

## Conference South America Water from Space II



Dates and Location	November 4-7 2019, Tropical Executive Hotel, Manaus, Brazil
Organization committee/ local organization committee	<p>Daniel Moreira (CPRM-Rio), Fabrice Papa (IRD-LEGOS), Stéphane Calmant (IRD-LEGOS), Joecilia Santos Da Silva (UEA Brésil), Nicolas Picot (CNES), Selma Cherchali (CNES)</p> <p>Local organizing committee: Jussara Socorro Cury Maciel (CPRM-Manaus) (and UEA colleagues in Manaus)</p>
Confirmed scientific committee	<p>Rodrigo Abarca del Rio Jean-François Crétaux Marielle Gosset Waldo Lavado Juan Gabriel Leon Philippe Maisongrande Alfredo Ribeiro Neto Rodrigo Paiva Tamlin Pavelski Frederique Seyler Javier Tomasella Santiago Yopez</p>
Targeted total amount of participants	Total : ~60-70 persons
Presentation and objectives of the Conference	<p>Earth has a limited amount of water that recycles itself in what is called the 'water cycle.' Climate, weather, and human life and activities are profoundly affected by the variability and changes in this continuous, interconnected cycle. Therefore, observing, monitoring and predicting the key variables governing the global water cycle is essential to our understanding of the Earth's climate, forecasting our weather, predicting floods and droughts, and improving water resources management. The progresses of Earth Observation Satellite Technologies (EO) over the past decades made possible to survey several of these variables from space. In the coming years, an increasing number of satellite missions will offer an unprecedented capacity to observe the Earth's surface, its interior and the atmosphere, ushering in a new era in the science of the Earth Environment and the water cycle.</p> <p>To foster the challenges and opportunities resulting from this incoming capacity, IRD, CNES (The French Space Agency) and several institutes in South America (Universities, State and Federal Agencies) initiate the conference series "South America Water from Space". The focus is to discuss the state-of-the-art instruments and scientific developments used in characterize global water cycle variability and to identify the primary needs in modeling and data assimilation to improve our knowledge of water cycle science and our ability to quantify future changes in water cycle variables.</p> <p>The first conference "South America Water from Space" (after an</p>

introductory one in Rio de Janeiro in 2016) was held in Santiago, Chile, from the 26th to 28th of March 2018 (<http://southamericawaterfromspaceconference.com/>), with more than 70 participants from all South American countries, France and USA. The 2019 conference “South America Water from Space II ” will be held in Manaus, State of Amazonas in Brazil on November 4-7, and will be primarily organized by CPRM, IRD, CNES and UEA. We will welcome presentations focusing on applications of remote sensing techniques to investigate water management issues, liquid and solid discharge in rivers, hydrometeorological risks, precipitation, the cryosphere, water levels and surface waters, lakes, rivers and wetland, turbulent energy fluxes and evapotranspiration, irrigation, floods and droughts, modeling the water cycle, and soil moisture, among others. Special contributions dealing with South American regional thematic (rivers such as the Amazon, the Orinoco, La Plata, Nordeste, Sao Francisco, BioBio, arid areas etc..) are a plus, but contributions dealing with tropical large river basins in general are most welcome. One part of the conference will be devoted specifically to the advent of the new capabilities of the Surface Water Ocean Topography (SWOT) Mission (NASA, CNES, CSA and UKSA) and the possibilities provided by the current satellites of the European COPERNICUS space program. The objectives of the SWOT mission, to be launched in October 2021, just two year away from the conference, are to make the first global survey of the Earth's surface water at an unprecedented 1km<sup>2</sup> resolution, to observe the fine details of how terrestrial surface water bodies change over time. Thus, presentations that show the benefits of high spatial resolutions around the globe, and that could serve as inspiration for South American research teams and/or operational institutions, or even upstream work, showing SWOT capabilities are particularly welcome. In the frame of the IRD-CNES initiative “ SWOT Early adopters from South America”, this conference will be jointly sponsored by IRD, CNES, CNRS, CPRM, ANA and possibly the Ambassade de France in Brazil.

**Manaus, Brazil  
4-7 November 2019**

**South America Water From Space II**  
Tropical Executive Hotel, Manaus, Brazil

**More information and registration at:**  
[www.hydrologyfromspace.org](http://www.hydrologyfromspace.org)

**Organizing committee:**  
D. Moreira, F. Papa, S. Calmant,  
J. S. Da Silva, S. Cherchali, N. Picot

**Scientific committee:**  
R. Abarca del Rio, J.-F. Crétaux, M. Gosset,  
W. Lavado, J. G. Leon, P. Maisongrande,  
A Neto, R. Paiva, T. Paveleski, F. Seyler,  
J. Tomasella, S. Yopez

## Preliminary Program

### Monday 4 November 2019:

**Morning (9h-13h):** Registration. Opening ceremony and speeches. General talks on Water Cycle and observations. Space Climate Observatory.

