HYDROSPACE 2023

27 November - 1 December 2023 | FIL Lisbon, Portugal

PROGRAMME

OVERVIEW PROGRAMME

DAY 1, MONDAY 27 NOVEMBER 2023	
08:00-09:00	REGISTRATION Atrium
09:00-11:00	WORKSHOP PLENARY SESSION: Opening, keynote presentations Auditorium I
11:00-11:30	Coffee Break
11:30-12:30	WORKSHOP PLENARY SESSION: Opening, keynote presentations Auditorium I
12:30-14:00	Lunch (offsite)
14:00-16:00	1.1 Advances in remote sensing methods, techniques and products Auditorium I
16:00-16:30	Coffee Break
16:30-18:30	1.2 Advances in remote sensing methods, techniques and products Auditorium I
18:30-19:30	Ice Breaker Reception

OVERVIEW PROGRAMME

DAY 2, TUESDAY 28 NOVEMBER 2023		
09:00-11:00	1.3 Advances in remote sensing methods, techniques and products Auditorium I	ESA Science Cluster for Hydrology Auditorium II
11:00-11:30	Coffee Break	
11:30-12:30	HYDROSPACE-2023 Poster Session	
12:30-14:00	Lunch (offsite)	
14:00-16:00	1.4 Advances in remote sensing methods, techniques and products Auditorium I	3.1 Advances in science and process understanding Auditorium II
16:00-16:30	Coffee Break	
16:30-18:30	1.5 Advances in remote sensing methods, techniques and products	3.2 Advances in science and process understanding

OVERVIEW PROGRAMME

DAY 3, WEDNESDAY 29 NOVEMBER 2023		
09:00-11:00	1.6 Advances in remote sensing methods, techniques and products Auditorium I	4.1 Water science for society Auditorium II
11:00-11:30	Coffee Break	
11:30-12:30	HYDROSPACE-2023 Poster Session	
12:30-14:00	Lunch (offsite)	
14:00-16:00	1.7 Advances in remote sensing methods, techniques and products Auditorium I	4.2 Water science for society Auditorium II
16:00-16:30	Coffee Break	
16:30-18:30	2.1 Advances in the use of EO for land surface and hydrological modelling Auditorium I	4.3 Water science for society Auditorium II
18:30-20:00	Free time to freshen up before the gala dinner	
20:00-23:30	Dinner offered by the Operational Space Hydrology Center - a French open initiative Iberostar Lisboa	

OVERVIEW PROGRAMME

DAY 4, THURSDAY 30 NOVEMBER 2023		
09:00-11:00	5.1 Novel technologies and future missions: the future of water cycle research Auditorium I	2.2 Advances in the use of EO for land surface and hydrological modelling Auditorium II
11:00-11:30	Coffee Break	
11:30-13:30	5.2 Novel technologies and future missions: the future of water cycle research Auditorium I	2.3 Advances in the use of EO for land surface and hydrological modelling Auditorium II
13:30-15:00	Lunch (offsite)	
15:00-17:00	5.3 Novel technologies and future missions: the future of water cycle research Auditorium I	2.4 Advances in the use of EO for land surface and hydrological modelling Auditorium II
17:00-17:30	Coffee Break	
17:30-18:30	Freetime for preparing final reporting and more poster viewing Auditorium I	Freetime for preparing final reporting and more poster viewing Auditorium II

OVERVIEW PROGRAMME

DAY 5, FRIDAY 1 DECEMBER 2023	
09:00-11:00	HYDROSPACE 2023 Plenary Closing Session: Keynote, Sessions Discussion debrief and General Discussion Auditorium I
11:00-11:30	Coffee Break
11:30-12:45	HYDROSPACE-2023 Plenary Closing Session: Final Words, Closing Remarks and Outlook Auditorium I
12:45-13:00	Posters take down – End of HYDROSPACE-2023

Time	Title	Lecturer
8:00 - 9:00	**Registration**	
Monday 09:00 - 12:30 Session		
	AUDITORIUM I: Opening Session	
9:00 - 9:10	Introduction and Scope of the Workshop	Jérôme Benveniste *(ESA)*
9:10 - 9:20	Welcome from Portugal	Ricardo Conde *(Portuguese Space Agency)*
9:20 - 9:30	Welcome ESA	Jérôme Benveniste *(ESA)*
9:30 - 9:40	Welcome CNES	Sophie Le Gac *(CNES)*
9:40 - 9:50	Welcome GEWEX	Peter van Oevelen *(GEWEX)*
9:50 - 10:00	Welcome EC DG-RTD	Panagiotis Balabanis *(EC DG-RTD)*
10:00 - 10:20	Keynote: Towards a Digital Twin for the Water and Energy Cycle over Land	Luca Brocca *(CNR-IRPI)*
10:20 - 10:40	Keynote: Enabling Climate Resilient Flood Management in South Sudan Using Earth Observation Data	Beatriz Revilla Romero *(GMV)*

10:40 - 11:00	Keynote: Toward a global long-term spatio-temporal variations of surface water storage anomaly from space from 1992 to 2015	Benjamin Kitambo *(LEGOS)*
11:00 - 11:30	**Coffee Break**	
11:30 - 11:50	Keynote: Hydrogeodesy for addressing key hydrological questions and water resource sustainability	Fernando Jaramillo *(Stockholm University)*
11:50 - 12:10	Keynote: Conjugate Biophysical Regulation of Stomatal and Aerodynamic Conductances Determines Terrestrial Evaporation Response to Land Surface Temperature Variability	Kanishka Mallick *(Luxembourg Institute of Science and Technology)*
12:10 - 12:30	Keynote: Update on SWOT: Transformative data from revolutionary technology, and implications for hydrology and water intelligence	Parag Vaze *(NASA/JPL)*
12:30 - 14:00	**Lunch (offsite)**	
Monday 14:00 - 16:00 Session		
AUDITORIUM I: 1.1 Advances in remote sensing methods, techniques and products		
Co-chairs: Angelica Tarpanelli, Karina Nielsen		

