

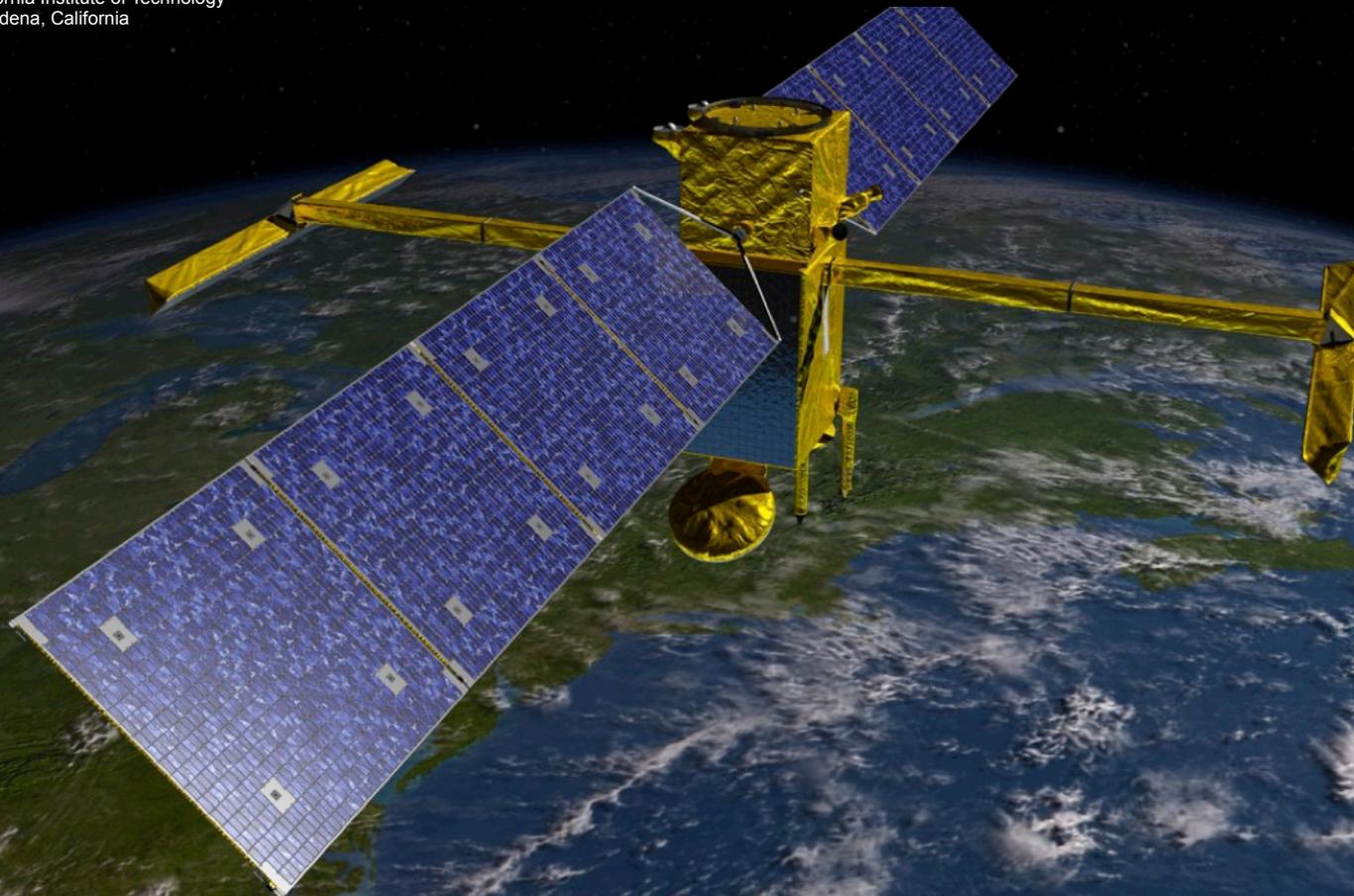


National Aeronautics and
Space Administration

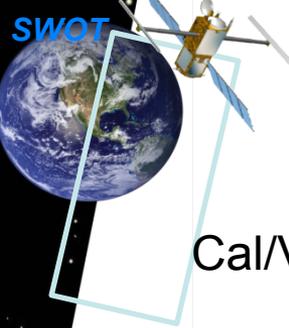
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California



