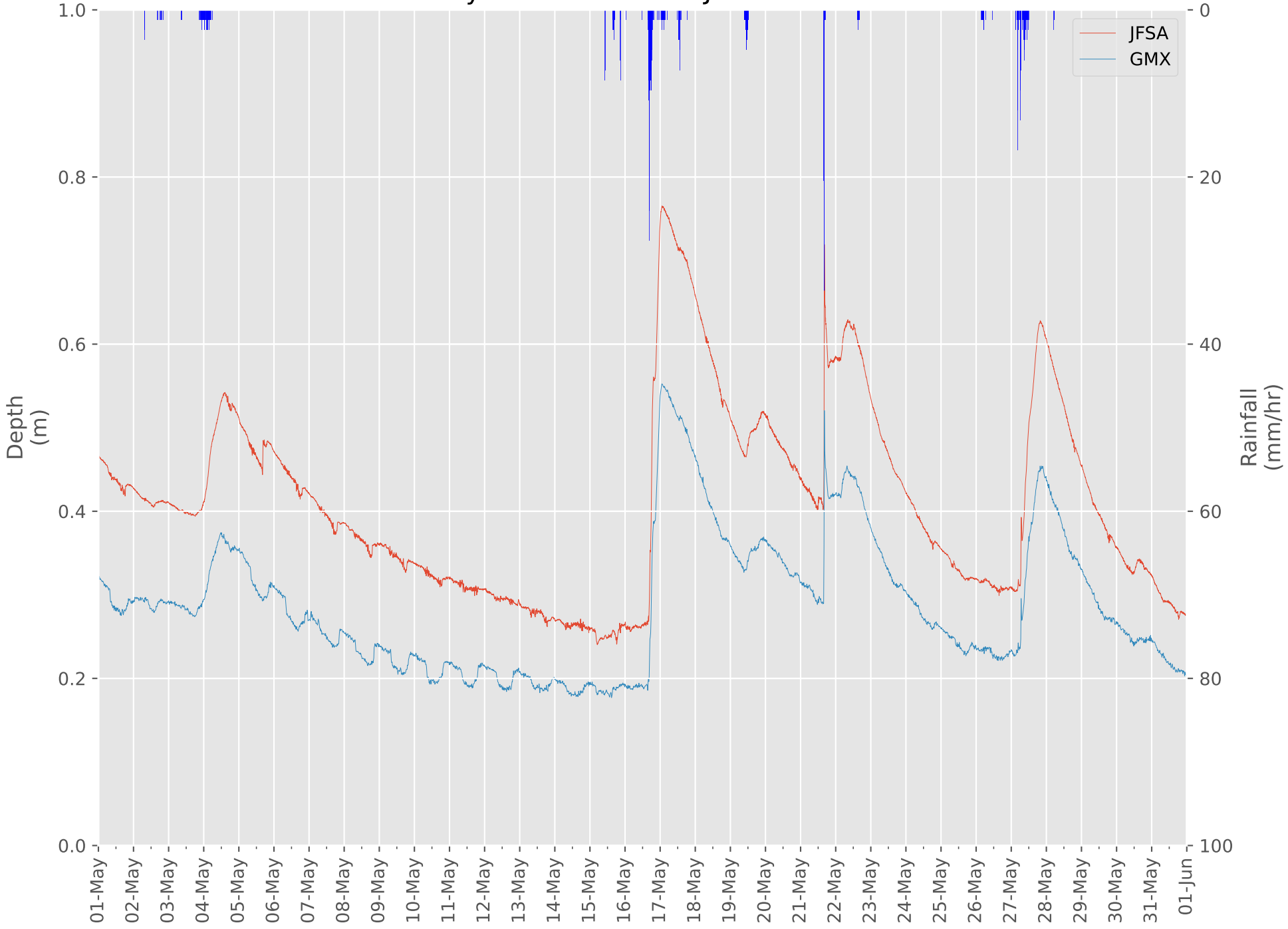
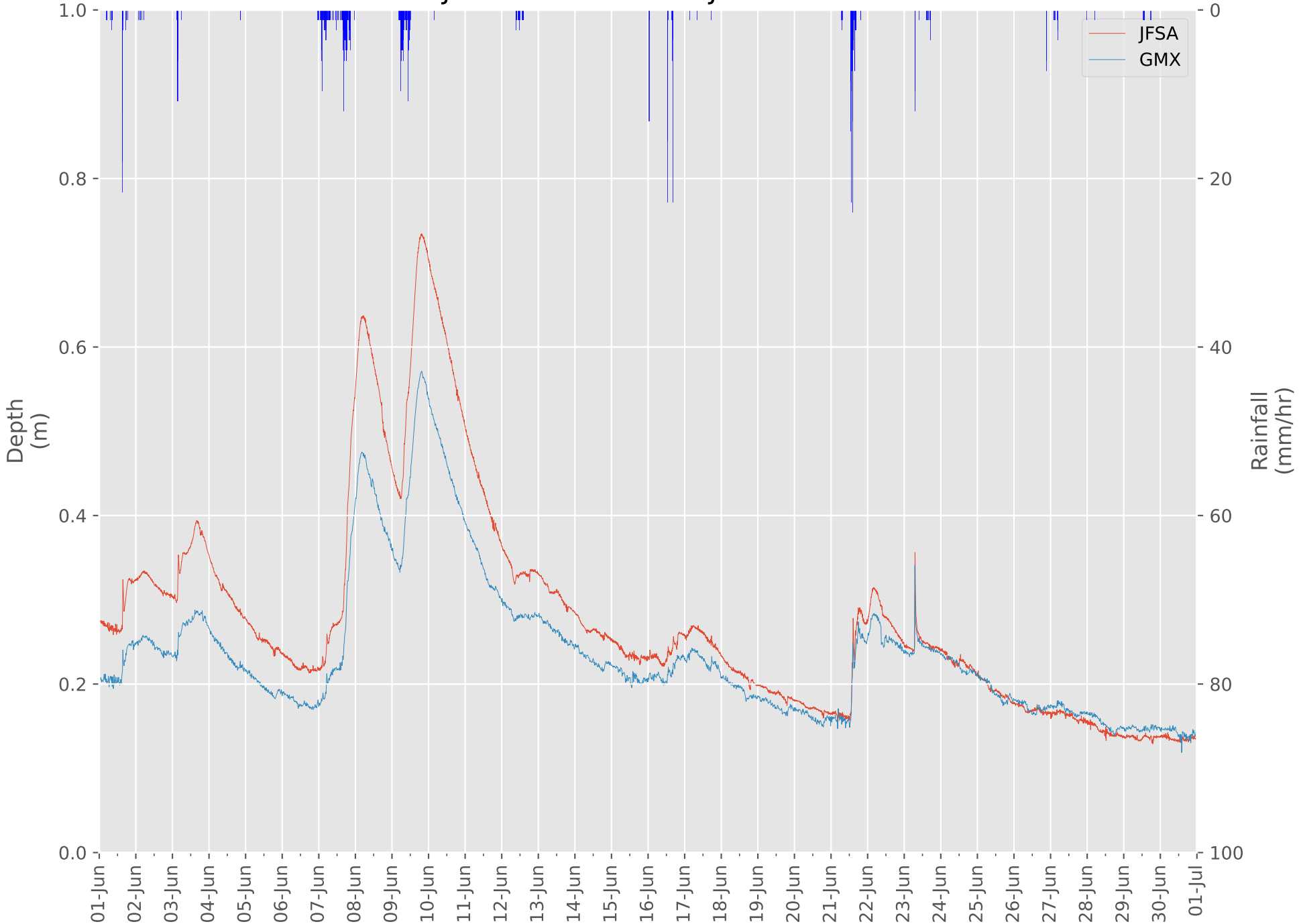
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S11
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
01-Jun


S11
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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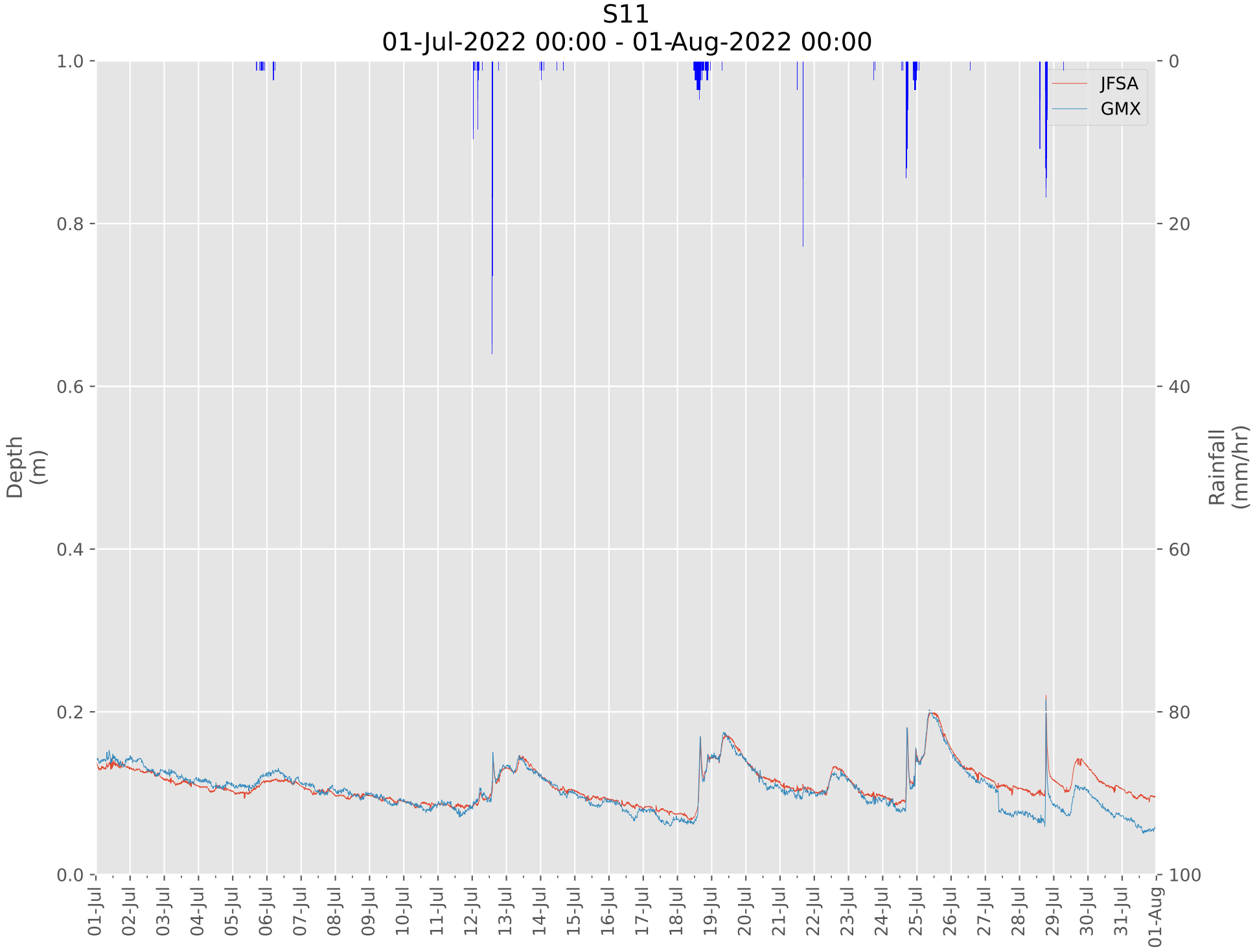
26-Jun
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S11
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
20-Jul
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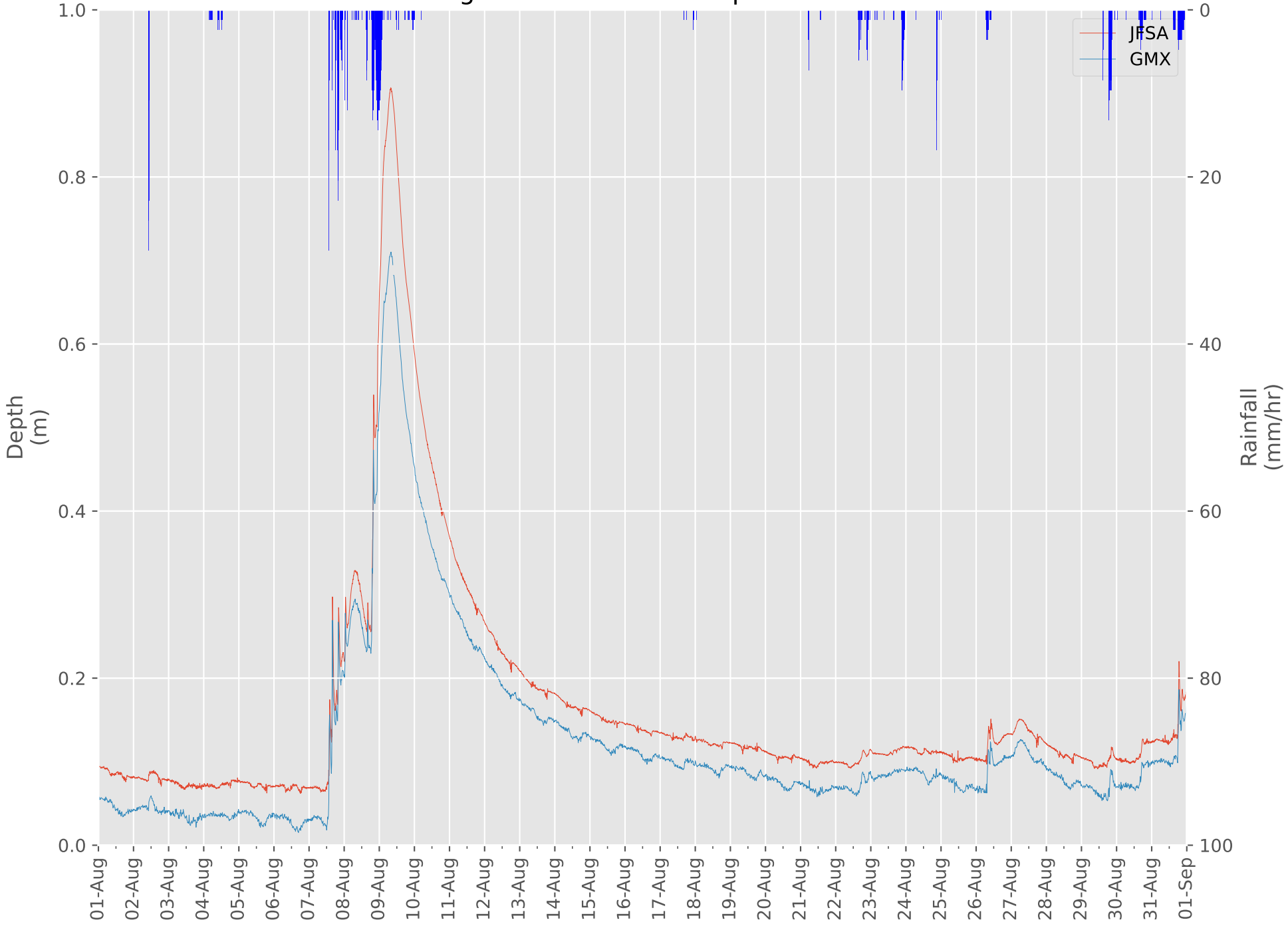
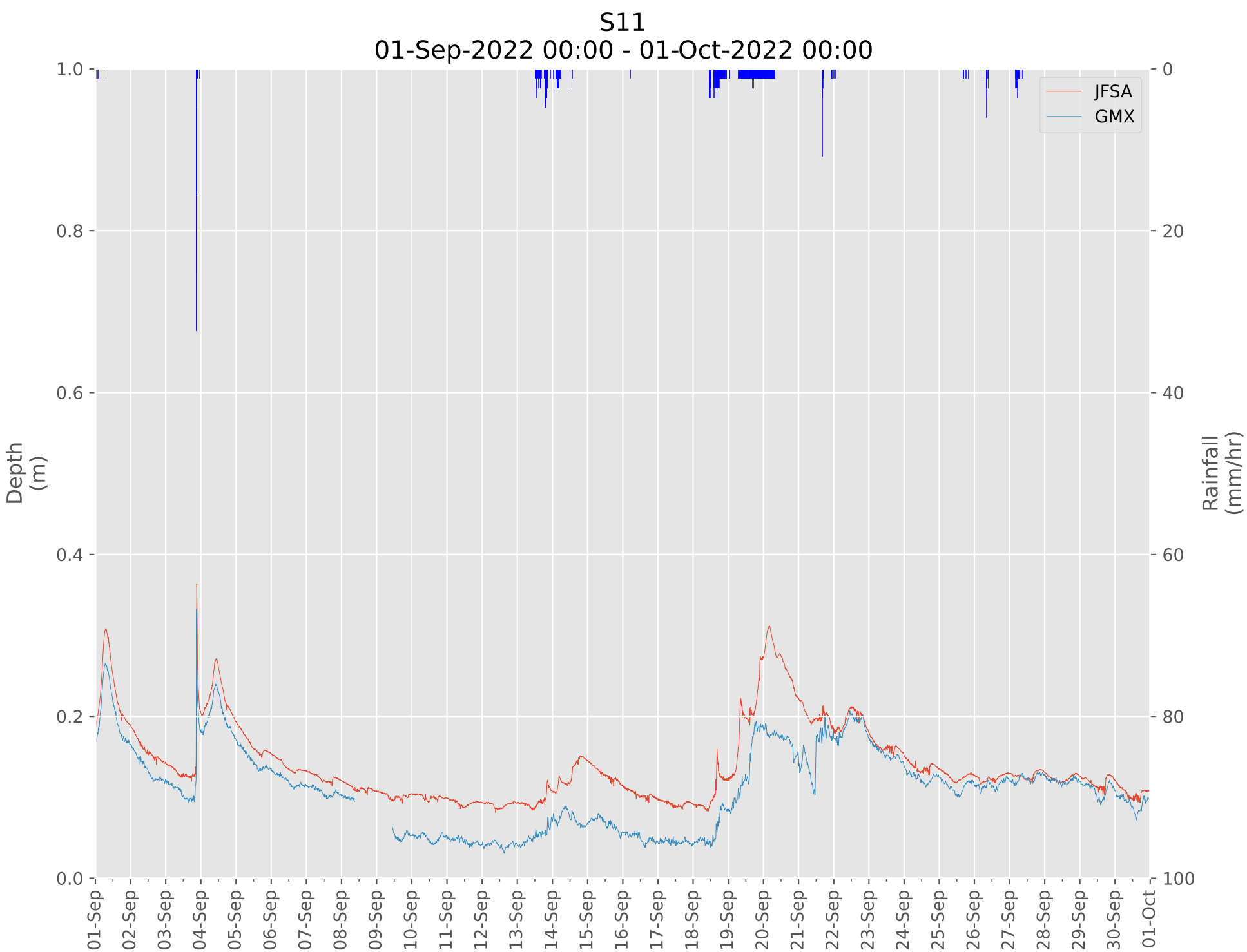
26-Jul
27-Jul
28-Jul
29-Jul
30-Jul
31-Jul
01-Aug


S11
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
20-Aug
21-Aug
22-Aug
23-Aug
24-Aug
25-Aug
26-Aug
27-Aug
28-Aug
29-Aug
30-Aug
31-Aug
01-Sep


S11
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
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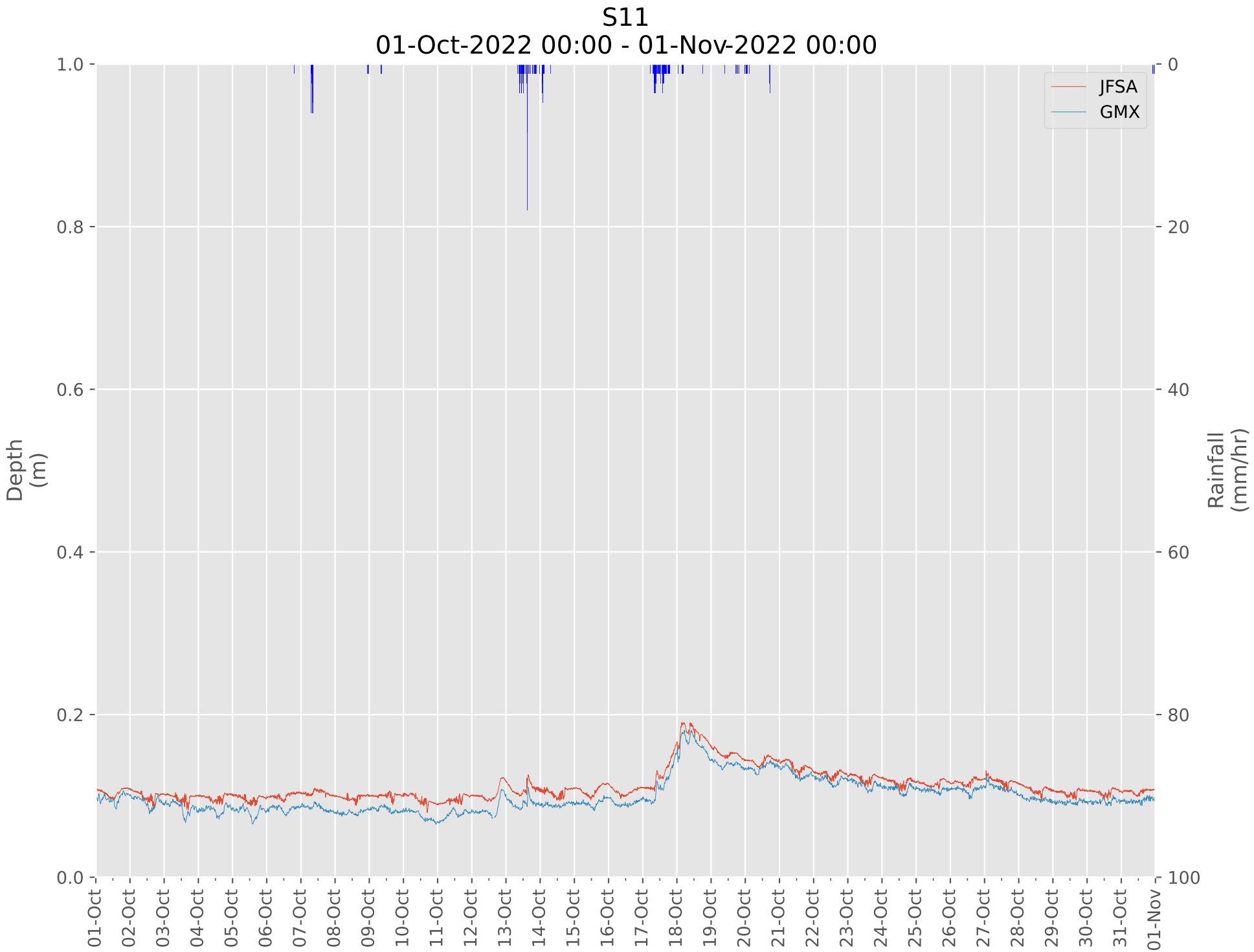
25-Sep
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S11
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
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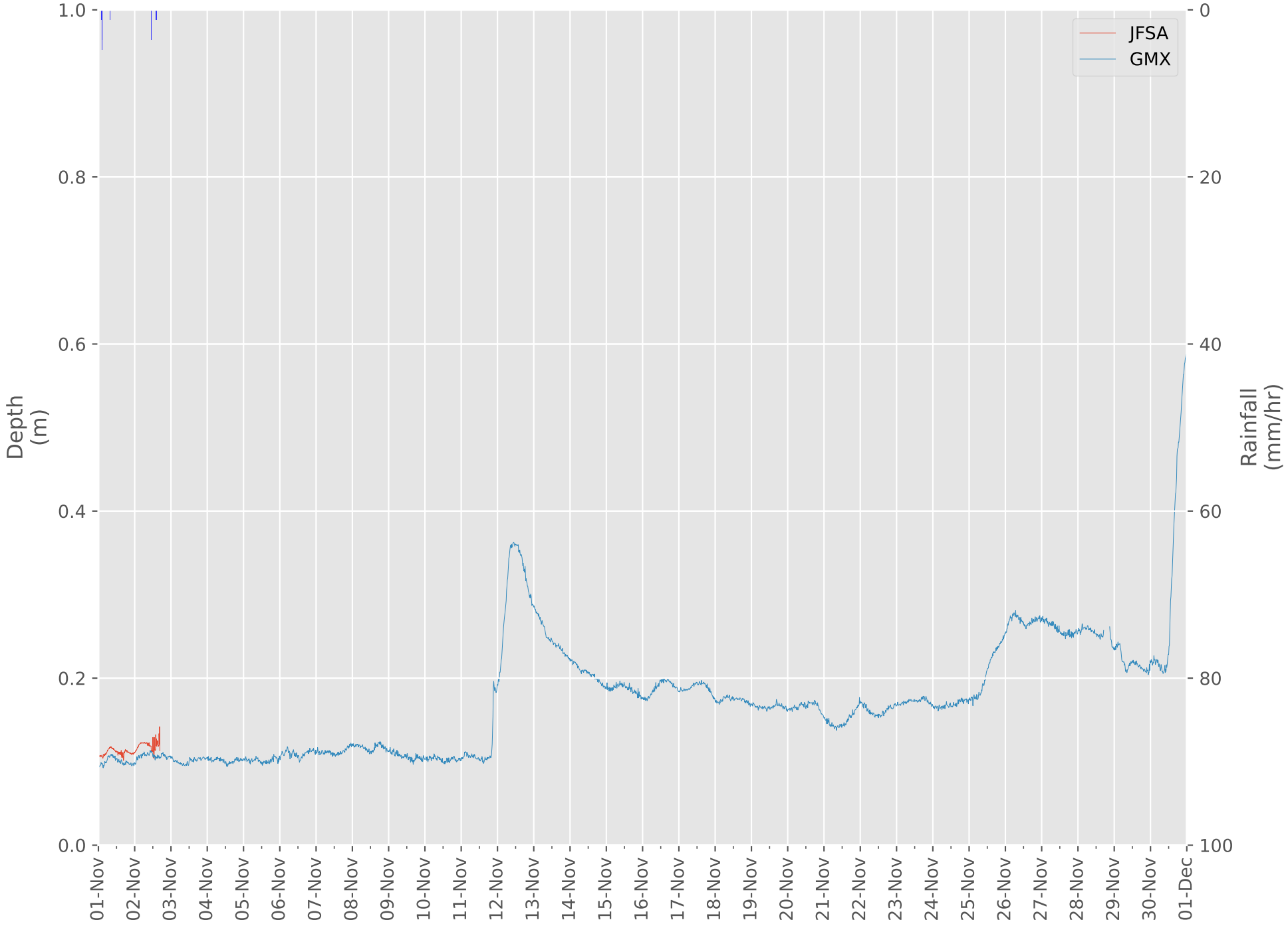
27-Oct
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov


