Aportes da alta resolução SPOT para o monitoramento da cor da água

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• **Medium resolution sensors** allow to retrieve some water quality parameters in the Amazonian waters
  - Suspended Sediment concentration in rivers
  - Suspended Sediment in floodplains
  - Phytoplankton pigments in floodplain lakes

• **The use of very high resolution sensors (< 10 m) is expected to bring complementary knowledge to MODIS & MERIS**
  - **Spatial** resolution (5 meters vs 250 meters)
  - **Temporal** resolution (few images on selected areas vs 2 images per day at global scales)
  - **Radiometric** resolution (number of bands, bandwidth)
Objective

- **PNTS** (Programme National de Télédection Spatiale) project funded by INSU
  - *Apport de l'imagerie satellitaire pour le suivi du transport sédimentaire dans les grands fleuves : caractérisation de la précision de la mesure*
  - Proposing team: LMTG & US ESPACE (SEAS Guyane Project)

- **Methodological project**: Analyse the impact of river section properties (width, variability, river sides ...) on the accuracy of suspended sediment retrieval with MODIS
  - Joint analysis of SPOT images / field data and MODIS products

- **Study the benefit of future satellite configurations**
  - PLEIADES (CNES), Sentinel (ESA) future satellites

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

• **2007 :**
  - Acquisition of SPOT images (SEAS Guyane) during field campaign (SAMSAT project)
  - 2 field campaigns (May, November)
  - Statistical analyses of field data

• **2008**
  - More SPOT images on ORE stations
  - 1 field campaign (March)
  - Joint analysis of radiometric field measurements, water samples and SPOT & MODIS images in 2008

• **Field campaigns for measurement of surface suspended sediment concentration variability**
  - Specific sampling at Manacapuru and Borba stations
  - Spectroradiometric measurements
Very high resolution imagery

- SPOT 5 image over Manacapuru station
Very high resolution imagery

June 2006
Very high resolution imagery

June 2007
Water Sampling

Legende
zone_C_selection
CONCENTRATION
- 42.79 - 65.20
- 65.21 - 71.20
- 71.21 - 80.00
- 80.01 - 88.40
- 88.41 - 106.80
Very high resolution imagery

- SPOT image over Borba station
Very high resolution imagery

- SPOT image over Borba station
Conclusion / Perspectives

• First results confirm that very high resolution imagery brings important knowledge on local properties of river sections
  ➔ Fine characterization of surface properties
  ➔ Complementarity with coarser resolution sensors

• Systematic study over ORE stations?

• Perspectives
  ➔ Systematic statistical analyses
  ➔ Guidelines about the use of MODIS images
  ➔ Inputs for other projects / rivers
    - MESASOL, PIATAM, PROSUL
    - CYMENT, SAMSAT