



HIDROLOGIA ESPACIAL O SISTEMA HIDROSAT – ANA

SPATIAL HYDROLOGY THE HIDROSAT SYSTEM – ANA

Brasília, 01 de setembro de 2015

Giana Márcia

Tipos de Estações Virtuais

- ▼ Qualidade de Água
- ▼ Turbidez
- ▼ Sedimentométrica
- ▼ Altimétrica

Menu

Estações Virtuais

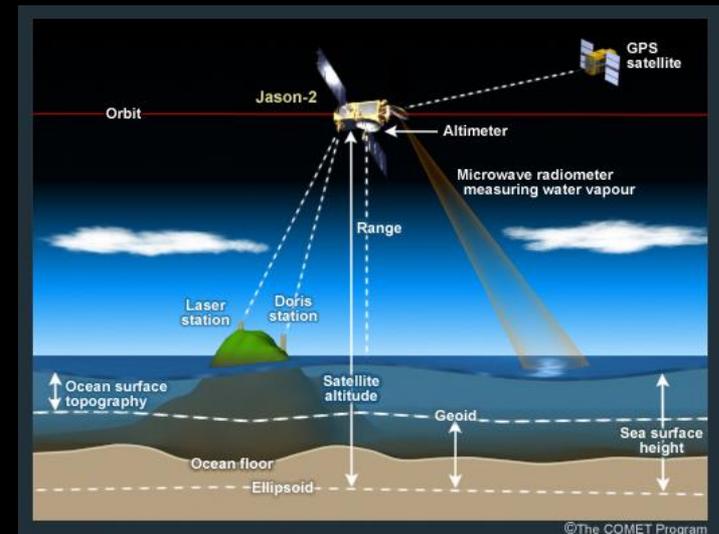
Pesquisar Estações Virtuais...

- ▼ 0614S03855W0-ACUDE ORÓS
- ▼ 0545S03748W0-ACUDE SANTA CRUZ DO APOC
- ▼ 0518S03852W0-ACUDE BANABUIU
- ▼ 0527S03825W0-ACUDE CASTANHÃO
- ▼ 0453S06001W0-FAZENDA VISTA ALEGRE
- ▼ 0229S06601W0-FONTE BOA
- ▼ 0308S05828W0-ITACOATIARA
- ▼ 0403S06301W0-ITAPÉUA
- ▼ 0353S05905W0-NOVA OLINDA DO NORTE
- ▼ 0155S05530W0-ÓBIDOS - LINIGRAFO
- ▼ 0540S03652W0-ACUDE ARMANDO RIBEIRO GONCALVES
- ▼ 0844S06355W0-PORTO VELHO
- ▼ 0326S06845W0-SÃO PAULO DE OLIVENCA
- ▼ 0400S07309W0-TAMISHIVACU
- ▼ 0322S06439W0-TEFÉ - MISSÕES
- ▼ 2318S04846W0-PARANAPANEMA - MONTANTE JURUMIRIM
- ▼ 2315S04900W0-PONTE AVARÉ-ITAI - JURUMIRIM
- ▼ 2316S04912W0-BARRAGEM UHE JURUMIRIM
- ▼ 2308S04936W0-RESERVATÓRIO CHAVANTES MONTANTE
- ▼ 2324S04935E0-RESERVATÓRIO CHAVANTES (CARLOPOLIS-FARTURA)