S11
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Depth (m)
Rainfall (mm/hr)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
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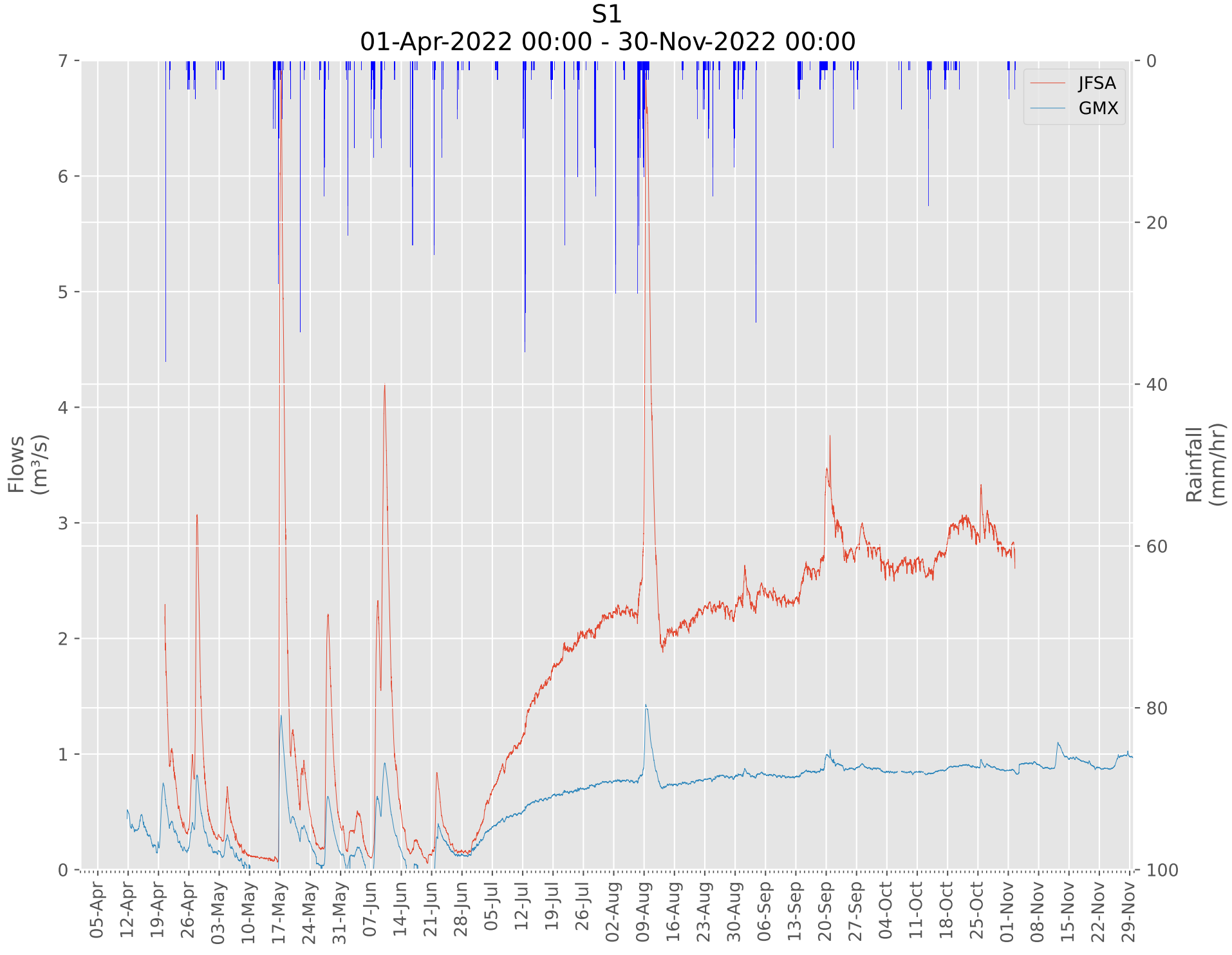
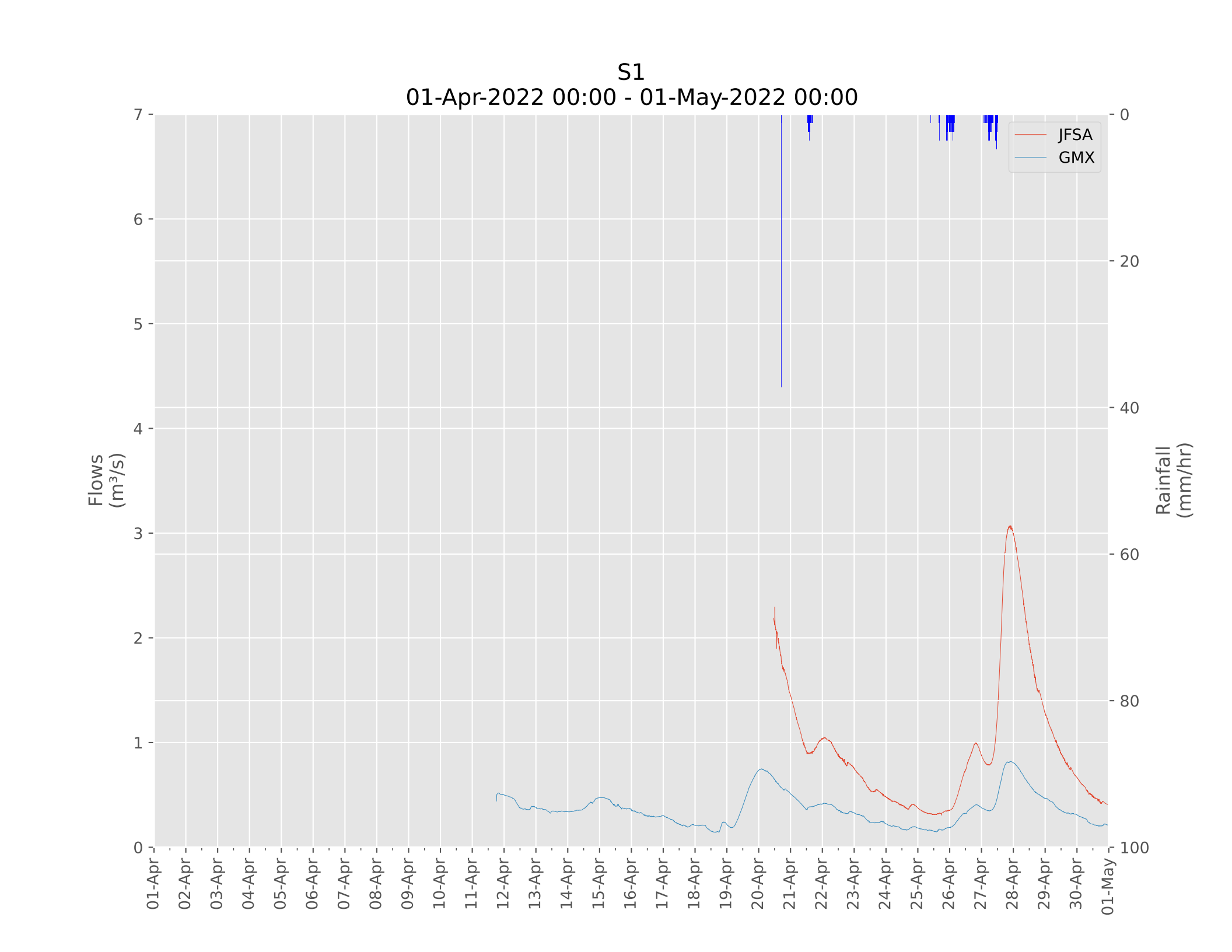
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S1
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S1
01-Apr-2022 00:00 - 01-May-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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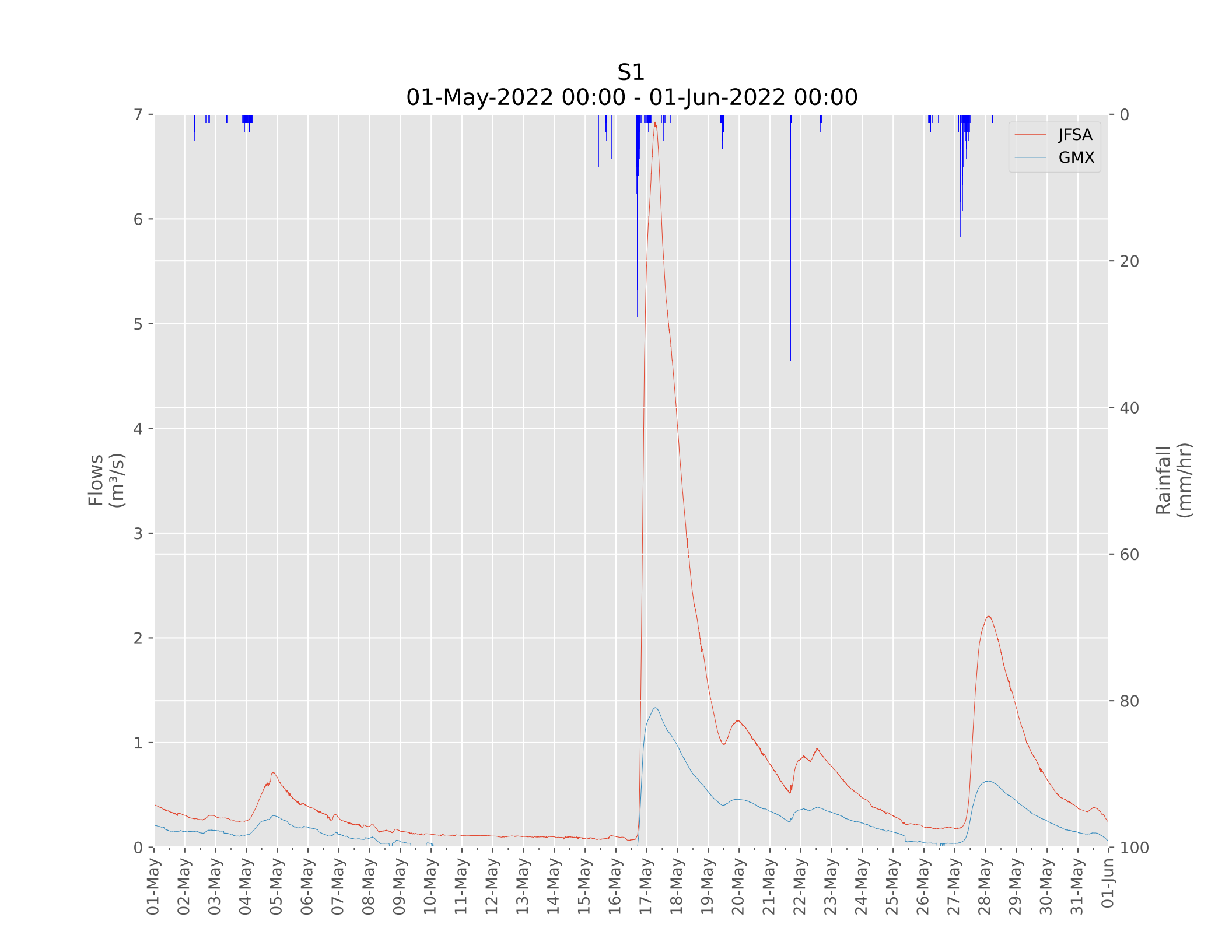
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S1
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
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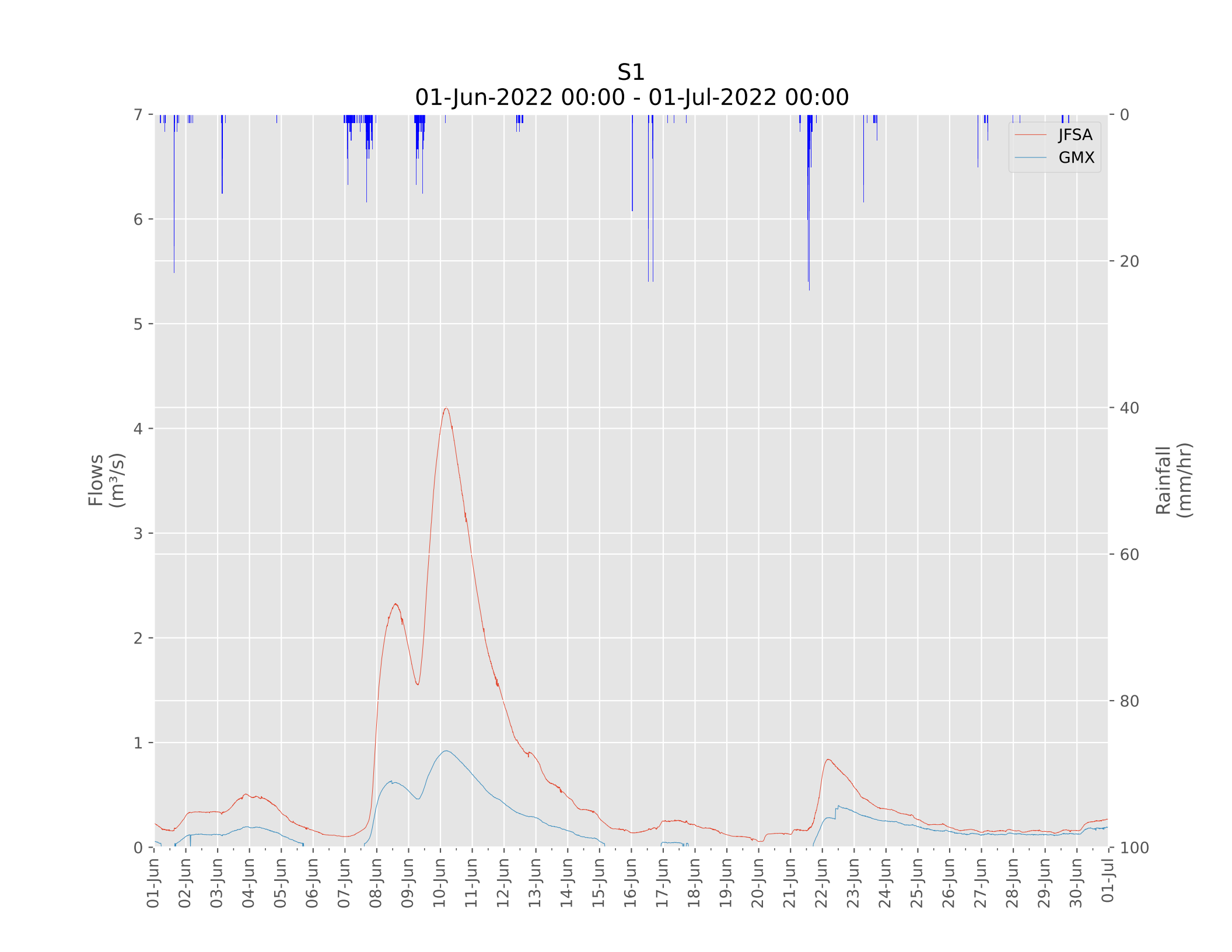
27-May
28-May
29-May
30-May
31-May
01-Jun


S1
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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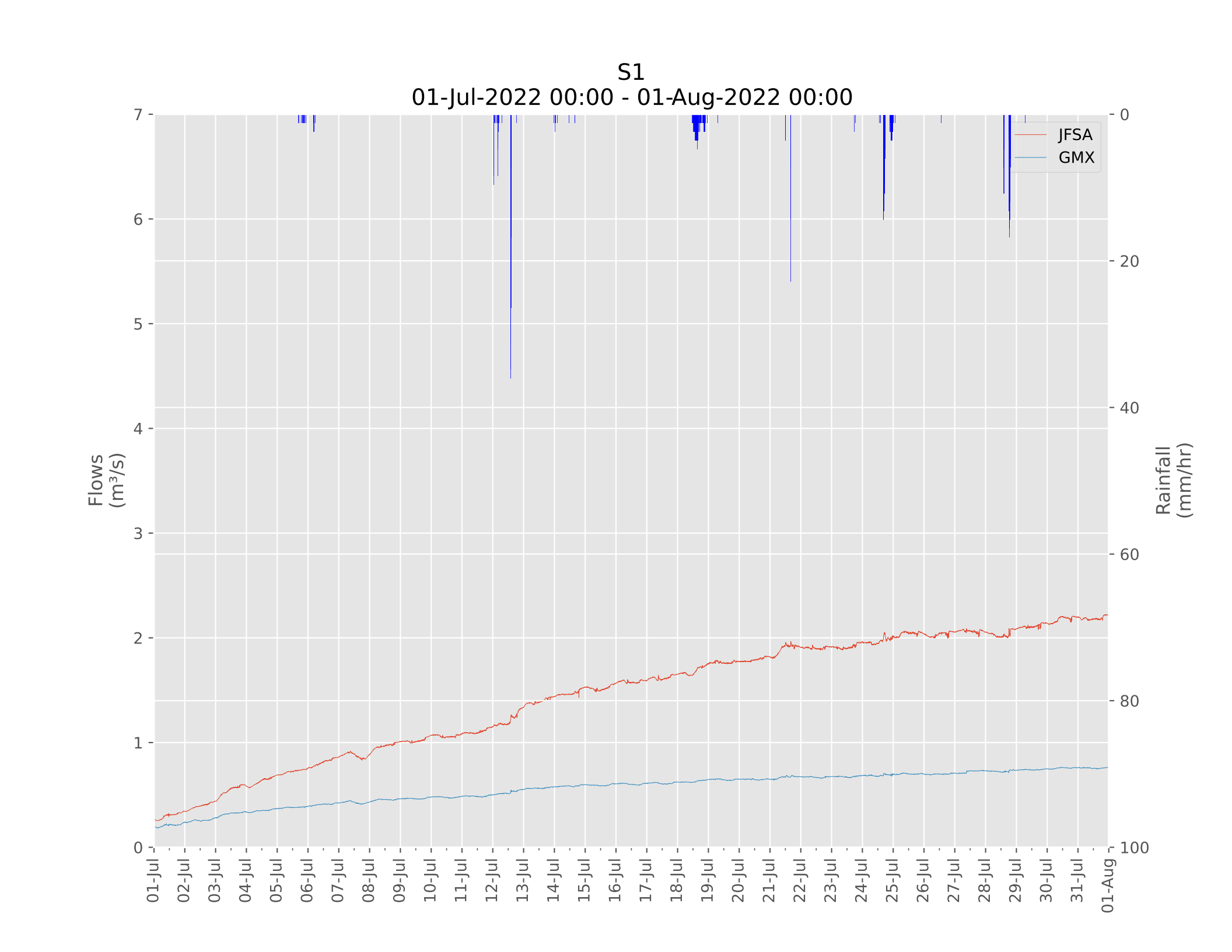
26-Jun
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S1
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
20-Jul
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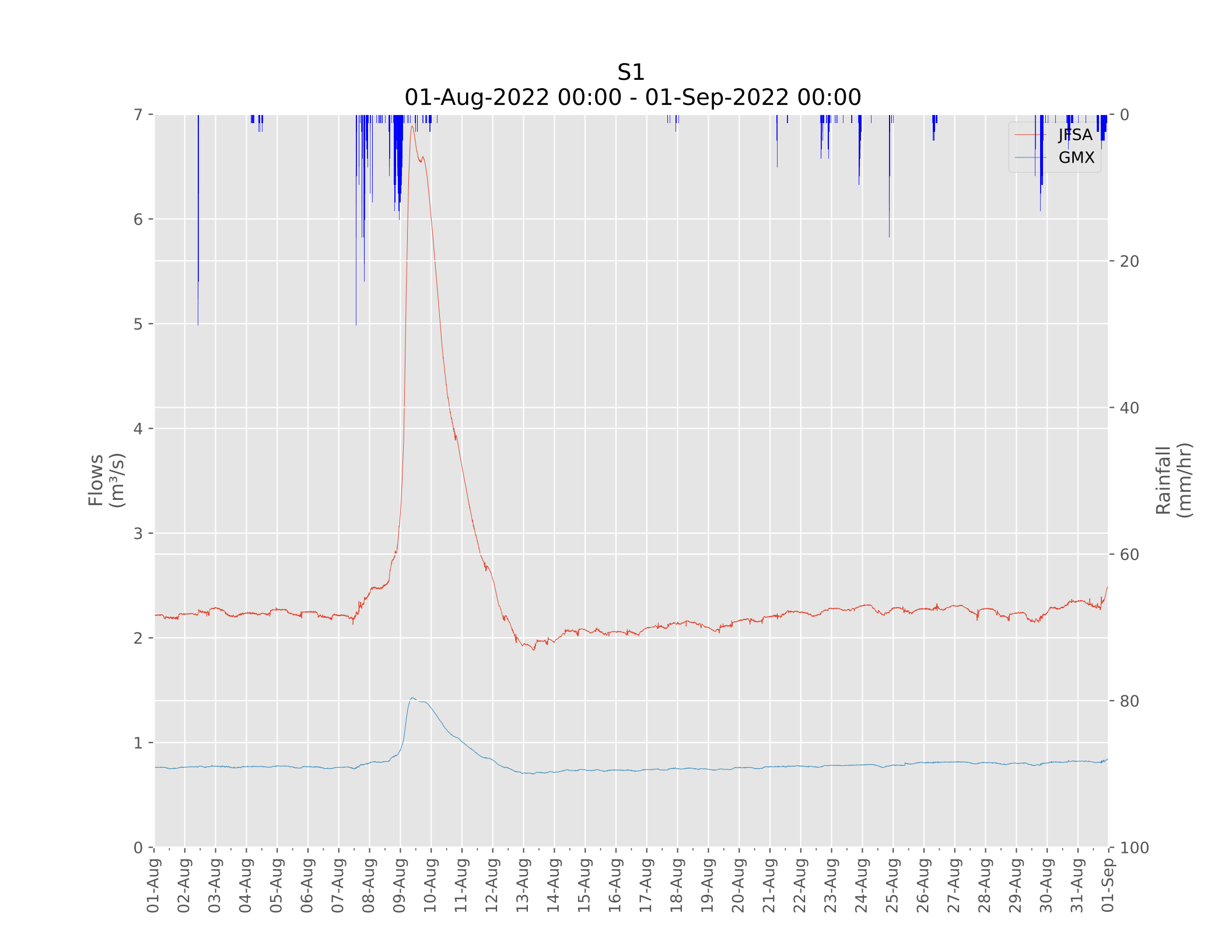
27-Jul
28-Jul
29-Jul
30-Jul
31-Jul
01-Aug