14:00 - 14:20	Extending river discharge time series of the Global Runoff Data Center (GRDC) using satellite data: A product with uncertainty estimate	Omid Elmi *(Institute of Geodesy, University of Stuttgart)*
14:20 - 14:40	What can we learn from numerical simulations of satellite altimetry signals over rivers? Detailed study and comparison to a dataset of Sentinel-6MF individual echoes	Sophie Le Gac *(CNES)*
14:40 - 15:00	Generation of high-resolution water surface slopes from multi-mission satellite altimetry	Christian Schwatke *(DGFI-TUM)*
15:00 - 15:20	Measuring longitudinal river profiles from Sentinel-6MF Fully-Focused SAR mode	François Boy *(CNES)*
15:20 - 15:40	Altimetry for the hydrology of Arctic rivers	Elena Zakharova *(EOLA)*
15:40 - 16:00	Discussion	
16:00 - 16:30	**Coffee Break**	
Monday 16:30 - 18:30 Session		
AUDITORIUM I: 1.2 Advances in remote sensing methods, techniques and products		
Co-chairs: Kevin Larnier, Elena Zakharova		
16:30 - 16:50	Fully Focused SAR Altimetry and Innovative River Level Gauges for Coastal Monitoring – the FFSAR-Coastal Project	David Cotton *(SATOC)*

16:50 - 17:10	An integrated approach for estimating river discharge by leveraging near-infrared sensors	Paolo Filippucci *(CNR-IRPI)*
17:10 - 17:30	Estimating Discharge of Narrow Rivers Using Satellite Altimetry and Optical Imagery	Daniel Scherer *(DGFI-TUM)*
17:30 - 17:50	Satellite-based mapping of river discharge at very high spatio-temporal resolution: The Ebro and Po basins	Victor Pellet *(Estellus)*
17:50 - 18:10	The River Discharge Climate Change Initiative project	Angelica Tarpanelli *(CNR-IRPI)*
18:10 - 18:30	Discussion	
18:30 - 19:30	**Icebreaker**	

Tuesday 09.00-11.00 Session		
AUDITORIUM I: 1.3 Advances in remote sensing methods, techniques and products		
Co-chairs: Fernando Jaramillo, Fabrice Papa		
9:00 - 9:20	Long-term Water Storage Anomalies Through GRACE Observations and Models' Estimation	Peyman Saemian *(Institute of Geodesy, University of Stuttgart)*
9:20 - 9:40	Satellite-derived multivariate world-wide lake physical variable time series for climate studies	Jean-Francois Cretaux *(LEGOS)*
9:40 - 10:00	Improving the retrieval of lake ice thickness with radar altimetry data	Anna Mangilli *(CLS)*
10:00 - 10:20	Tracking the volume changes of shallow lakes in West Africa with remote sensing: comparison of existing methods to derive the hypsometric curve	Felix Girard *(CNRS-GET-CLS)*
10:20 - 10:40	The FluViSat project: Measuring global streamflow with very high resolution satellite video	Nick Everard *(UKCEH)*
10:40 - 11:00	Discussion	
11:00 - 11:30	Coffee Break	
11:30 - 12:30	HYDROSPACE-2023 Poster Session	
12:30 - 14:00	Lunch (offsite)	

Tuesday 09.00-14.00 Session		
AUDITORIUM II: ESA Science Cluster for Hydrology		
Co-chairs: Espen Volden, Karim Douch		
09:00 - 09:08	Introduction	Espen Volden *(ESA)*
09:08 - 09:16	4DMED - Hydrology	Christian Massari *(CNR-IRPI)*
09:16 - 09:24	DTE Hydrology Platform	Luca Brocca *(CNR-IRPI)*
09:24 - 09:32	AI4EO Water	Filipe Aires *(ESTELLUS)*
09:32 - 09:40	STREAM-NEXT & DEMETRAS	Angelica Tarpanelli *(CNR-IRPI)*
09:40 - 09:48	Hydrocoastal	Karina Nielsen *(DTU)*
09:48 - 09:56	AlpSnow	Thomas Nagler *(ENVEO)*
09:56 - 10:04	Irrigation+	Jacopo Dari *(University of Perugia/ CNR-IRPI)*
10:04 - 10:12	DEMETRAS SM	Francesco de Zan *(Delta Phi)*

10:12 - 10:20	4DHydro	Luis Samaniego *(UFZ)*
10:20 - 10:28	Storage-Discharge Relationship	Karim Douch *(ESA)*
10:28 - 11:00	Questions and discussion	CO-CHAIRS
11:00 - 11:30	**Coffee Break**	
11:30 - 12:30	**HYDROSPACE-2023 Poster Session**	
12:30 - 14:00	**Lunch (offsite)**	
Tuesday 14.00-16.00 Session		
AUDITORIUM I: 1.4 Advances in remote sensing methods, techniques and products		
Co-chairs: Nuno Moreira, Luca Ciabatta		
14:00 - 14:20	Increasing information content delivery for the humanitarian response using FloodSENS and recent advances in AI technologies	Guy Schumann *(RSS-Hydro)*
14:20 - 14:40	Extreme snowfall in the Sierra Nevada Mountains: implications for terrestrial water storage and water supply	Noah Molotch *(University of Colorado)*

14:40 - 15:00	Remote sensing of recent extreme daily precipitation events in Madeira island	Nuno Moreira *(IPMA)*
15:00 - 15:20	RainGNSS : an in-situ network for altimetry, water vapor and precipitation validation of satellite-based observations	Bruno Picard *(Fluctus Sas)*
15:20 - 15:40	Satellite observations of snow parameters in mountain regions in support of water management	Thomas Nagler *(ENVEO)*
15:40 - 16:00	Discussion	
16:00 - 16:30	**Coffee Break**	
Tuesday 14.00-16.00 Session		
AUDITORIUM II: 3.1 Advances in science and process understanding		
Co-chairs: Benjamin Kitambo, Karim Douch		
14:00 - 14:20	Discharge and water storage change from modern-era satellite altimetry	Luciana Fenoglio *(University of Bonn)*
14:20 - 14:40	Water cycle events in the global mass budget	John Reager *(NASA/JPL)*

