



WORLD  
METEOROLOGICAL  
ORGANIZATION



## **Concept Note for Capacity Building on Hydrological Data Exchange, standardization, and Interoperability in Region VI**

**Online on 25 January 2024 from 13:00 to 16:00 CET and 26  
January 2024 from 09:00 to 11:30 CET**

**Face-to-Face 29–30 January 2024, Zagreb, Croatia**

### **Introduction**

The World Meteorological Organization (WMO) in collaboration with the International Sava River Basin Commission (ISRBC) is organizing a Capacity Building Workshop on Hydrological Data Exchange, Standardization, and Interoperability in RA VI, to be held on 29 and 30 January 2024. The training will take place in the premises of ISRBC in Zagreb, Croatia. The workshop is aimed for the representatives of Sava Hydrological Information System data providers and selected experts from Danube and Rhine River basin countries. The resource persons for the training will be drawn from WMO experts (Joint Expert Team on Hydrological monitoring-JET-HYDMON), OGC Hydrology Domain Working Group (OGC-HDWG) and WMO partner organizations providing technical solutions like WHOS DAB (Earth and Space Science Informatics laboratory (ESSI-lab) of the National Research Council of Italy - Institute of Atmospheric Pollution Research (CNR-IIA)) and OSCAR/Surface platform (Meteo Swiss).

### **Aim of the Training**

The training, in line with activities stipulated by the [\*Memorandum of Understanding between the World Meteorological and the International\*](#)



WORLD  
METEOROLOGICAL  
ORGANIZATION



[Sava River Basin Commission](#), will be conducted for three (3) full days; one (1) day online and two (2) face-to-face all to be planned in January.

The aim of the workshop involves the following:

1. Enable ISRBC and Sava, Danube and Rhine Members to access and share hydrological data using relevant meta (data) standards and principles supported by WMO Hydrological Observing System (WHOS) as a component of WMO Global Integrated Global Observing System (WIGOS) and WMO Information System (WIS2.0) for data interoperability.
2. Equip the participants with necessary knowledge to strengthen the existing policy on the exchange of hydrological and meteorological data and information in the Sava River basin through the implementation of WMO Unified Data Policy.
3. Demonstrate the benefit of system integration, provide training on registration of hydrological stations in OSCAR (Observing Systems Capability Analysis and Review)/Surface and allocation of WIGOS Station Identifiers (WSIs).
4. Acquire skills and knowledge of WHOS core tools and supported technologies for strengthening the existing systems and platforms within the countries and basins.
5. Explore implementation of the WMO Hydrological Status and Outlook System (HydroSOS), EW4All initiative and their linkages to WHOS.

## **Output**

1. Necessary skills acquired to improve data access, exchange, and standardization.



WORLD  
METEOROLOGICAL  
ORGANIZATION



2. Awareness for systems integration (OSCAR, WHOS, WIS and HydroSOS)
3. Roadmap for WHOS implementation, operation and HydroSOS pilot
4. Background for further developments of Sava HIS and its interconnectivity with the WMO systems and tools.

## Programme

Time (CET)	Topic	Facilitator/Presenter
<b>Online Session One: 25 January 2024 from 13:00 to 16:00</b>		
13:00–13:20	Introduction and welcome	Dragan Zeljko, ISRBC Executive Secretary Sari Lappi, WMO Secretariat Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
13:20–13:50	SAVA HIS	Mirza Sarač, ISRBC
13:50–14:15	WHOS and SAVA HIS (data protocols and tools, data, metadata)	Mirza Sarač, ISRBC Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
14:15–14:30	Questions and answers	Johanna Korhonen, WMO Secretariat
<b>14:30-14:45</b>	<b>Break</b>	
14:45–15:00	Danube HIS	Zoran Major and Alex Hoebart, ICPDR
15:00–15:30	WaterML2.0 part 1-5	Sylvain Grellet, BRGM
15:30–16:00	Questions and answers, Closing	Johanna Korhonen, WMO Secretariat



WORLD  
METEOROLOGICAL  
ORGANIZATION



INTERNATIONAL SAVA RIVER BASIN COMMISSION

**Online Session Two: 26 January 2024 from 09:00 to 11:30**

09:00–09:05	Recap of day 1	Mirza Sarač, ISRBC
09:05–09:20	SensorThings API and WaterML2.0	Hylke van der Schaaf, SensorThings API SWG co-chair and implementer of FROST Sylvain Grellet, BRGM
09:20–09:35	WHOS DAB, Ontology, and other technologies	Enrico Boldrini, ESSI-lab of the CNR-IIA Washington Otieno, WMO Secretariat
09:35–09:50	Questions and answers	Enrico Boldrini, ESSI-lab of the CNR-IIA Washington Otieno, WMO Secretariat
09:50–10:00	<b>Break</b>	
10:00–10:15	WHOS Integration with other Systems (including WIS, OSCAR)	Enrico Boldrini, ESSI-lab of the CNR-IIA Washington Otieno, WMO Secretariat
10:15–10:35	HydroSOS	Katie Facer-Childs, UKCEH Sulagna Mishra, WMO Secretariat
10:35–10:50	Questions and answers	Sulagna Mishra, WMO Secretariat
10:50–11:10	OSCAR/Surface and WSI	Lucia Cappelletti, MeteoSwiss Washington Otieno, WMO Secretariat
11:10–11:20	Recap and conclusion	Johanna Korhonen, WMO Secretariat
11:20–11:30	Closing remarks	Sari Lappi, WMO Secretariat Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON

**End of online session**



WORLD  
METEOROLOGICAL  
ORGANIZATION



INTERNATIONAL SAVA RIVER BASIN COMMISSION

<b>Physical Session (ISRBC, Zagreb Croatia) 29th January 2024</b>		
09:00–09:30	Introduction and Welcome	Dragan Zeljko, ISRBC Executive Secretary Sari Lappi, WMO Secretariat Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
9:30–10:40	SAVA HIS (data interoperability and Tools)	Mirza Sarač, ISRBC
10:40–11:30	Questions and answers	Johanna Korhonen, WMO Secretariat
10:45–11:00	<b>Coffee Break</b>	
11:00–11:30	Demonstration of Danube HIS	Zoran Major and Alex Hoebart, ICPDR
11:30–11:40	Open discussions: Learning exchange on SAVA HIS and Danube HIS	Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
11:40–12:30	Application of WIGOS Metadata Standard	Jörg Klausen, chair TT-WIGOS Metadata
	KPIs for WIGOS metadata	Jörg Klausen, chair TT-WIGOS Metadata Anna Milan, WMO Secretariat
12:30–12:40	Questions: Application of WIGOS Metadata Standard	Jörg Klausen, chair TT-WIGOS Metadata Lucia Cappelletti, MeteoSwiss
12:40–13:00	WSI and OSCAR demonstration	Lucia Cappelletti, MeteoSwiss Washington Otieno, WMO Secretariat
13:00–14:00	<b>Lunch</b>	
14:00–14:30	WHOS DAB and OSCAR API XML template demonstration	Roberto Roncella, ESSI-lab of the CNR-IIA Lucia Cappelletti, MeteoSwiss
14:30–15:40	Pilot registration of Stations in OSCAR	Roberto Roncella, ESSI-lab of the CNR-IIA Lucia Cappelletti, MeteoSwiss Washington Otieno, WMO Secretariat
15:40–16:50	Water Quality Interoperability experiment: Implementation of WaterML2.0 part 5 in SAVA HIS (use sample data)	Sylvain Grellet, BRGM Hylke van der Schaaf, SensorThings API SWG co-chair and implementer of FROST



WORLD  
METEOROLOGICAL  
ORGANIZATION



INTERNATIONAL SAVA RIVER BASIN COMMISSION

		Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
16:50–17:00	Recap	Sari Lappi, WMO Secretariat and Johanna Korhonen, WMO Secretariat
<b>Physical Session (ISRBC, Zagreb Croatia) 30th January 2024</b>		
9:00–9:15	Overview of WHOS DAB, Ontology, and technologies	Washington Otieno, WMO Secretariat
9:15–10:45	Demonstrations: Implementation of WHOS Ontology; Metadata mappings, profiles, discovery and WaterML2.0 standards	Enrico Boldrini, ESSI-lab of the CNR-IIA Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON
10:45–11:00	<b>Break</b>	
11:00-11:30	Integration of new OGC Standards e.g SensorThings API,	Hylke van der Schaaf, SensorThings API SWG co-chair and implementer of FROST Sylvain Grellet, BRGM
11:30-12:00	Integration of CUAHSI Technologies, and HydroServer into WHOS	Enrico Boldrini, ESSI-lab of the CNR-IIA
12:00–12:30	WHOS and WIS2.0 interoperability (global catalogue, and MQTT, topic hierarchy)	Enrico Boldrini, ESSI-lab of the CNR-IIA Washington Otieno, WMO Secretariat
12:30–13:00	Questions and Answers	Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON Enrico Boldrini, ESSI-lab of the CNR-IIA
13:00-14:00	<b>Lunch</b>	
14:00 –14:30	WHOS metadata quality	Juan F. Bianchi, Instituto Nacional del Agua, Argentina
14:40–15:00	WHOS monitoring and WIS Monitoring	Enrico Boldrini, ESSI-lab of the CNR-IIA Washington Otieno, WMO Secretariat



WORLD  
METEOROLOGICAL  
ORGANIZATION



15:00–15:30	Open Discussion: Improvement of SAVA HIS	Mirza Sarač, ISRBC
15:30–15:45	<b>Break</b>	
15:45–16:15	Open discussion: Optimization of performance of WHOS DAB and User Interface tools	Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON  Washington Otieno, WMO Secretariat
16:15–16:30	Conclusion, Next Steps for WHOS and HydroSOS in Sava, Danube and Rhine	Johanna Korhonen, WMO Secretariat
16:30–16:45	Closing and final remarks	Sari Lappi, WMO Secretariat  Zoran Major, International Commission for the Protection of the Danube River  Silvano Pecora, WMO INFCOM Vice-President and Chair JET-HYDMON  Dragan Zeljko, ISRBC Executive Secretary
<b>End of Training</b>		