S1
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
20-Aug
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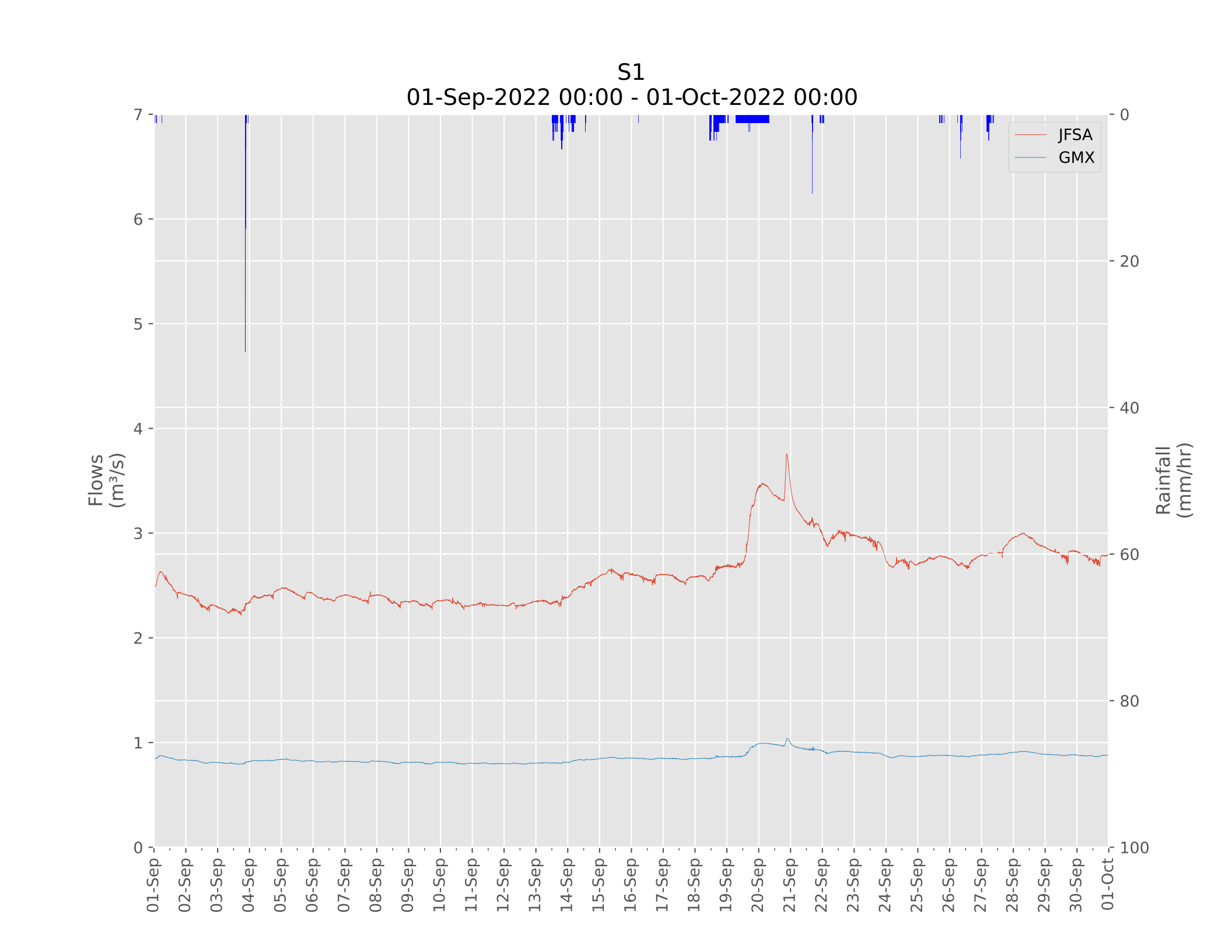
27-Aug
28-Aug
29-Aug
30-Aug
31-Aug
01-Sep


S1
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
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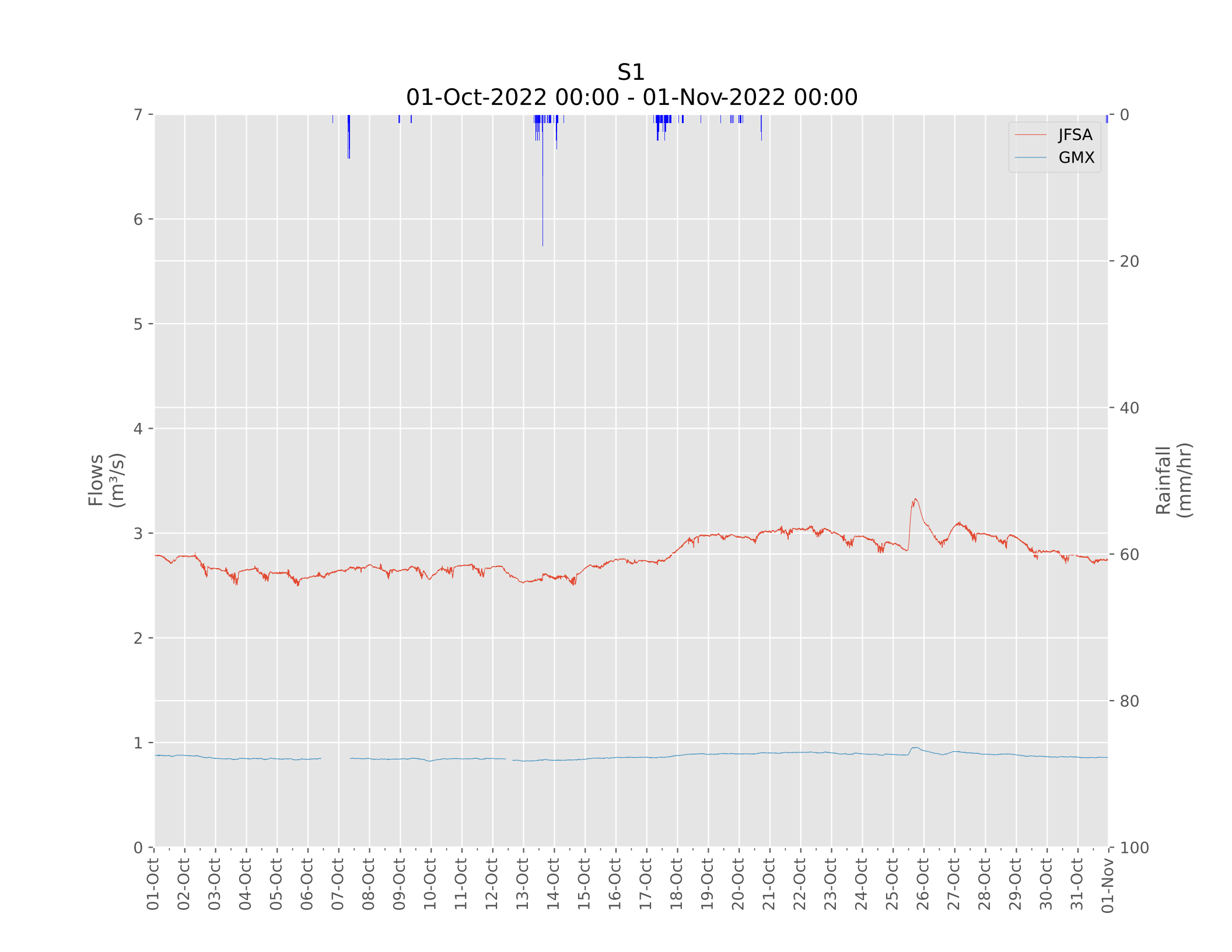
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S1
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
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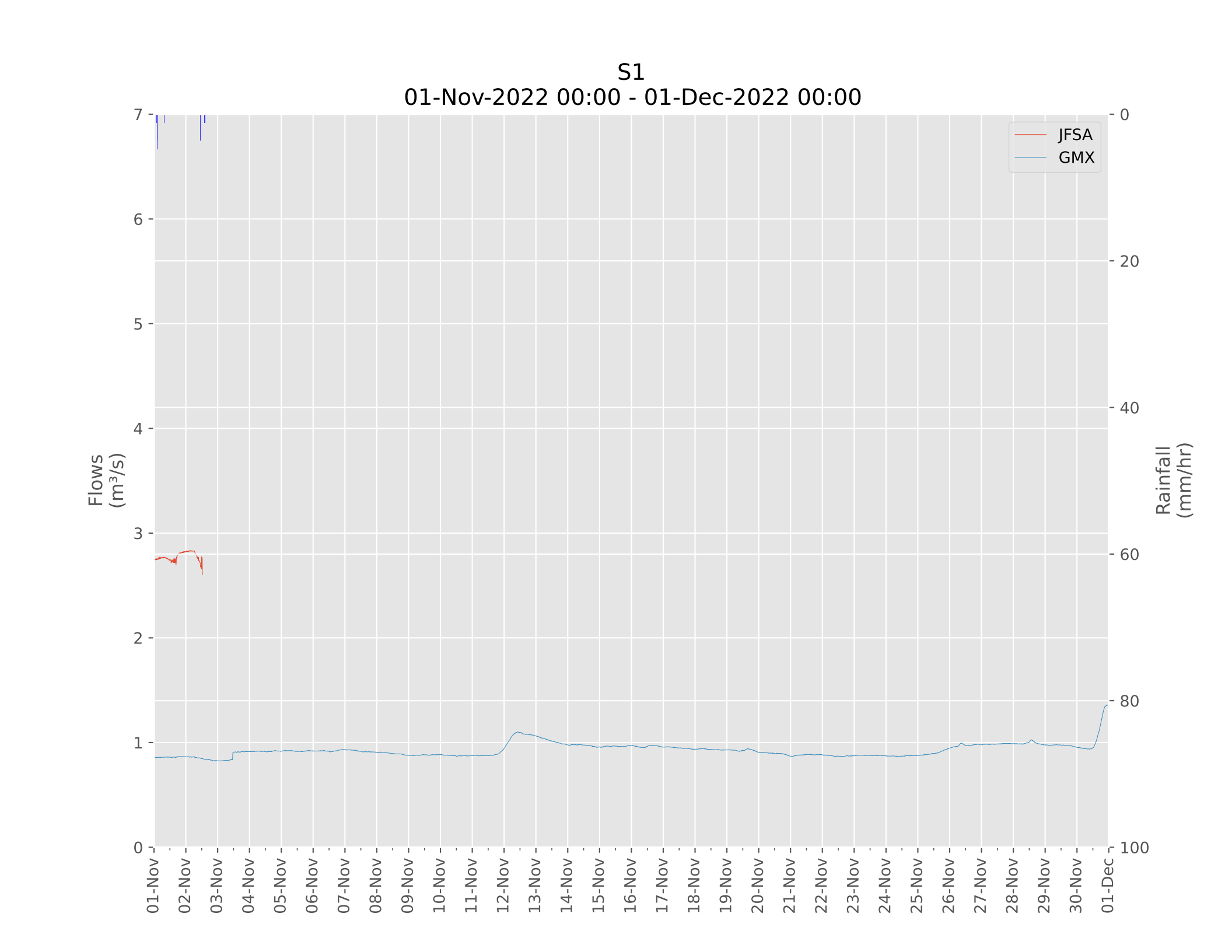
27-Oct
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov


S1
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
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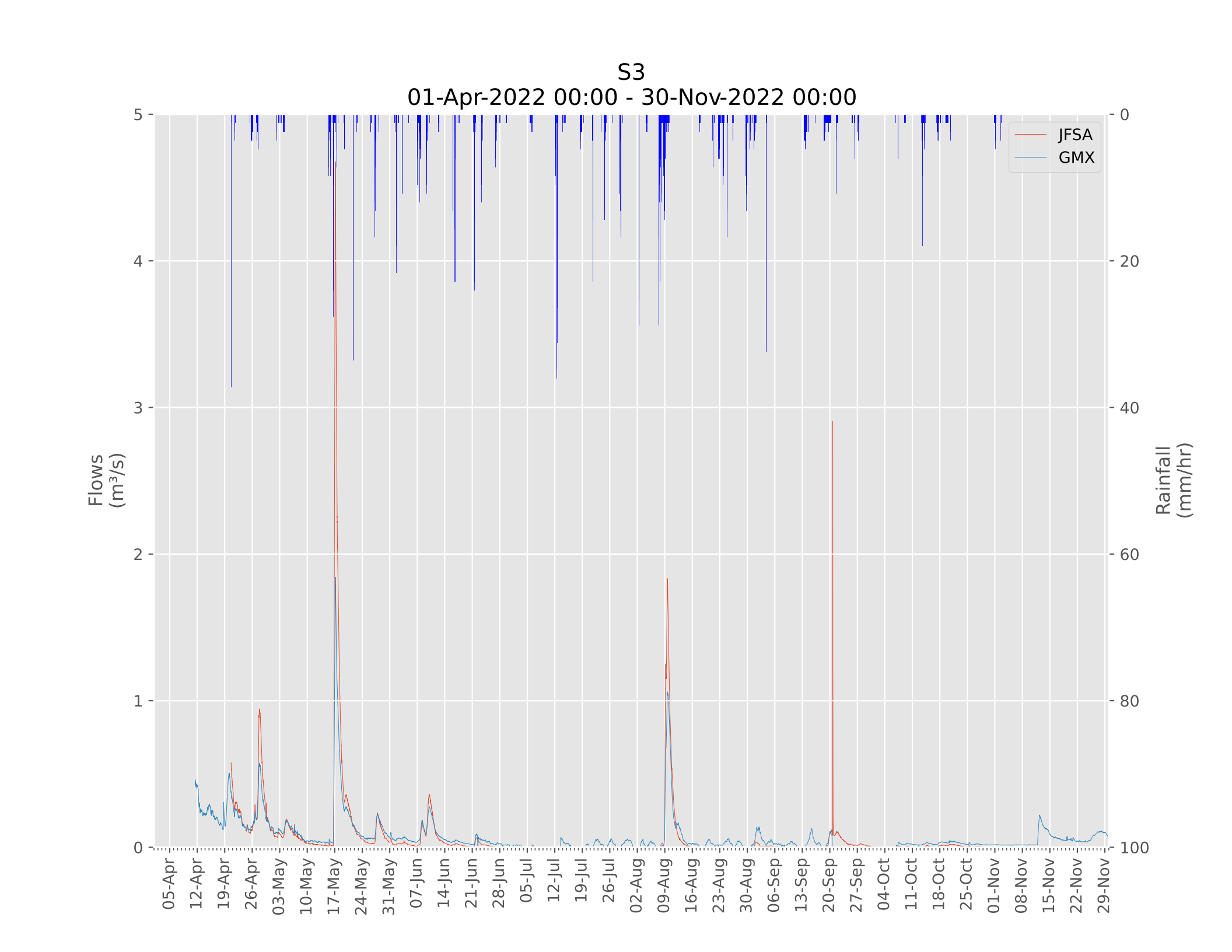
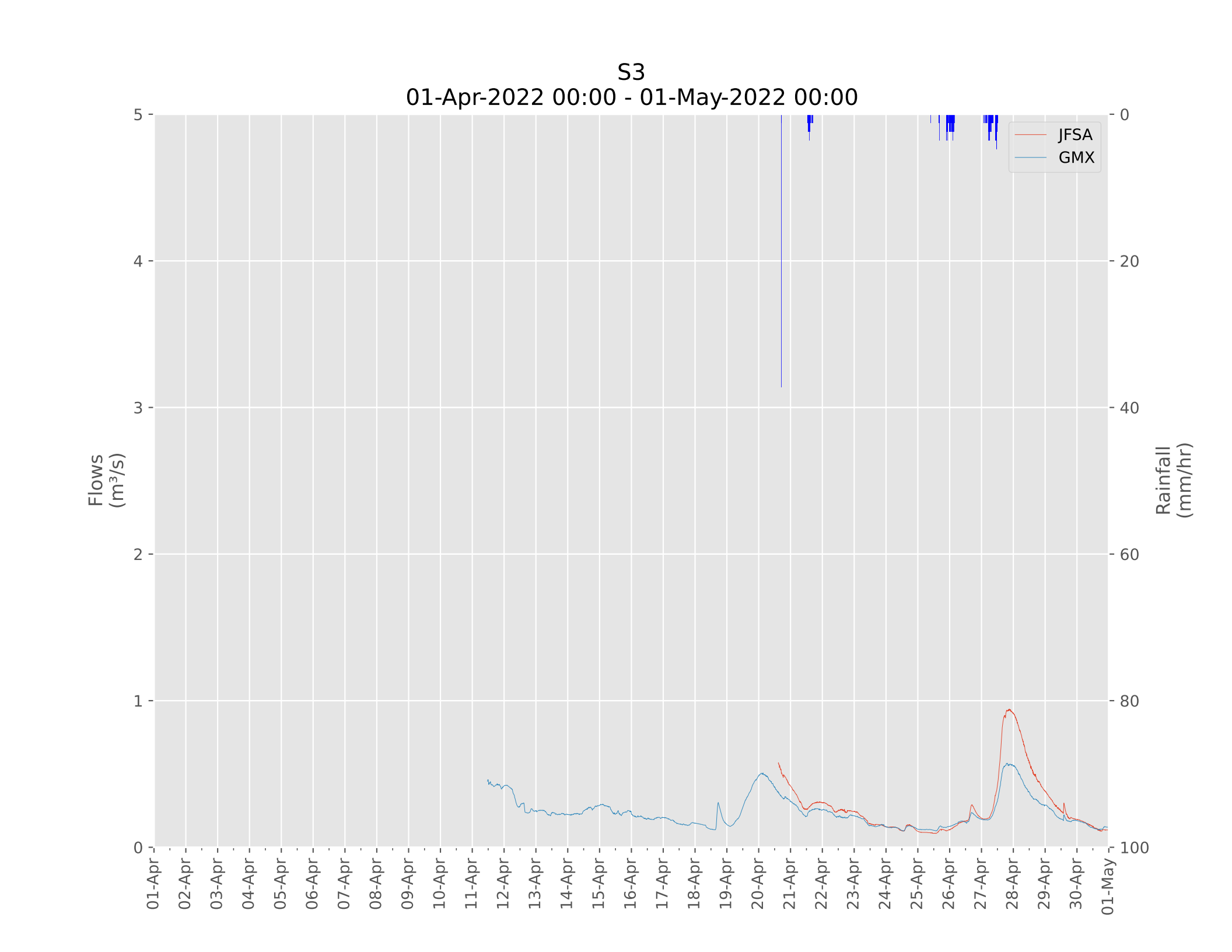
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S3
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S3
01-Apr-2022 00:00 - 01-May-2022 00:00
Flows (m³/s)
Rainfall (mm/hr)
JFSA
GMX
0
1
2
3
4
5
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
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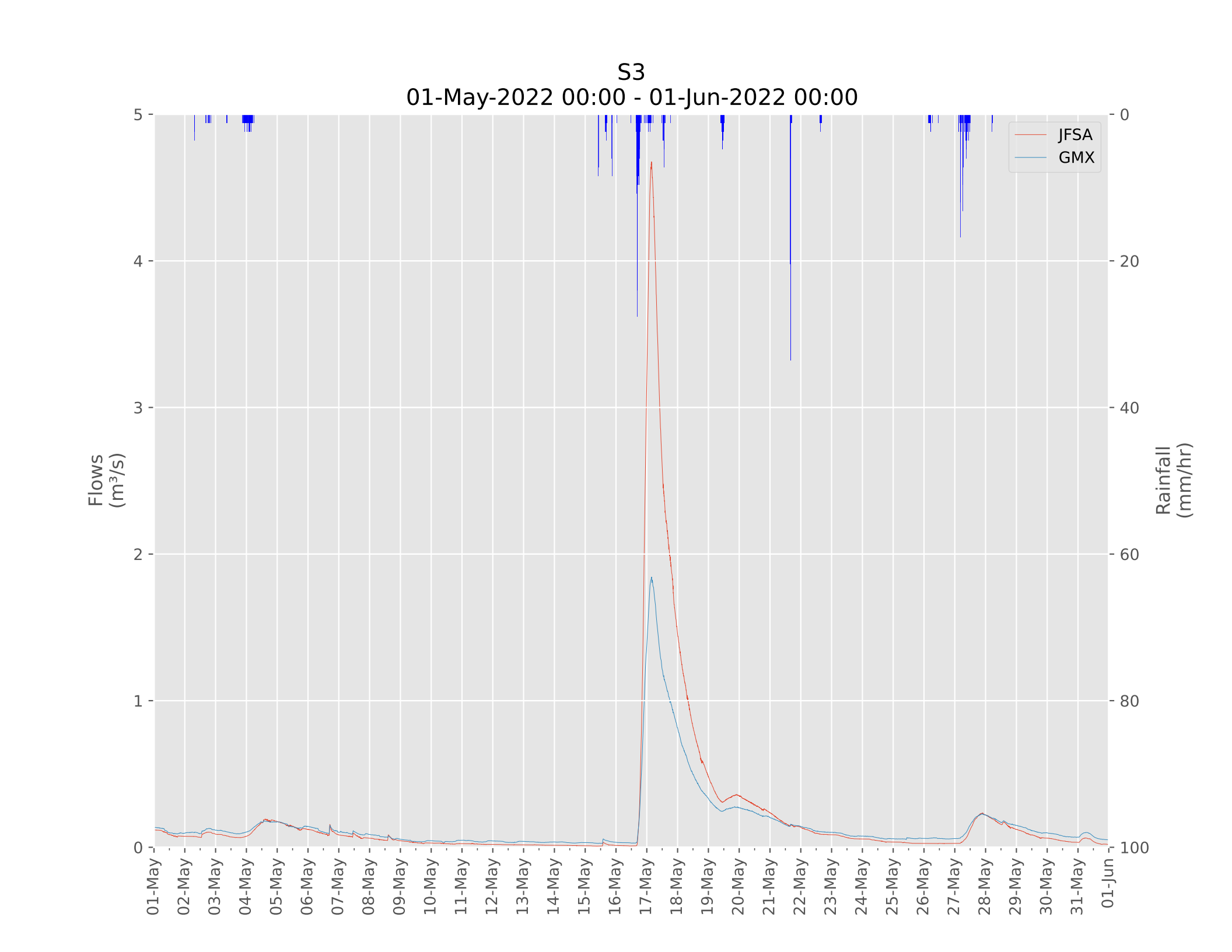
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S3
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
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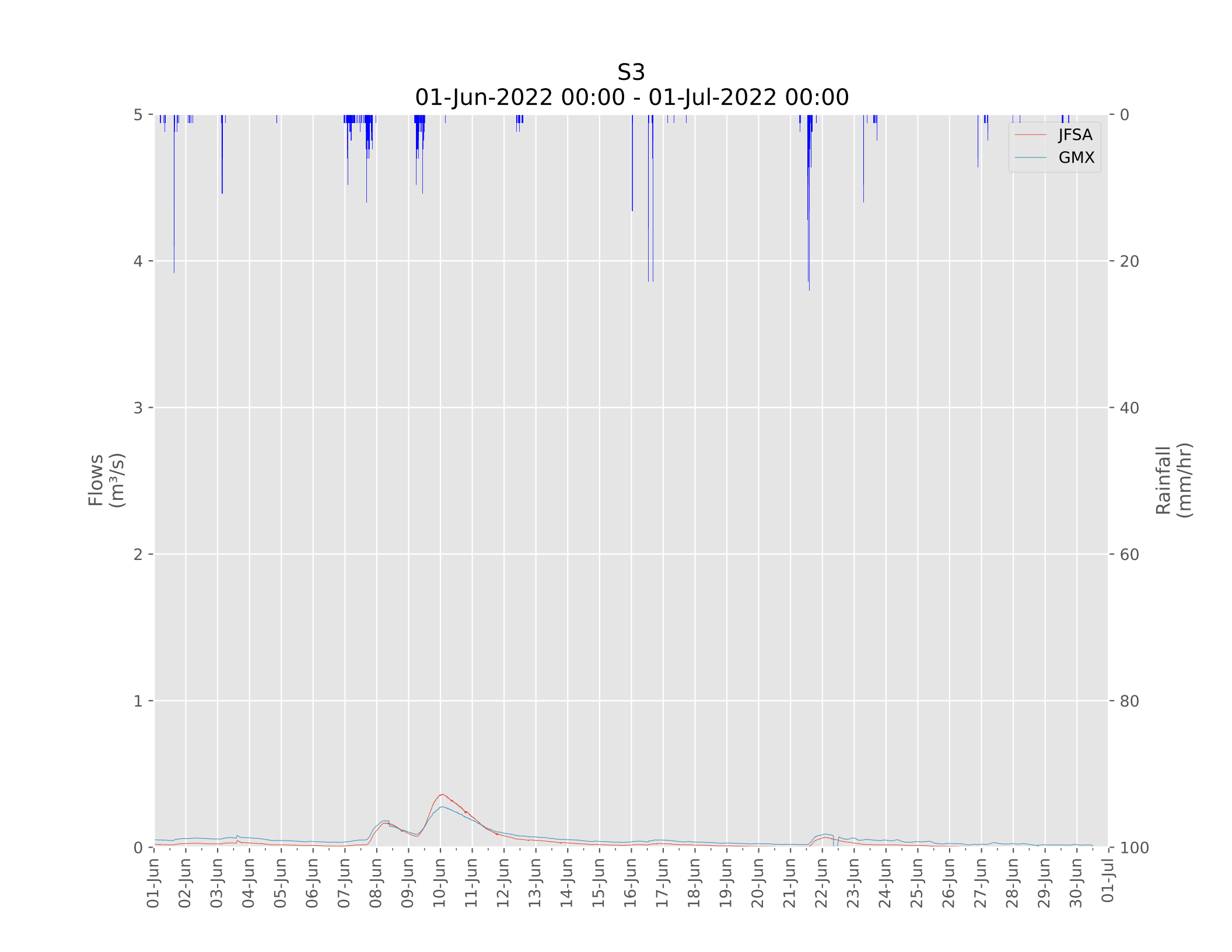
28-May
29-May
30-May
31-May
01-Jun