14:40 - 15:00	Joint analysis of remotely sensed soil moisture and daily satellite gravimetry to describe water storage dynamics around hydrological extremes	Daniel Blank *(HafenCity University Hamburg)*
15:00 - 15:20	Current availability and distribution of Congo Basin's freshwater resources	Mohammad Tourian *(Institute of Geodesy, University of Stuttgart)*
15:20 - 15:40	Contribution of anthropogenic and hydroclimatic factors on the variation of surface water extent across the contiguous United States	Serena Ceola *(University of Bologna)*
15:40 - 16:00	Discussion	
16:00 - 16:30	**Coffee Break**	

Tuesday Sessions 16.30-18.30		
AUDITORIUM I: 1.5 Advances in remote sensing methods, techniques and products		
Co-chairs: Diego Miralles, Jacopo Dari		
16:30 - 16:50	The Two-Source Energy Balance (TSEB) model formulation using thermal-infrared remote sensing for evapotranspiration estimation: Applications from field to global scales	William Kustas *(USDA-Agricultural Research Service)*
16:50 - 17:10	Evapotranspiration Estimation with Multi-Source Satellite Data in the OpenET platform	Yun Yang *(Mississippi State University)*
17:10 - 17:30	Assessing the Influence of Nearshore Bathymetry on Coastal Overtopping due to Extreme Sea Level Events: A Satellite-Derived Bathymetry and XBeach Modeling Approach	Soraia Romão *(CoLAB/Atlantic)*
17:30 - 17:50	Advances in Novel Tropospheric Moisture and Stable Water Vapour Isotopologue Satellite Products from SWIR Sensors	Tim Trent *(University of Leicester)*
17:50 - 18:10	Sentinel-6/Michael Freilich performances assessment over Inland Waters during tandem phase with Jason-3	Nicolas Taburet *(CLS)*
18:10 - 18:30	Discussion	

Tuesday Sessions 16.30-18.30		
AUDITORIUM II: 3.2 Advances in science and process understanding		
Co-chairs: Cintia Bonanad, Sofia Ermida		
16:30 - 16:50	20 Regional-scale, high-resolution estimates of irrigation water use from satellite data	Jacopo Dari *(University of Perugia/CNR-IRPI)*
16:50 - 17:10	Lake Desiccation Monitoring in Persian Plateau, Causes and Effects	Amirhossein Ahrari *(University of Oulu)*
17:10 - 17:30	The EUMETSAT Satellite Applications Facility on Land Surface Analysis - Improving our understanding of Land Surface Processes	Isabel Trigo *(IPMA)*
17:30 - 17:50	Compound extreme sea level events on an estuarine environment: combining in-situ, satellite and modelling tools	Cintia Bonanad *(ATLANTIC CoLAB)*
17:50 - 18:10	Discussion	

Wednesday 09.00-11.00 Sessions		
AUDITORIUM I: 1.6 Advances in remote sensing methods, techniques and products		
Co-chairs: Nicolas Picot, Jean-François Crétaux		
9:00 - 9:20	Calibration/Validation of SWOT measurements over the lake Issyk-kul	Jean-François Cretaux *(CNES)*
9:20 - 9:40	SWOT early results over rivers	Roger Fjørtoft *(CNES)*
9:40 - 10:00	SWOT early results over lakes	Claire Pottier *(CNES)*
10:00 - 10:20	Cal/Val of HR SWOT products using in-situ networks and in-flight nadir altimetry missions	Julien Renou *(CLS)*
10:20 - 10:40	First analysis of SWOT data on the Garonne River near Marmande	Jean-Christophe Poisson *(Vortex-io)*
10:40 - 11:00	Discussion	
11:00 - 11:30	Coffee Break	

Wednesday 09.00-11.00 Sessions		
AUDITORIUM II: 4.1 Water science for society		
Co-chairs: Christian Schwatke, Francesco Avanzi		
9:00 - 9:20	Satellite products supporting the understanding of the interaction between inland waters and the coastal zone during extreme events: the case study of the Po River drought	Angelica Tarpanelli *(CNR-IRPI)*
9:20 - 9:40	The EOatSEE coastal total water level product: development, validation, and application	Catarina Cecilio *(ATLANTIC CoLAB)*
9:40 - 10:00	Combining large scale in-situ network and satellite data: towards digital twins of rivers	Jean-christophe Poisson *(Vortex-io)*
10:00 - 10:20	Drought monitoring and early warning in Mozambique with satellite soil moisture data	Mariette Vreugdenhil *(TU Wien)*
10:20 - 10:40	Depleting groundwater in the Po River Plain, Italy as seen by observations from GRACE and vertical land motion	Christian Massari *(CNR-IRPI)*
10:40 - 11:00	Discussion	
11:00 - 11:30	Coffee Break	
11:30 - 12:30	HYDROSPACE-2023 Poster Session	
12:30 - 14:00	Lunch (offsite)	

Wednesday 14.00-16.00 Sessions		
AUDITORIUM I: 1.7 Advances in remote sensing methods, techniques and products		
Co-chairs: Marco Restano, Jiaming Chen		
14:00 - 14:20	Using image processing techniques to detect inland water bodies in Sentinel-(6)MF Fully Focused SAR radargrams and improve water surface height retrieval: A case study over Garonne River	Jean-Alexis Daguzé *(CLS)*
14:20 - 14:40	River discharge estimation from altimetry with Fully-Focused SAR technique	Jiaming Chen *(University of Bonn)*
14:40 - 15:00	Water Surface Level Measurements Over Inland Targets With FFSAR	Ferran Gibert *(isardSAT S.L.)*
15:00 - 15:20	Fault tolerant approach to regenerate L1B SAR altimetry waveforms for enhancing L2 retrackers performance Applications in the Congo River basin	Shahin Khalili *(Institute of Geodesy, University of Stuttgart)*
15:20 - 15:40	ARARAS (Algorithm for Radar Altimetry Retracking on speculAr waveformS), a new retracking method based on physical model for nadir Low-Resolution Mode (LRM) altimetry over inland waters	Malik Boussaroque *(Hydro-matters/ LEGOS)*
15:40 - 16:00	Discussion	
16:00 - 16:30	Coffee Break	

