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Dates and Location	<b>October 29 - November 2 2024</b> <b>South America Water from Space IV, Belem, Brazil</b> <b>Venue: Event Center Benedito Nunes</b> <b>Federal University of Para (UFPA), Belem, Brazil</b>
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## Program

### Tuesday 29 October 2024:

#### Morning (08h-09h30): Registration at UFPA

08h00-09h30: Registration

#### Morning (09h30-10h45): Opening ceremony - Welcome speeches

09h30-09h35: Organizing Committee, Daniel Moreira and Fabrice Papa (5')

09h35-09h40: UFPA-Belém, Officials (5')

09h40-09h45: President or Director of SGB (5')

09h45-09h47: IRD Representative, Abdel Sifeddine (2')

09h47-09h49: CNES Representative, Delphine Lereoux (2')

09h50-09h55: ITV Representative (5')

09h55-10h00: Itaipu Representative (5')

10h00-10h05: President of ABRHidro, Alexandre Kepler Soares (5')

10h05-10h10: President of the Brazilian Space Agency-AEB (5', TBC)

10h10-10h15: Director of INPE Belem (5')

10h15-10h20: Vice-Counselor for Cooperation and Cultural Action to the French Embassy in Brazil, Sophie Jacquel (5')

10h20-10h25: Representative of the Amazon Cooperation Treaty OTCA (ACT) (5', TBC)

10h25-11h00 Coffee Break

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**Morning (11h00-12h30):** Presentations by Institutes and Agencies.

*Chair persons: Daniel Moreira - Fabrice Papa*

11h00-11h15: Contribution of space agencies to hydrology and water cycle from space. Delphine Leroux, CNES Hydrology and Water Cycle Program Manager (15')

11h15-11h20: South America Water from Space: An international initiative for the survey of water resources from space in South America. Fabrice Papa, IRD/LEGOS (5')

11h20-11h30: IRD activities in Brazil and in the Amazon. Abdel Sifeddine, IRD representative to Brazil (10')

11h30-11h40: SGB activities in Brazil. Andrea Germano, SGB-DEHID (10')

11h40-11h50: An introduction to COP 30 in Belem (10', TBC)

11h50-12h00: ABRHidro Technical commission on Amazonia. Alexandre Kepler Soares (ABRHidro), Ayan Fleischmann (Mamiraua), Paulo Pontes (ITV) (10')

12h00-12h25: Keynote: Hydrogeodesy to Address Water-related and Sustainability Challenges, F. Jaramillo, Uni. Stockholm (20' + 5' questions)

12h25-12h30: Logistics about the conference, mini-courses (Organizing Committee)

Lunch break (12h30-14h00)

**Afternoon (14h00-18h00).** Water Cycle and Climate extremes; Continental water from space; The SWOT mission

*Chair persons: TBD*

14h00-14h30: Keynote: Observing water from space with SWOT. Jean-François Crétaux, CNES-LEGOS, France (25' + 5' questions)

14h30-14h50: Widespread of extreme low river water level during the 2023 and 2024 Amazon droughts revealed by altimetry and SWOT. Daniel Moreira, SGB, Brazil and GET, France (15' + 5')

14h50-15h10: Future climatic and hydroclimatic projections in Latin America. Rodrigo Paiva, IPH-UFRGS, Brazil (15' + 5')

15h10-15h30: Timing of Global Surface Water Transitions Reveals Human Influence on Recent Growth in Water Extent. Gustavo Willy Nagel, University of Southampton, UK. (15' + 5')

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15h30-15h50: From the Amazon to the Congo Basin, the Congo Basin Science Initiative. Raphael Tshimanga, Co-chair of the Science Panel for the Congo Basin, CRREBaC-Uni. Kinshasa, RD Congo, (15' + 5')

15h50-16h15 Coffee Break

16h15-16h40: Keynote: 40 years of water quality remote sensing in Brazil: Past and Future Perspectives. Evlyn Novo, INPE, Brazil (20' + 5')

16h15-16h35: SWOT reveals how the 2024 disastrous flood in South Brazil was intensified by increased water slope and wind forcing. Leo Laipelt, IPH-UFRGS, Brazil (15' + 5')

16h35-16h55: Numerical modeling of the water level extremes along the Amazon delta: perspectives for spaceborne altimetry. Paul Coulet, LEGOS, France (15'+ 5')