8h30-9h00: Registration

9h00-09h30: Opening ceremony. Discourse by Organizing committee (Context of SWOT, and its program SWOT-Aval, global cooperation in space activities and hydrology-climate between IRD, CNES, CPRM, ANA and South America partners, etc, Objectives of the conference...)

9h30-09h45: Speech by the Ambassador of France in Brazil (15', TBC)

09h45-10h00: Speech by a local representative of Brazil/Manaus (15', Confirmed)

*Chair persons: tbd*

10h00-10h30: Presentation by CPRM official (20' + 10' questions, Confirmed)

10h30-11h00: Presentation by IRD official (F. Seyler) (20' + 10' questions, Confirmed)

11h00-11h30: Coffee Break

11h30-12h00: Presentation by CNES official, CNES Earth Observation Program and Space Climate observatory (S. Cherchali) (20' + 10' questions, Confirmed)

12h00-12h30: Presentation by ANA official (20' + 10' questions, TBC)

12h30-13h00: Presentation by USA official, "World water issues and a focus on South America" (E. Rodriguez) (20' + 10' questions, Confirmed)

### Lunch break (13h-14h30)

**Afternoon (14h30-18h) Session I.** Continental water from space and SWOT mission

*Chair persons: tbd*

14h30-15h00: The SWOT mission, general overview and SA context (S. Cherchali, CNES) (25' + 5' questions, Confirmed)

15h00-15h20: Rivers of the world (T. Pavelski, UNC, USA) (15' + 5', TBC)

15h20-15h40: Worldwide Rivers monitoring from altimetry (S. Calmant, IRD, France) and J. Da Silva Santos (UEA, Brazil) (15' + 5', Confirmed)

15h40-16h00: Lake monitoring from space over SA (J-F. Cretaux (LEGOS, CNES, France), A. Ribeiro Neto (FUP, Brazil), R. Abarca del Rio (UC)) (15' + 5', Confirmed)

16h00-16h30: Coffee Break

Chair persons: tbd

16h30-16h50: Water quality in South America from satellite (J.M Martinez, IRD, France) (15' + 5', TBC)

16h50-17h10: Global scale and Amazon freshwater dynamic from multi-satellite (F. Papa (IRD, France) + J. Tomasella (CEMADEN, Brazil) (15' + 5', Confirmed)

17h10-17h30: (15' + 5'): SAR remote sensing in South America (Evelyn Novo, INPE) (15'+ 5', TBC)

17h30-17h50: (15' + 5'): Remote sensing of precipitation (M. Gosset (IRD, France) and Romulo Juca Oliveira (LEGOS/GET - INPE)) (15'+ 5', Confirmed)

17h50-18h30: Round table- discussion- questions

18h30: end of the day 1

**Tuesday 5 November 2019 :**

**Morning (8h30-12h30):** Session 2: Integrated studies for hydrology and water cycle.

Chair persons: tbd

8h30-9h00: Hydrology reanalysis over South America (Rodrigo Paiva, UFGRS) (25'+ 5', Confirmed)

9h00-9h20: Hydrology and Climate variability (Rodrigo Abarca del Rio, Chile) (15'+ 5', Confirmed)

9h20-9h40: The Water Cycle: closure and variability in South America (Filipe Aires, CNRS, France) (15'+ 5', TBC)

9h40-10h15: The water cycle of African river from a modeling perspective (Congo river by Adrien Paris 15', CLS, Niger river by Vanessa Pedinotti, Magelium 15' + 5', TBC)

10h15-10h45: Coffee Break

10h45-11h05: Integrated monitoring of small water objects from space – example of ponds in the arid context of Nordeste (M. Grippa, UPS) (15'+ 5', Confirmed)

11h05-11h25: The monitoring of SA rivers from SAR and optical observations (Santiago Yopez, Universidad de Concepción, Chile) (15'+ 5', Confirmed)

11h25-11h45: Hydraulic visibility of rivers in the context of SWOT and modeling (Pierre-André Garambois, INSA, France) (15'+ 5', TBC)

11h45-12h05: Assimilation of satellite observations in hydrological models (Charlotte Emmerly, CS, 15' +5', TBC)

12h05-12h25: The study of the Amazon delta in the SWOT context (F. Durand, IRD) (15'+ 5', Confirmed)

Lunch break (12h30-14h00)

