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GEOMORPHOLOGICAL FEATURES AND CARTOGRAPHY OF THE GRAN SASSO D'ITALIA MASSIF BETWEEN CORNO GRANDE-CORNO PICCOLO AND PIZZO INTERMESOLI

ABSTRACT: PECCI M. & D'AQUILA P., *Geomorphological features and cartography of the Gran Sasso d'Italia massif between Corno Grande-Corno Piccolo and Pizzo Intermesoli*. (IT ISSN 0391-9838, 2011).

The detailed geomorphological study and cartography presented here is part of a multidisciplinary study that includes snow profile monitoring and meteo-climatic, geomorphological and glaciological surveys in the area of the Gran Sasso d'Italia massif, all aimed primarily at the characterisation and mitigation of active geomorphological processes (D'Aquila, 2004; D'Aquila & Pecci, 2006; D'Aquila, 2007; Pecci & alii, 2007; Pecci, 2009; Pecci & D'Aquila, 2010). These processes usually develop rapidly, and they include snow avalanches and landslides (particularly rock fall and toppling). This work completes a study of the summit area of the Gran Sasso d'Italia massif that was already published for the Corno Grande-Corno Piccolo area (D'Alessandro & alii, 2003).

The study area is located close to the principal thrust of the Gran Sasso d'Italia massif, whose landforms are mainly controlled by geological, structural and glacial processes. In fact, important morphostructures have been identified as being linked to the direct action of tectonics at the macro-scale level, as in the case of the orientation of the principal valleys. Tectonics have also promoted the spread of gravitational phenomena.

The glacial footprint is evident in the numerous inactive erosive and accumulative landforms related to the LGM (Last Glacial Maximum) and in the presence of the Calderone Glacier («*Ghiacciaio del Calderone*» in the map), which, although divided into two aprons since 2000, is still considered the southernmost glacier in Europe. Landforms related to

cryogenic processes are common, as are karst, fluvial, fluvio-glacial and slope landforms created by running water. Humans are only sporadically present but are capable of encountering risk situations when interacting with the gravitational dynamics linked to rock fall (as in the case of the «Paretone» landslide of August 22nd, 2006) or to snow avalanches.

The terrain data have been digitalised, processed and mapped in a GIS (Geographic Information System) environment at the 1:10,000 scale.

KEY WORDS: Geomorphological mapping, GIS, Gran Sasso d'Italia, Ghiacciaio del Calderone.

INTRODUCTION, GEO-ENVIRONMENTAL AND GEOMORPHOLOGICAL SETTING

The study area is located in central Italy, in the northern part of the Abruzzo Region in the «Gran Sasso d'Italia - Monti della Laga» National Park (fig. 1).

The study area is located primarily in the municipal territory of Pietracamela (TE), between the village to the north and the area of Campo Pericoli to the south, and it includes wide depressions located southward and below the western peak («*Vetta Occidentale*» in the map) of Corno Grande which, at 2,912 m a.s.l., is the highest peak of the Apennines. The area is delimited along the eastern side by the Cornacchie valley («*Valle delle Cornacchie*» in the map) and the edge of Arapietra and, on the western side, by the watershed bordering the top (2,635 m a.s.l.) of Pizzo Intermesoli. The area's climate (D'Alessandro & alii, 2003) is characterised by a bimodal precipitation distribution and by a clear warming trend in recent years (Pecci, 2007). It was estimated (Federici, 1979) that, during the LGM, the seasonal snow limit in the central Apennines has varied from 1,500 m a.s.l. for the western region (Mt. Morrone) to 1,900 m a.s.l. for the eastern region (Laga Mts.), whereas the freezing point was many metres lower, thus creating favourable conditions for glacial morphogenesis; also nowadays it is not uncommon to detect winter temperatures of -25 °C, which are unusual for these latitudes. Moreover,

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