16h55-17h15: Variability of water storage extremes and glacier retreat in Patagonia. Rodrigo Abarca del Rio, Uni. Concepcion, Chile (15'+ 5')

17h15-17h35: Citizen science across Latin America. Andres Wehrle, University of Ascension, Paraguay (15'+ 5')

17h35-17h55: Rios Online, a Citizen Science Initiative in the Amazon basin. Naziano Filizola, UFAM, Brazil (10' + 5' questions)

**Evening (18h00-22h00) Social event and Cocktail**

**Wednesday 30 October 2024:**

**Morning (9h00-10h50):** Session 1: Tracking Amazon hydrology and environment from Space

Chair persons: – TBD

9h00-9h30: Keynote: Remote sensing for sustainable Amazon waters. Ayan Fleischmann, Mamiraua Institute, Brazil (25'+ 5')

9h30-9h50: Sentinel-1 data reveals unprecedented reduction of Open Water Extent due to 2023 drought on central Amazon basin. Daniel Maciel, INPE, Brazil (15' + 5')

9h50-10h10: Looking upstream: analyzing the protection of the drainage area of Amazon rivers. Rosane Cavalcante and Paulo Pontes, ITV, Brazil (15'+ 5')

10h10-10h30: Remote sensing contribution to simulate hydrodynamics in Amazonia (Curuai floodplain) under climate constraints. Pauline Enguehard, IRD ESPACEDEV, France (15' + 5')

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10h30-10h50: Title TBC. Naziano Filizola, UFAM, Brazil (15' + 5')

10h50-11h15: Coffee Break

**Morning (11h15-12h30):** Session 1: Tracking Amazon hydrology and environment from Space (continued)

Chair persons: – TBD

11h15-11h35: Floodplains control recent discharge changes in the Amazon. Alice Fassoni, UnB, Brazil (15' +5')

11h35-11h55: Riparian communities in the Central Amazon are largely subject to erosion and sedimentation risk. Andre Zumak, Mamiraua Institute, Brazil (15' +5')

11h55-12h15: Integrating Satellite Data to Map 2023-2024 Surface Water Loss in the Amazon. Carlos Moreira de Souza Jr, Imazon, Brazil (15'+ 5')

12h15-12h35: Hydroclimatic trends in the Madeira River Basin – impacts of deforestation and greenhouse gas emissions in the Amazon region. Leonardo Alves Vergasta, UEA, Brazil (15'+ 5')

Lunch break (12h30-14h00)

**Afternoon (13h45-12h30):** Session 1: Tracking Amazon hydrology and environment from Space (continued)

Chair persons: – TBD

13h45-14h05: Exploring the potential of InSAR for the delineation of inundation extent in tropical wetlands. Clara Hübinger, University of Stockholm, Sweden (15'+ 5')

14h05-14h25: Ensemble hydrological predictions at intraseasonal scale through a statistical-dynamical downscaling approach over southwestern Amazonia. Fabio Nunes de Souza, UEA, Brazil (15'+ 5')

14h25-14h45: Application of P-band radar to the characterization of hydrography in tropical forests. Laurent Polidori, UFPA, Brazil (15'+ 5')

**Coffee break and Poster Session (14h45-16h15)**

14h45-16h00: Hydrological Science, Water Cycle and Water Resources from Satellites with special focus on South America.

- Lake/Wetlands/Rivers monitoring and processes
- Precipitation and HydroClimatology
- Water resources and management
- Modeling in large river basins
- SWOT and upcoming hydrology-oriented mission

See the complete program at the end of the document

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**Afternoon (16h15-18h15): Session 2: Hydrology from Space in Africa**

Chair persons: – TBD

16h15-16h40: Keynote: Remote sensing for sustainable African rivers, results and prospects. Raphael Tshimanga, CRREBaC and Uni Kinshasa, RD Congo (20' + 5')

16h40-17h00: Monitoring surface water from space in Africa, a review. Fabrice Papa, IRD-LEGOS, France (15'+5')

17h00-17h20 Survey of African lakes from space. Paul Gerard Gbetkom, LEGOS, France (15'+5')

17h20-17h40: Hydroclimatic variability in the tropical Amazon and Congo basins, and its interactions with vegetation, ocean and atmosphere: an integrated approach. Sly Wongchuig, CNES-LEGOS, France (15' + 5')

17h40-18h00: Hydrogeological control of monthly groundwater storage variation in the Congo Basin confirmed by GRACE signal decomposition. Benjamin Kitambo, Congo Basin Water Resources Research Center (CRREBaC) and University of Lubumbashi, RD Congo (15' + 5')

18h00-18h20: Toward regional applications of spatial hydrology in Africa: challenges and advances. Adrien Paris, HydroMatters, France (15' + 5')

**Thursday 31 October 2024:**

**Morning (9h00-12h30): Session 3: Hydrological studies in river systems in Latin America and worldwide**

Chair persons: TBD.

