Monitoramento das concentrações em MES de superfície nos rios Amazonas e Madeira por satélite

Suivi des concentrations de MES des fleuves Amazone et Madeira par satellite

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Objetives / Projects

- **This year**: production of daily Surface Suspended Sediment Concentrations (SSC) time series with MODIS images
  - Development of an Inversion algorithm

- **SAMSAT project funded by French Spatial Agency CNES**
  - Spectroradiometric measurements
  - Field campaigns
  - Inversion model

- **PNTS project funded by INSU**
  - Use of very high resolution images (SPOT)
  - IRD - SEAS Guyane
Processing chain

• **Image Database : GETMODIS (G. Cochonneau)**
  - MODIS images (Terra & Aqua satellites) time series are retrieved over HYBAM stations starting March 2000
  - > 30000 images stored and available online for partners via Java interface

• **Production of reflectance time series**

• **Inversion model : from reflectance to concentration**
  - HIBAM 10-day measurements are used for calibration
  - “Bootstrap” technique for robust calibration and accuracy estimates
  - Generalized Inverse algorithm is used to produce daily time series (P. Mazzega)
  - Field campaigns for measurement of surface concentration variability
Field spectroradiometry

- Spectral irradiance and radiance sensors have been exploited this year along rivers and floodplain lakes (SAMSAT project)
  - Better knowledge of the different river water profiles is essential for satellite image interpretation
  - > 10000 radiometric measurements acquired
Summary of results in Brazil: Daily SSC estimates from MODIS images.
Conclusion / Perspectives

• Daily estimates of surface concentration of suspended sediment were produced for the main white water rivers in Brazil
  ➔ Both concentration and prediction error are available
  ➔ Results over the 2000-2006 period show fine accuracy and robustness

• Perspectives
  ➔ More refining on inverse model (SAMSAT, PostDoc CYMENT)
  ➔ Promising results to be presented over Peru and Bolivia (Raul Espinoza)
  ➔ Computation of solid fluxes and joint interpretation of satellite estimates in the whole basin
  ➔ Coupling with sediment transport model (Marie Bonnet – PostDoc CYMENT)
  ➔ More radiometric measurement and study of floodplain lakes (PhD C. Mendoza)

• Debate: Integration of satellite estimates within ORE database?
  ➔ Satellite-based estimates may be used to complete and extend ORE time series