**The Last Glacial Maximum in the southern side of the Alps: chronology, paleoclimate and sedimentary response**

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In the last decade the study of several end-moraine systems, and related outwash plains, improved the chronology of the Last Glacial Maximum in the Italian Alps. During the LGM, most Alpine valleys were occupied by ice streams, while several other catchments hosted only small cirque glaciers confined to the highest peaks. Paleobotanical data suggest that rainfall was the main trigger for the culmination of the last glaciation. Indeed an increase in precipitation from the MIS3 to the onset of the LGM can be inferred by palaeovegetation records, in agreement to palaeoclimatic atmospheric circulation models, indicating significant rainfall in the eastern Southern Alps. The humidity persisted all along the glacial maximum supporting open conifer forests, even close to the piedmont glacier fronts, as well as wide-spread wetlands in the distal reach of the eastern glaciofluvial systems.
The signals of an incoming spread of glaciers in a mountain range are normally recorded in the frontal alluvial plain by an increase in sediment deposition at the valley outlets. The response of larger catchments to the advance of ice streams (Tagliamento, Piave, Adige/Brenta, Adda, Dora Baltea and Dora Riparia systems) can be detected in the increase of sediment accumulation in the plains since 29.5-28 ka cal BP, and then to the growth of the alluvial megafans in the piedmont plain. The LGM outwash deposits have an average thickness of 15-35 m in the Venetian-Friulian Plain and of 10-20 m in the central-western Po Plain. In several areas the LGM sediments buried a fairly well developed soil. Several datings in the end moraine systems indicate that Alpine glaciers reached the piedmont plain at about 26.5 ka cal BP. Subsequently, in response to changes in precipitation rates during the LGM, the frontal position of the glaciers oscillated at least two times within the end moraine systems before the onset of decay at 22 ka cal BP and the collapse of ice streams at 19 ka cal BP.