**Afternoon (14h00-18h00):** Session 3: SWOT Early adopters and Water study in the operational context. Session 4: SWOT-Ocean

Chair persons: tbd

14h00-14h20 : ANA (Brazil): Brazil needs for RS in Operational context (20', TBC)

14h20-14h40: CPRM (Brazil): RS of Water in Operational and SWOT context (20', Confirmed)

14h40-15h00: SENAMHI, Hydroclimatology from Peru using space data and land climatological observations (Waldo Lavado, Peru) (20', Confirmed)

15h00-15h20: FUNCEME, Satellite Based activities to monitor Rainfall and water resources in Nordeste Brasil (Meiry Sayuri Sakamoto) (20', TBC)

15h20-15h40 : CEMADEN, Operational discharge forecast in rivers managed by Cemaden: expected benefits from the use of SWOT (J.Tomasella, Brasil) (20', Confirmed)

15h40-16h00: IRD-ANA, The Service dObservations HYBAM, (J-M. Martinez, IRD), (20', TBC)

16h00-16h30: Coffee break

Chair persons: tbd

16h30-18h: SWOT-Ocean for South America

16h30-17h00: Physical oceanography of Tropical Atlantic in the context of SWOT, the SWOT-Ocean Brazil project (F. Hernandez, IRD, France) (20'+5', Confirmed)

17h05-17h25: Another presentation on SWOT Ocean Topics (TBC with Fabrice Hernandez).

**Poster Session and Social Event (17h30-20h)**

**17h30-20h. Poster Session and social event:** Hydrology Science and Water Resources from Satellites with special focus in South America. We should target ~5 posters (Scientist + Student posters) in each of these areas (total of ~30 posters, logistic to be done with UEA):

- Water bodies/Lake/Wetlands/Rivers (Current + Volodia, SMASH, etc...)
- Precipitation and HydroClimatology
- Water resources and management
- Hydrology and models in large river basins
- SWOT SA Early adopters
- Estuaries and Coastal

**Wednesday 6 November 2019 :**

**Morning (9h-13h):** Session 5: Satellite-based Hydrological studies worldwide.

Chair persons: ?

9h00-9h20: Hydrological studies over the Congo river basin (R. Tshimanga, RDC) (15'+ 5', TBC)

9h20-9h40: Hydrological studies over the Orinoco river basin (Juan Gabriel Leon, Colombia) (15'+ 5', Confirmed)

9h40-10h10: Hydrological studies over the Indian rivers (Indu J., IIT Mumbai, India,) (15'+ 5', TBC)

10h10-10h30: Hydrological modeling studies over the Uruguay river basin (Gonzalo Saprizza Azuri, Universidad de la República, Salto, Uruguay) (15'+ 5', Confirmed)

10h30-10h50: Hydrological studies over the Sao Francisco river (Philippe Maillard, UFGM) (15'+ 5', TBC)

10h50-11h15: Coffe Break

11h15-11h35: The use of SMOS and following missions in soil moisture studies for global hydrology (Someone from CESBIO) (15'+ 5', TBC)

11h35-11h55: 'SurfWater', a dynamical database of water masks with Sentinel-1 and Sentinel-2, (Santiago Pena Luque, CNES, Confirmed)

12h00-13h00: Preparing SWOT use with the SWOT Large scale simulator (CNES) and OTB (CNES, 1h00, TBC)

Lunch break (13h00-14h00)

**Afternoon (14h-16h):** Session 6: SWOT mission: Hydroweb, GDR1, cal/val activities before launch, new ST and future projects

Chair persons: ?

14h00-14h20: The Hydroweb database presentation and its mirror in Brazil (JF Crétaux and Daniel Moreira, CNES-CPRM) (20', Confirmed)

14h20-14h40: How GNSS IPPP Positioning Technique Can Help Space Altimeter Missions? (Félix Pérosanz, CNES, GET) (20', TBC)

14h45-15h15: SWOT Cal Val needs (N. Picot, CNES) (30', TBC)

15h15-15h45: Ongoing and future Field campaigns in SA and the new GDR1 ScyHyLab (S. Calmant and D. Moreira, IRD-CPRM) (30', Confirmed)

15h45-16h30: Discussion on future projects / fund rising possibilities for SWOT SA / general questions

16h30-17h30: Round table, discussions, meeting outcomes, wrap-up.

17h30-19h30: (optional, for students for instance or scientists/engineer who are interested): technical activities such as training to use MAPS and/or

VALS, automatic download series from hydroweb, etc

**7 November 2019: field trip to visit a cal/val sites by CPRM-IRD**

**7h00-19h00** to be arranged later

**End of conference**