INVENTORY AND ANALYSIS OF NEW-FORMATION GLACIAL LAKES IN AOSTA VALLEY

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Recently formed glacial lakes may represent a major source of hazard in mountain areas because of their rapid dynamics and of the sudden phenomena they can trigger. In order to analyze this topic in Aosta Valley Region a methodological approach has been developed.

First, to detect recently formed (after 1975) glacial lakes and to assess outburst hazard, an inventory has been compiled, also taking in account possible damage and impacts in downvalley areas. This analysis is based on recent ortophotos (2005) compared with previous glacier perimeters (1975), and on airborne and field surveys. In this inventory more than 120 new glacial lakes have been detected and classified on the basis of different geomorphological parameters.

Secondly, a collection and analysis of historical data allowed to indentify glaciers recurrently subject to GLOF events in the past. Furthermore in order to detect englacial or subglacial water bodies, which cannot be directly observed, geophysical techniques have been tested on a sample glacier. These techniques can also be applied to provide an estimation of water volume of glacial lakes.

Finally, an hydraulic model has been applied on a test-site to assess scenarios of overflooded areas in event of a GLOF

The inventory provide a useful database for a first assessment of GLOF related hazard at a regional scale. Tested methodologies will allow to analyze in detail dangerous cases which may be detected from this assessment.