H-ST Cal/Val projects



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Hydro-ST Cal/Val projects

Cal/Val is shared between Projects (NASA/JPL and CNES) and ST

For hydrology, it will be the first mission which officially deals with cal/val

Consequently, no historical expertise on the project side same as for oceanography

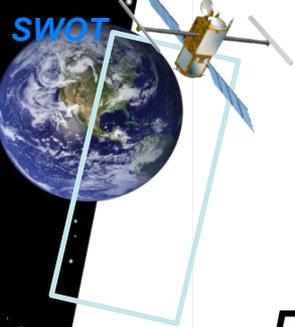
But ST has an expertise inherited from nadir altimetry

This is an advantage: teams already experimented what they intend to do for SWOT

But it may be a drawback: SWOT is different from nadir altimetry and the validation tools and methods developed for nadir altimetry may be not the best for SWOT (we can only guess what to do)

Projects have tools that ST do not : AirSWOT in US only

Validation requires ground measurements : much easier for ST than for Projects



Hydro-ST Cal/Val projects

5 ST projects / posters :

Jones/Fulton et al. US

Smith et al. US + Can

Medeiros Moreira et al. Br+Fr+Co+Bo

Maillard & Calmant Br+Fr

Seyler & Calmant Fr in South Am

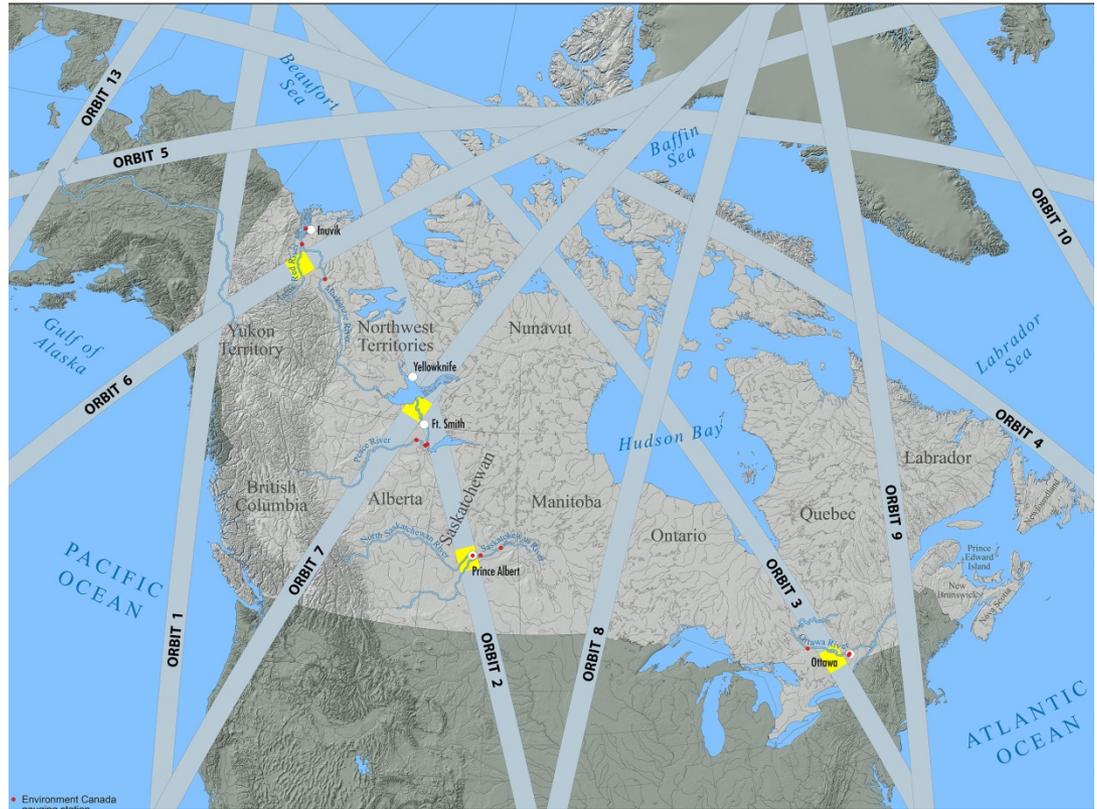


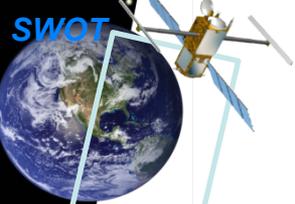
Smith et al. (US + Canada)