Wednesday 14.00-16.00 Sessions		
AUDITORIUM II: 4.2 Water science for society		
Co-chairs: Guy Schumann, Cédric David		
14:00 - 14:20	Operational monitoring of French Guiana rivers using spatial hydrology	Adrien Paris *(Hydro Matters/LEGOS)*
14:20 - 14:40	Developing Best Practices for Flood Map Validation	Antara Dasgupta *(RWTH Aachen University)*
14:40 - 15:00	Comparison of VV and VH polarization for Sentinel-1 based flood mapping	Florian Roth *(TU Wien)*
15:00 - 15:20	Daily Monitoring of the May 2023 Emilia-Romagna Flood Using COSMO-SkyMed data	Luca Pulvirenti *(Cima Research Foundation)*
15:20 - 15:40	Total water storage variations analysis in the Lake Tanganyika watershed over 2002-2021 for water balance monitoring and flood study	Paul Gérard Gbetkom *(LEGOS)*
15:40 - 16:00	Discussion	
16:00 - 16:30	Coffee Break	

Wednesday 16.30-18.00 Sessions		
AUDITORIUM I: 2.1 Advances in the use of EO for land surface and hydrological modelling		
Co-chairs: Filipe Aires, Simon Munier		
16:30 - 16:50	Using optimality principles to couple terrestrial carbon and water cycles in remote sensing hydrological models	Rodolfo Nobrega *(School of Geographical Sciences)*
16:50 - 17:10	Daily, accurate evapotranspiration from global to local scale	Joost Brombacher *(Eleaf)*
17:10 - 17:30	Improving Soil Moisture Simulations Based on Satellite Data-optimized Soil Texture Data	Hui Lu (*Tsinghua University)*
17:30 - 17:50	New high-resolution precipitation and soil moisture Earth-Observation data for hydrological modelling in the Mediterranean region	Vianney Sivelle (*CNR-IRPI)*
17:50 - 18:10	GPM IMERG and its constellations in capturing extreme events and hydrological utility over the conterminous united states	Yang Hong (*University of Oklahoma)*
18:10 - 18:30	Discussion	

Wednesday 16.30-18.00 Sessions		
AUDITORIUM II: 4.3 Water science for society		
Co-chairs: Chiara Corbari, Simone Gabellani		
16:30 - 16:50	Developing snow-drought indices using H-SAF operational products	Francesco Avanzi *(Cima Research Foundation)*
16:50 - 17:10	Mapping irrigated cropland dynamics with remote sensing for water policy design and assessment	Timothy Foster *(University of Manchester)*
17:10 - 17:30	Multi-scale water management and drought monitoring at the Morocco national scale	Chiara Corbari *(Politecnico di Milano)*
17:30 - 17:50	Mapping safe drinking water in low- and middle- income countries using Earth observation data	Esther Greenwood *(ETH)*
17:50 - 18:10	Discussion	
18:10 - 20:00	Free time to freshen up before the gala dinner	
20:00 - 23:00	**Dinner offered by the Operational Space Hydrology Center - a French open initiative** **Iberostar Lisboa**	

Thursday 09.00-11.00 Sessions		
AUDITORIUM I: 5.1 Novel technologies and future missions: the future of water cycle research		
Co-chairs: Ilias Daras, John Reager		
9:00 - 9:20	ESA/NASA Mass Change and Geosciences International Constellation (MAGIC) - Science and application prospects	Ilias Daras *(ESA)*
9:20 - 9:40	The H SAF EPS-SG day 1 MWI and MWS Machine Learning algorithms for snowfall and rainfall surface precipitation rate retrieval	Daniele Casella *(CNR-ISAC)*
9:40 - 10:00	Evaluation of snowfall retrieval capabilities of the Arctic Weather Satellite mission: analysis of some case studies	Andrea Camplani *(CNR-ISAC)*
10:00 - 10:20	Space-borne G-band radars: applications in mid/high latitude cloud and precipitation remote sensing	Alessandro Battaglia *(Politecnico di Torino)*
10:20 - 10:40	A Deep Learning model to predict drought in the Horn of Africa using satellite data at daily scale	Riccardo D'Ercole *(CNR-ISAC)*
10:40 - 11:00	Discussion	
11:00 - 11:30	**Coffee Break**	

Thursday 09.00-11.00 Sessions		
AUDITORIUM II: 2.2 Advances in the use of EO for land surface and hydrological modelling		
Co-chairs: Adrien Paris, Pierre Olivier Malaterre		
9:00 - 9:20	EO data + physical modeling: A hybrid approach for a near real-time snow monitoring	Federico Di Paolo *(MobyGIS)*
9:20 - 9:40	Assessing the Utility of Multi-Mission High-resolution Satellite Signals for Hydrologic Model Calibration in a Tropical River Basin	Debi Prasad Sahoo *(CNR-IRPI)*
9:40 - 10:00	Satellite-based hydrological modeling over Niger basin: characteristics, sensitivities and performances for better understanding the flood events in Niamey (the 2020 extreme event case)	Romulo Augusto Juca Oliveira *(GET)*
10:00 - 10:20	Assessing the Utility of Multi-Mission High-resolution Satellite Signals for Hydrologic Model Calibration in a Tropical River Basin	Pierre Olivier Malaterre *(INRAE)*
10:20 - 10:40	Advancing Global-Scale River Discharge Estimation: A Novel Framework for Assimilating SWOT Altimetry using CTRIP-HyDAS.	Kaushlendra Verma *(CNRM, Météo-France, CNRS)*
10:40 - 11:00	Discussion	
11:00 - 11:30	Coffee Break	

