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# The onset of the Last Glacial Maximum in northern Italy: chronostratigraphical and palaeoecological evidences from alluvial plain and lacustrine successions

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The culmination of the glacial advance related to the Last Glaciation in the Alps is marked by well defined pedemontane end moraine systems built up in front of the mouth of the main alpine valleys. Some Alpine glaciologists used the term "Last Glacial Maximum (LGM)" to indicate the position of maximal extent of glaciers reached in the end moraine systems, dated back to 19-24 ka cal BP (Ivy Ochs et al., 2004), whereas the term LGM is used here in a global sense, i.e. we refer to the global interval of maximum integrated ice volume reached at global scale during the last glaciation (19- 30 ka cal BP, Lambeck et al., 2002). We investigated the chronostratigraphy and the palaeoenvironmental changes related to the onset of the glacier advance on the southern side of the Alps and in the Po plain. We focused on alluvial and lacustrine successions, external to the LGM glacier limits, in the fluvial systems which were affected by LGM glaciation. Several different lines of evidence allow to set an abrupt increase of the fluvial aggradation between 30 to 29 ka BP. The latter phases of glacial deposition still in the amphitheatres are dated between 21 and 18 ka cal BP. The glacial culmination appear to be two-folded and its duration is somewhat longer that previously admitted. This is because, within the area which was glaciated during the LGM, the glacier erosion has overriden the underlying deposits, thus the first phases of glacier advance are poorly documented. These results suggest an overall synchronym between the global LGM and the last culmination of the last (Würmian)

glaciation in the Italian Alps.