

From Monitoring to Decision Making: Integrated Management of the Mont de La Saxe Landslide (Courmayeur, Italy)

Davide Bertolo^{1*}, Patrick Thuegaz¹

¹ Geological Service, Regione Autonoma Valle d'Aosta, Via Promis, 2, 11100 Aosta, Italy

*Corresponding author: e-mail address: d.bertolo@regione.vda.it

Keywords: *Landslide monitoring; Decision support; Early warning; Risk management; Mont de La Saxe; Civil protection; Alpine hazards.*

Abstract: The Mont de La Saxe landslide (Courmayeur, Western Italian Alps) is one of the most instrumented and studied slope instabilities in Europe. Since 2009, a multi-sensor monitoring system—combining ground-based InSAR, GNSS, inclinometers, piezometers, and meteorological data—has continuously tracked its evolution. Beyond the technical aspects, the key challenge lies in converting monitoring data into effective, transparent decisions during critical phases. A structured decision-support framework was developed to integrate quantitative indicators with qualitative field observations, providing adaptive alert levels for civil protection. The experience gained during the 2013–2014 emergency and subsequent applications to other Alpine sites demonstrates how long-term monitoring, coupled with clear decision logic, can enhance risk management and public trust in complex mountain environments.