09h00-09h20: Exploration of SWOT capabilities in South America aided by citizen scientists. Angelica Gomez, University of North Carolina - Chapel Hill, USA (15' +5')

09h20-09h40: Flood analysis in Bolivian Andes using a combined satellite-based precipitation, Oliver Saavedra, Bolivia (15' +5')

09h40-10h00: Dynamics of the May 2024 Porto Alegre flood as measured using SWOT, GNSS reflectometry, and GNSS surveys. Felipe Nievinski, UFRGS, Brazil (15' +5')

10h00-10h20: Streamflow Elasticity Curves to Precipitation in South America. Arthur Kolling Neto, UFRGS, Brazil (15' +5')

10h20-10h40: Application of Artificial Neural Networks in Satellite-Based Mapping of Suspended Sediment Concentration: Case Studies in the Pantanal, São Francisco and Doce River Basins. Juliana Andrade Campos, ITV, Brazil (15' +5')

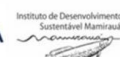
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10h40-11h10: Coffee Break

11h10-11h30:

Long-term monitoring of evaporation in the largest South American lakes and reservoirs. Júlia Brusso Rossi, IPH-UFRGS (15' +5')

11h30-11h50: Comparison of flooded surfaces through two satellite products (SWOT and Sentinel-2) for the Chaschoc-Seja Lagoon System in Tabasco, Mexico, Mario Alberto Hernandez Hernandez, UNAM, Mexico (15' +5')

11h50-12h10: TBC, UFPA (15' +5')

12h10-12h30: Sensitivity of lumped and semi-distributed hydrological models to gridded precipitation datasets in a transboundary basin (Titi Caca). Paula Lady Pacheco Mollinedo, IRD/ESPACEDEV, Bolivia (15' +5')

12h30-12h50:

Assessment of SWOT data and Analysis of small reservoirs dynamics in Northeast Brazil, Rafael Reis, GET, France and FUNCEME, Brazil (15' +5')

Lunch break (12h50-14h00)

**Afternoon (14h00-16h30):** Session 4. Water resources and risk management. Operational Hydrology.

Chair persons: TBD.

14h00-14h20: CEMADEN - Early Warning and Risk Forecast Scheme. Alex Ovando, CEMADEN, Brazil (15' +5')

14h20-14h40: From Early adopters to the use of SWOT at ANA, Alexandre Amorim and Mauricio Cordeiro, ANA, Brazil (15' +5')

14h40-15h00: Assessing the contribution of daily surface waters observations versus the current operational constellation of altimeters for hydrological monitoring of under-monitored basins: the Cases of Maroni and Niger basins. Laetitia Gal, HydroMatters, France (15' +5')

15h00-15h20: Analise da altimetria por Satélite SWOT em estação de monitoramento no Reservatorio da Itaipu. Luiz Henrique Maldonado, ITAIPU, Brazil (15' +5')

15h20-15h40: Result of the MARU project: Water color processing applied to the monitoring of waste water discharge impact in 2 brazilian basins. Paul Haener, OIEau, France and Brazil (15' +5')

15h40-16h00: Precipitation: characteristics, new remote sensing techniques and operational hydrological applications. Romulo Oliveira Juca, HydroMatters, France (15' +5')

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16h00-16h20: Advances on Satellite monitoring of reservoir stocks. Santiago Pena Luque, CNES, France (15' +5')

Additional eventual talks to be confirmed

The BIO-PLATEAUX project French Guyana, Surinam, Estado do Amapá, Brazil) (15' +5')

16h30-17h00: Coffee Break

**Afternoon (17h00-18h00)**: Future projects. Open discussions. Closing Ceremony.

17h00-17h40: Conclusions, discussions, future projects, journal special issue (WRR/GRL); Where/when are we planning the next conference?

