PASCAL

PASSt climate change impacts on Carbon Accumulation in Amazonia flood plain Lakes
Objectives:

- Evaluated how much climate changes may have influenced erosion and deposition of sediment and sedimentary organic carbon in Amazonian floodplains.

- What is the influence of decennial to centennial climate variability in modern and past data?

- What is the importance of carbon sequestration by sedimentary processes in relation to the whole cycle of carbon in Amazonia?
Study area:

Peruvian Amazonia
Equipes:
LMTG
LOCEAN
EPOC

Colaborações:
UFF
USP
UEA
Two approaches to reconstruct paleoclimate and paleohydrology

- Speleothemes
- Laminated sediment cores

Two time scales

**The last 25 000 years** (Last Glacial Maximum, Younger Dryas, deglaciation phases and a full Milancovitch cycle of precession).

**The last centuries** (interannual variability: El Nino, La Nina and interdecadal variability)
to reconstruct the climate in the past 25,000 yr in Andean Amazonia, using speleothems signatures from Ecuadorian, Peruvian and Bolivian caves.
-to determine the paleohydrological variations in the Peruvian Amazon Basin at two time-scale: during the last 25000 yr and the last centuries using high resolution studies of lacustrine records
- to calibrate, through the study of modern data the influence of climate variability on water and sediment discharge

ORE Hybam MES data
Remote sensing
- to determine deposition and erosion rates in alluvial plains during the past 25,000yr and to compare with modern rates (from Peruvian and Brazilian Amazon floodplain cores)
- to determine the accumulation rates of organic carbon

- to identify the main climatic factors (extreme events, short term variability) responsible for erosion/deposition processes
Expected results of PASCAL project are:

- Dated speleothem records of geochemical paleoclimate proxies (time series).
- Statistical relationships between modern climate and hydrology variabilities.
- Quantification of present-day sediment transport through field data and satellite imaging.
- 3D reconstructions of floodplains deposits with time surface.
- High resolution sedimentary proxies for flood plains lake (short and long cores/time series).
- Calculation of carbon accumulation rates for different time periods at the study sites.
- Assessment of the role of climatic changes in the erosion-transport and sediment and carbon balance in the Amazon basin.
Preliminary Cruise
Lago Concordia
Lago do Lagarto
Lago Samiria
Río Marañón
Obrigado!