Thursday 11.30-13.30 Sessions		
AUDITORIUM I: 5.2 Novel technologies and future missions: the future of water cycle research		
Co-chairs: Yiljan Zeng, Wolfgang Wagner		
11:30 - 11:50	High-resolution mapping of terrestrial evapotranspiration using ECOSTRESS: Insights into surface energy balance for future thermal missions	Tian Hu *(Luxembourg Institute of Science and Technology)*
11:50 - 12:10	A global multi-scale ET mapping system using multi-source thermal infrared imaging	Martha Anderson *(USDA-ARS)*
12:10 - 12:30	Hydrological Remote Sensing using Signals of Opportunity below 400 MHZ	James Garrison *(Purdue Univers)*
12:30 - 12:50	What are Benefits and Dangers when Using Artificial Intelligence for Monitoring of Soil Moisture from Earth Observation Data?	Wolfgang Wagner *(TU Wien)*
12:50 - 13:10	Unleashing the Potential of SAR Imagery for Water Detection: A Self-Supervised U-Net Approach with Knowledge Distillation for Semantic Segmentation	Francisco J. Peña *(Stockholm University)*
13:10 - 13:30	Discussion	
13:30 - 15:00	Lunch (offsite)	

Thursday 11.30-13.30 Sessions		
AUDITORIUM II: 2.3 Advances in the use of EO for land surface and hydrological modelling		
Co-chairs: Simon Munier, Rajat Bindlish		
11:30 - 11:50	Coupled hydrological-hydraulic modeling and data assimilation of the Niger and Maroni Rivers using SWOT river products and other EO missions	Kevin Larnier *(CE GROUP)*
11:50 - 12:10	Contribution of daily observations of water surface elevation from SWOT Nadir altimeter for near-real time monitoring and short-term discharge forecasting in the Maroni River basin, French Guiana	Laetitia Gal *(HYDRO MATTERS/ LEGOS)*
12:10 - 12:30	Assimilation of Sentinel-1 data to improve estimates of snow, soil moisture, irrigation and discharge in the Po river basin	Gabrielle De Lannoy *(KU Leuven)*
12:30 - 12:50	Improved modeling of Congo hydrology by representing lake storage dynamics and data assimilation	Sly Wongchuig *(LEGOS)*
12:50 - 13:10	Towards high resolution volume variation from space remote sensing	Christophe Fatras *(CLS)*
13:10 - 13:30	Discussion	
13:30 - 15:00	**Lunch (offsite)**	

Thursday 15.00-17.00 Sessions		
AUDITORIUM I: 5.3 Novel technologies and future missions: the future of water cycle research		
Co-chairs: Antara Dasgupta, Claude Duguay		
15:00 - 15:20	Enabling Flood Inundation Forecasting Through Satellite-based Flood Extent Assimilation	Antara Dasgupta *(RWTH Aachen University)*
15:20 - 15:40	The ESA Scout HydroGNSS Small Satellite Mission	Martin Unwin *(SSTL)*
15:40 - 16:00	Digital catchment twins - how holistic approaches improve decision making	Fabian Von Trentini *(EOMAP)*
16:00 - 16:20	Opportunities for lake ice remote sensing from current and future global navigation satellite system reflectometry (GNSS-R) missions	Yusof Ghiasi *(University of Waterloo)*
16:20 - 16:40	Innovative Autonomous UAV solution for in-situ Cal/Val of satellite altimetry over inland waters and other surfaces	Valentin Fouqueau *(Vortex-io)*
16:40 - 17:00	Discussion	
17:00 - 17:30	**Coffee Break**	

Thursday 15.00-17.00 Sessions		
AUDITORIUM II: 2.4 Advances in the use of EO for land surface and hydrological modelling		
Co-chairs: Gabrielle De Lannoy, Luca Brocca		
15:00 - 15:20	A Deep Learning Approach for Lake Ice Cover Forecasting	Samuel Johnston *(H2O Geomatics)*
15:20 - 15:40	Co-variability of soil moisture, vegetation, and land surface temperature from an Earth Observation perspective	Emanuel Dutra *(IPMA)*
15:40 - 16:00	Multi-source data and modeling to understand climate and human compounding effects on flood risk in the Bay of Bengal	Augusto Getirana *(NASA Goddard Space Flight Center)*
16:00 - 16:20	Towards a digital twin of the water cycle in the Mediterranean Basin	Lorenzo Alfieri *(Cima Research Foundation)*
16:20 - 16:40	Towards a Digital Twin for the Alps	Luca Brocca *(CNR-IRPI)*
16:40 - 17:00	Discussion	
17:00 - 17:30	Coffee Break	
17:30 - 18:30	Free time for preparing final reporting and more poster viewing	

Friday 09.00-11.00 Session		
AUDITORIUM I: Hydrospace-2023 Plenary Closing Session - Keynote, Sessions Discussion Debrief and General Discussion		
Chairs: Jérôme Benveniste, Jean-François Crétaux, Session Co-Chairs		
9:00 - 9:20	EU water research and innovation – current activities and future perspectives	Panagiotis Balabanis
9:20 - 9:30	Co-Chairs Debrief of Session Discussion: 1. Advances in remote sensing methods, techniques and products	CO-CHAIRS
9:30 - 9:40	Co-Chairs Debrief of Session Discussion: 2. Advances in the use of EO for land surface and hydrological modelling	CO-CHAIRS
9:40 - 9:50	Co-Chairs Debrief of Session Discussion: 3. Advances in science and process understanding	CO-CHAIRS
9:50 - 10:00	Co-Chairs Debrief of Session Discussion: 4. Water science for society	CO-CHAIRS
10:00 - 10:10	Co-Chairs Debrief of Session Discussion: 5. Novel technologies and future missions: the future of water cycle research	CO-CHAIRS
10:10 - 11:00	GENERAL DISCUSSION - RECOMMENDATIONS FOR THE WORKSHOP REPORT	ALL CO-CHAIRS
11:00 - 11:30	Coffee Break	