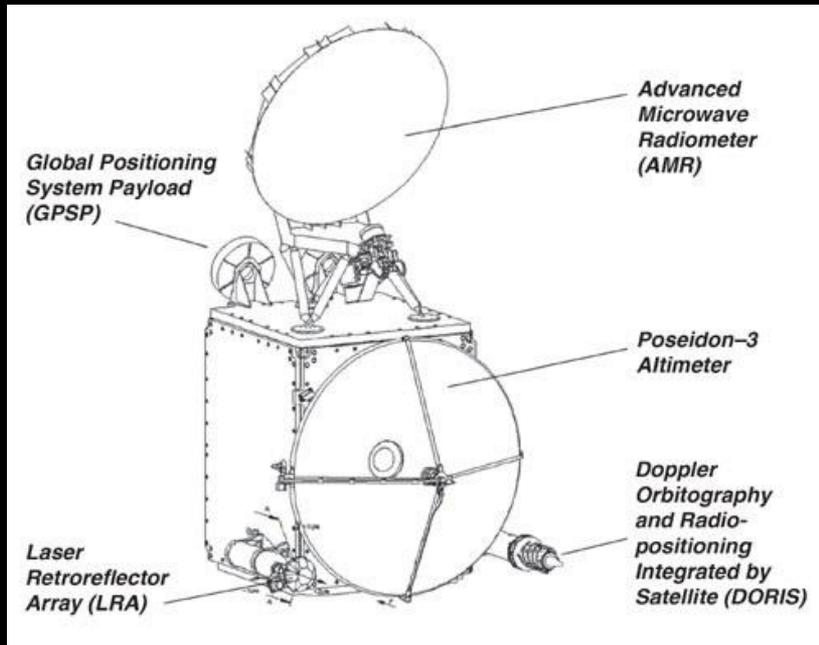


- ✓ Launched June 20th, 2008;
- ✓ Ocean Surface Topography Mission (OSTM)/Jason-2;
- ✓ International Satellite Mission - collaboration between:
 - NASA;
 - the National Oceanic and Atmospheric Administration (NOAA);
 - CNES (Space Agency of France);
 - European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).
- ✓ Following the retirement of the Topex-Poseidon satellite due to a technical fault after more than thirteen years of exceptional services, [Jason-2](#) is scheduled for a 2008 launch to join its predecessor, Jason-1, launched at the end of 2001;

JASON-2



JA2



ENVISAT

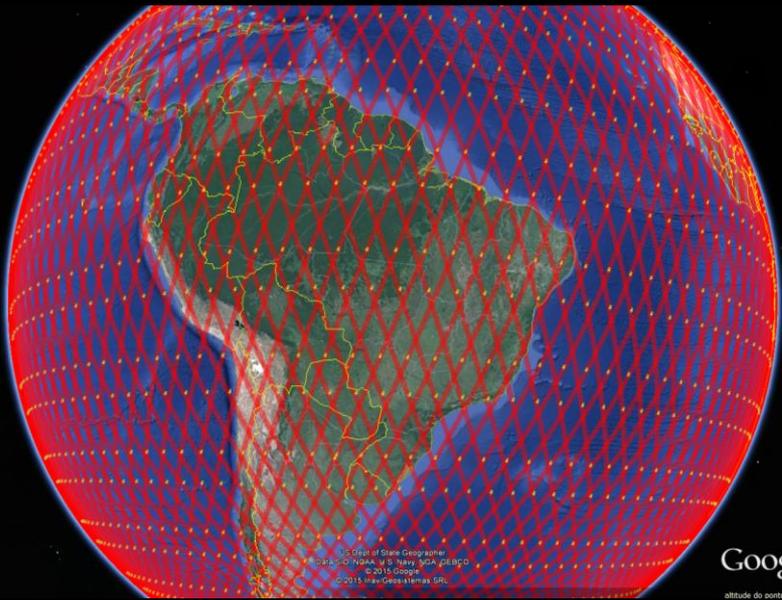
- ✓ Launched on March 1st, 2002;
- ✓ Orbited Earth more than 50.000 times over 10 years – twice its planned lifetime;
- ✓ Contact with Envisat was suddenly lost on April 8th, 2012;
- ✓ End of the mission was declared on May 9th, 2012.



SARAL ALTIKA

- ✓ Satellite with ARgos and ALtiKa is a cooperative altimetry technology mission of Indian Space Research Organisation (ISRO) and CNES (Space Agency of France);
- ✓ Complementary to the Jason-2 mission of NASA/NOAA and CNES/EUMETSAT;
- ✓ Same orbit than ENVISAT, to **ensure a continuity** of altimetry observations in the long term;
- ✓ Launched Feb 25th 2013.

