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Geomorphodynamics across different time scales and archives in the Western Mediterranean

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The Western Mediterranean realm is considered as a region highly sensitive with regard to climate changes and landscape transformations. Within its semi arid and semi humid areas, even slight climatic changes may result in far-reaching consequences in respect of environment and ecological systems. In view of past landscape development, terrestrial sedimentary archives are particularly suitable to establish a linkage between palaeoenvironments and geomorphic system behaviour.
The investigated area is situated in the Madrid Basin in Central Spain. On the basis of fluvial sedimentary records we were able to show that during the Holocene geomorphic activity in terms of surface erosion and sediment shifting was strongly linked to periods of climatic aridity. But what is the situation like if we try to expand the considered time span to the last glacial cycle? For that period information from fluvial archives is strongly limited and not always easy to interpret. Fortunately, the same area hosts thick successions of well differentiated aeolian loess deposits that enable palaeoenvironmental reconstructions. The problems we face are (1) a chronological scale jump since the considered time span is one order of magnitude higher, (2) a change towards aeolian archives with the whole issue of relevant processes involved as well as their palaeoenvironmental significance, and (3) a lower level of detail in terms of dating uncertainties and a much smaller number of comparative studies.
In a brief overview the most important archive information will be presented with the expectation to get an idea of geomorphic dynamic patterns across different time scales and different sedimentary archives within the same area.