S3
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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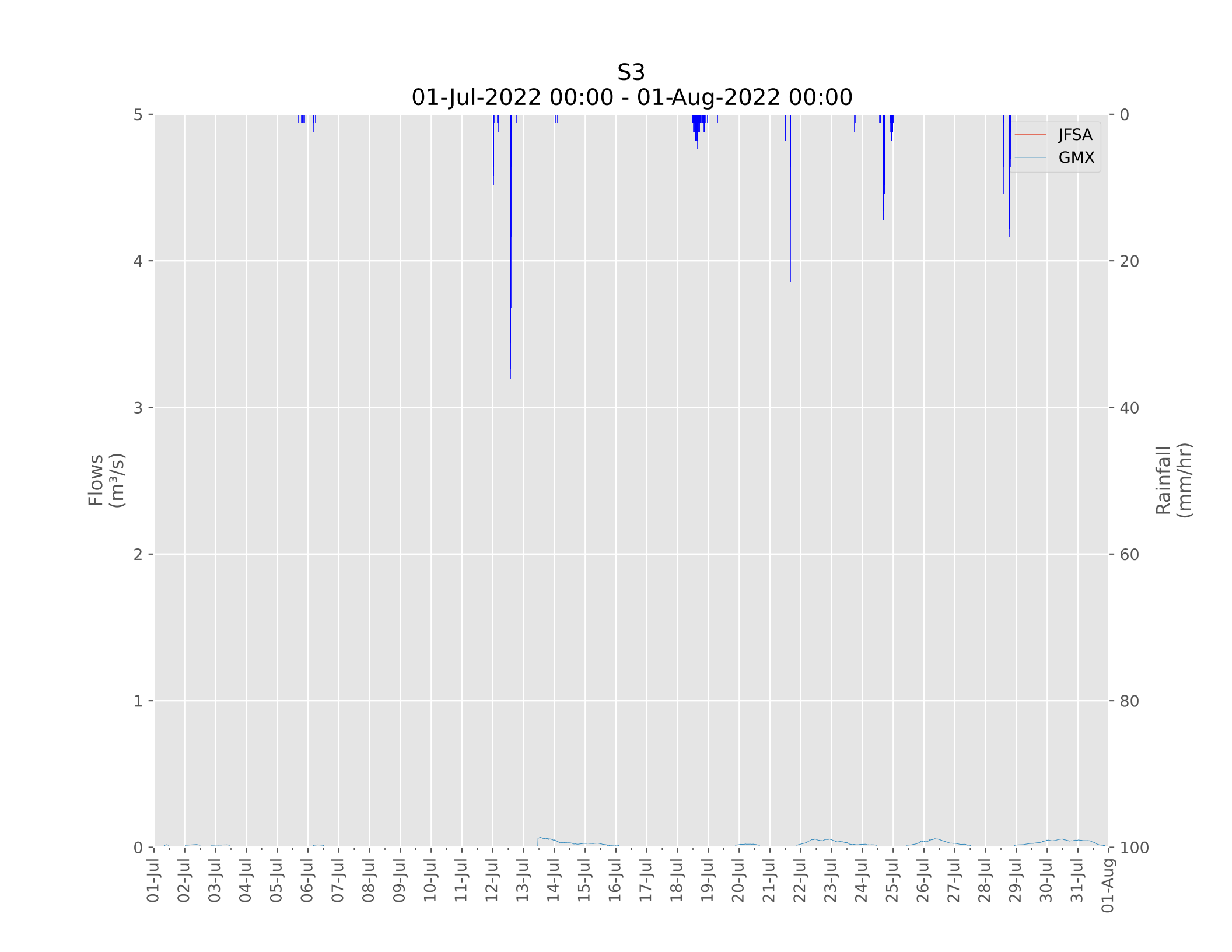
29-Jun
30-Jun
01-Jul


S3
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
17-Jul
18-Jul
19-Jul
20-Jul
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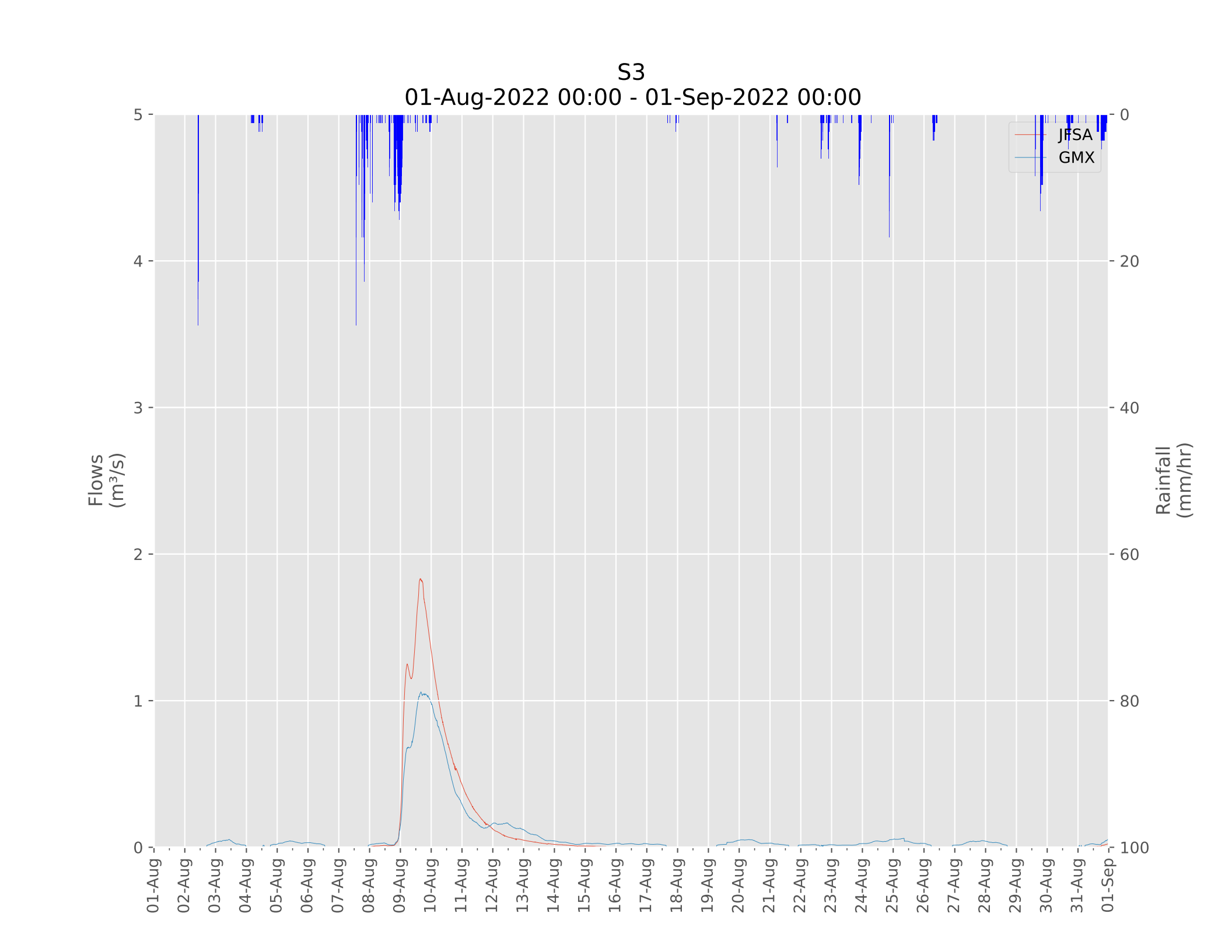
30-Jul
31-Jul
01-Aug


S3
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
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20-Aug
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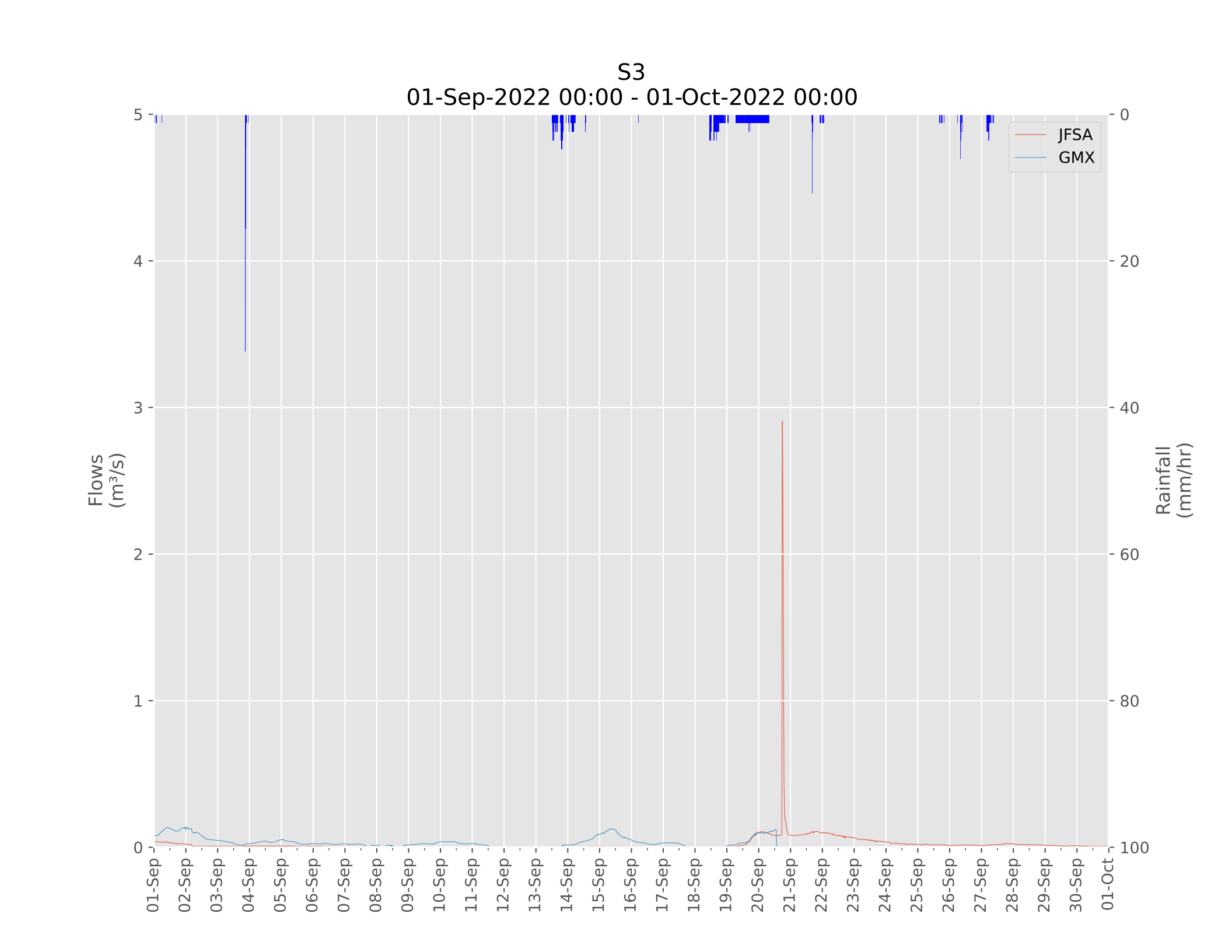
29-Aug
30-Aug
31-Aug
01-Sep


S3
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
20-Sep
21-Sep
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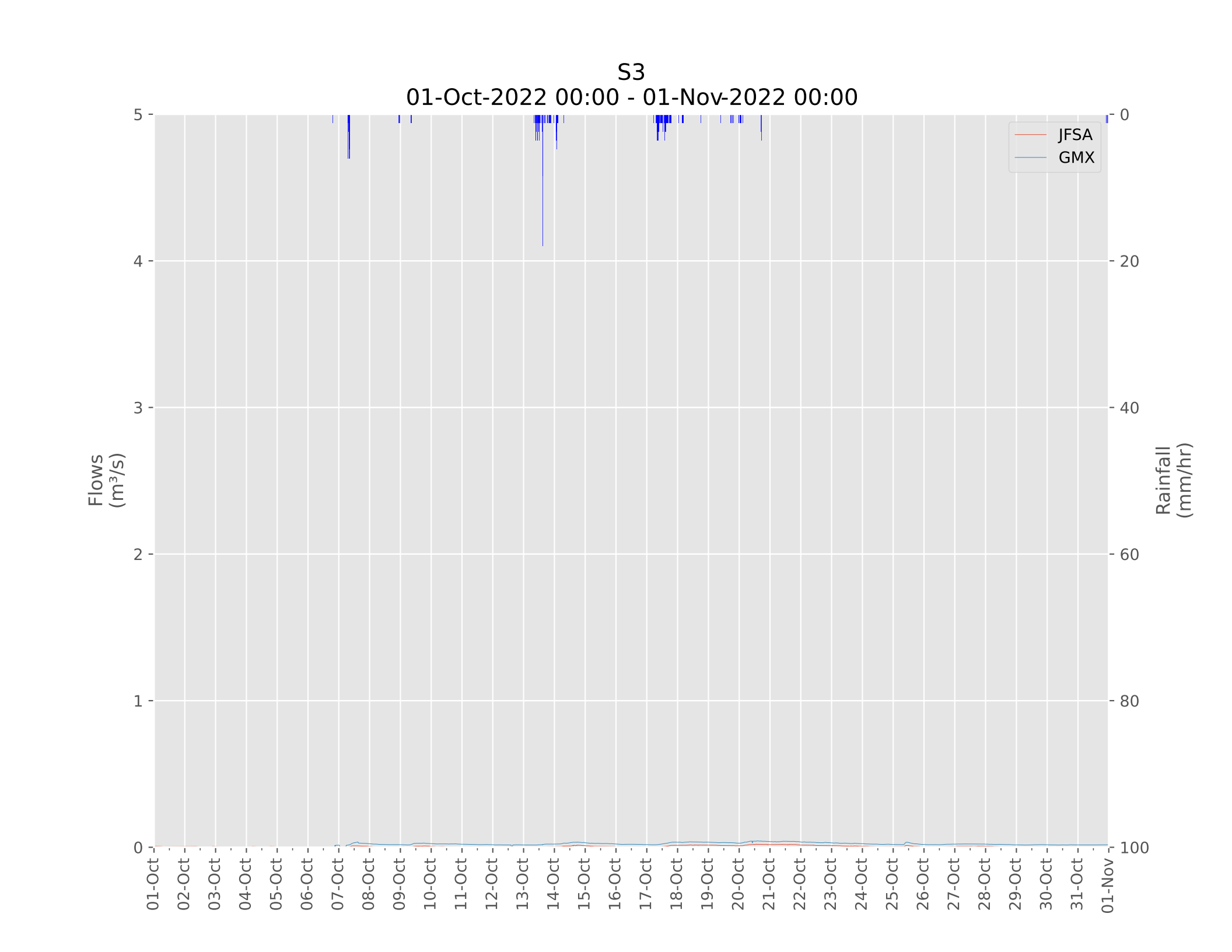
23-Sep
24-Sep
25-Sep
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S3
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
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28-Oct
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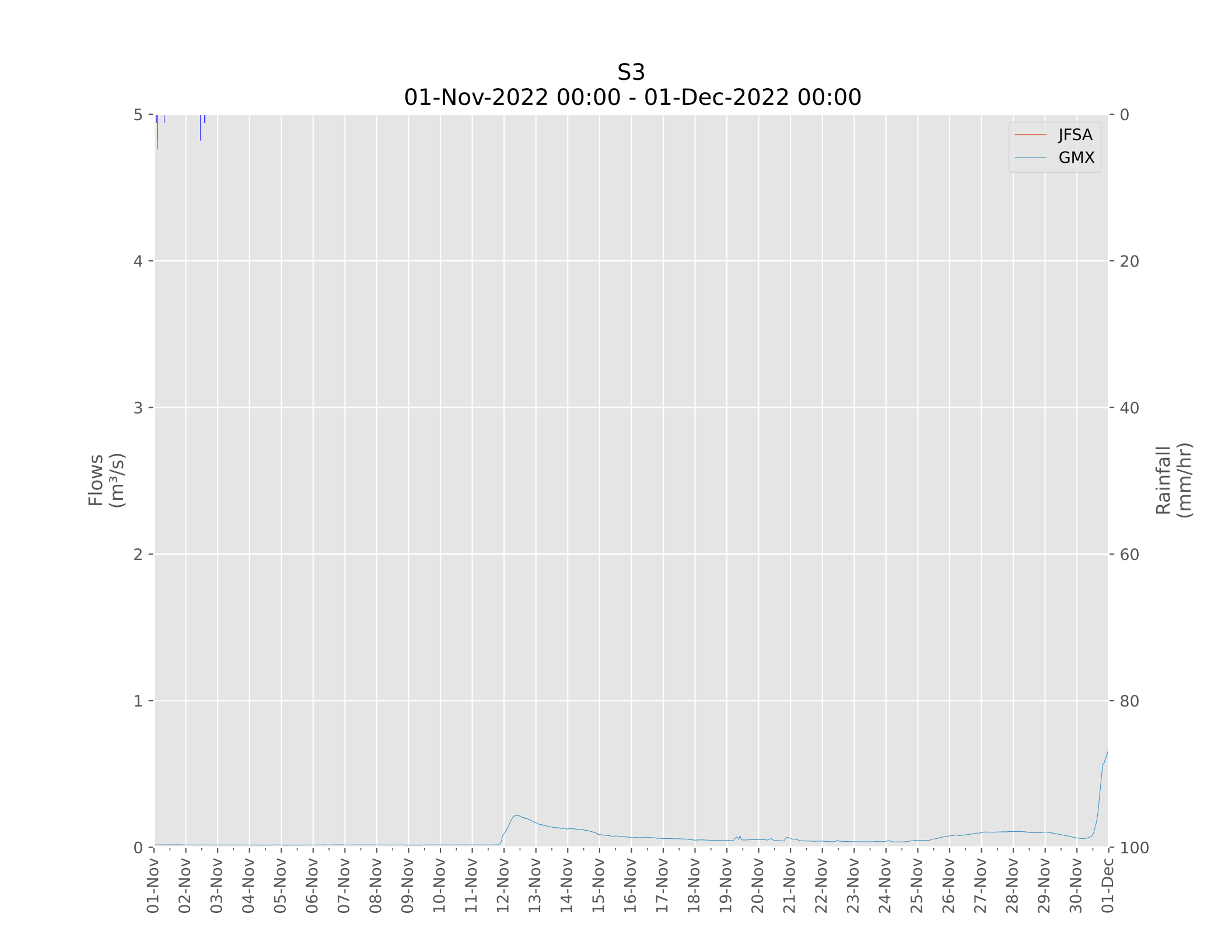
30-Oct
31-Oct
01-Nov


S3
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
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19-Nov
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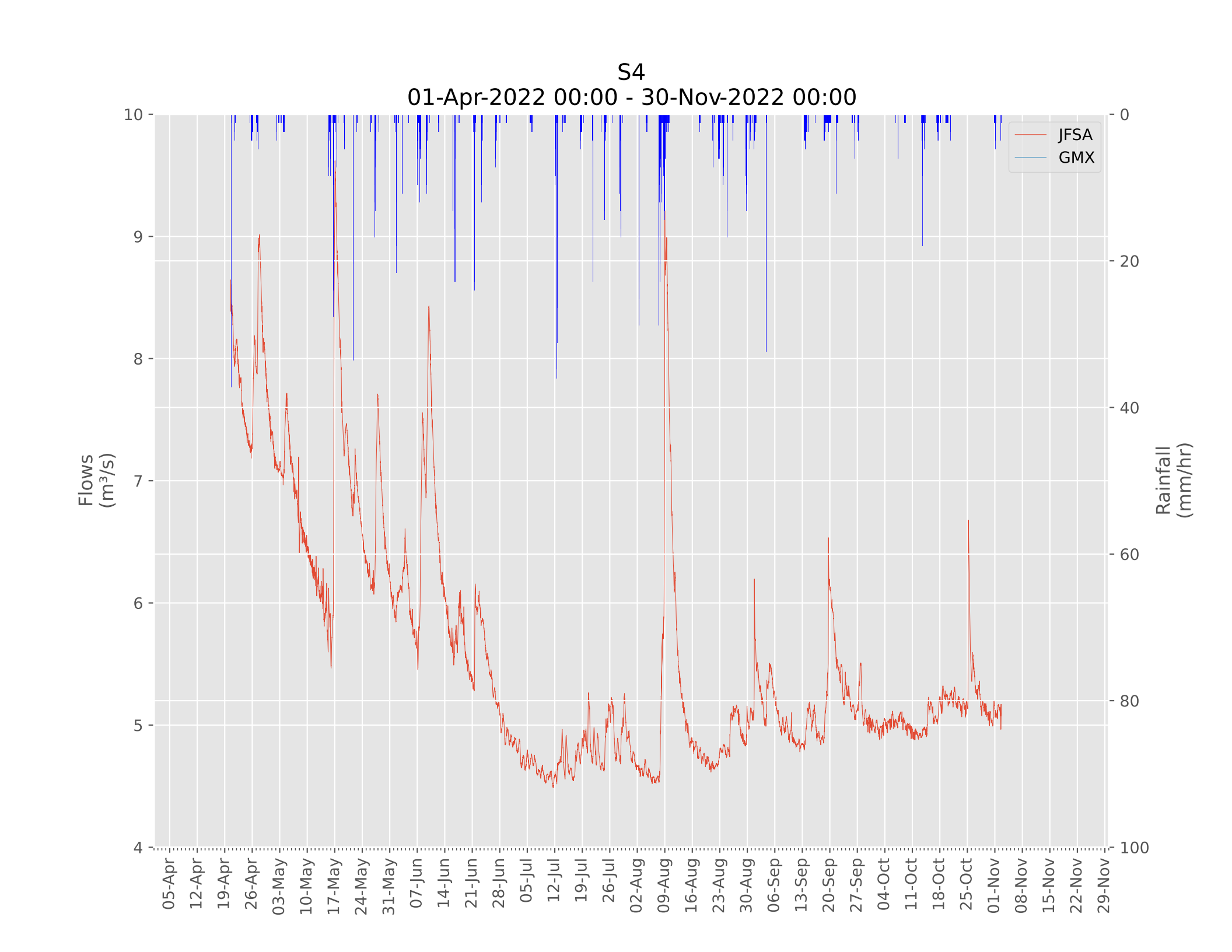
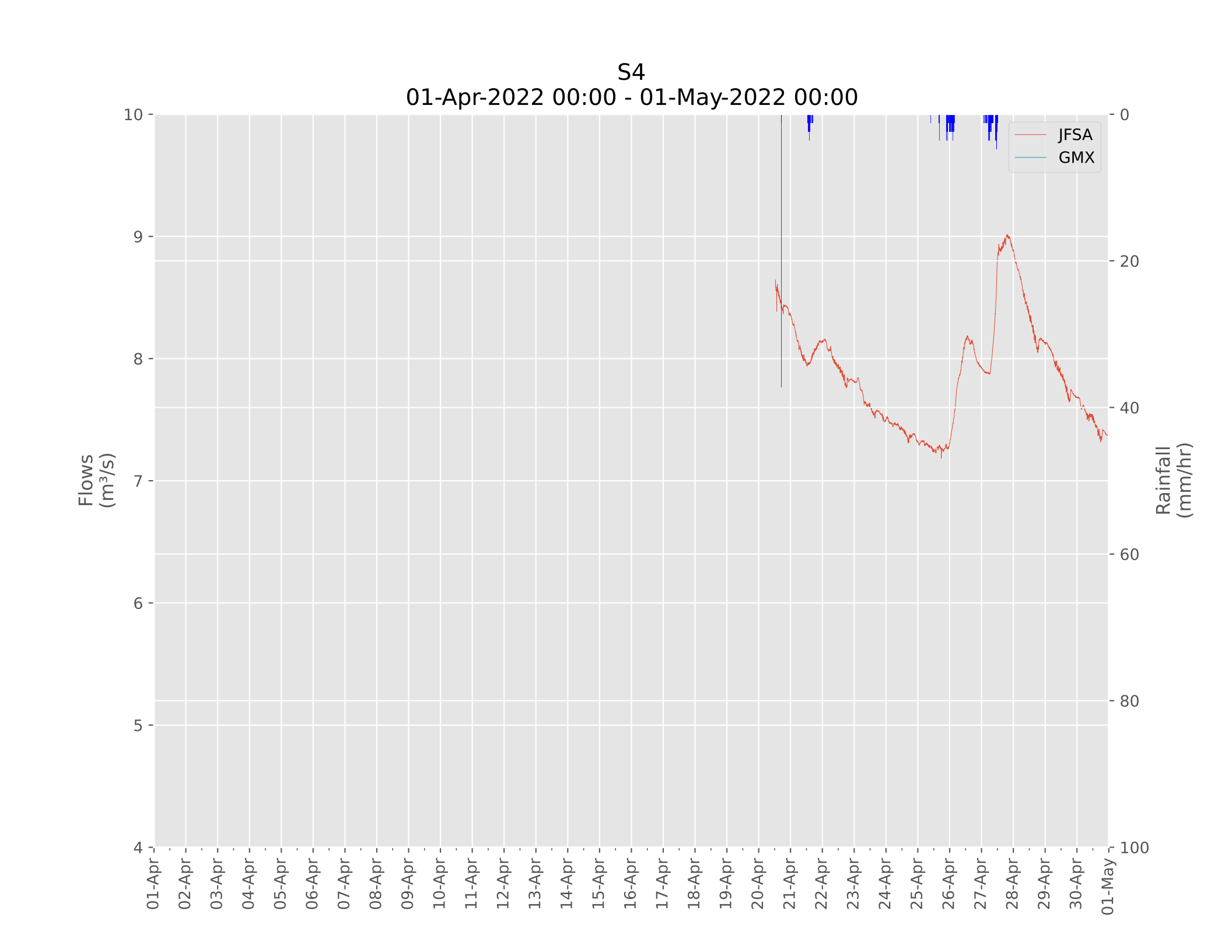
24-Nov
25-Nov
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S4
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S4
01-Apr-2022 00:00 - 01-May-2022 00:00
Flows (m³/s)
Rainfall (mm/hr)
JFSA
GMX
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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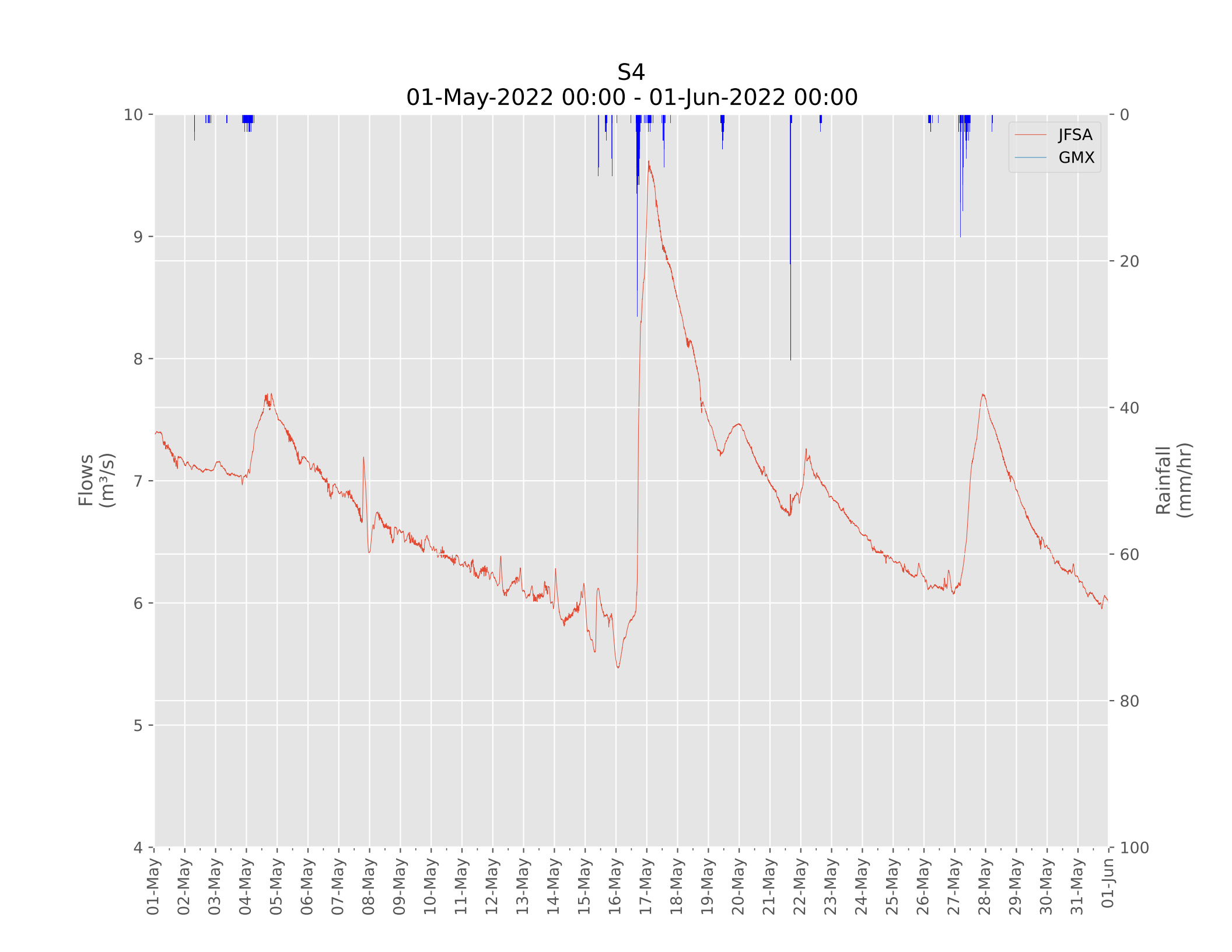
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S4
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
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11-May
12-May
13-May
14-May
15-May
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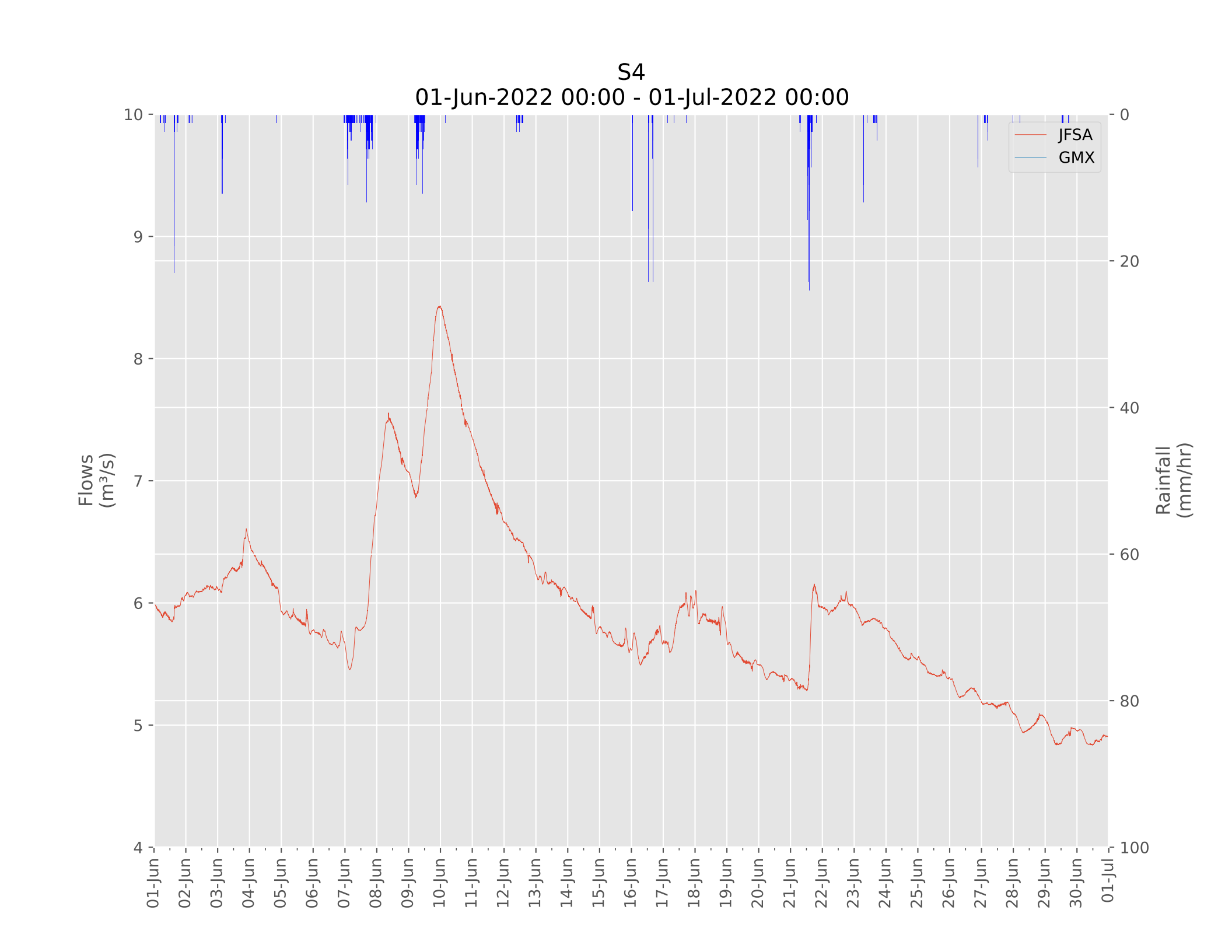
30-May
31-May
01-Jun


