

GIS in Water Resource Project Proposal

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Title

- Evaluating the sediment concentration level of tributaries in Amazon River using Moderate resolution imaging spectroradiometer (MODIS).

STUDY AREA

- Watersheds in Amazon basin (didn't decide specific region yet)

DATA SOURCES

- MODIS Images for several locations and dates (around late Summer when stage is high): I will try to make spatial resolution as high as possible by *interpolation* and *spectral unmixing* to improve accuracy. MODIS is chosen because I think width of Amazon River is wide enough (I have never worked with MODIS before).
- DEM, Watershed, flow, monitoring stations from USGS
- Field data of sediment concentration from INPE (Instituto Nacional Pesquisas Especiais, Brazil) and related articles
- Other raster images (e.g. Landsat) for precision estimation

DRAFT PROCEDURE

- Cloud removal using the method I have developed which will be presented at South-West AAG meeting in November
- Multi-date normalization using regression or empirical line calibration
- Georeferencing if needed (reference GIS data from department of transportation, Brazil)
- Various applications based on DEM
- Spectral mixture analysis, other image enhancements

RESULT AND DISCUSSION

- Classification of pixels and draw quantitative (or qualitative) result.
- Pattern of sediment flow
- Visualization and limitation of this research

REFERENCE

- Mertes, L. A. (2002). Remote sensing of riverine landscapes. *Freshwater biology*, 47, 799-816.
- Rees, W. G. (2000). The accuracy of digital elevation models interpolated to higher resolutions. *International journal of remote sensing*, 21(1), 7-20.

As project proceeds, a lot of more data and techniques will be added.