Friday 11.30-12.45 Session		
AUDITORIUM I: HYDROSPACE-2023 Plenary Closing Session - Final Words, Closing Remarks and Outlook		
Chairs: Jérôme Benveniste, Jean-François Crétaux		
11:30 - 11:45	A Word from GEWEX	*GEWEX*
11:45 - 12:00	A Word from the European Commission	*EC*
12:00 - 12:15	A Word from CNES	*CNES*
12:15 - 12:45	A Word from ESA, Closing Remarks and Outlook	Jérôme Benveniste *(ESA)*
12:45 - 13:00	Posters take down - End of HYDROSPACE-2023	

Poster ID	Theme 1: Advances in remote sensing methods, techniques and products	Presenter
1	Satellite Altimetry Data for Societal Benefit: Supporting Applications User Communities	Margaret Srinivasan
2	Nadir altimetry over land: achievements using the Open-Loop Tracking Command (OLTC) and benefits for inland waters users	Sophie Le Gac
3	Improved tropospheric corrections for Coastal and inland water altimetry	Joana Fernandes
4	Amazon basin cal/val sites for satellite altimetry	Daniel Moreira
5	Towards the provision of operational FRM measurements for Sentinel-3 over inland water: procedures, protocols and roadmap	Valentin Fouqueau
6	Developing a Bio-optical Model for Shallow Coastal Zones in the German Baltic	Aminah Kaharuddin
7	High resolution estimation of SSS and SST in coastal seas from Satellite imagery	Solomon White
8	An inter-comparison of approaches and frameworks to quantify irrigation from satellite data	Søren Kragh
9	Validation of Surface Inundation Algorithm for HydroGNSS Mission	Jilun Peng

10	Deforestation-induced surface warming is influenced by the fragmentation and spatial extent of forest loss in Maritime Southeast Asia	Octavia Crompton
11	Monitoring the terrestrial water storage changes and watershed fluxes using GRACE gravity data on regional scales	Sedigheh (Kiana) Karimi
12	Groundwater potential modeling of Ar Rub Al Khali using multi-sources of remote sensing in a GIS	Samy Elmahdy
13	Evaluation of GRACE Satellite Data for Groundwater Drought Monitoring in Lorestan Province	Abdolnabi Abdeh Kolahchi
14	Assessing Hydrological Connectivity in Wetlands at a Global Scale with D-InSAR	Clara Hübinger
15	Preliminary Analysis of Italian Lakes Water Level Monitoring Using GEDI Altimetric Data in Google Earth Engine	Alireza Hamoudzadeh
16	Assessing the Impacts of Climate Change and Regulatory Regimes on Lake Water Levels in Sweden Using Satellite and In- situ Data	Saeid Aminjafari
17	Monitoring Ungauged Manchar Lake (Pakistan) Using ICEsat-2 Data	Shahryar Jamali
18	Estimation of Lake Water Levels from Sentinel-6 Fully-Focused SAR observations using numerical simulations	Carlos Yanez

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20	A Convolutional Neural Network for the Classification of Lake Surface Conditions f rom SAR Altimetry Waveforms	Jaya Sree Mugunthan
21	Ice cover and water dynamics of large Eurasian lakes - insights from satellite remote sensing and field observations	Alexei Kouraev
22	Long term analysis of global surface water volume change using remote sensing data	Omid Elmi
23	Insights on deriving reservoir volumes from earth observation data, architecture for global processing	Antonio Moreno Rodenas
24	SAR, SARin, RDSAR and FF-SAR Altimetry Processing on Demand for Cryosat-2, Sentinel-3 and Sentinel-6 at ESA's Altimetry Virtual Lab	Marco Restano
25	Sentinel-3 Inland waters level-2 thematic products: latest results based on full mission reprocessing validation	Filomena Catapano
26	Sentinel-3 Land STM: performances of the New Hydrology Thematic Products over Inland Waters	Julien Renou
27	Operational Lakes and Rivers Water Level Monitoring using satellite altimetry data in Copernicus Global Land Service	Nicolas Taburet

28	C3S: An increased spatial coverage of monitored lakes with nadir altimetry for water level products	Gabriel Calassou
29	AlTiS : Generating Water Level Time-Series from Radar Altimetry	Fabien Blarel
30	Evolution of H SAF near real-time rainfall products derived from soil moisture observations	Luca Ciabatta
31	An efficient statistical method to correct large-scale precipitation products: Empirical Conditional Probability (ECP) method	Shima Azimi
32	Developing Purely Satellite-derived Precipitation Estimation: Integrating Top-Down and Bottom-Up Approaches	Hamidreza Mosaffa
33	Improving inland water altimetry through retracking of radargrams instead of single waveforms	Mohammad Tourian
34	Specular echoes on a 100 km stretch of the Rhine River	Stefano Vignudelli
35	Water extend estimation over inland targets using FF-SAR data	Adrià Gómez Olivé
36	From Kaleidoscopic Space-Borne Hydrological Datasets To Data-Driven Trained Models Allowing to Build Global-scale Maps of Unobserved Hydrological Parameters: an example with a Vector Maps of River Discharge Distribution	Kevin Larnier

37	Automatic toolchain for the generation of coupled hydrology-hydraulic simulations and data assimilation from multi-sources and multi-scales data fusion	Kevin Larnier
38	Evaluation of Altimetry Data over Polish Rivers Using Water Gauge Stations and Hydrodynamical Model	Natalia Strojna
39	Estimating river bathymetry of Cooper Creek from remote sensing datasets	Atul Kumar Rai
40	Improving SAR Altimeter processing over inland water - the ESA HYDROCOASTAL project	David Cotton
41	Early exploration of the application of the SWOT River Database (SWORD) on pre-SWOT altimetry observations for river discharge estimation using an open-source framework	Amin Shakya
42	Global Scale L3 River Water Level Processor for Real-Time Applications	Nicolas Bercher
43	Assessing Water Level Measurements utilizing Sentinel 3 Satellite Radar Altimetry Data in the Upper Indus River at Tarbela Reservoir	Jasra Rehman
44	Harmonised snow variable retrieval for hydrological applications by reconstruction of the snow surface spectrum using radiative transfer modelling	Rune Solberg
45	Evaluation of change detection techniques for soil moisture estimation from Sentinel-1 time series	Jesus Alvarez-Mozos