S4
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
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11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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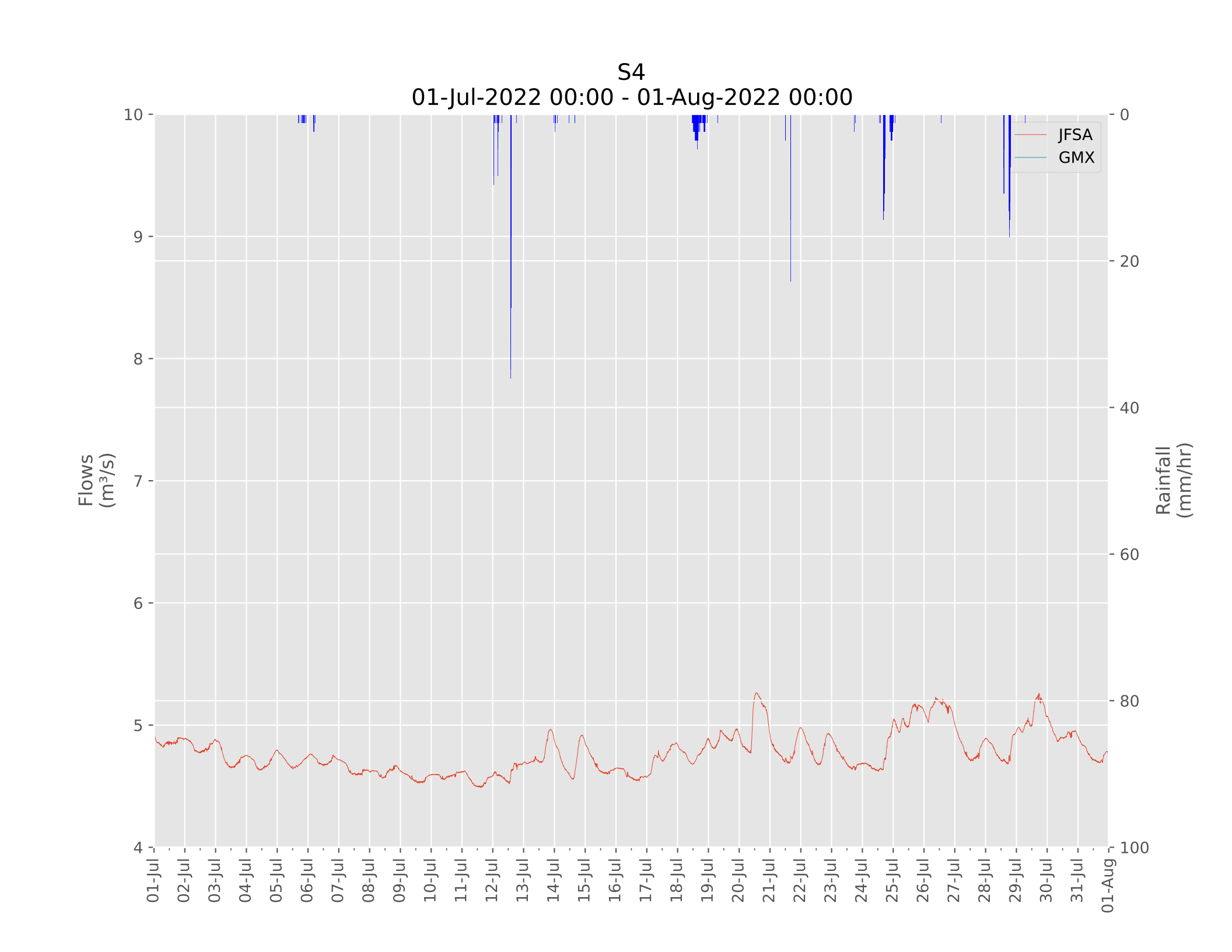
26-Jun
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S4
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
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09-Jul
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11-Jul
12-Jul
13-Jul
14-Jul
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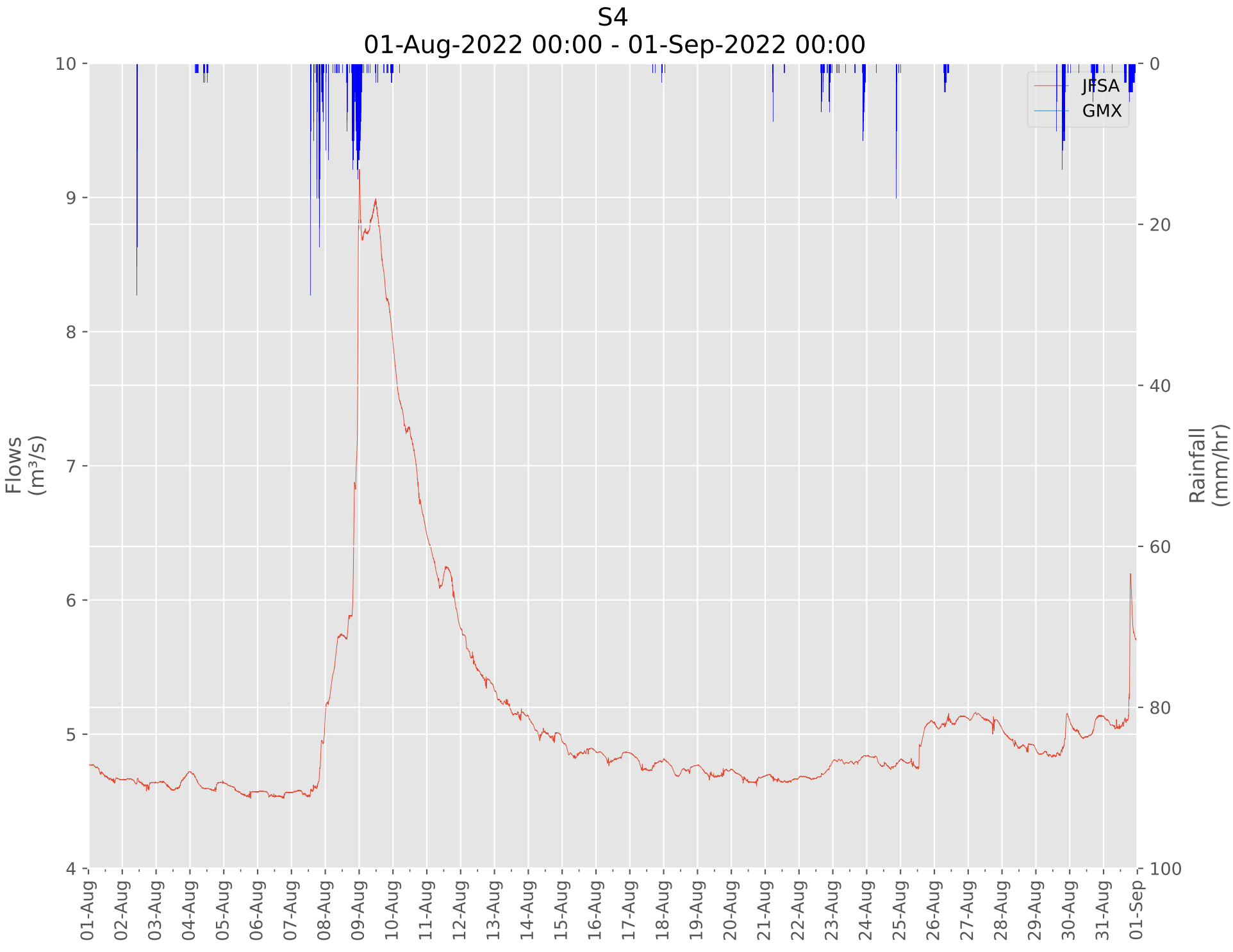
31-Jul
01-Aug


S4
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
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09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
17-Aug
18-Aug
19-Aug
20-Aug
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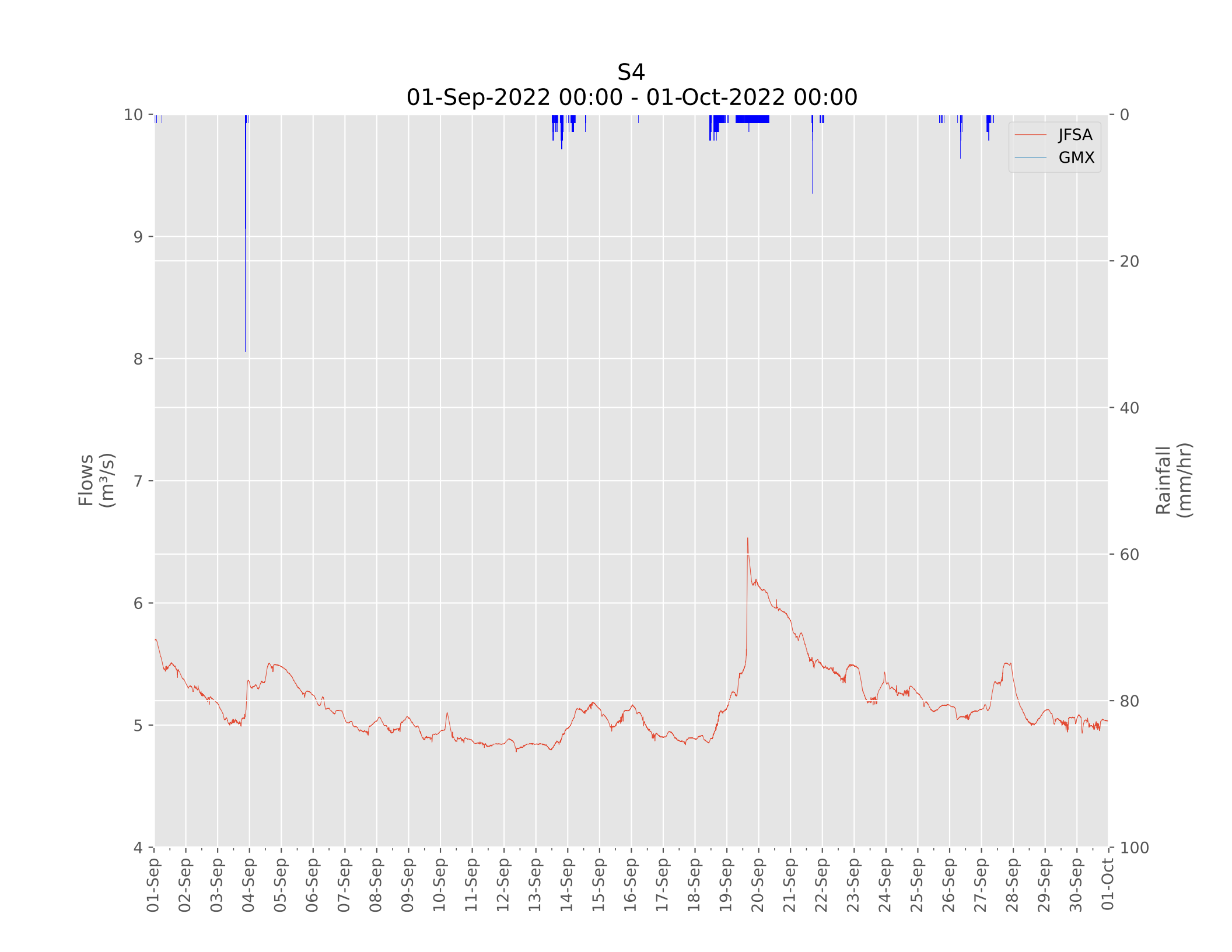
30-Aug
31-Aug
01-Sep


S4
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
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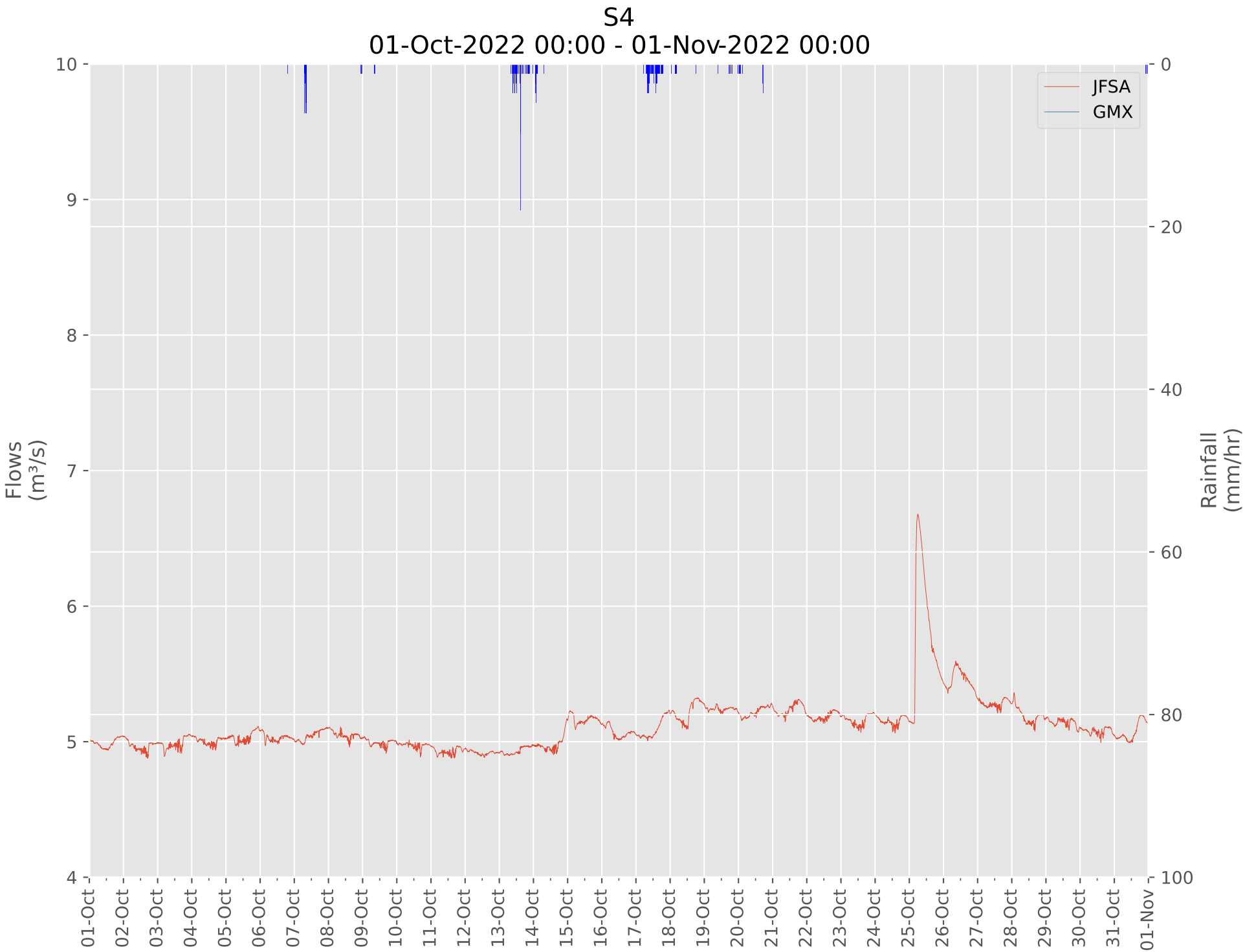
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S4
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
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28-Oct
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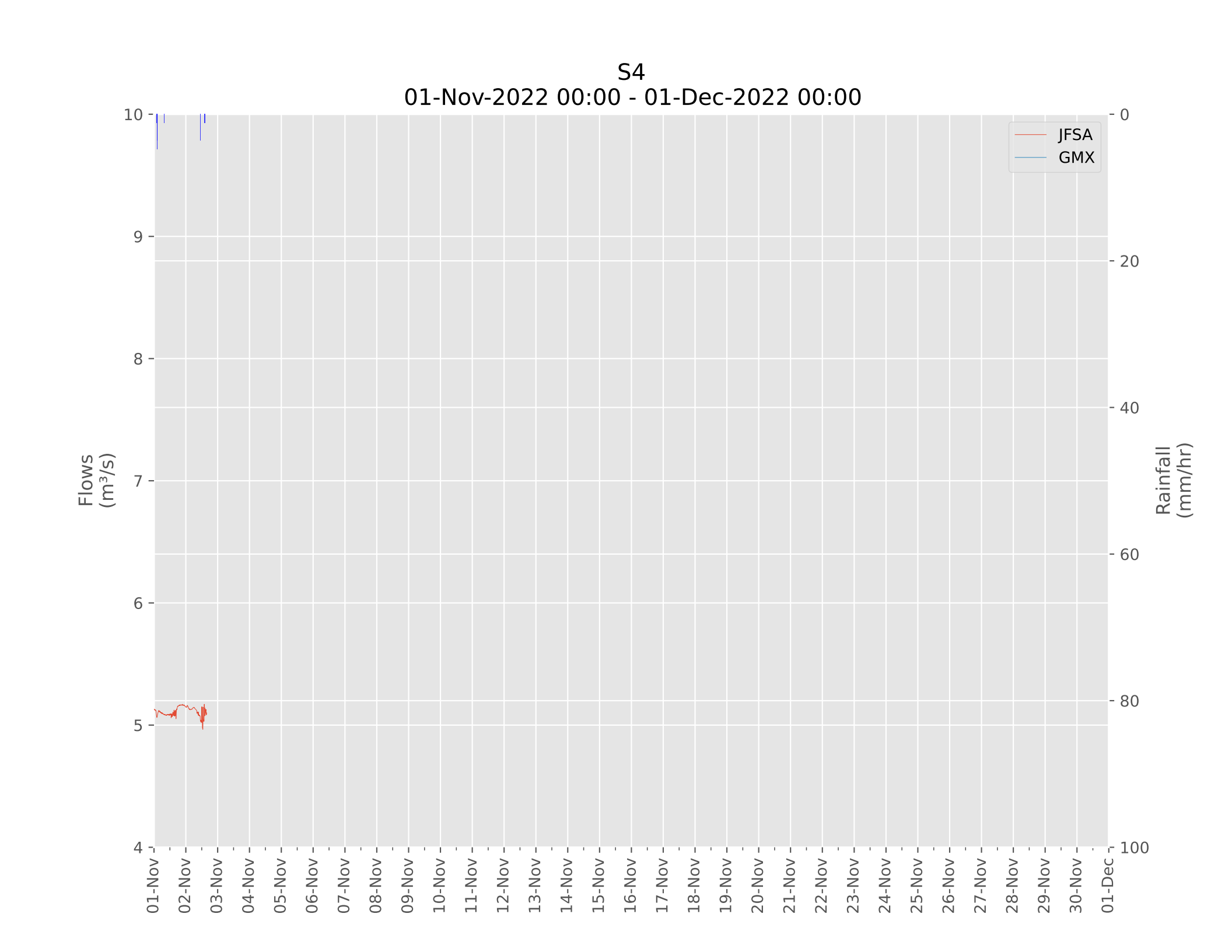
30-Oct
31-Oct
01-Nov


