

# Satellites and water resources management: towards a revolution?

## Experience of Geological Survey of Brazil and applications over South America

Daniel Medeiros Moreira

Jointly project  
with :



## INTRODUCTION



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- Water resources on the continental surface are limited, and the spatial and temporal distribution of this resource does not always meet the most crucial needs.
- The quantity and quality of the fresh water supplies will be a major problem in the coming decades. (World Resources Institute, <http://www.wri.org/wri/wr2000>).
- Nowadays, monitoring of the continental water resource (temporal variability of river stages and river discharges) is provided via hydrologic networks. The challenges common to most regions include inadequate monitoring networks, gaps in records, a general decline in the number of stations, chronic under-funding, differences in processing and quality control, and differences in data policies (WMO, 2003

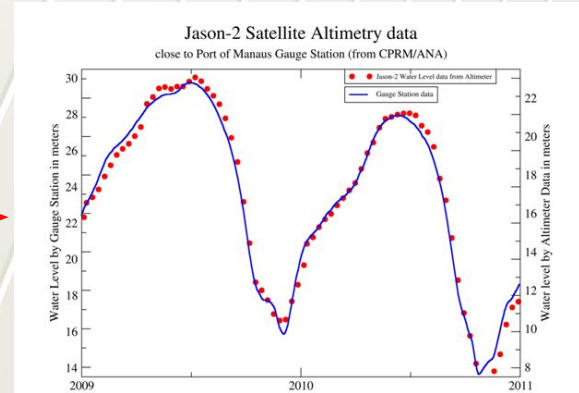
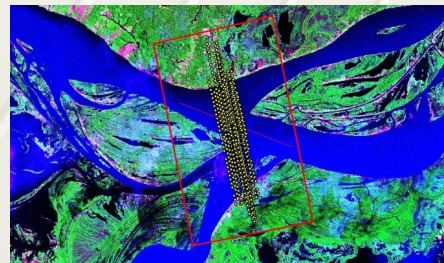
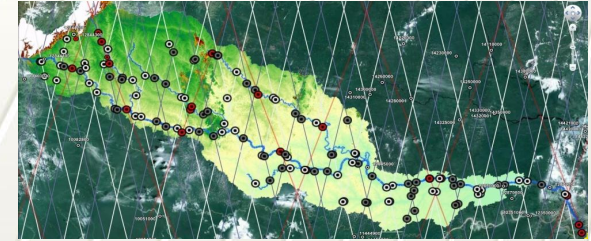
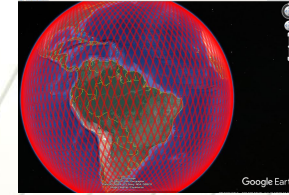
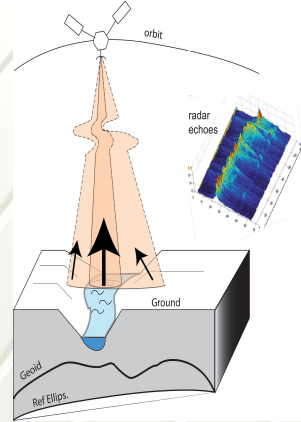
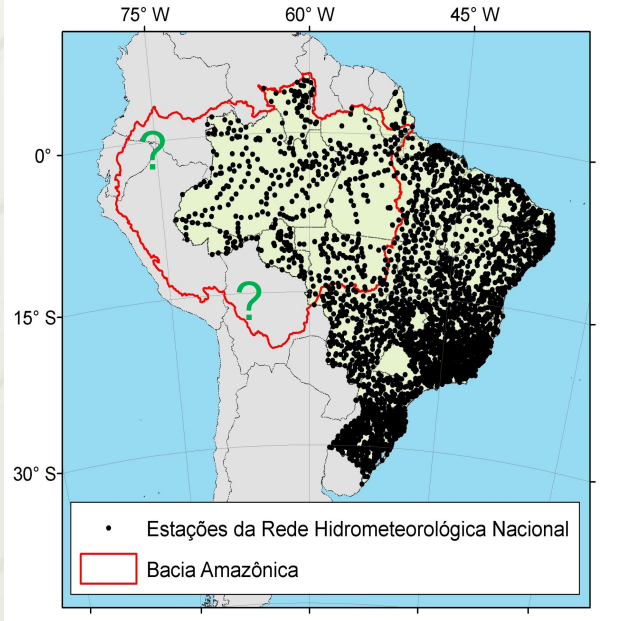
# ALTIMETRY OVER RIVERS

Such a monitoring system can be provided by satellite data in complement of the existing in-situ networks and there is a strong need for an application specific to continental waters of the existing and forthcoming satellite missions.