1Day orbit targets
In Canadian Arctic :

Hydro parameters

Phenomenology
(water detection,
contours...)





Fulton / Jones (USGS)

Use the USGS databases

(levels, discharges by RC, cross-sections...)

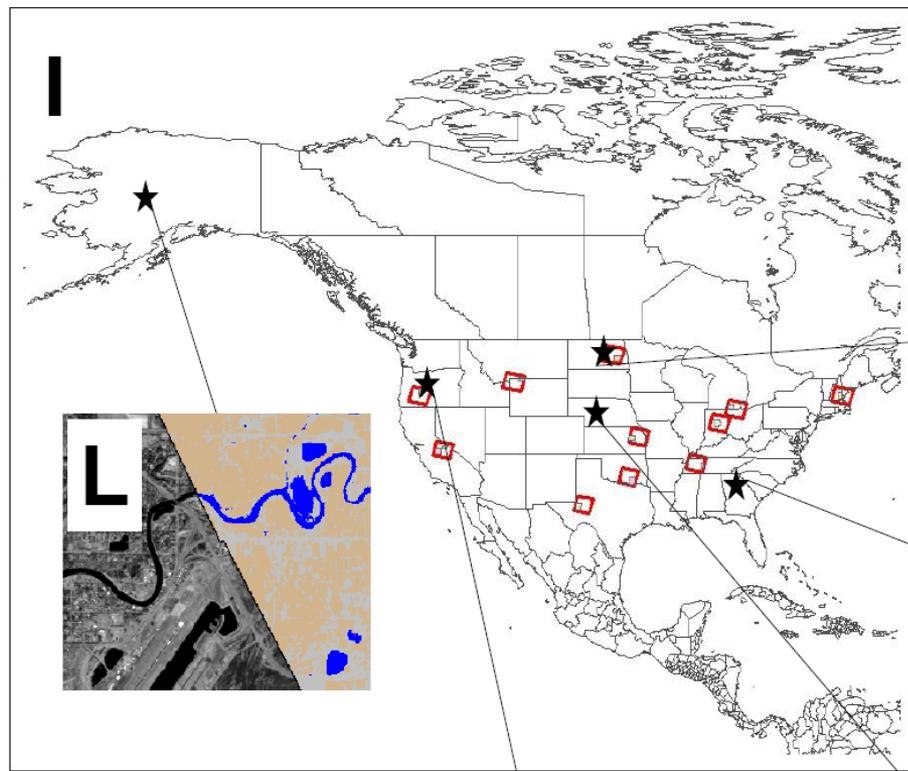
and imagery to set up a database ready for

comparison with SWOT data over the US

territory

Experiment with existing sat altimetry and

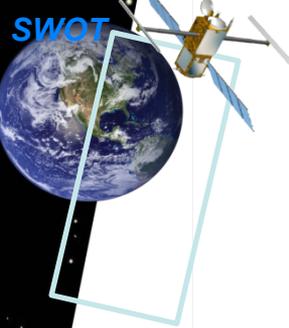
Landsat



Define standards for sites characterisation (see Ernesto's talk)

Tier 1 « gold sites » (mostly ST+Project)