S4
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
10
9
8
7
6
5
4
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
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18-Nov
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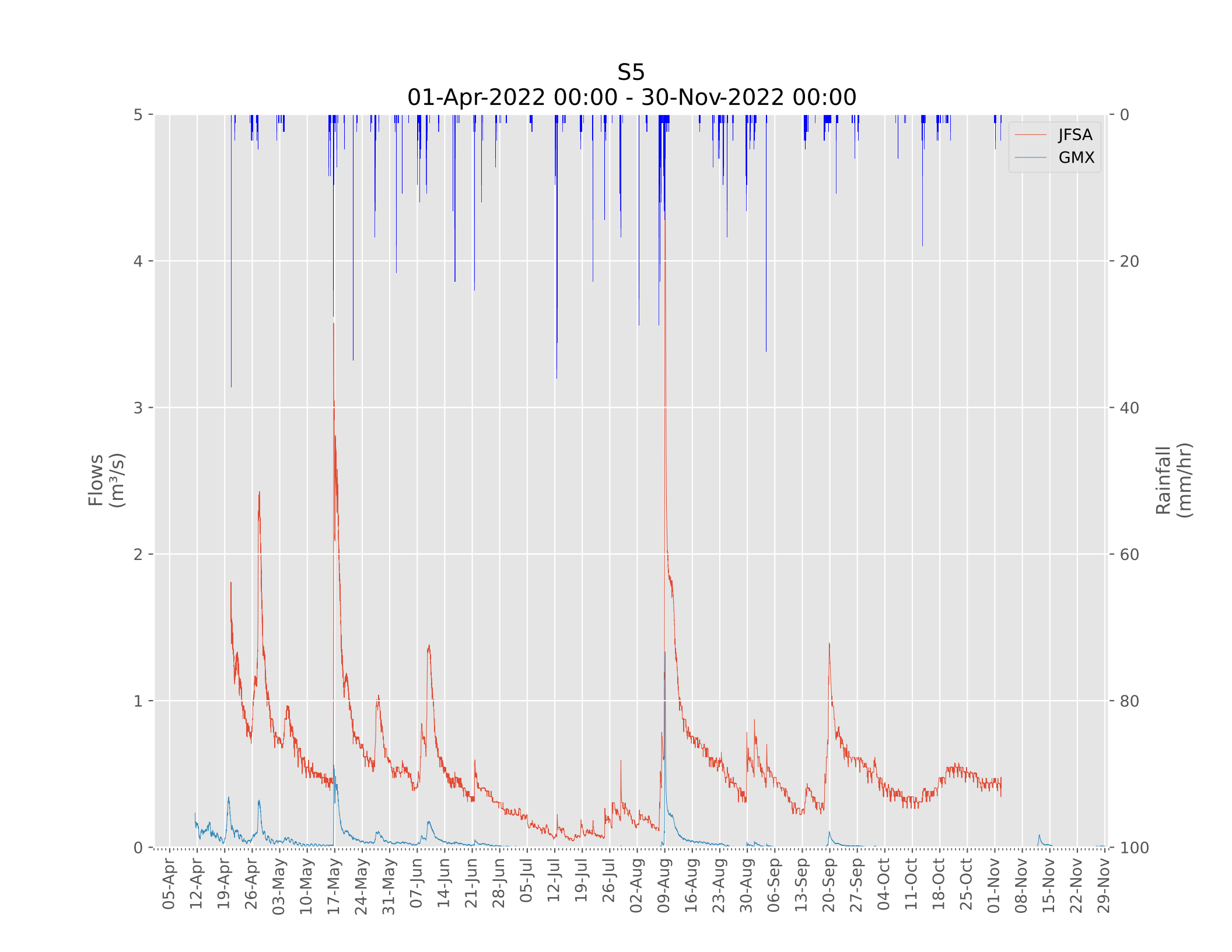
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S5
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
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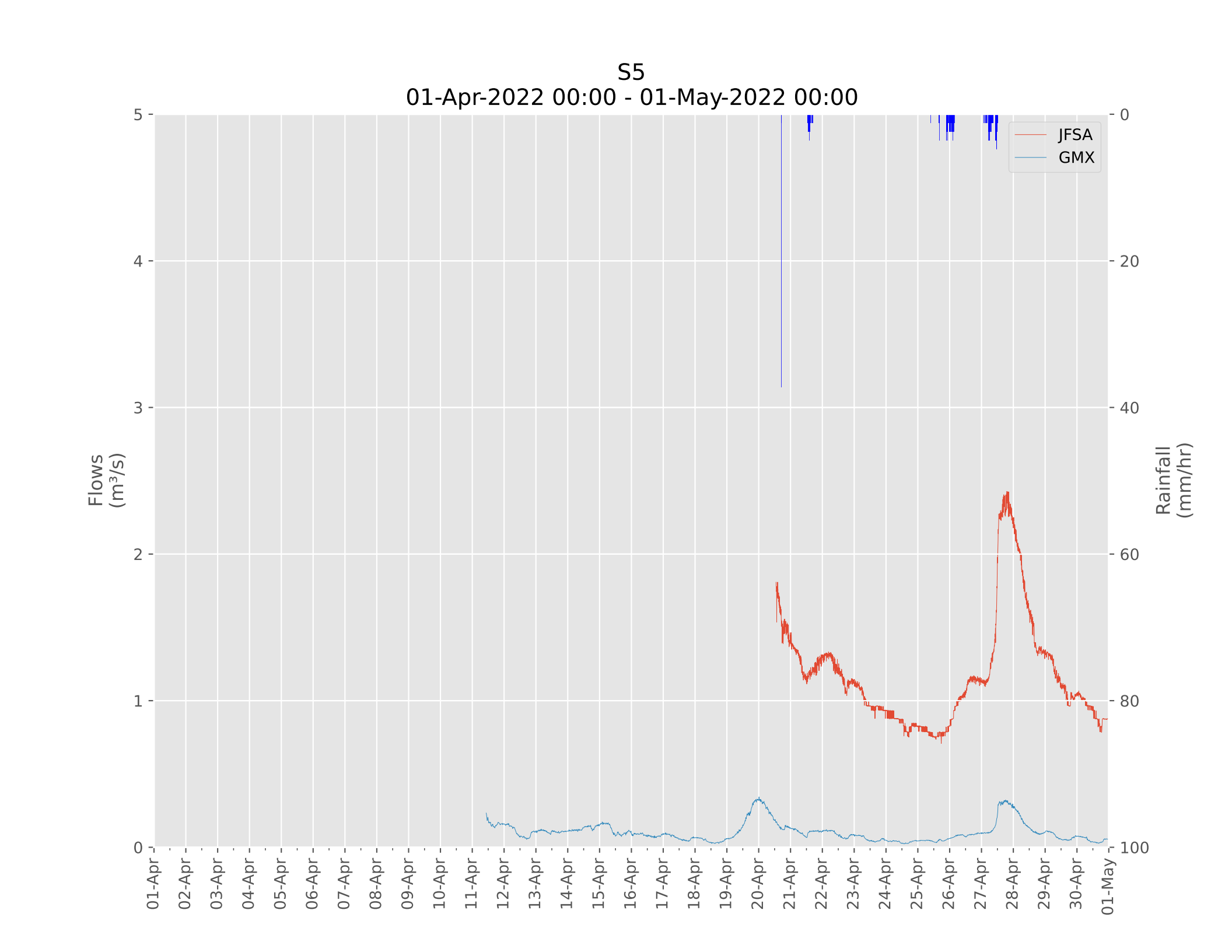
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S5
01-Apr-2022 00:00 - 01-May-2022 00:00
Flows (m³/s)
Rainfall (mm/hr)
JFSA
GMX
0
1
2
3
4
5
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
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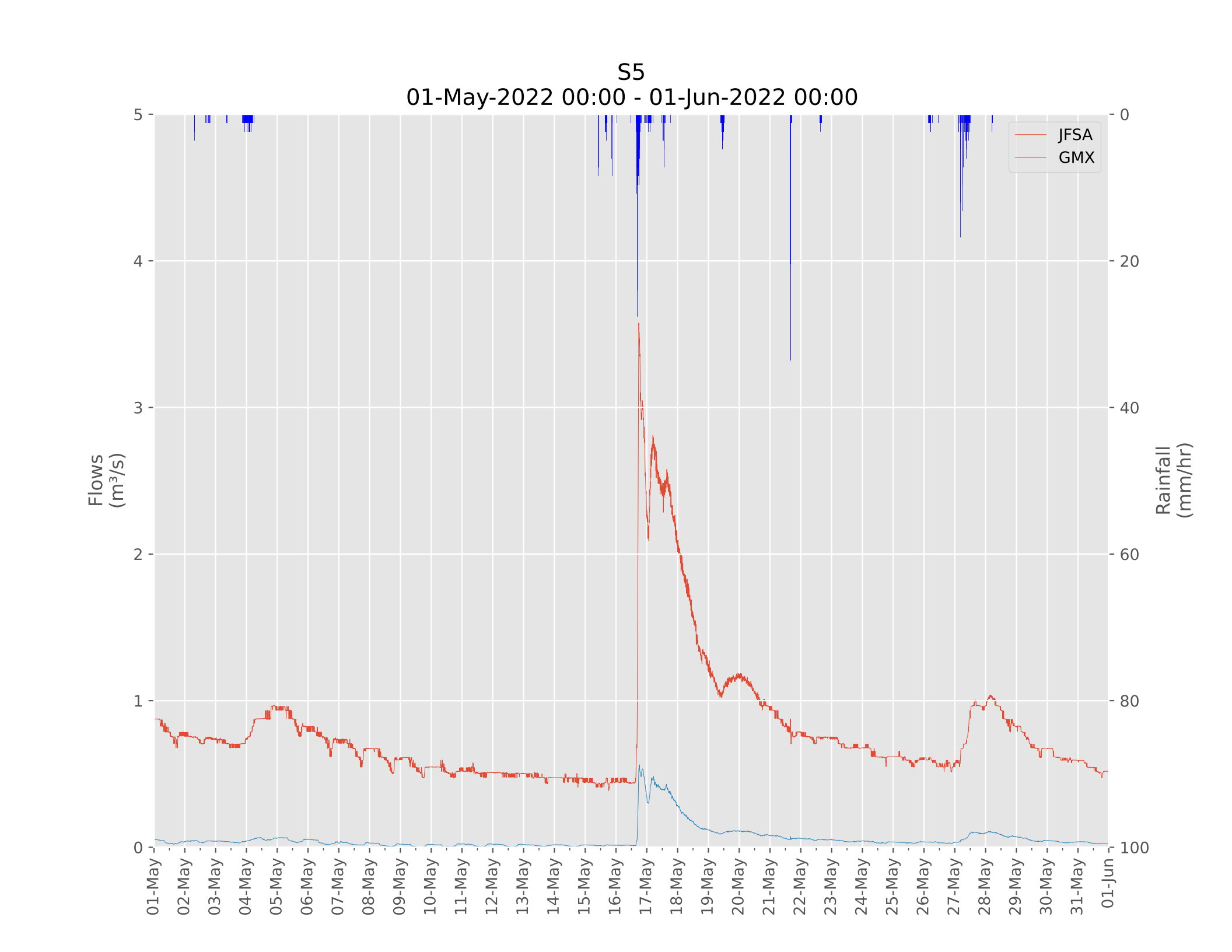
30-Apr
01-May


S5
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
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11-May
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13-May
14-May
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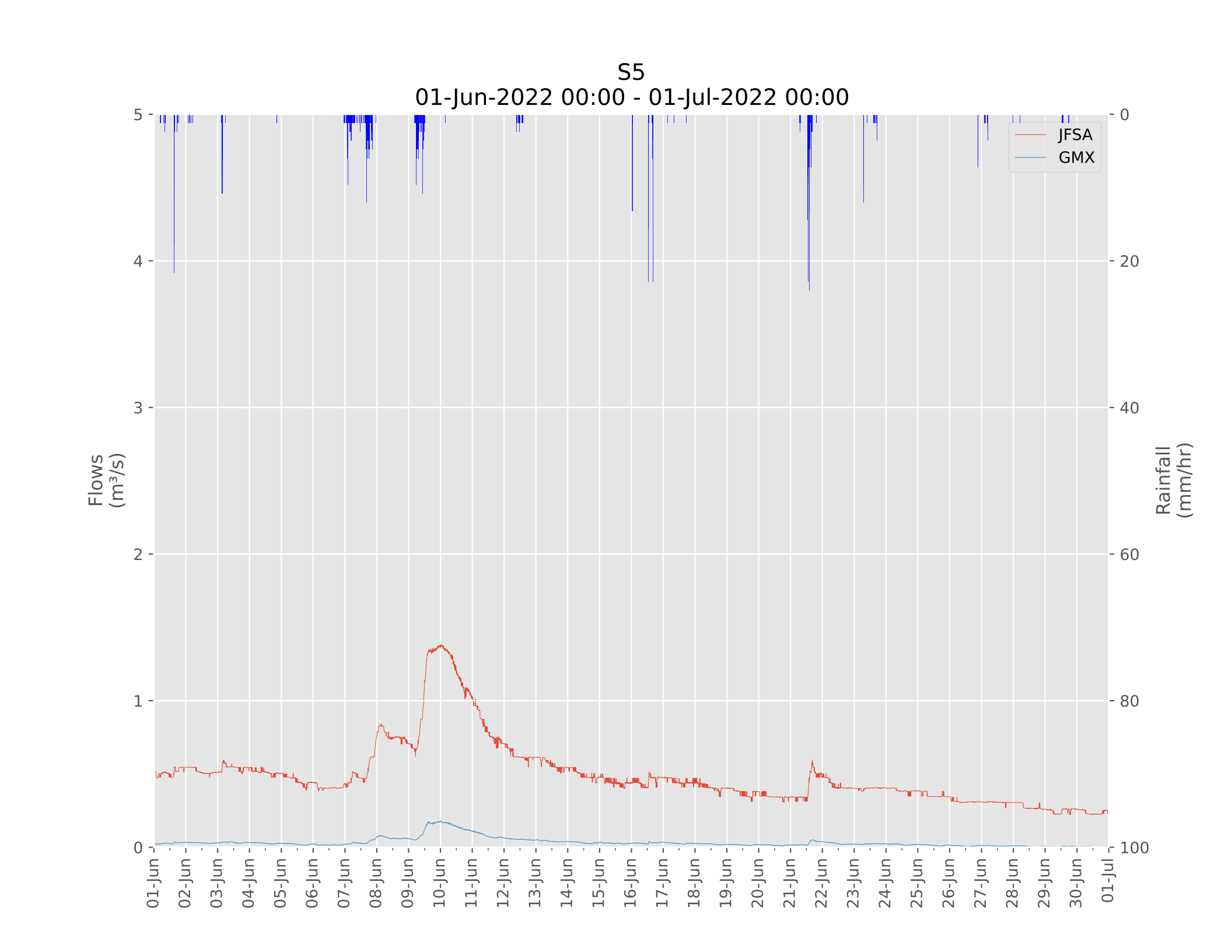
01-Jun


S5
01-Jun-2022 00:00 - 01-Jul-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
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80
100
01-Jun
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11-Jun
12-Jun
13-Jun
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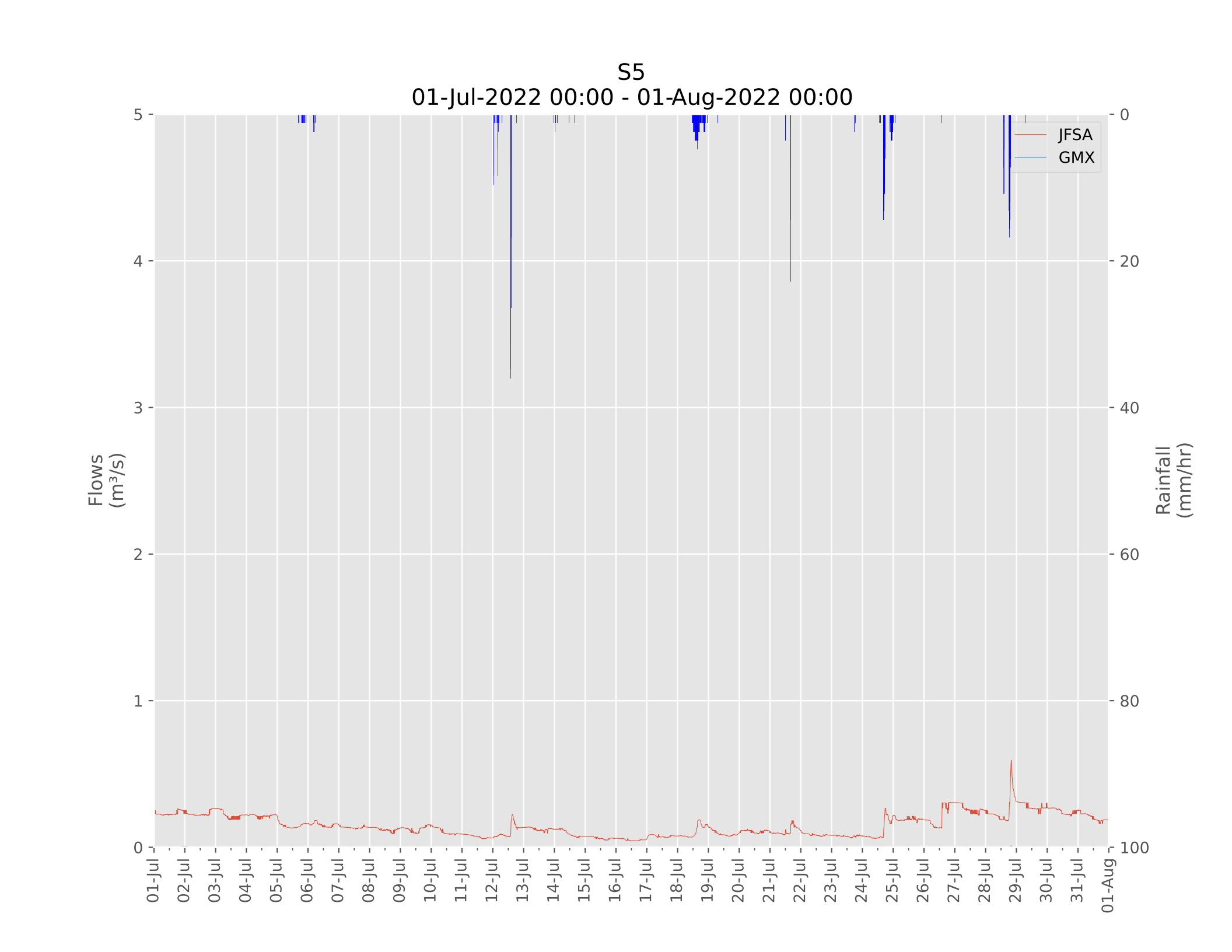
30-Jun
01-Jul


S5
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
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5
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
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11-Jul
12-Jul
13-Jul
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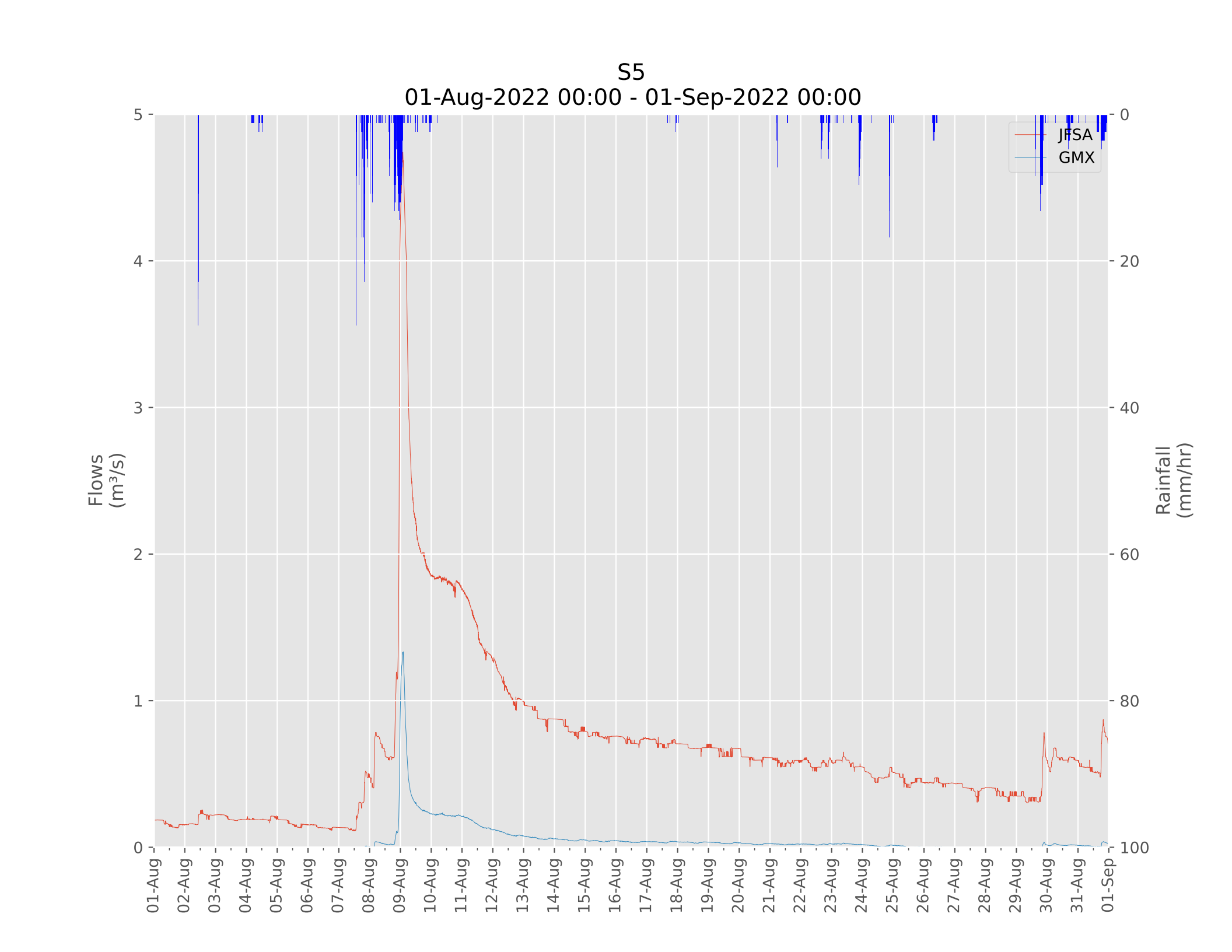
31-Jul
01-Aug


