



Assessing paleoseismic sedimentary records reliability: compared case studies in Venezuelan Andes and Northwestern Alps.

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In both Mérida Andes (northwestern Venezuela) and french northwestern Alps, several present day natural lakes and late Quaternary paleo-lacustrine sedimentary sets, are partly developed upon, or in the vicinity (few km), of active faults. These lacustrine fills represent, more or less completely, the last 15 000 yrs (Late Glacial and Holocene). In the Venezuelan Andes, the presented investigations (outcrops analysis, coring) concern the Mucubajì Lake and the Los Zepa paleo-lake, upon the Boconò Fault; for northwestern Alps (outcrops analysis, HR seismic imagery, coring), they concern the Le Bourget and Annecy Lakes, partly upon the Vuache and Culoz Faults.

The two studied regions differ with respect to three points: 1) major strike slip fault (part of a plate boundary) vs. second order fault (tier fault within a shortened foreland); 2) strong seismicity (Magnitude up to 7) vs. moderate seismicity (M. up to 5.5); 3) specific rates and processes of erosion/sedimentation (high altitude tropical setting vs. mid-latitude low altitude setting).

Combining results from the different sites, we may sum up a set of criteria to better constrain a paleosismic origin of analyzed features and, thus, provide a more reliable register of pre-historical earthquakes succession for a defined area:

- correlation between well-identified sedimentary “events” and reported earthquakes, for the historical portion of the sedimentary records;
- correlations between paleo-lacustrine data and trench data;
- discontinuities and specific architecture of deltaic foresets;
- identification of subaqueous slumps evolving into fast hyperpycnal flows, with underlying liquefaction features;
- textural characterization of seiche effects; importance of suspended-load in re-sedimentation processes with sharp segregation from bed-load.