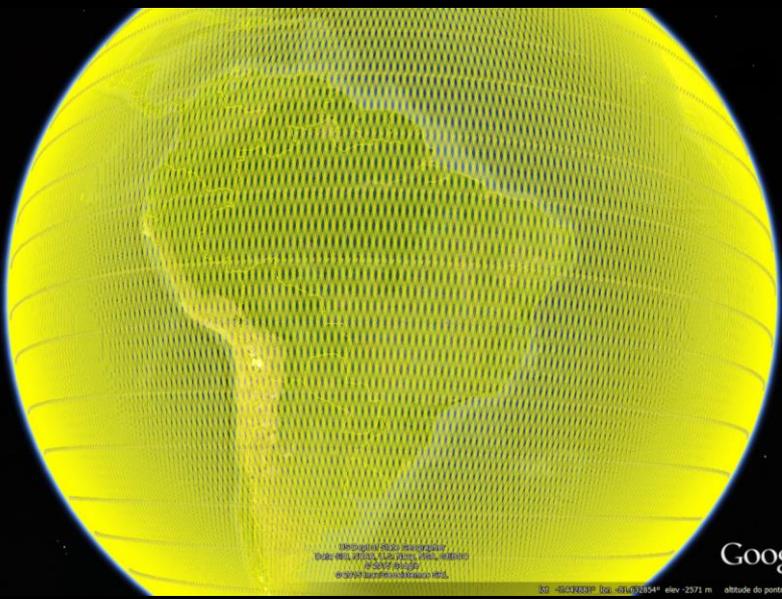
Google Earth



ENVISAT & SARAL
~ 75 km track spacing

Google earth
altitude do ponto de visão 9141.91 km

JA2
~ 300 km track spacing

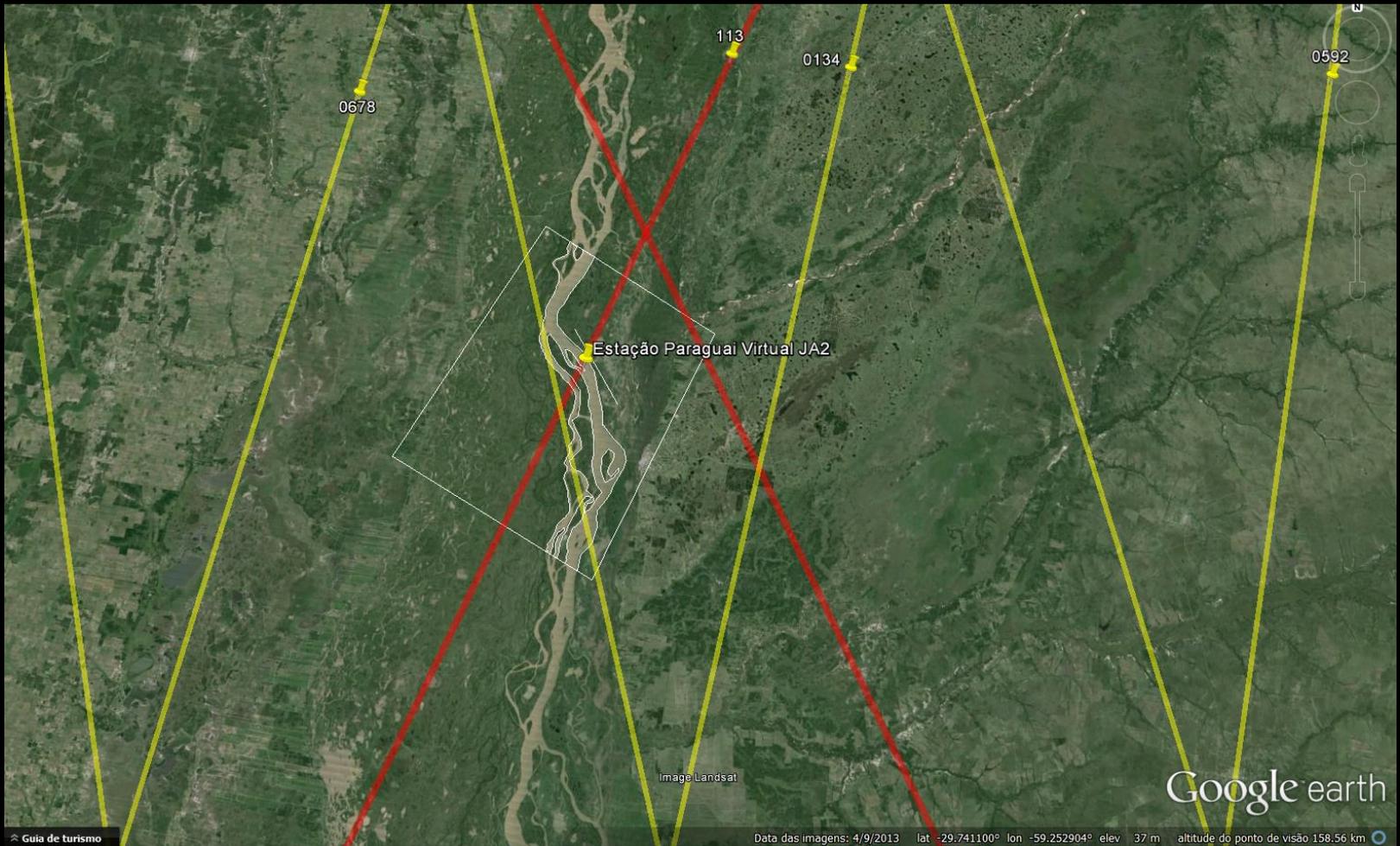


Google earth

Google earth

altitude do ponto de visão 9141.91 km

Google Earth