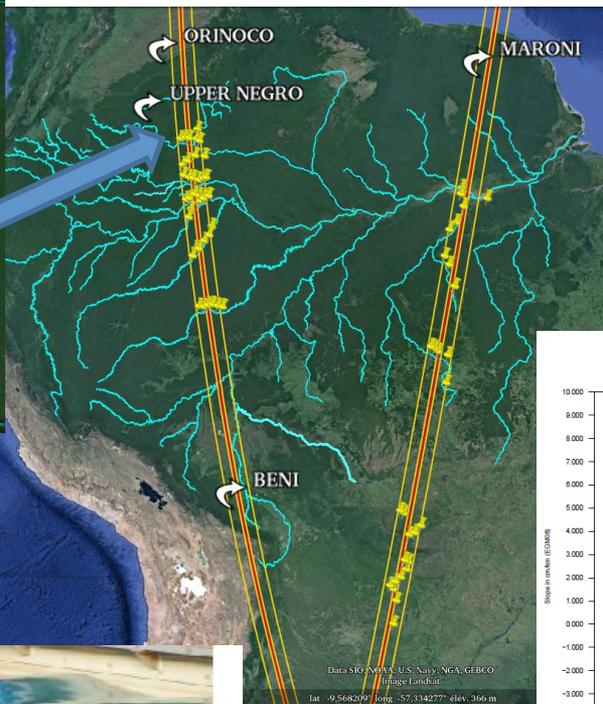
Tier 2 (partly fulfill the requirements for Tier 1)



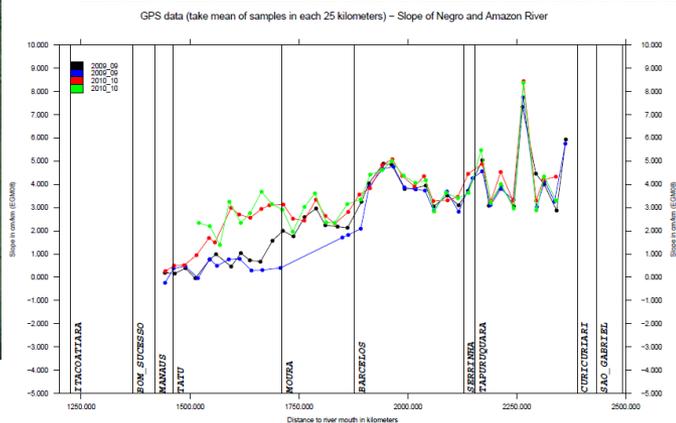
Moreira et al.:

Large, forested, tropical rivers

+ ~ 50 sites dedicated to SWOT : $h(x,t)$, dh/dx , dh/dt , W , $Q(t)$



2015, nov
2016, July





Maillard & Calmant

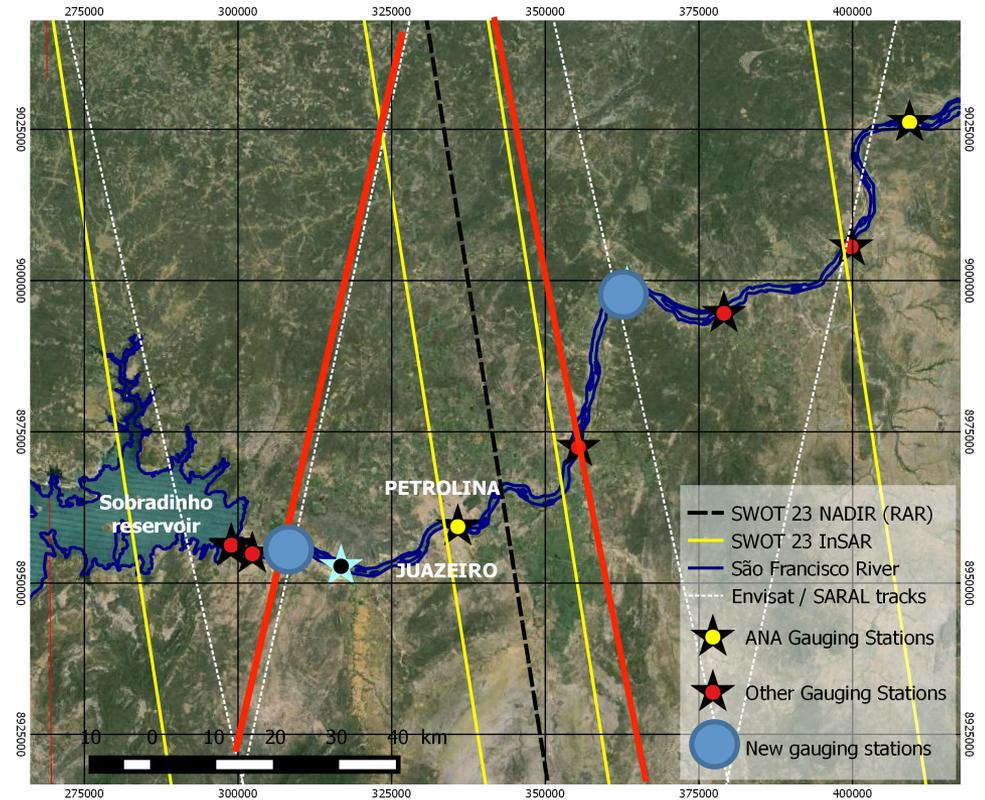
Focus on the Sao Francisco River
major societal role in Brazil with dams and
regulation for agriculture)