S5
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Aug
02-Aug
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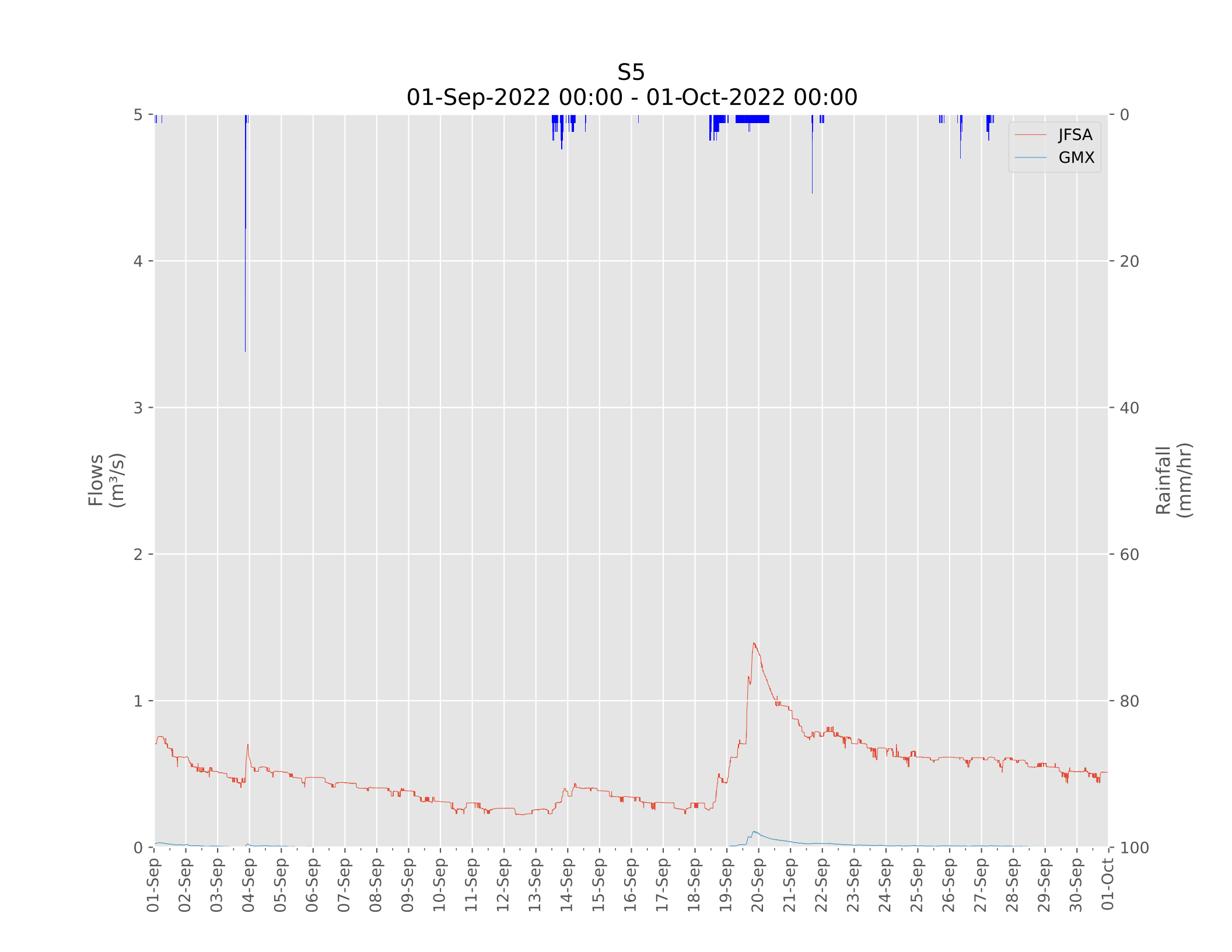
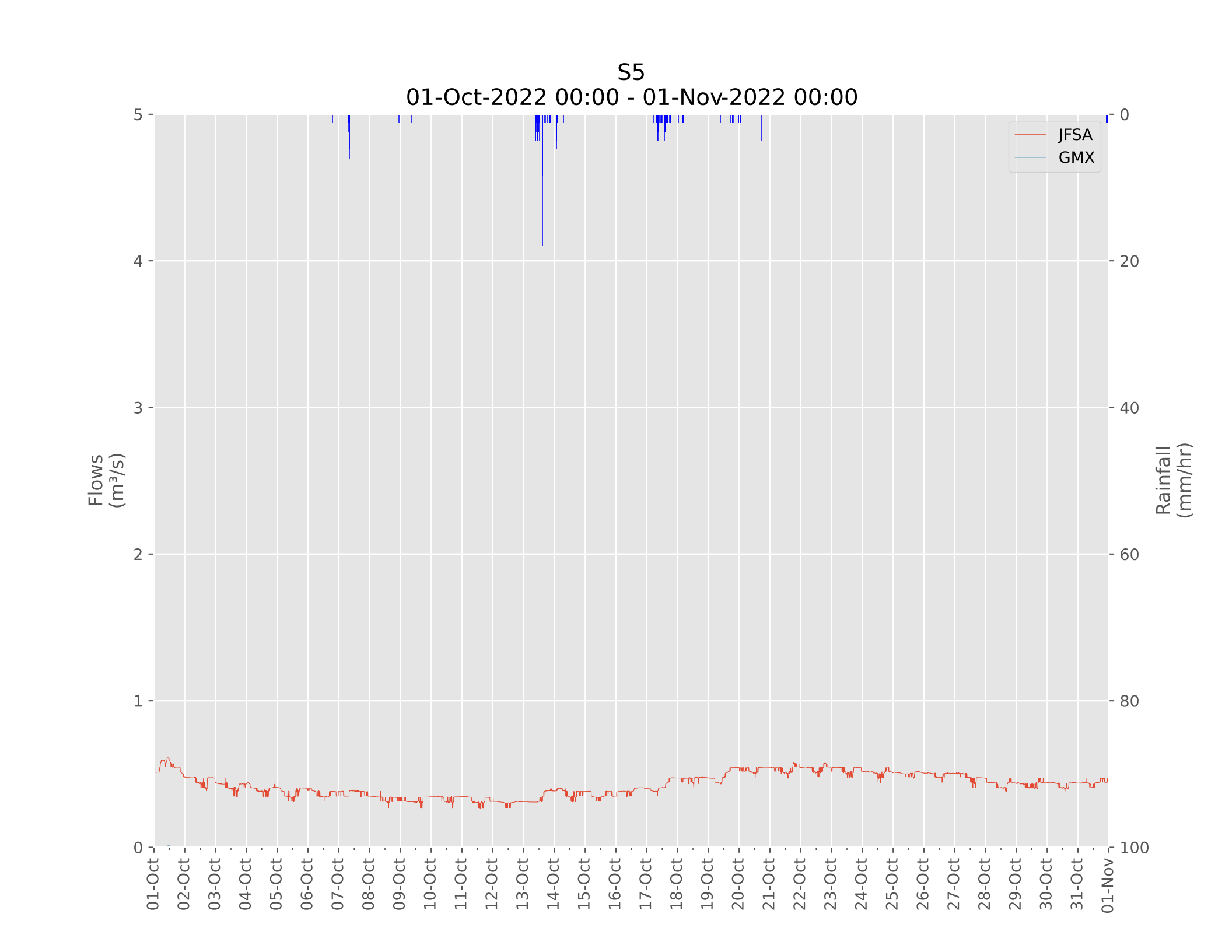
01-Sep


S5
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
18-Sep
19-Sep
20-Sep
21-Sep
22-Sep
23-Sep
24-Sep
25-Sep
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S5
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
08-Oct
09-Oct
10-Oct
11-Oct
12-Oct
13-Oct
14-Oct
15-Oct
16-Oct
17-Oct
18-Oct
19-Oct
20-Oct
21-Oct
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23-Oct
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26-Oct
27-Oct
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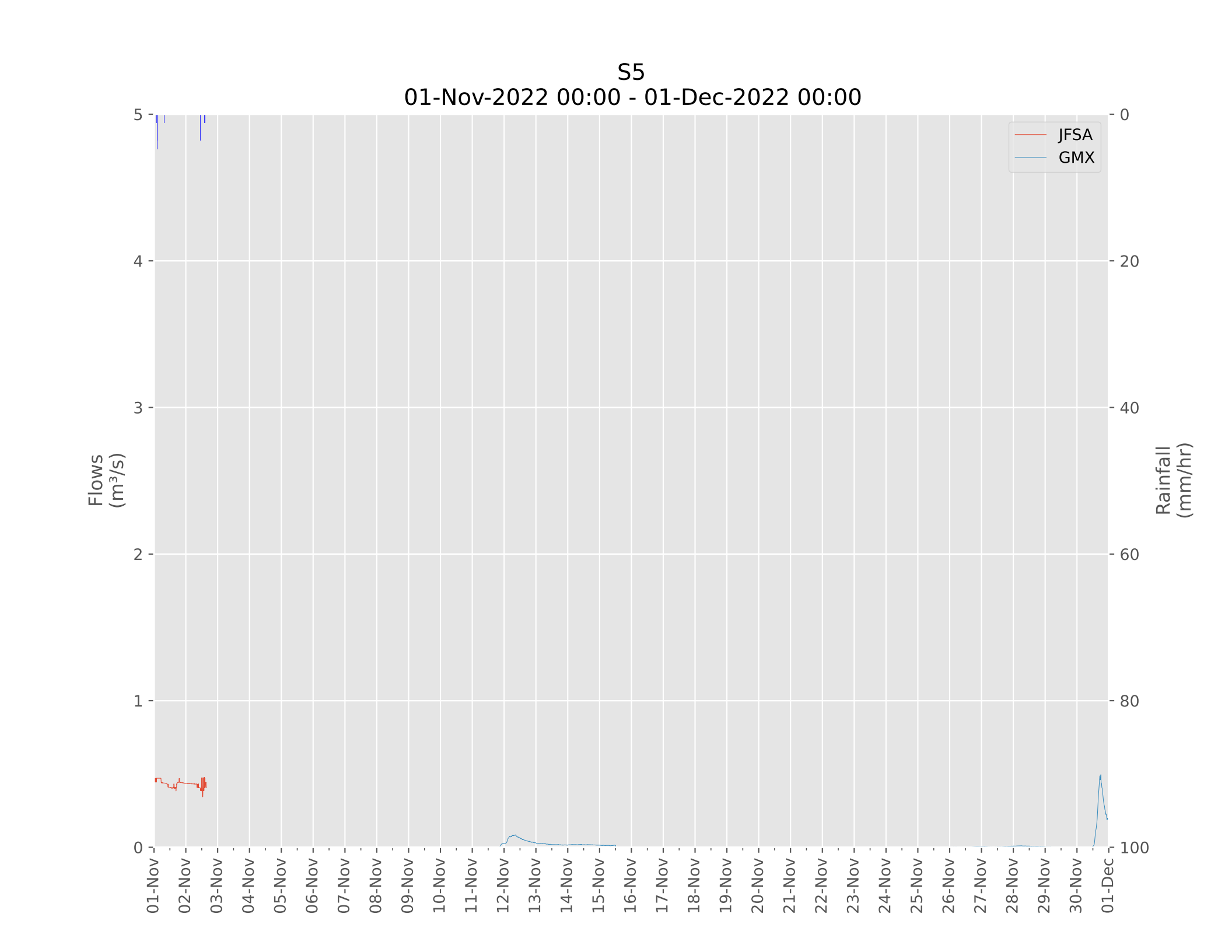
29-Oct
30-Oct
31-Oct
01-Nov


S5
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
20-Nov
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22-Nov
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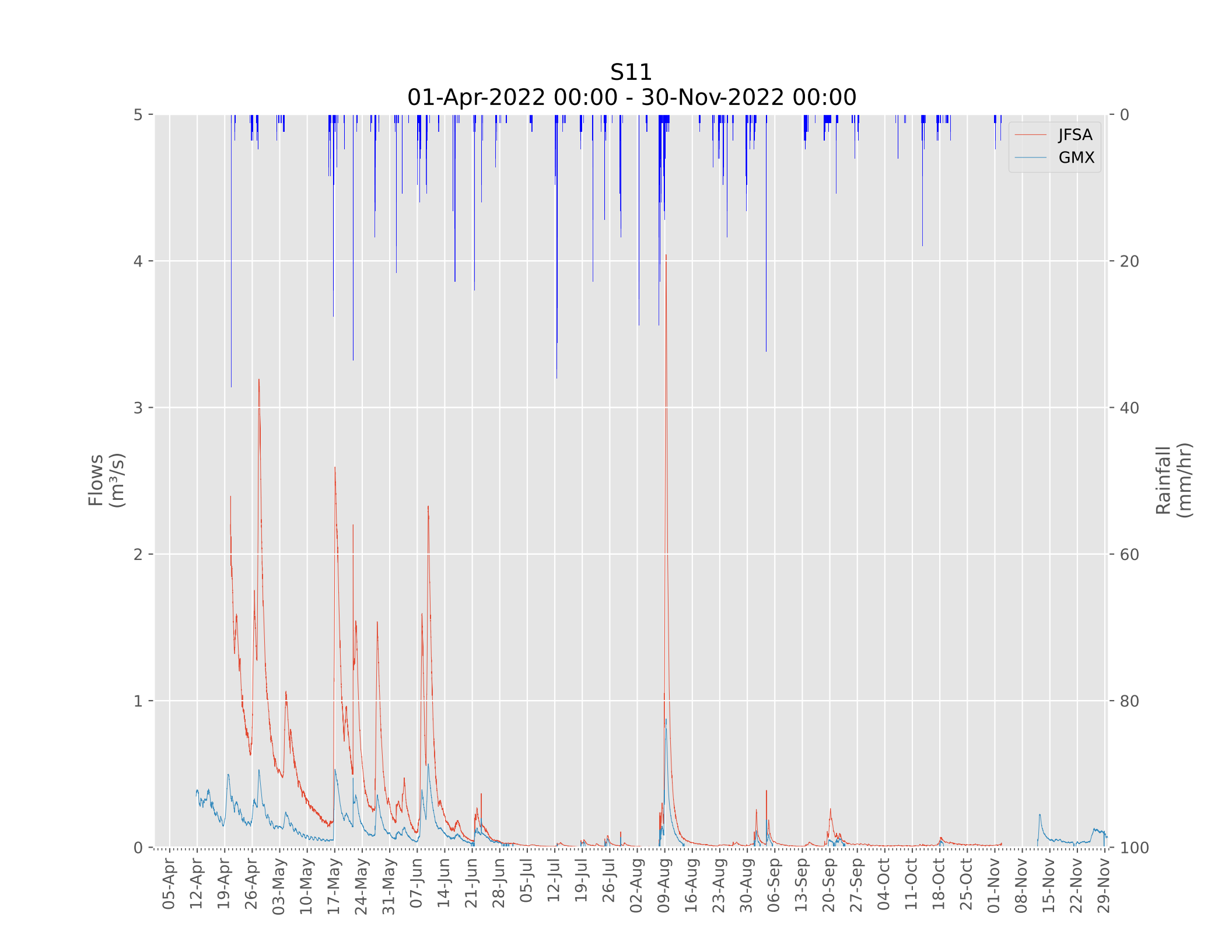
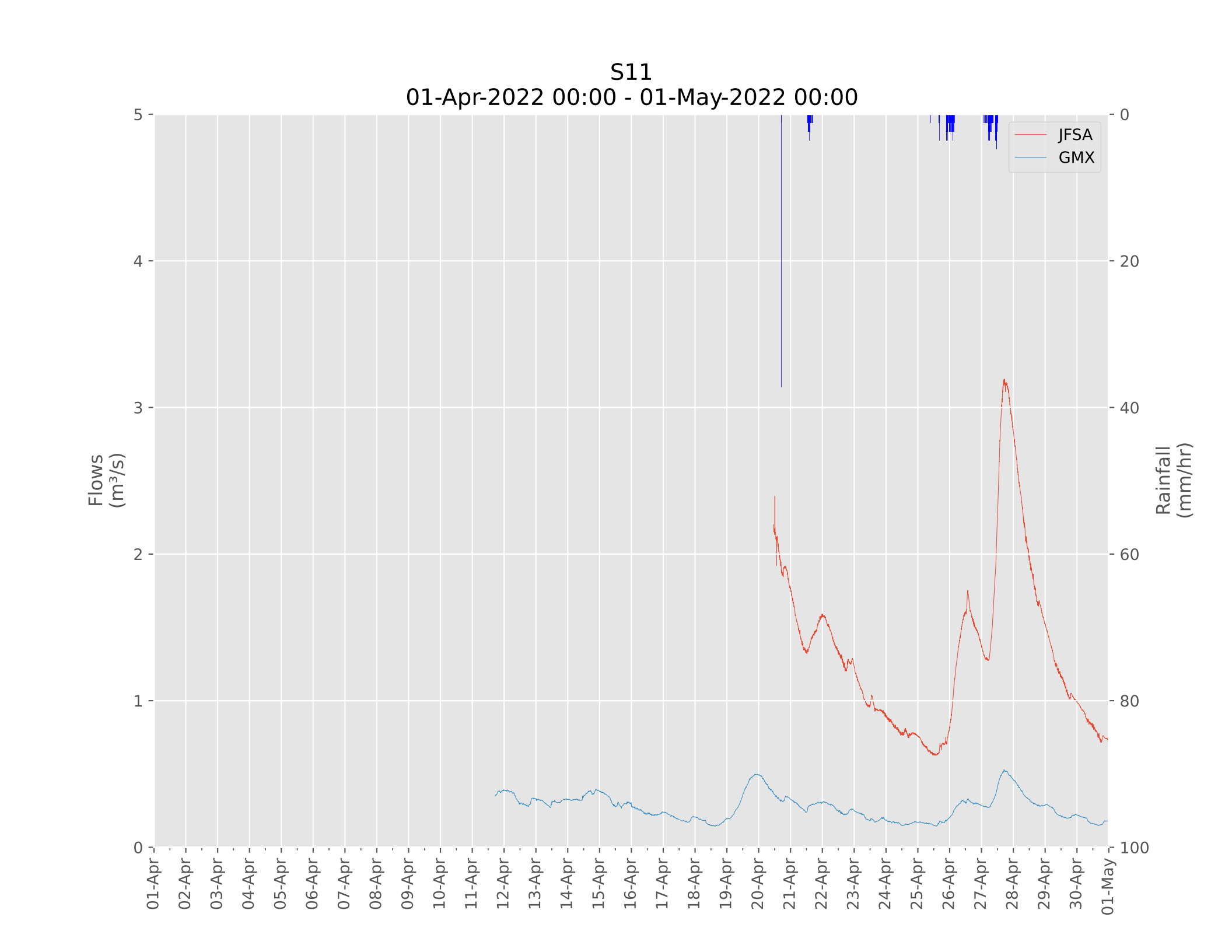
26-Nov
27-Nov
28-Nov
29-Nov
30-Nov
01-Dec


S11
01-Apr-2022 00:00 - 30-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
05-Apr
12-Apr
19-Apr
26-Apr
03-May
10-May
17-May
24-May
31-May
07-Jun
14-Jun
21-Jun
28-Jun
05-Jul
12-Jul
19-Jul
26-Jul
02-Aug
09-Aug
16-Aug
23-Aug
30-Aug
06-Sep
13-Sep
20-Sep
27-Sep
04-Oct
11-Oct
18-Oct
25-Oct
01-Nov
08-Nov
15-Nov
22-Nov
29-Nov


S11
01-Apr-2022 00:00 - 01-May-2022 00:00
Flows (m³/s)
Rainfall (mm/hr)
JFSA
GMX
0
1
2
3
4
5
0
20
40
60
80
100
01-Apr
02-Apr
03-Apr
04-Apr
05-Apr
06-Apr
07-Apr
08-Apr
09-Apr
10-Apr
11-Apr
12-Apr
13-Apr
14-Apr
15-Apr
16-Apr
17-Apr
18-Apr
19-Apr
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24-Apr
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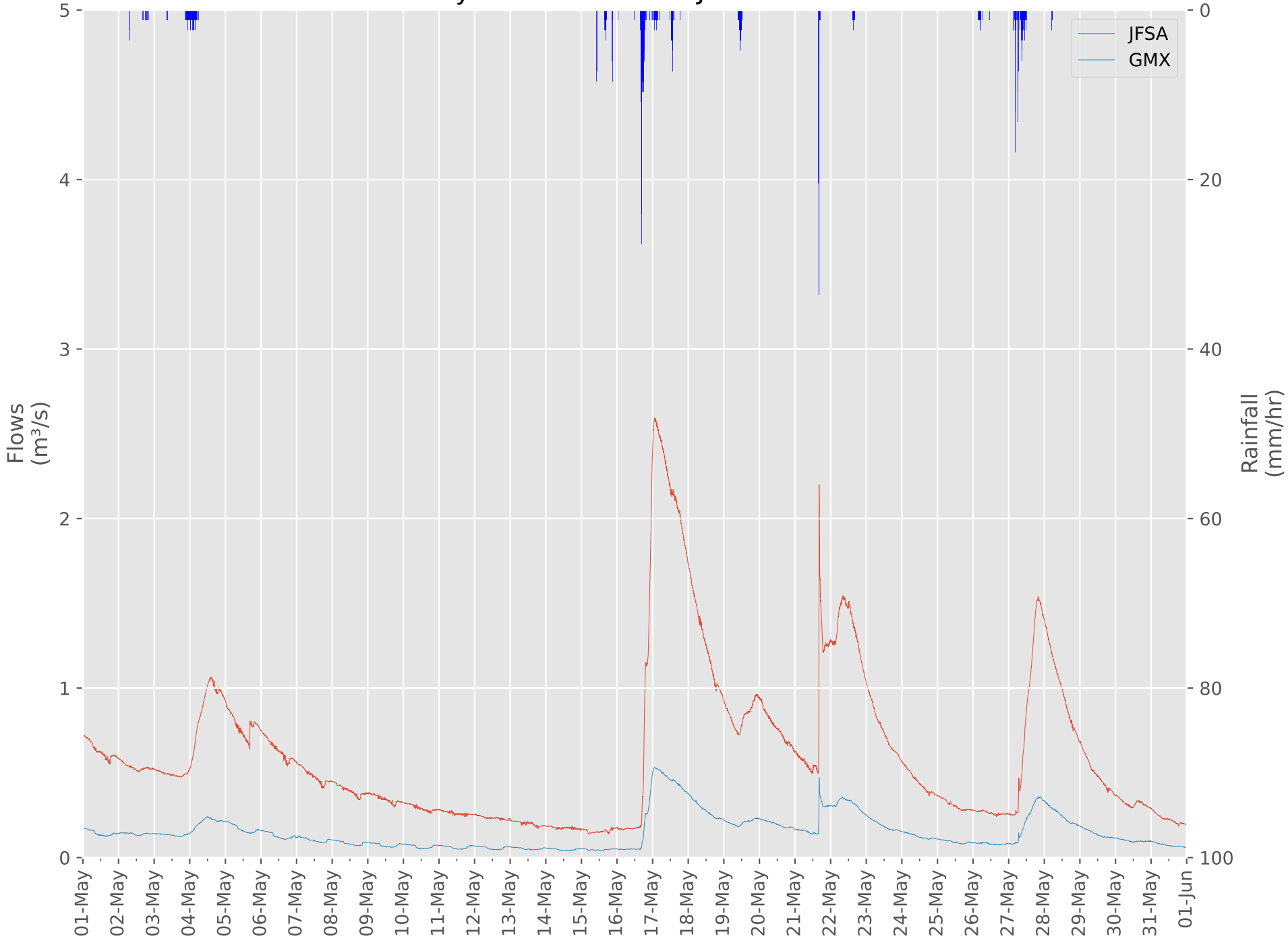
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May


S11
01-May-2022 00:00 - 01-Jun-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
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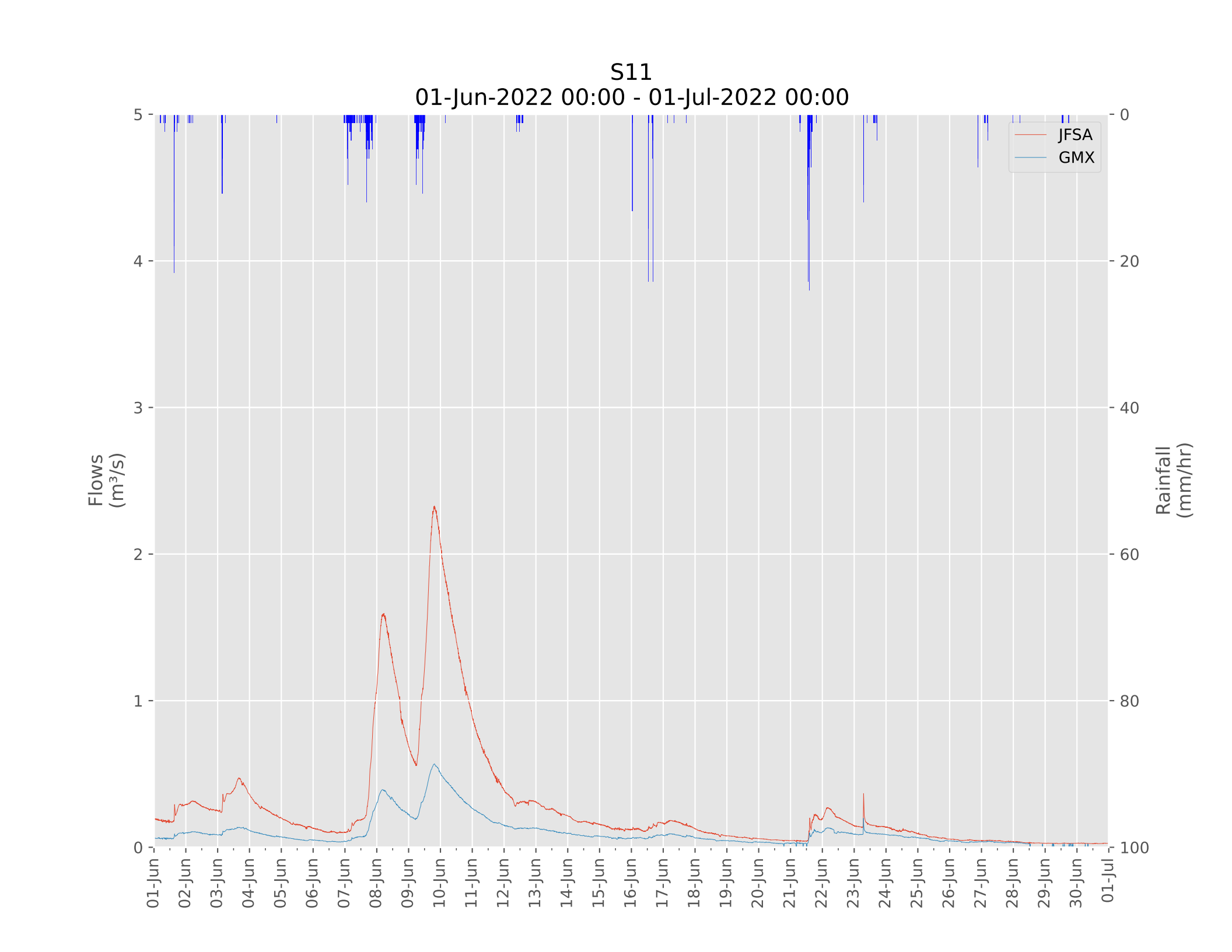
25-May
26-May
27-May
28-May
29-May
30-May
31-May
01-Jun