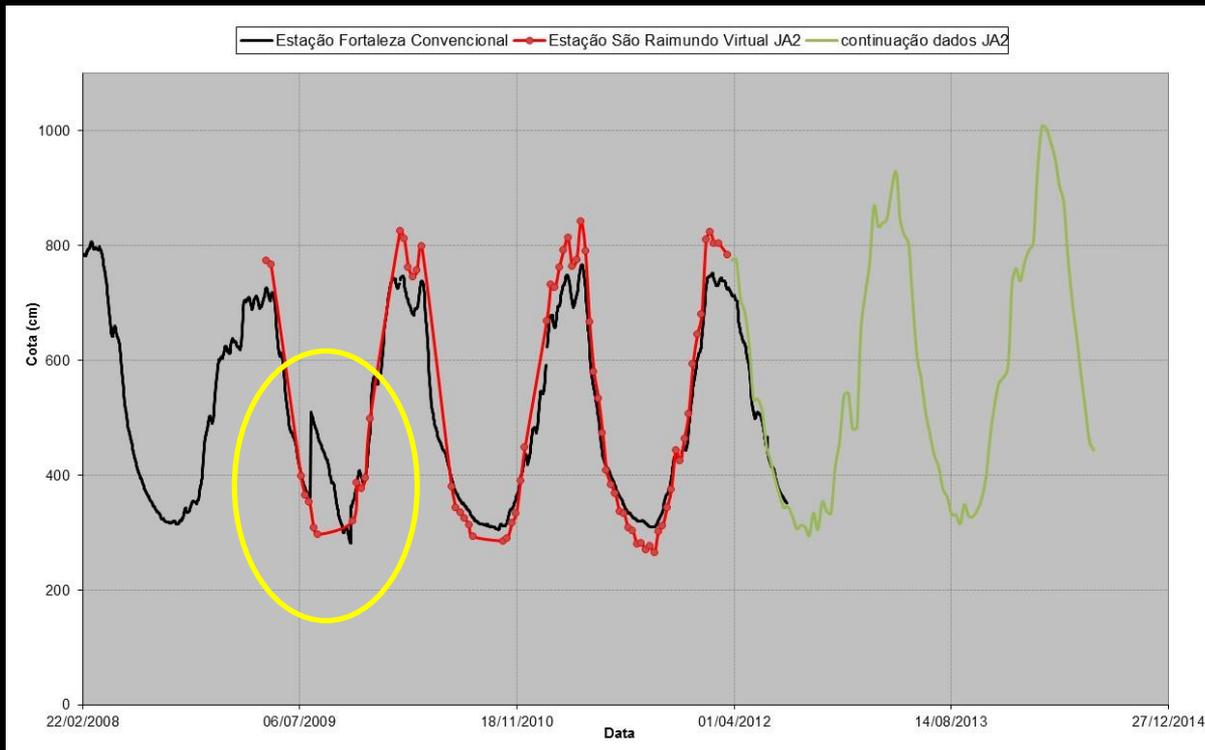


Guia de turismo

Data das imagens: 4/9/2013 lat -29.741100° lon -59.252904° elev 37 m altitude do ponto de visão 158.56 km

PRACTICAL USES

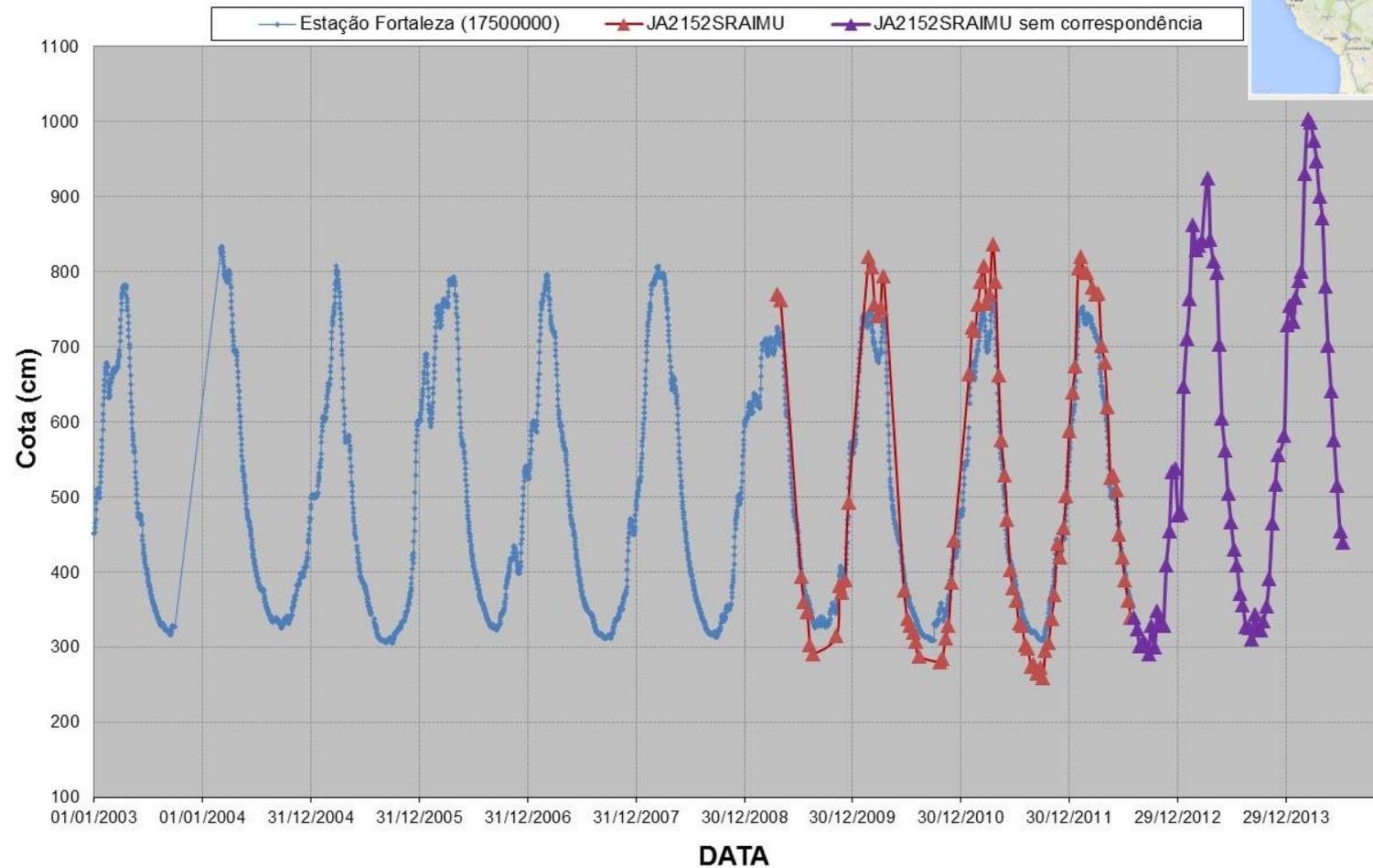
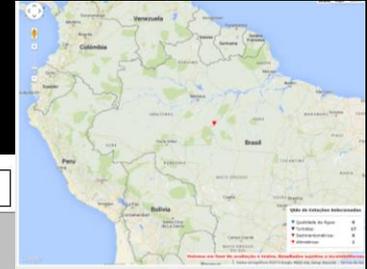
1. DATABASE CORRECTION