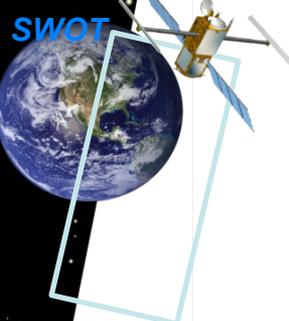
Collect all the data for a fine
modelling of the flow in the river
using SWOT data

Including complement the set of
existing gauging sites with new
stations (levelled gauge, cross-
section + discharge)

Characterisation of the land type on
the river banks ...

Collect nadir alt. series (SARAL, S3-A)





Seyler & Calmant: Fr Guiana

Counterpart of the USGS project lead by Fulton

TEAM:

Brazil:

University of Amazonas State Joecila Da Silva

Mineral Resources Comapgny of Brazil: Daniel Moreira

United States

USGS: John Fulton, Dave Bjerklie, John Jones, Toby Minear

National Weather Service, Northeast River Forecast Center: Ed Capone

Canada

Environnement Canada: Al Pietroniro, Daqing Yang

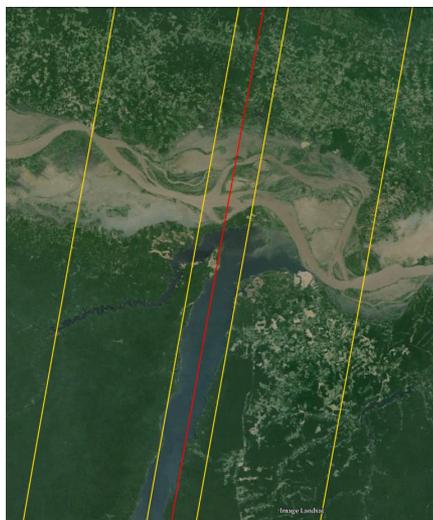
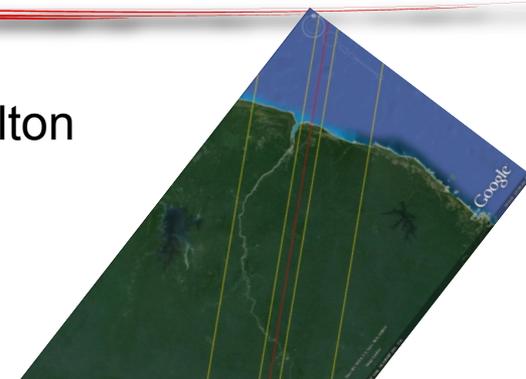
Italy

Italian National Research Council: Tommaso Moramarco, Angelica Tarpanelli

France

ICUBE Equipe Mécanique des fluides, INSA de strasbourg Pierre-André GARAMBOIS

UMR GET (IRD, CNES, CNRS, Université de Toulouse: Marie-Paule Bonnet

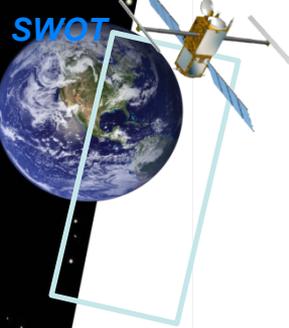


Validation :

in a context of slope varying rapidly (The Maroni river)