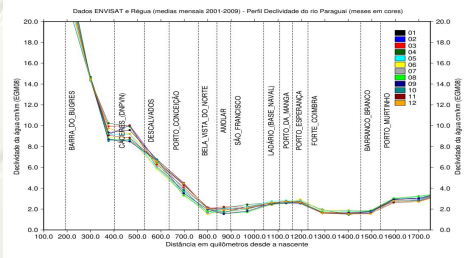
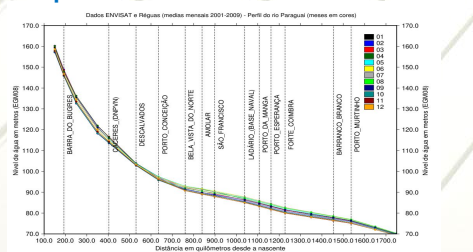
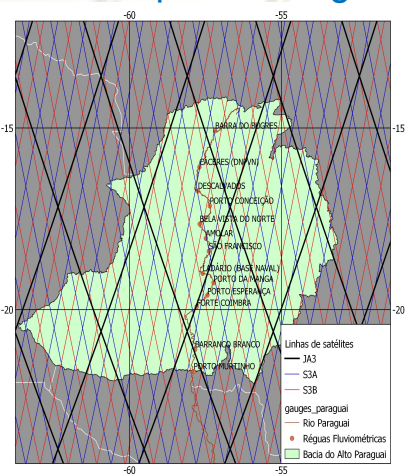


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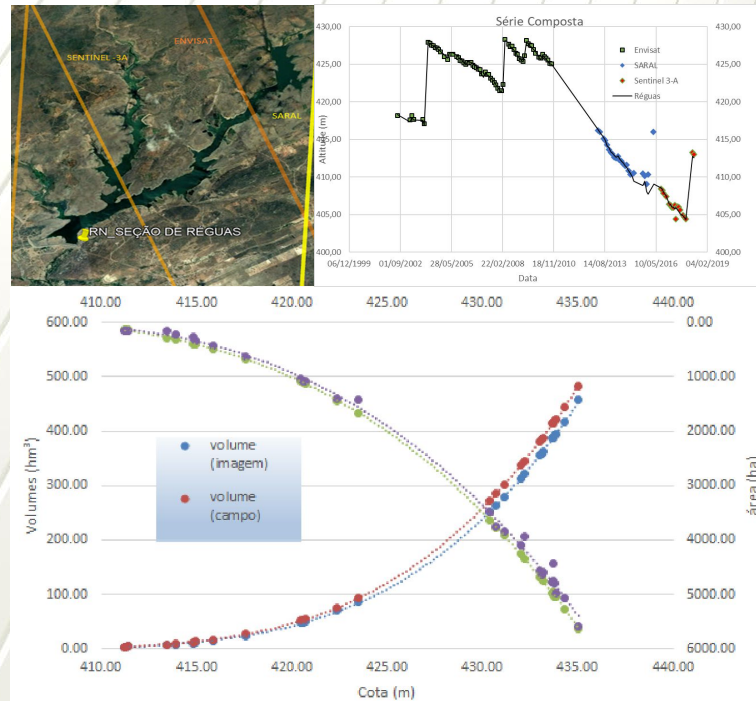
## Altimetry for rivers



## River slope and longitudinal profiles



## Monitoring Reservoir Volumes

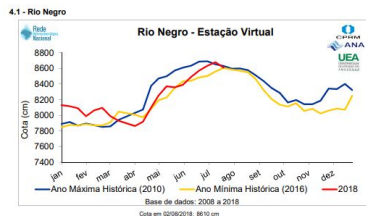


## Support for flood monitoring in transboundary basins



### 4 - Monitoramento da Bacia Amazônica por dados de satélite

Para o monitoramento dos principais cursos d'água da bacia Amazônica em regiões localizadas fora do território brasileiro, são utilizados dados provenientes dos sensores altimétricos instalados a bordo dos Satélites Jason 3. A resolução temporal de obtenção de dados é de 10 dias.



## CONCLUSIONS

- Altimetry it's a great tool for hydrological monitoring, nowadays the satellite altimetry can even be useful at regions well monitored, to check data quality and bring independent data to solve water conflicts.
- Altimetry applied at poor gauged zones can bring very important information .
- New missions as SWOT and SMASH can really bring a game changer for Satellite applications for Hydrology

Some challenges for altimetry and Future (SWOT and SMASH):

- Bringing operational missions at time sampling of gauge stations.
- Assessment of data quality , improvement of data processing&distribution, lack of investment for cal/val of satellite altimetry for hydrology.



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HÁ 51 ANOS TRABALHANDO PARA O  
DESENVOLVIMENTO DO PAÍS

 SERVIÇO GEOLÓGICO  
DO BRASIL - CPRM

## DANIEL MEDEIROS MOREIRA

### Engenheiro Cartógrafo

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Serviço Geológico do Brasil – CPRM  
e-mail: [daniel.moreira@cprm.gov.br](mailto:daniel.moreira@cprm.gov.br)  
[www.cprm.gov.br](http://www.cprm.gov.br)