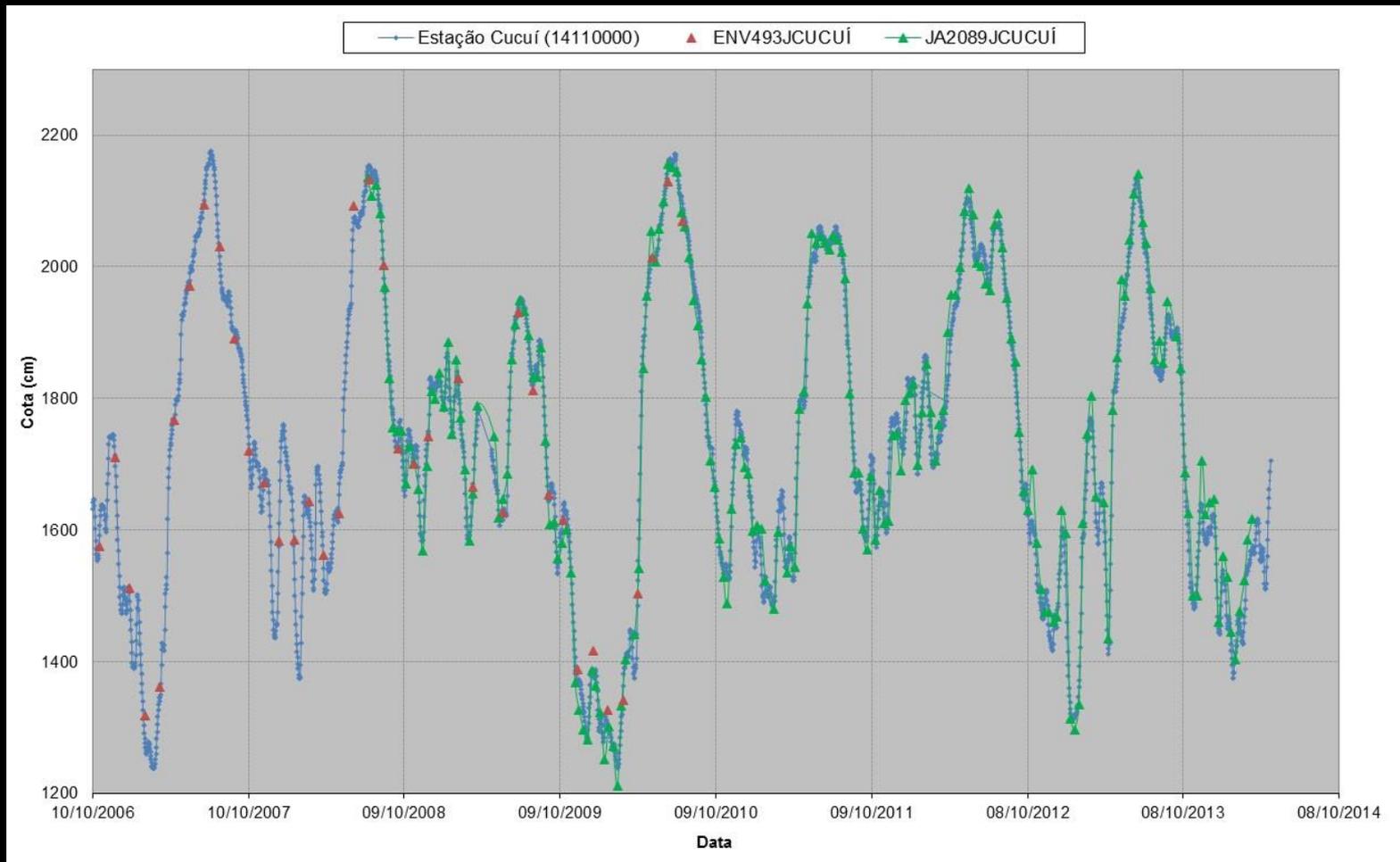
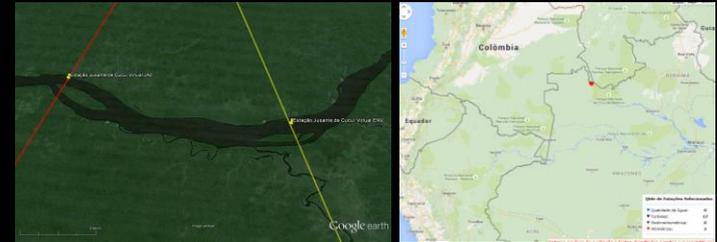
DATA COMPARISON

