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From archive to archive - Are fluvial records suitable for comparative archive research?

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Concerning fluvial dynamics in recent as well as in former times, numerous conceptual models exist that facilitate the interpretation of individual sedimentary layers, depending on e.g. morphological or textural features or a specific spatial position within the floodplain. Coarse gravel deposits, for example, are generally considered as channel bed facies, whereas silty clays are usually seen as a kind of still water deposit. Sands point to higher dynamics related to avulsions, crevasse-splays or proximal sedimentations in general, and flood loams are deposited in more or less distal floodplain positions. As solid stratigraphic records often allow for interpretation of sedimentation processes and sedimentation conditions, more comprehensive description of related palaeoenvironmental conditions are sometimes difficult to establish and even difficult to prove.
The approach used in this contribution involves to identify several stages of floodplain development based on own stratigraphic findings and to cross-match them with a number of comparative studies on various terrestrial archives. The effort in this context is to reconstruct palaeoenvironmental conditions from independent data and to assess its impact on fluvial system behavior. Rectified age models (e.g. similar calibration of radiocarbon ages) are a fundamental precondition for comparative studies. Furthermore, appropriate spatial reference levels as well as the suitability of parameters that contribute to the record are needed to ensure a comparability of different records. Special caution is required, if system-inherent or tectonic impacts affect fluvial sedimentation dynamics that are not reflected by other records. Furthermore, we should emphasize causalities and dependencies between different records. Especially if different systems, like characteristics of vegetation systems and geomorphological systems are compared, response-times on external forcing will take on a key role. Another major point is the interregional diversity of landscape forming parameters that has to be taken into account when comparing archives across regions.
If it succeeds to cross-match stratigraphic findings with reliable proxy data, at least information about fluvial system response on climate forcing should arise. Furthermore, some approaches to assess the effects of anthropogenic interventions are presented. In a last step, we will compare fluvial dynamic patterns of different river catchments in central and southern Spain that show different natural and environmental conditions. The aim of this approach is to work out interregional patterns on the one hand and local peculiarities on the other.