



To interpret individualistic river behavior in the past.- Limitations and challenges

Dominik Faust and Daniel Wolf

Germany (dominik.faust@tu-dresden.de)

In earth science we aim to understand how landscape(s) (or parts of it) developed and what is going on nowadays and what will happen in the future. Depending on the complexity of the landscape under study, understanding and interpretation become more and more challenging, because the degree of difficulty increases with complexity levels. To reconstruct river dynamics in the past and river behavior through time is one of these challenging issues. Rivers are individualistic, spontaneous and reactive and each catchment has a never recurring singularity (Schumm 1991) that makes each river system unique. Rivers may form alluvial landscapes in different velocities. Even if we are able to determine the most triggering factor(s) of fluvial dynamics and shaping, triggering factors will change from catchment to catchment. The problem is that this non-conformist river behavior will produce disproportionate results (Phillips 2014) that we have to handle somehow.

Singularity of river dynamics and referring catchment configuration as well as the complex diversity of processes and factors that control and influence fluvial activity hampers a straightforward interpretation of changing floodplain dynamics through time. This seems to be one reason why the number of studies that have been performed on floodplain sediment archives remains comparatively low, especially regarding the Western Mediterranean region. Therefore, a basic demand on fluvial archive research is to address the complexity of the factors that control the characteristics of fluvial sequences in order to provide a robust basis for their interpretation. Nonetheless and against the background of individualistic river behavior and self-organization we try to discuss the reliability of information emerging from floodplain records in general by comparing individualistic (incomparable?) systems. We show how to minimize possible pitfalls, what after all remains as information about past river dynamics and how far we may go to avoid misleading interpretation.