- ✓ Virtual ENV station and conventional station;
- ✓ Analysis:
Inconsistency in 3 complete months between data from Fortaleza Conventional Station (17500000) and data from ENVISAT altimetry;
- ✓ Field files stored in ANA's system indicate wrong transcription of numbers – data from conventional station corrected

2. COMPLETE DISCONTINUED HISTORICAL SERIES



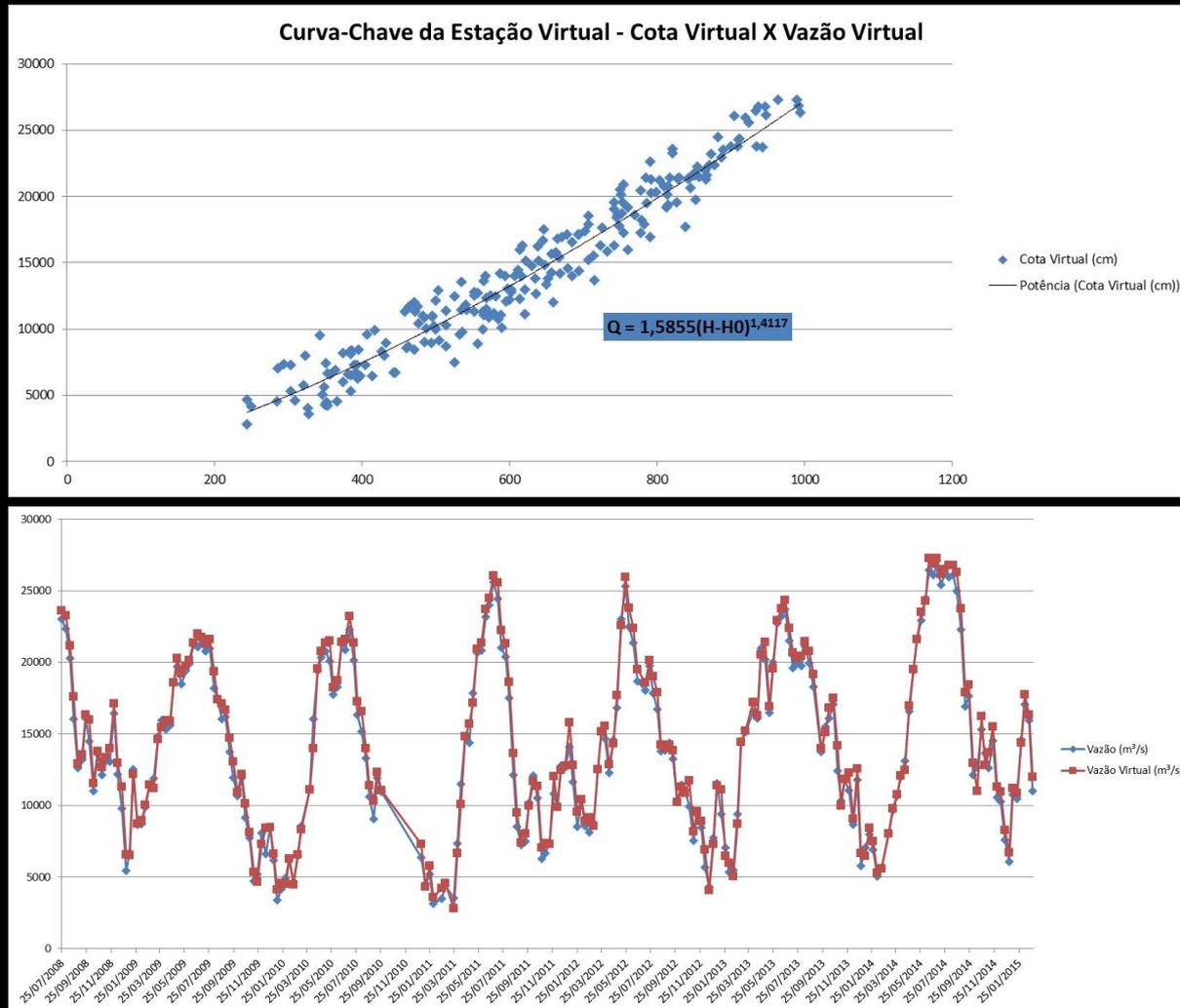
3. CHECK ACCURACY OF FIELD MEASUREMENTS AND SATELLITE DATA