46	Soil Moisture Estimation of Lorestan, Iran Using Multisource Remote Sensing Products (GLDAS, ESA CCI SM, SMAP)	Abdolnabi Abdeh Kolahchi
47	River Basin DREAMing	Philippa Berry
48	Field scale soil moisture retrieval by using Sentinel-1 images over an agricultural area in a semi-arid Mediterranean environment	Giulia Graldi
49	Improved Soil Moisture Retrieval using Machine Learning	Victor Pellet
50	Performances of SWOT Poseidon-3C altimeter over inland waters and interest of the 1 day revisit time during the fast sampling phase	Nicolas Taburet
51	Preliminary Analysis of SWOT daily measurements over rivers gained by the nadir altimeter	Stéphane Calmant
52	SWOT expertise center: an full working environment for calibration and validation activities	Mathilde Simeon
53	Preliminary assessment of the SWOT L2 Lake products over small water bodies observed during the CalVal orbit in the Alsace and Lorraine regions (France)	Hervé Yésou
54	Validation of the cross-over calibration applied on SWOT LR products over lakes	Julien Renou

55	Mountain lake survey in the Pyrenees from citizen science in the framework of the LOCSS project and the SWOT Cal-Val	Jean-Francois Cretaux
56	Analysis of expertised data processing for the generation of SWOT L2 River products	Kevin Larnier
57	Analyses of the relationship between horizontal and vertical brightness temperatures for derivation of signal-to-noise ratio and vegetation metrics	David Chaparro
58	Surfwater – Water Extent Dynamics for Resources Monitoring	Santiago Pena Luque
59	RAWSIW: a remote sensing analysis workflow for water quality retrieval in small inland waters	Amir Chegoonian
60	Towards a dense network of in-situ water surface temperature and water turbidity measurements	Jean-christophe Poisson
61	An automatic river segmentation tool for preserving hydraulic signatures	Kevin Larnier
62	SWOT Phenomenology and Processing for Hydrology	Damien Desroches
132	Unraveling the Power of Sentinel-3A Radar Altimetry Waveform for Inland Water Dynamics	Farkhanda Noor
Poster ID	**Theme 2: Advances in the use of EO for land surface and hydrological modelling**	**Presenter**
63	Evaluation of volume reservoir based on analysis of satellite images	João Fernandes

64	The LSA SAF data record on evapotranspiration and surface energy fluxes: sub-daily estimates across Europe, Africa and South America throughout the operational life of the MSG satellite	José Miguel Barrios
65	The unprecedented heat waves in Summer 2022 caused lake shrinkage in the middle and lower Yangtze River Basin	Changqing Ke
66	Estimation of chlorophyll in Danube Lakes in Ukraine using observations from Copernicus Sentinel-2 MSI	Valeriya Ovcharuk
67	Temporal and Spatial Analysis of Lake Eğirdir Shoreline Changes Using Satellite Images and Unmanned Aerial Vehicle	Erhan Şener
68	Can Earth observations improve land surface model simulations through the calibration of a simple irrigation scheme?	Sara Modanesi
69	Assessment and Hydrological Validation of Merged Near-Real-Time Satellite-Based Precipitation over Saudi	Raied Alharbi
70	Effects of spatial and temporal distribution of precipitation on hydrological modelling sensitivity of small catchments	Elena Grek

71	Remote monitoring of water storage in reservoirs behind dams using satellite imagery - a case study in the Algarve, Portugal	Nuno de Santos Loureiro
72	Projecting spatiotemporal streamflow changes in a Mediterranean coastal watershed: Insights from EURO-CORDEX and CMIP6 models	Siham Acharki
73	Global Discharge Estimation from SWOT Satellite and reference DEMs	Isadora Rezende de Oliveira Silva
74	IRIS Version 2: Global River Surface Slopes from ICESat-2	Daniel Scherer
75	Towards a pan-Mediterranean snow reanalysis: 4DMED-SNOW	Francesco Avanzi
76	Investigating Snow Cover Dynamics and Runoff in Snow-fed Watersheds: A SWAT-MODIS Integration Experiment	Soufiane Taia
77	EUMETSAT H SAF Satellite-derived snow cover products and their applications in hydrology	Ali Nadir Arslan
78	Multivariate Data Assimilation for Hydrological Forecasting in Large River Basins: A Case Study on the Niger River Basin Using the HYFAA Modeling Platform	Vanessa Pedinotti
79	The LSA SAF data record on evapotranspiration and surface energy fluxes: sub-daily estimates across Europe, Africa and South America throughout the operational life of the MSG satellite	José Miguel Barrios

80	Towards the Partitioning of Evapotranspiration Using Remote Sensing Calibration-Free Models	Fernanda Valente
81	Merits of Assimilating SWOT Altimetry Observations for Flood Forecasting - A Proof-of-Concept	Thanh Huy Nguyen
82	A framework for improved near real-time flood mapping	Ambika Khadka
83	Estimation of Groundwater Storage: Can Storage Change Derived from the Gravity Recovery & Climate Experiment (GRACE) be a Substitute for a Calibrated Numerical Flow Model?	Alper Elçi
84	Efficiency of global precipitation datasets in tropical river basins revealed by large sampling hydrological modelling	João Andrade
85	Assessing the Spatio-Temporal Performance of Satellite-Based Precipitation Datasets in the Rhine River Basin, Germany	Abdul Baqi Ahady
86	Combination of satellite altimetry and hydrodynamic modelling for investigation of winter water level regime in Arctic rivers	Inna Krylenko
87	Estimating Daily Discharge of an Entire River Network Using Space-based SWOT Observations	Siqi Ke

