



“Characterizing” factors of deep-seated gravitational slope deformations as tools for the interpretation of large slope instabilities’ type and evolution

F. Carraro (1), **M. Giardino** (1), D. Giordan (2), G. Martinotti (1)

(1) Dipartimento di Scienze della Terra, Università di Torino, Italy (2) CNR-IRPI, Italy

Deep-seated gravitational slope deformations (DSGSD) is a common and widespread type of large-slope instability in the Alps: in the Aosta Valley Region DSGSD s occupy at least 13% over of total area. In this study, regional distribution analysis have been coupled with local detailed geological and geomorphological surveys of single phenomena, in order to detect DSGSDs’ triggering and controlling factors, deformation processes and evolutionary stages.

Data and maps from field and remote sensing investigations have been supported by drillings, geomechanical and hydro-geochemical analysis from project studies for hydroelectric plants and tunnels. G.I.S. technologies allowed complex data analysis, DSGSD modelling and hazard assessment.

Aspects regarding DSGSD s’ passive and active triggering and controlling factors has been studied thoroughly: gravity-induced stresses, tectono-metamorphic setting, morphostructural relationships, glacial and periglacial morphodynamics, recent tectonic evolution, hydrogeological conditions and karsts phenomena have been generically indicated as “characterizing” factors, in the sense of their spatial and temporal changeable role of predisposing and/or triggering factors.

In the studied area, three of the “characterizing” factors resulted crucial in differentiating DSGSDs’ form and evolution: deep dissolution, active surface tectonics, and structural setting have been considered as possible end-members of a classification proposal for studied DSGSD.