DERIVED DATA

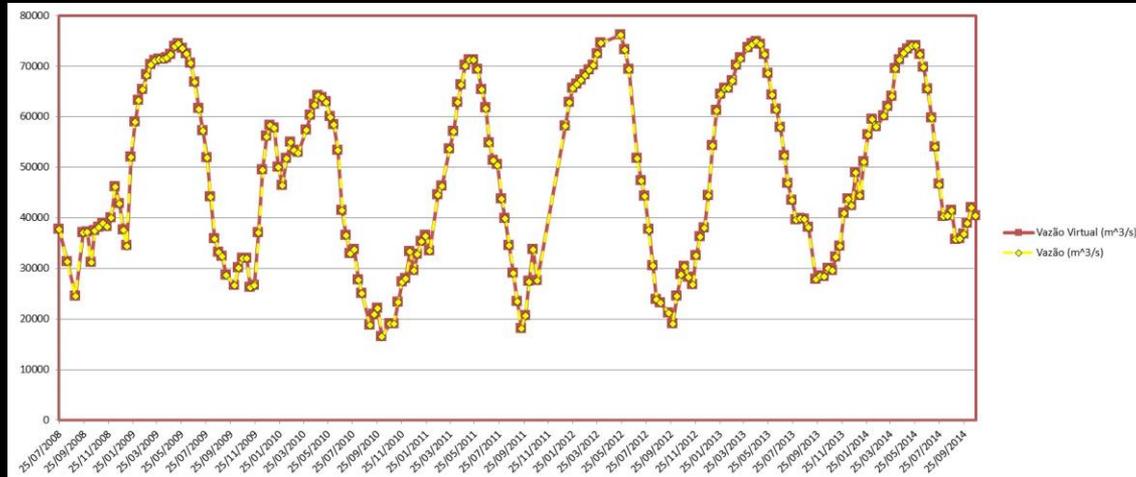
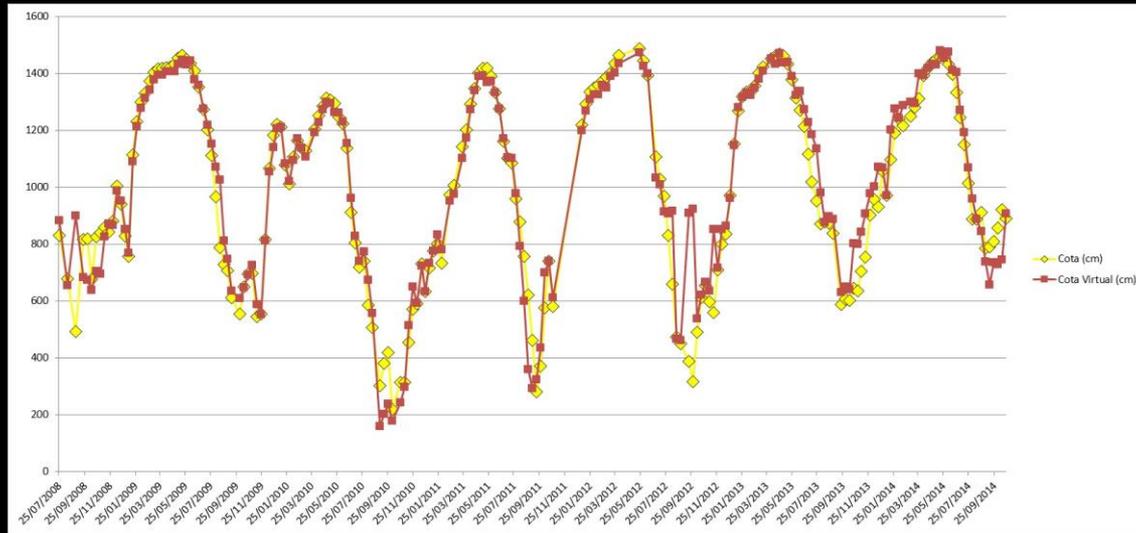
DISCHARGE CALCULATIONS BASED ON RATING CURVES MADE WITH THE USE OF LEVEL MEASUREMENTS FROM SATELLITES