88	The unprecedented heat waves in Summer 2022 caused lake shrinkage in the middle and lower Yangtze River Basin	Changqing Ke
89	Quantifying Soil Moisture from Space-Based SAR and Ground-Based Geophysical and Hydrological Measurements	Qi Gao
90	Shoreline change assessment using Worldview, Sentinel, Landsat and Planetscope satellite images: a case study of the Kızılırmak Delta, Türkiye	Şehnaz Şener
91	Towards a pan-Mediterranean snow reanalysis: 4DMED-SNOW	Francesco Avanzi
92	Estimation of winter wheat water requirement in a semi-arid region using satellite remote Sensing	Tarek Bouregaa
93	Enhancing Disaster Preparedness: Simulating Glacial Lake Outburst Flooding of the Shishper Glacier in Pakistan with 2D Hydraulic Modeling and Satellite Data	Falak Naz
94	Prediction of Fast Developing Hydrological Processes by Daily GRACE(-FO) Data Assimilation	Leire Retegui Schiettekatte
95	Enhancing catchment-scale rainfall-discharge modelling through GRACE(-FO) observations of storage-discharge relationships	Karim Douch

96	Remote monitoring of water storage in reservoirs behind dams using satellite imagery - a case study in the Algarve, Portugal	Nuno de Santos Loureiro
Poster ID	**Theme 3: Advances in science and process understanding**	**Presenter**
97	Contribution of the Amazonian moisture transport to the water budget at Brazilian southeastern using atmospheric modelling and reanalysis	Murilo Ruv Lemes
98	Modelling and Remote Sensing to estimate evaporation and water use in the Ebro Basin	Roger Clavera-Gispert
99	The use of hydrological modeling to determine the site index for Scots pine (Pinus sylvestris L.)	Piotr Mroczek
100	The effect of the surface water in the calculation of the terrestrial water storage – the case of the Sobradinho reservoir	Alfredo Ribeiro Neto
101	Monitoring small reservoirs in semi-arid brasilian Nordeste - the SWOT perspective	Marielle Gosset
Poster ID	**Theme 4: Water science for society**	**Presenter**
102	User Requirements and interests for Fully Focused SAR Altimetry and Innovative River Level Gauges for Coastal and River Monitoring	Jean-Christophe Poisson

103	Waterjade: Digital Twin solutions for the optimization of water forecast	Federico Di Paolo
104	Remote sensing and machine learning for spatio-temporal analysis of agricultural and meteorological drought: Case of Loukkos Basin (Northwestern Morocco)	Siham Acharki
105	New long-term analysis of meteorological droughts in Ukraine	Inna Semenova
106	Assessment of the impact of blowing up the Kakhovka hydroelectric power station dam on the quality of sea waters of the Odessa Black Sea coast using satellite information	Yuriy Tuchkovenko
107	Assessing the impact of climate change on flood inundation in highly urbanized river basin in the Central Himalaya	Sunil Bista
108	GEWEX and International Research Collaboration in Water Research	Peter Van Oevelen
109	Using Satellite Data to Monitor Groundwater Drought in the Algarve Region	Maria Neves
110	hydroweb.next, a thematic hub for hydrology data centralizing free access to innovative hydrology data including SWOT	Lionel Zawadzki
111	Declining Freshwater Resources of India: Challenges in Adaptation Under a Changing Climate	Shadananan Nair

112	EO Africa Water Management: A support to farmers and planners to improve irrigation water management	Daniela Drimaco
113	The Flood and Drought Research Infrastructure: Integrating Earth Observation Data for Hydrological Research	Rafael Barbedo
114	The use of remote sensing and field data for water quality monitoring in the Iron Gate I reservoir on the Danube River	Constantin Nistor
115	Assessing the Influence of Nearshore Bathymetry on Coastal Overtopping due to Extreme Sea Level Events: A Satellite- Derived Bathymetry and XBeach Modeling Approach	Soraia Romão
116	Merits of Assimilating SWOT Altimetry and Sentinel-1-derived flood extent Observations for Flood Forecasting - A Proof-of- Concept	Thanh Huy Nguyen
117	Climate change impact on flooding risks at N'Djamena (Chad basin) using remote sensing and hydrological modelling	Laetitia Gal
118	Surface Water Extent and Volume in the Inner Niger Delta (Ind) Over 2000-2022 Using Multispectral Imagery and Radar Altimetry	Cassandra Normandin

119	Designing an Operational Water Bodies Monitoring System from Space at National Scale to Support Civil Protection and Water Management Applications: a Feasibility Study	Luca Cenci
Poster ID	**Theme 5: Novel technologies and future missions: the future of water cycle research**	**Presenter**
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121	WADIT - Water Digital Twin	Daniela Drimaco
122	HiVE Mission: Revolutionizing Water Resource Management with Global Thermal Imagery	Matthieu Taymans
123	Flash flood modeling and in urban areas using High Resolution hydrodynamic model and machine learning models	Kevin Larnier
124	j-Snow: A Digital Twin for snow monitoring at high resolution in near real-time	Federico Di Paolo
125	Information Content of L-, C-, and X-band Microwave Observations for Soil Moisture Estimation	Moritz Link
126	Mapping The Seasonal Variability Of Swedish Ramsar Wetlands By Combining Deep Learning, SAR And Optical Imagery	Abigail Robinson

127	LinAR: interpolating hydrological data gaps with a combination of linear interpolation and autoregressive models	Michał Halicki
128	The Copernicus Expansion CIMR mission and opportunities for land monitoring	María Piles
129	The Sentinel-3 Next Generation Topography (S3NG-TOPO) Mission; Enhancing Continuity, Performance and Hydrology Capabilities	Alejandro Egido
130	Global L-band Observatory for Water cycle Studies (GLOWS) - Soil Moisture continuity mission	Rajat Bindlish
131	The Global Runoff Database - A unique archive for river discharge data	Simon Mischel

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can be found at: **www.hydrospace2023.org**