



Implementation of a geodatabase of published and non-published data on the catastrophic Vajont landslide

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On the 9th October 1963 a catastrophic landslide suddenly occurred on the southern slope of the Vajont dam reservoir. A mass of approximately 270 million m³ collapsed into the reservoir generating a wave which overtopped the dam and hit the town of Longarone and other villages: almost 2000 people lost their lives. Numerous questions, legal, economic, societal, and scientific have accompanied its history, before and after October 9th 1963.

Several investigations and attempted interpretations of the slope collapse have been carried out during the last 45 years, however a comprehensive explanation of both the triggering and the dynamics of the phenomenon has yet to be provided. Research on the Vajont landslide, published in the international literature after 1963, can conveniently subdivided into the following:

- 1) papers based on geological and geomorphological data collected at the Vajont site;
- 2) papers focussing on specific aspects including the geotechnical properties of the materials involved, the physical and rheological behavior of the failure mass and the varied methods of stability analysis applied in order to understand the factors involved in landslide initiation and development;
- 3) papers dealing with the Vajont landslide in a more comprehensive way.

The Vajont landslide has significantly increased our understanding of the kinematics and dynamics of such catastrophic phenomena. However, much of the data on the Vajont slide exists in a non-electronic hard copy format. A geodatabase on the Vajont Slide has been developed, utilising and updating the information collected by Genevois & Ghirotti (2005). An electronic bibliography of all published papers, theses and non-published technical reports, and all available site data forms the core of a newly developed geodatabase on the Vajont landslide. In addition, data on engineering geological mapping, topography, rock mechanics, groundwater and monitoring have been centralized in a GIS system to allow a re-evaluation of existing information on the Vajont slide. Structural data collected as part of previous studies have been collated and entered into the DIPS program for further analysis. Further data on local microseismic activity will be sought and processed.

This work represents the first stage of a more comprehensive research project which intends to integrate a detailed mapping and modeling study of the Vajont slide. The Vajont slide, although the subject of numerous publications, remains one of the most important and intriguing case histories in rock mechanics. Notwithstanding there has been to date no integrated application of state-of-the-art remote data collection and numerical modeling techniques.

References

Genevois R., Ghirotti M. (2005). The 1963 Vajont landslide, Giornale di Geologia Applicata 1, pp. 41-53.