Estação Japurá Virtual



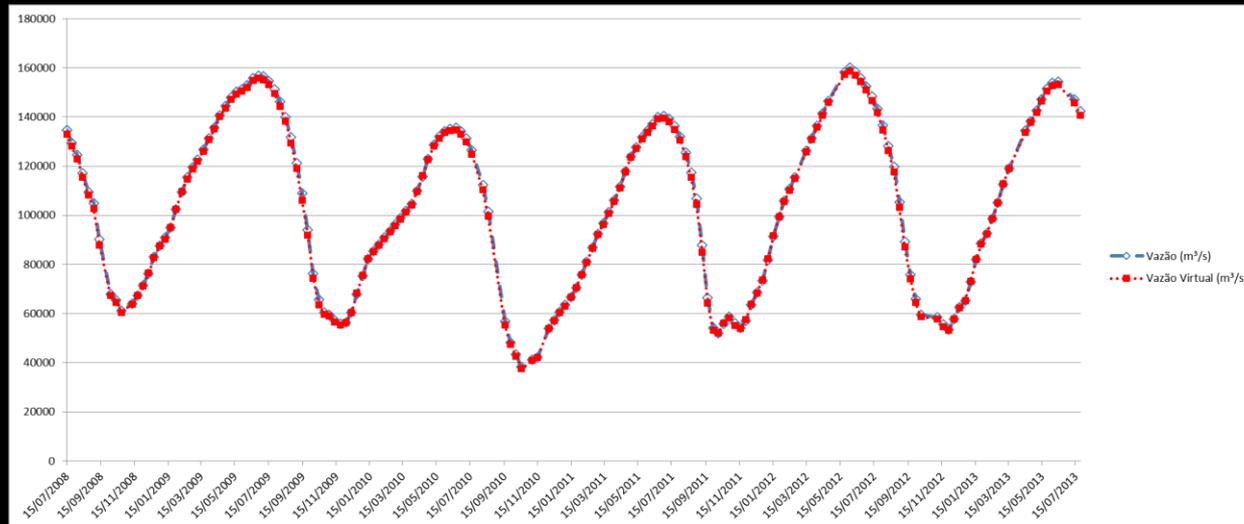
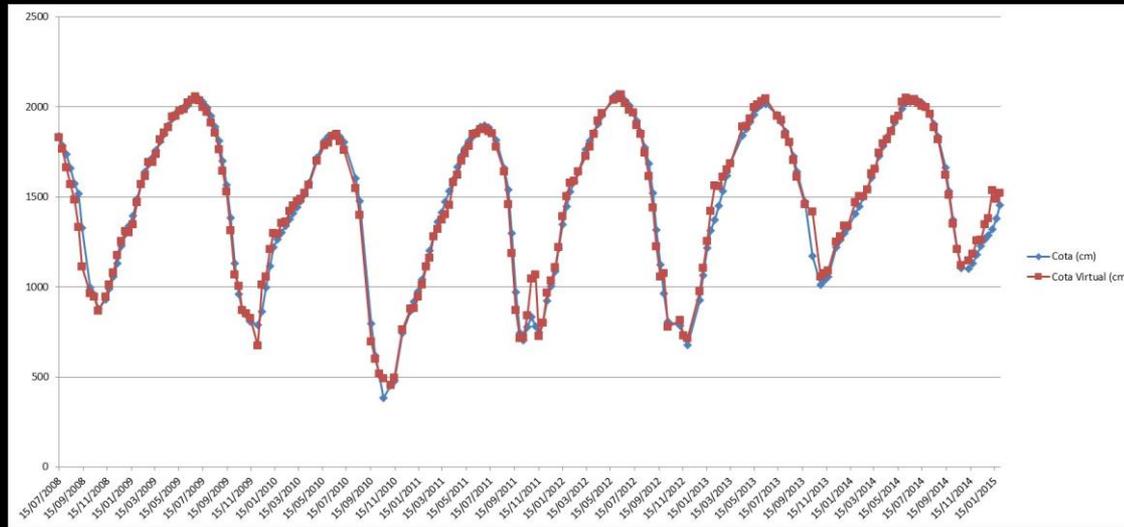
STAGE-DISCHARGE CURVES ARE EVEN MORE ACCURATE THAN LEVEL MEASUREMENTS

Estação São Paulo de Olivença Virtual



STAGE-DISCHARGE CURVES ACCURACY

Estação Montante de Anori Virtual



NEXT MISSIONS

- **JASON-3 – August, 08th, 2015 (CNES, NASA, EUMETSAT, NOAA);**
 - **SENTINEL-3 (2015; ESA);**
 - **SWOT (2020; CNES, NASA, CSA, UKSA);**
- **JASON-CS series (2017?; ESA, EUMETSAT, EU, CNES);**
- **COMPIRA (Coastal and Ocean Measurement Mission with Precise and Innovative Radar Altimeter) - Japan Aerospace Exploration Agency (JAXA; 2019);**

Among others

Obrigada!

**Giana Márcia
Agência Nacional de Águas**

giana.santos@ana.gov.br (+55) (61) 2109 –5479

www.ana.gov.br