17h40-18h00: Closing Ceremony

**18h00 End of conference**

## Friday 1 November 2024:

**Morning (9h-12h30)**: Courses, FEFACCION formation

Choice #1: Radar altimetry (provided by Adrien Paris, Taina Conchy, Benjamin Kitambo) ~30-35 persons, session of 3h

Choice #2: SWOT (provided by Santiago Pena Luque, Daniel Moreira, Alice Fassoni, Fabrice Papa, Delphine Leroux) ~30-35 persons, session of 3h

Choice #3: Water Resources Applications (provided by Rodrigo Paiva, Sly Wongchuig, Laetitia Gal). ~30-35 persons, session of 3h

Break (10h45-11h15)

Lunch break (12h30-14h00)

**Afternoon (14h00-17h30)**: Courses Coffee Break (10h45-11h15)

Choice #1: Radar altimetry (provided by Adrien Paris, Taina Conchy, Benjamin Kitambo) ~30-35 persons, session of 3h

Choice #2: SWOT (provided by Santiago Pena Luque, Daniel Moreira, Alice Fassoni, Fabrice Papa, Delphine Leroux) ~30-35 persons, session of 3h

Choice #3: Water Resources Applications (provided by Rodrigo Paiva, Sly Wongchuig, Laetitia Gal). ~30-35 persons, session of 3h

## Saturday 2 November 2024:

**08h0-17h00**: Field trip on rivers around Belem with SGB-ITAIPU team, hydrology survey and measurements

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## **Poster Session Program**

**Wednesday 30<sup>th</sup> of October 2024 14h45-16h15:**

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Dinâmica do uso e ocupação da terra e seu efeito na temperatura e na precipitação no bioma Caatinga (Floresta Tropical Sazonalmente Seca) – Brasil,  
Alessandro de Paula Universidade Estadual do Sudoeste da Bahia, Brazil

Assessing SAR-based ground motion techniques in boreal and tropical peatlands for carbon dynamics monitoring.  
Daniel Escobar Carbonari, University of Stockholm, Sweden

An overview of daily and monthly CHIRPS and ERA5-Land precipitation data accuracy over Pantanal  
Bruno Rech, INPE, Brazil

Identifying wildfires with convolutional neural networks and remote sensing: application to Amazon Rainforest  
Carlos Fábio de Oliveira Mendes, UFAM, Brazil

Monitoramento Anual das Águas Superficiais e Avaliação da Distância das comunidades ao rio Amazonas.  
Carlos José dos Santos Freitas, UnB, Brazil

Análise do Registro Histórico das Outorgas do Direito de Uso de Recursos hídricos no Maranhão - Finalidades de uso por bacias hidrográficas e seus cenários futuros.  
Daniel de Lima Nascimento Sirio, Universidade Estadual do Maranhão, Brazil

Comparação de medições topobatemétricas Lidar realizadas com sensor aerotransportado e embarcado na missão ICESat-2  
Eduarda de Lima Araujo, UnB, Brazil

Sensoriamento Remoto E Geoprocessamento Como Ferramenta De Prevenção De Risco: Mapeamento De Áreas Suscetíveis À Inundação Em Anajás-Pa.  
Eduardo Ayron Gomes Soares, UFPA, Brazil

Monitorando Hidrológico em Complexo Hidrelétrico no Rio Madeira.  
Fabíola Esquerdo de Souza, Universidade Federal do Amazonas, Brazil

TBD,  
Gabrielle Silene dos Santos Almeida, Censipam, Brazil

Os impactos das mudanças climáticas e da utilização desordenada das barragens de usos múltiplos na bacia hidrográfica do rio Uraim, em Paragominas-PA1  
Hugo de Souza Ferreira, Serviço Geológico do Brasil, Brazil

Application of Sentinel 1's radar image for monitoring of reservoirs in Pernambuco, Brazil  
Jonas Felipe Santos de Souza, Federal University of Pernambuco, Brazil

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Ecosystem-based Spatial Modeling: Assessing the Supply of Hydrological Services in a Watershed in Southern Brazil.  
Kahuam Gianuca, Universidade Federal Do Rio Grande, Brazil

Application Of Satellite Altimetry And Hydrographic Leveling Across Continental Water Bodies For The Integration Of Vertical Reference Frames  
Leonard Niero da Silveira, Universidade Federal do Pampa, Brazil

Proposal for Virtual Gauges for Monitoring Environmental Hydrological Disasters using SWOT  
Luana Oliveira Sales, UnB, Brazil

