

## Indicators of past ecosystem dynamic on current soils in Lorraine (France)

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Developed between geological substratum, atmosphere and biosphere, soils have a key role on the biodiversity and are ecological indicators of the ecosystem health. Soils evolve under natural environmental modifications. But the belief of current pristine soils is a fake. Indeed, for at least 8000 years, they are also under human forcing influence with a significant impact trend through the modern time (Anthropocene). The soil resilience may be complex to measure with current markers but soils are important archives. They record past human activities on landscapes and ecosystems dynamics through their development and the material they contain (charcoal, wood, pollen, anthropogenic artefacts...). Archaeology is then a good way to approach those archives, giving a chronological frame to the researches on soil dynamics.

This presentation will illustrate new aspects of the research in Lorraine (north-eastern France). Recent results highlight a strong erosion phase, related to human and natural factors, at the end of the Iron Age (450-50calBC) and a loamy clayey soil degradation, maybe related to both roman drainage and climatic water stress, at the beginning of our era (100-200c. AD). Ongoing works using paleoclimate research attempt to precise the climatic contribution on both processes. Multi-disciplinary researches are starting using approaches from archaeology, soil science, geochemistry and botanic. Forested ecosystems areas associated to charcoal production are studied in the Vosges Mountains (Lorraine) to investigate the influence of an historical human activity on current soil pollution and/or fertility.