S11
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JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Jun
02-Jun
03-Jun
04-Jun
05-Jun
06-Jun
07-Jun
08-Jun
09-Jun
10-Jun
11-Jun
12-Jun
13-Jun
14-Jun
15-Jun
16-Jun
17-Jun
18-Jun
19-Jun
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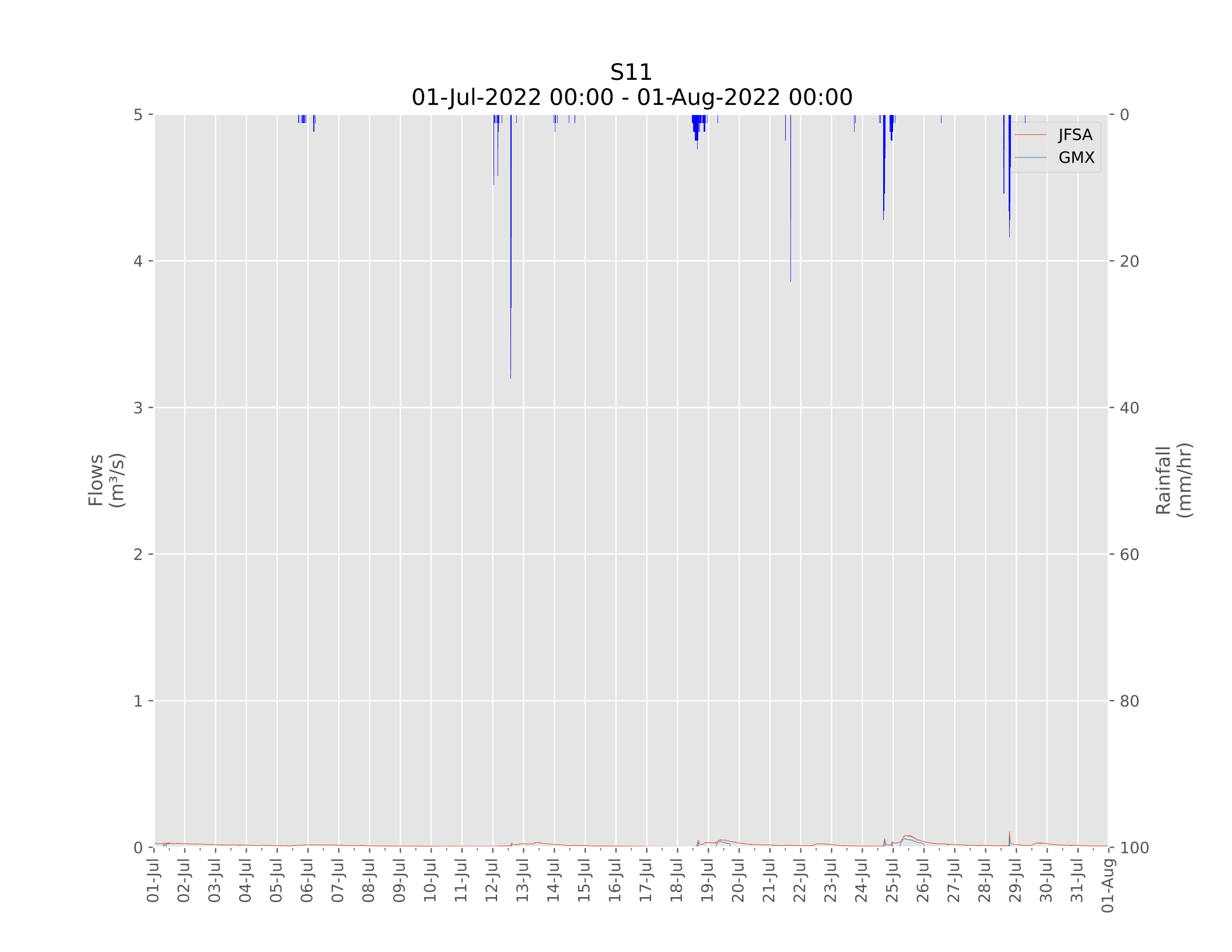
27-Jun
28-Jun
29-Jun
30-Jun
01-Jul


S11
01-Jul-2022 00:00 - 01-Aug-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Jul
02-Jul
03-Jul
04-Jul
05-Jul
06-Jul
07-Jul
08-Jul
09-Jul
10-Jul
11-Jul
12-Jul
13-Jul
14-Jul
15-Jul
16-Jul
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18-Jul
19-Jul
20-Jul
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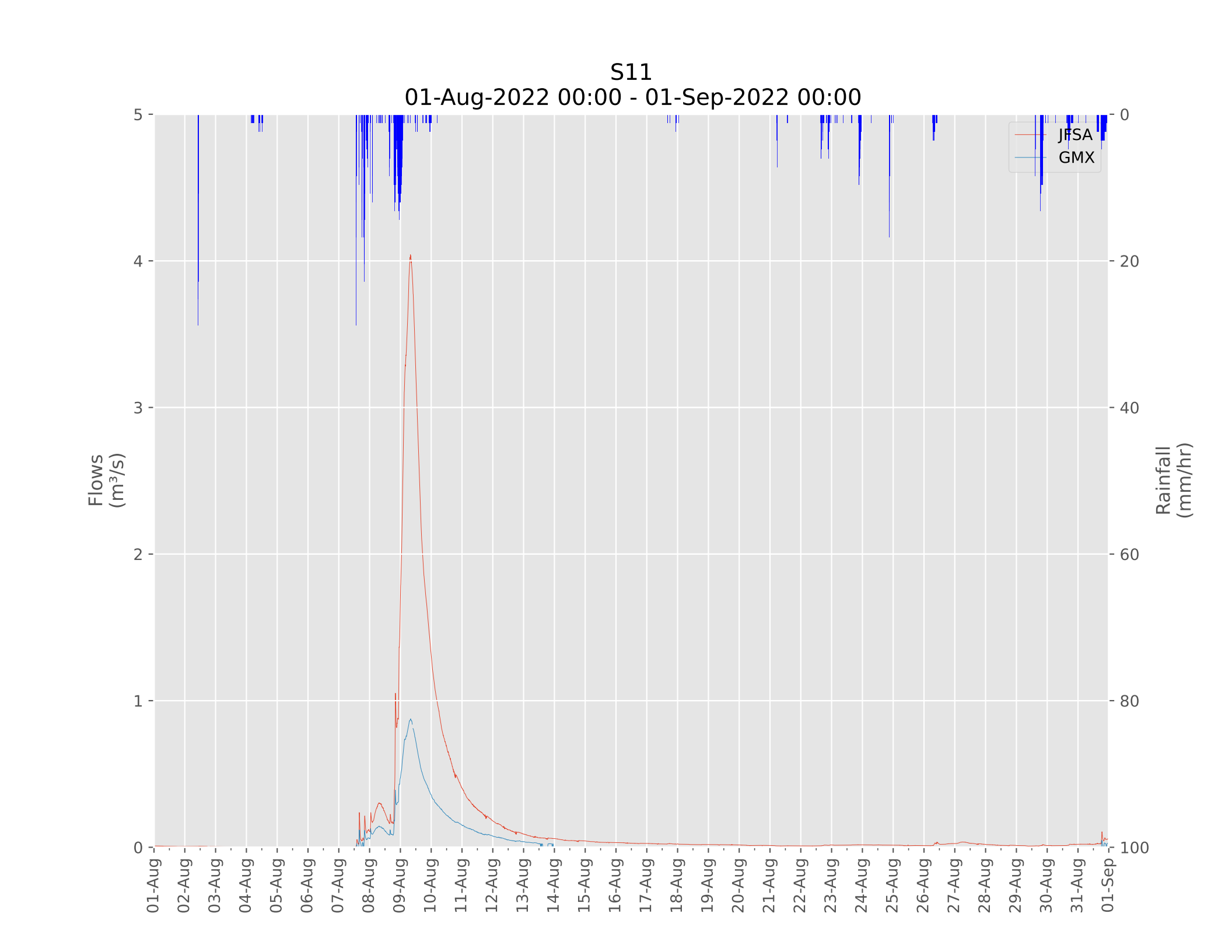
28-Jul
29-Jul
30-Jul
31-Jul
01-Aug


S11
01-Aug-2022 00:00 - 01-Sep-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
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1
2
3
4
5
0
20
40
60
80
100
01-Aug
02-Aug
03-Aug
04-Aug
05-Aug
06-Aug
07-Aug
08-Aug
09-Aug
10-Aug
11-Aug
12-Aug
13-Aug
14-Aug
15-Aug
16-Aug
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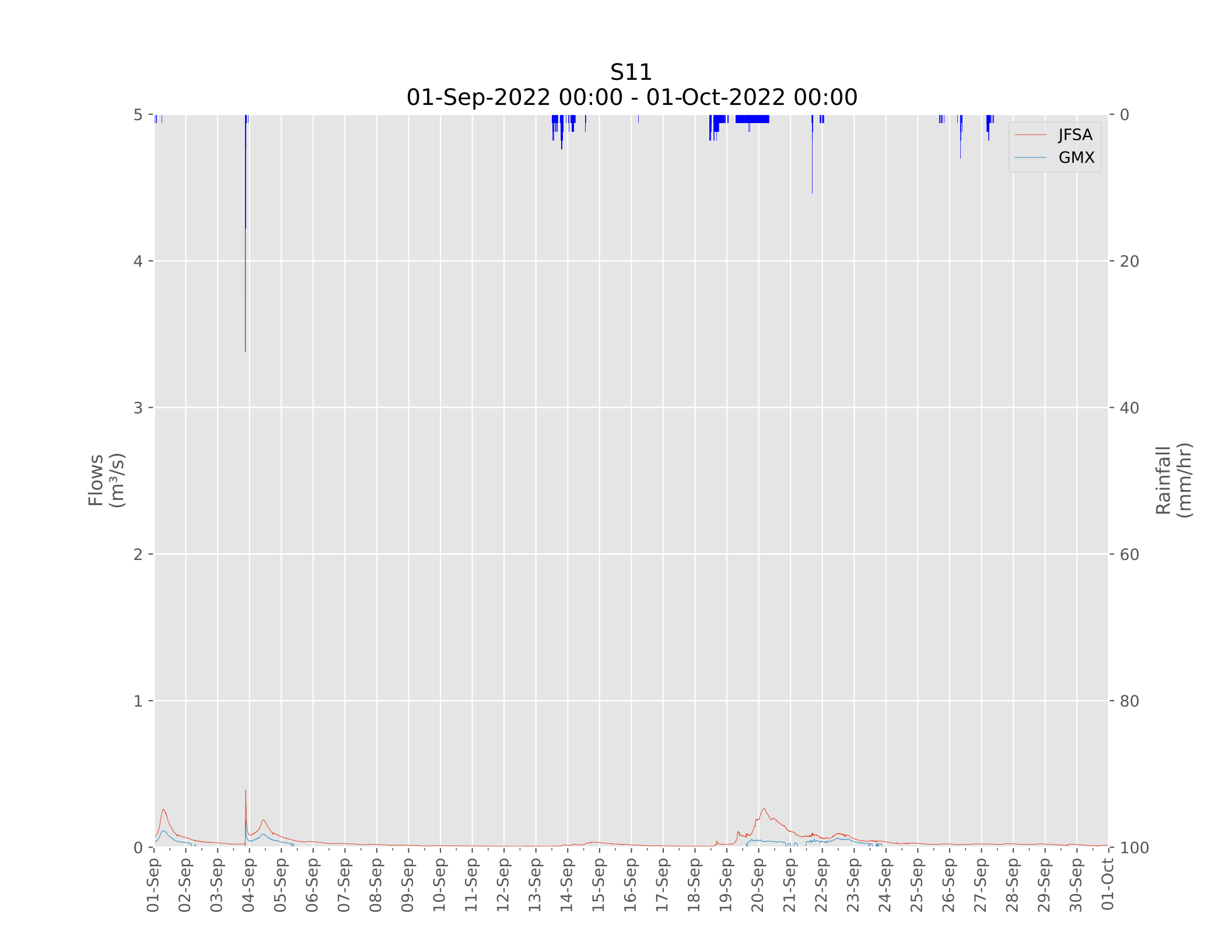
28-Aug
29-Aug
30-Aug
31-Aug
01-Sep


S11
01-Sep-2022 00:00 - 01-Oct-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
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1
2
3
4
5
0
20
40
60
80
100
01-Sep
02-Sep
03-Sep
04-Sep
05-Sep
06-Sep
07-Sep
08-Sep
09-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
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16-Sep
17-Sep
18-Sep
19-Sep
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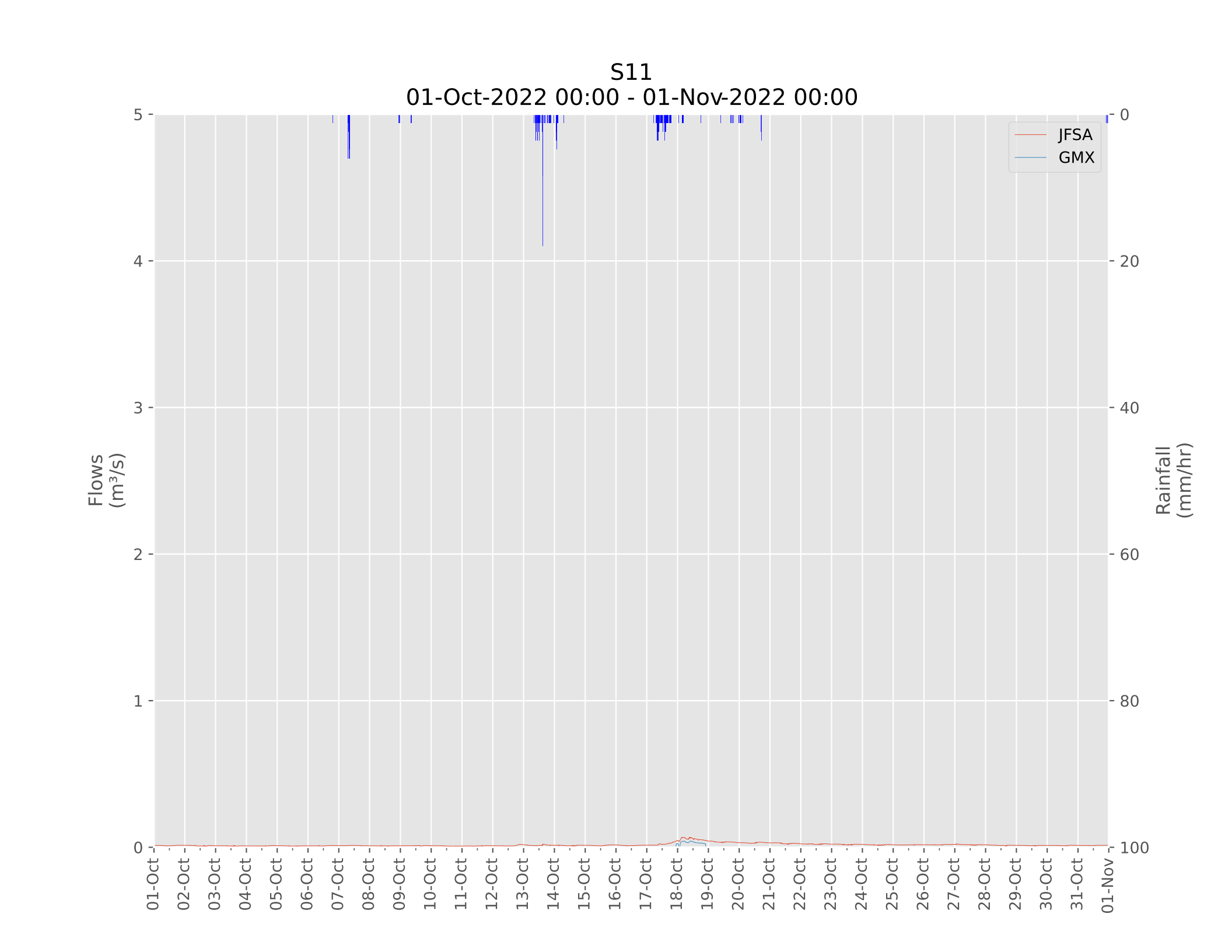
26-Sep
27-Sep
28-Sep
29-Sep
30-Sep
01-Oct


S11
01-Oct-2022 00:00 - 01-Nov-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Oct
02-Oct
03-Oct
04-Oct
05-Oct
06-Oct
07-Oct
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11-Oct
12-Oct
13-Oct
14-Oct
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17-Oct
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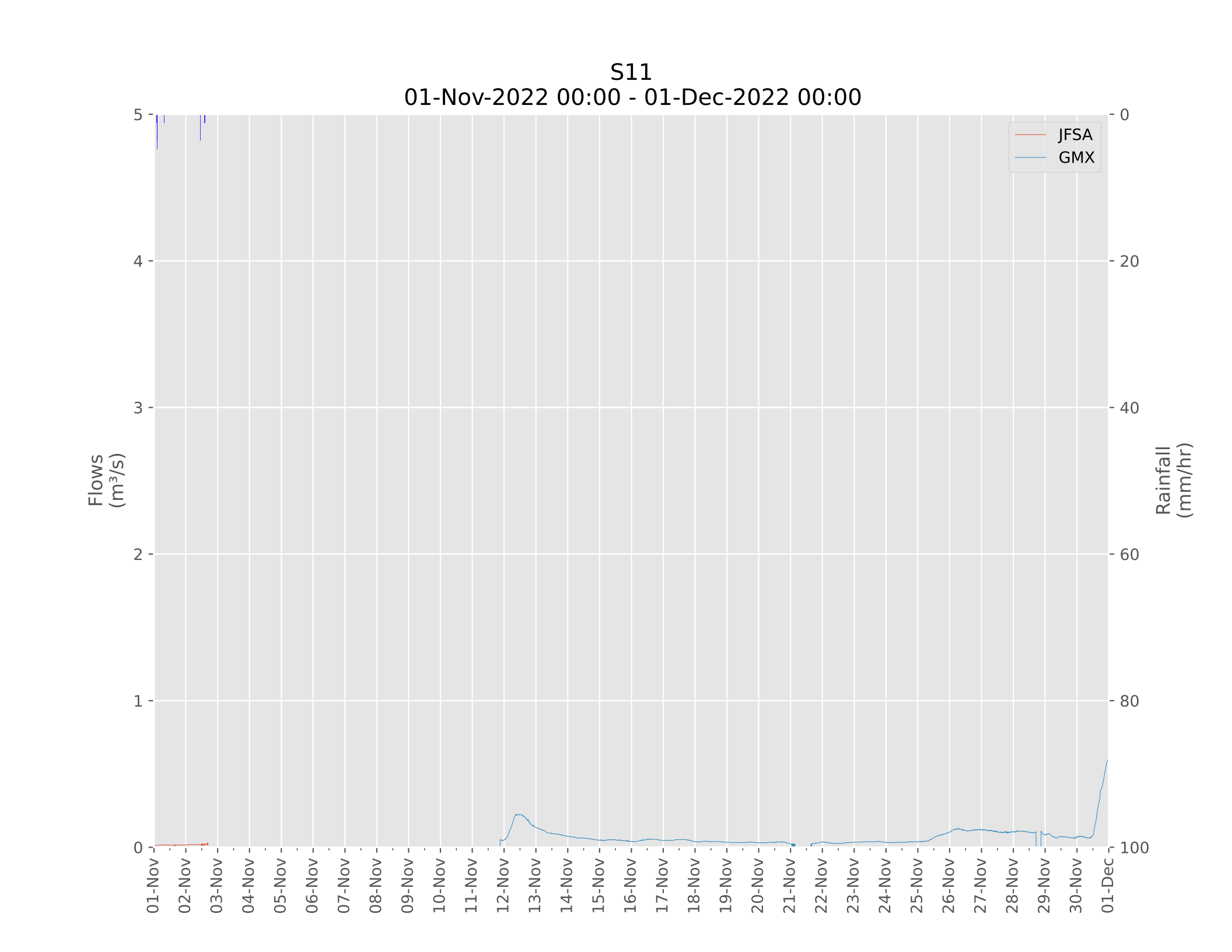
29-Oct
30-Oct
31-Oct
01-Nov


S11
01-Nov-2022 00:00 - 01-Dec-2022 00:00
JFSA
GMX
Flows (m³/s)
Rainfall (mm/hr)
0
1
2
3
4
5
0
20
40
60
80
100
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
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11-Nov
12-Nov
13-Nov
14-Nov
15-Nov
16-Nov
17-Nov
18-Nov
19-Nov
20-Nov
21-Nov
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28-Nov
29-Nov
30-Nov
01-Dec

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Ottawa. ON
Paris. ON
Gatineau. QC
Montréal. QC
Québec. QC

Appendix G

Report Figures

N

Legend

- Level Logger Site
- Rain Gauge/Barometer Site
- Study Area

SCALE: 1:35000

0 1 2 km

J.F. Sabourin and Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
www.jfsa.com

Tewin Lands 2021-22 Field Monitoring Report

Figure 1: Surface Water Monitoring Sites 2021

PROJECT	0971(01)-21
DRAWN	MP
DATE	MAY 2023

C:\Users\BrennanThomas\J.F. Sabourin and Associates Inc\JFSA-OTTAWA-SERVER - Documents\PROJ\0971\0971(01)-21 - Fieldwork\Design\GIS\sc\20221024-Infiltration Field Sites

N

Legend

- Level Logger Site
- Flow Logger Site
- Level & Flow Logger Site
- Rain Gauge/Barometer Site
- Study Area

SCALE: 1:35000

0 1 2 km

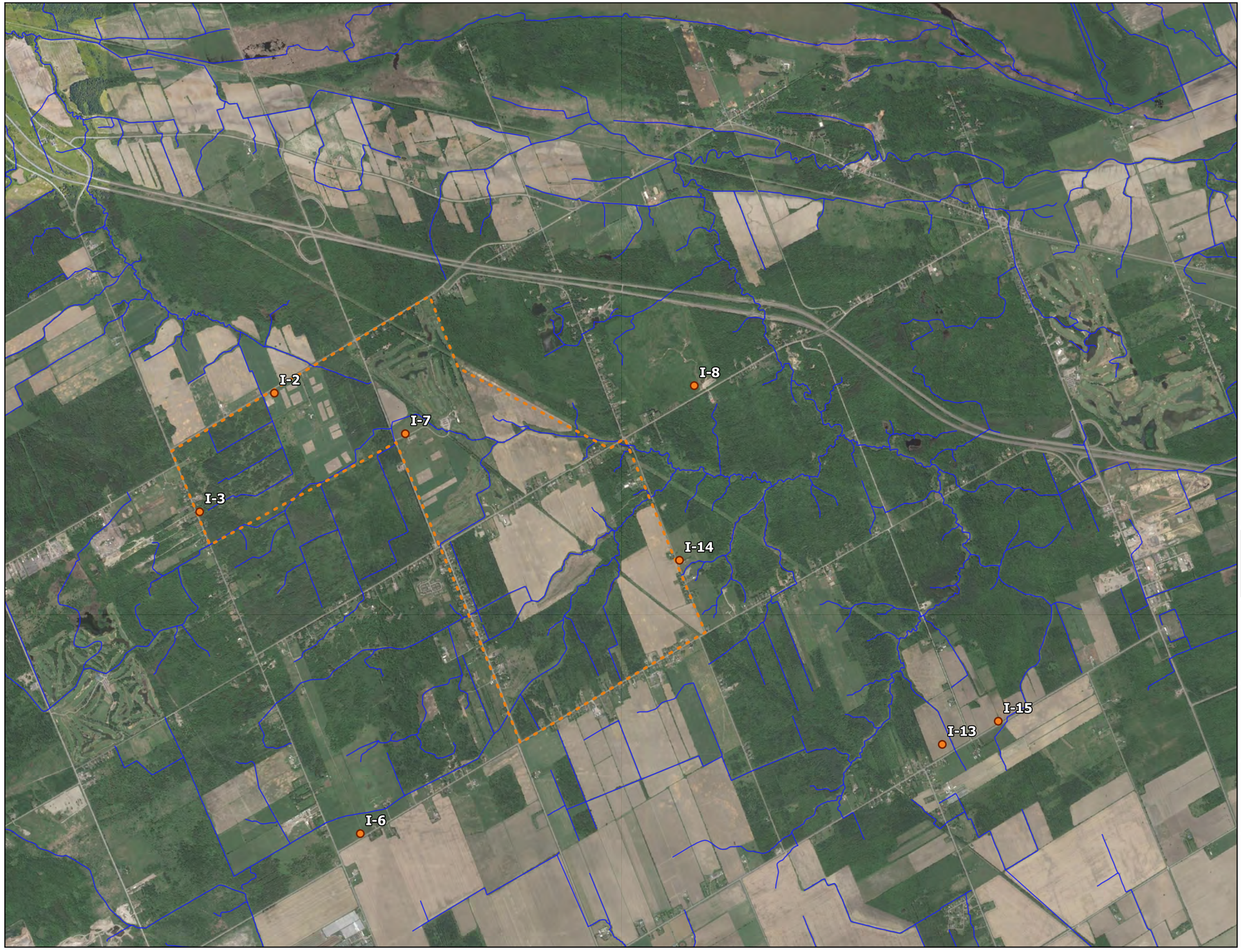
J.F. Sabourin and Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
www.jfsa.com

Tewin Lands 2021-22 Field Monitoring Report

Figure 2: Surface Water Monitoring Sites 2022

PROJECT	0971(01)-21
DRAWN	MP
DATE	MAY 2023

C:\Users\BrennanThomas\J.F. Sabourin and Associates Inc\JFSA-OTTAWA-SERVER - Documents\PROJ\0971\0971(01)-21 - Fieldwork\Design\GIS\sc\20221024-Infiltration Field Sites



N

Legend

- Infiltration Test Site
- Study Area

SCALE: 1:35000

0 1 2 km

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52 Springbrook Drive
Ottawa, ON, K2S 1B9
(613) 836-3884
www.jfsa.com

Tewin Lands 2021-22 Field Monitoring Report

Figure 8: Infiltration Test Site Locations 2022

PROJECT	0971(01)-21
DRAWN	MP
DATE	MAY 2023