Águas Subterrâneas E Atividades Antrópicas: Um Estudo Qualitativo Sobre Técnicas De Tratamento.  
Marcos Fernandes de Oliveira, IFGoiano-Rio Verde, Brazil

Historical lake water level in central-Chile using satellite altimetry and conceptual hydrological modelling approaches.  
María Pedreros Guarda, University of Concepción, Chile

The water resources management of Mexico City's densely urbanized area as depicted by improved water balance components.  
Mario Alberto Hernandez Hernandez, Geophysics Institute, National Autonomous University of Mexico, Mexico

Deep learning for streamow drought projection under climate change in a public water supply system, Brazil.  
Mateus Domingos, UniCamp, Brazil

Aplicacao da Altimetria por Satélite SWOT na Avaliaao da Declividade no Reservatorio de Itaipu: Desafios e Resultados  
Pablo Souza Dos Santos, ITAIPU, Brazil

Mapping Inland Waters of South America through GEOCOVER-2000 Mosaic  
Paulo Roberto Martini, INPE, Brazil

Monitoramento da Seca no Rio Amazonas: Analise por SBAS-INSAR da Regiao de Tabatinga dos ultimos 5 anos.  
Suzan Rodrigues, Universidade de Brasilia, Brazil

TBD,  
Tatiana Parã Monteiro De Freitas, IFPA, Brazil

Validation of the water level of Jaraua/AM lakes with SWOT satellite altimetry,  
Thais Pinto de Souza, Universidade de Brasilia, Brazil

TBD,  
Avner Gaspar, UFOPA, Brazil

TBD

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Rodrigo Da Silva, UFOPA, Brazil

CHIRPS and SSEBop to support the precipitation isohyets atlas and water balance in Brazil.  
Victor Hugo da Motta Paca, Geological Survey of Brazil, Brazil

Stereo bathymetry to monitor small seasonal agriculture water ponds in ungauged areas.  
Victoria Vanthof, University of Waterloo, Canada

Hydroclimatic Cycles of Southern Chilean Lakes: An Integrated Approach Using SWOT Satellite Data  
J. Andrade-Jiménez, Uni Concepcion, Chile

Quantifying Glacier Retreat and water contribution in Patagonia: A 27-Year Remote Sensing Study of the Upsala and Perito Moreno Glaciers  
J. Andrade-Jiménez, Uni Concepcion, Chile

Impact of erosion processes on forest management in the Amazon floodplain: a remote sensing perspective, Andre Zumak, Mamiraua, Brazil

Evaluating the potential of the SWOT satellite in estimating Brazilian reservoir parameters  
Daniel Beltrão, UnB, Brazil

Spatiotemporal dynamics of Amazonian rivers, importance for the Amazon basin sustainability.  
Jorge D. Abad, Red Ayku, Peru

Monitoring Amazonian floodplain using Sentinel-1 time series.  
Ana Carolina Pires Pereira, UnB, Brazil

Inference of spatio-temporal parameters of basin scale hydrological-hydraulic model by variational assimilation of multi-satellite and SWOT data.  
Kevin LARNIER, HydroMatters, France

Seamless multi-temporal composite maps of Sea Surface Height (SSH): Application of the Multi-Dimensional Dynamic Data Fusion System (M3DFS) to NASA's SWOT Karin instrument.  
Marouan Bouali, ORBTY Ltda., Brazil

Do Protected Areas Enhance Surface Water Quality across the Brazilian Amazon?  
Paulo Pontes, Rosane Cavalcante, ITV, Brazil

Improving GPP estimates in Brazilian biomes: A remote sensing approach with water demand factors.  
Wilany Alves, UFRGS, Brazil

Spatiotemporal fluctuations in water surface extent of Pantanal Wetland using Sentinel-2 data  
Jahdy Moreno Oliveira, INPE, Brazil

Streamflow dynamics of Amazonian rivers according to their hydrogeochemical heterogeneity  
Paulo Pontes, Rosane Cavalcante, ITV, Brazil

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The effects of teleconnections on water and carbon fluxes in the two South America's largest biomes.

Edivaldo Afonso de Oliveira Serrão, UFRGS, Brazil

Water temperature as a proxy for hydrological connectivity

Débora Carolina Hymans, Mamiraua Institute, Edivaldo Afonso de Oliveira Serrão, UFRGS, Brazil

Understanding the hydroclimatology of the world's largest tropical watersheds: The use of remote sensing and modeling in the Amazon and Congo basins

Sly Wongchuig, CNES-LEGOS, France

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