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First results of optically stimulated luminescence (OSL) analyses from loess-palaeosol sections along the Rhône Valley, France.

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Loess-palaeosol sequences are most important archives for reconstructing terrestrial palaeoenvironments. However, in the European Mediterranean, these archives are surprisingly scarcely investigated. In southern France, respective sediment-soil archives were last investigated in more detail in the middle of the last century, when major construction works in the region provided access to numerous loess exposures. However, this was before the breakthrough of luminescence-dating as a major chronometric method for the Later Pleistocene. Thus, the loess was poorly dated. Later, Mediterranean loess archives attracted fewer researchers than their central-European counterparts. Reasons for this may be that, compared to the loess belt of temperate Europe, Mediterranean loess deposits are often reworked and mixed with slope deposits. Moreover, palaeosols that developed during climate ameliorations of the last glacial period seem to reflect less pronounced temperature and humidity shifts than those in temperate regions. The most prominent palaeosol developed within the last-glacial loess in the Rhône Valley is a brown palaeosol with large carbonate concretions at its base. However, it is usually severely truncated.

We allocated joint research efforts from groups in Germany and France to track last-glacial sedimentation and climate shifts in loess-palaeosol sections along the Rhône Valley, south of the confluence of the River Saone at Lyon. Thereby, optically stimulated luminescence (OSL) dating serves as a vital tool for establishing chronometries for the loess-palaeosol sections in southern France, with first results from the Rhône Valley in Bosq et al. (2018, 2020). We summarize results from two sites that are regarded as key sections for palaeoenvironmental reconstruction along the

Rhône Valley as evaluated from inspections during fieldwork, complemented by several smaller sections. Our presentation focusses on challenges met with OSL dating attempts of these Mediterranean archives and first achievements in backing the stratigraphies established by sediment-soil analyses in the field and laboratory by chronometric data.

References

Bosq, M., Bertran, P., Degeai, J.-P., Kreutzer, S., Queffelec, A., Moine, O., Morin, E., 2018. Last Glacial aeolian landforms and deposits in the Rhône Valley (SE France): Spatial distribution and grain-size characterization. *Geomorphology* 318, 1–20. doi:10.1016/j.geomorph.2018.06.010

Bosq, M., Kreutzer, S., Bertran, P., Degeai, J.-P., Dugas, P., Kadereit, A., Lanos, P., Moine, O., Pfaffner, N., Queffelec, A., Sauer, D., 2020. Chronostratigraphy of two Late Pleistocene loess-palaeosol sequences in the Rhône Valley (southeast France). *Quaternary Science Reviews* 245, 106473. doi:10.1016/j.quascirev.2020.106473