



From CRITEX to OZCAR: Geophysical wandering accross the French Critical Zone Observatories

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From 2012 to 2017, the French program CRITEX helped funding innovative equipment for the temporal and spatial exploration of the Critical Zone at the catchment scale. In 2018, the CRITEX geophysical equipment was deployed accross the French Critical Zone Observatories Network (OZCAR) as parts of a set of innovative experiments aimed at characterizing the deep architecture of the Critical Zone and its dynamics. Our first survey was set to improve hydrological modelling of subsurface flows at the Strengbach experimental catchment by characterizing regolith depth in the CZ with seismic measurements. A second study (still ongoing) is aimed at imaging karst water dynamics in the unsaturated zone at the Low Noise Underground Laboratory (LSBB) using an original time-lapse coupling of geophysical methods including muon tomography, gravimetry, electrical resistivity, seismics and nuclear magnetic resonance. Our third experiment uses innovative seismic transmission and refraction tomography surveys to image the structure of karst and epikarst at the Saint Ferron abym and understand subsurface flows. In the fourth and last study we combined seismics and induced polarization measurements to image the depth of regolith and the weathering front of pyrite at the Draix-Bleone experimental catchment, hoping to understand the forcings driving mechanical and chemical weathering in connection with climatic controls at the site.