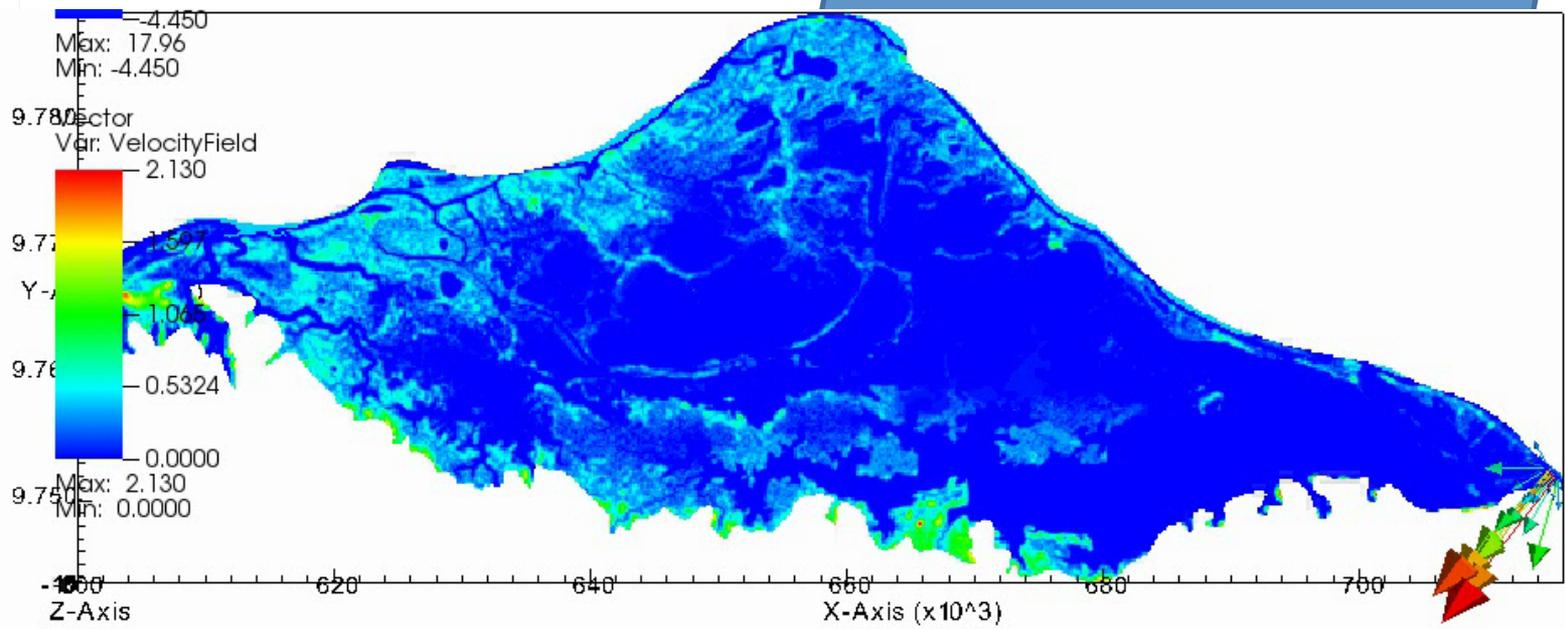
SWOT vs model

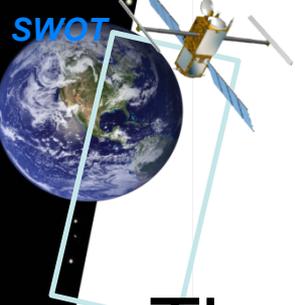
In varzeas (Inundation zones along the Amazon mainstream)



Varzea modelling

SWOT swath





H-ST Cal/Val projects

The posters presented in this session:

Mostly deal with Validation (not with instrument calibration)

Mostly deal with the 1day orbit

Only take place in Americas (do not represent the actual diversity of contexts...)

More diversity is welcome (ongoing...)