



ALISSA: Abridged Landslide Inventory of Spain for synoptic Susceptibility Assessment

Javier Hervás

Institute for Environment and Sustainability, Joint Research Centre (JRC), European Commission, 21027 Ispra (VA), Italy
(javier.hervas@jrc.ec.europa.eu)

ALISSA is a concise although fairly spatially distributed, small-scale landslide inventory covering peninsular Spain and the Balearic Islands. The inventory was primarily aimed to provide point locations of undifferentiated landslides to calibrate and validate the susceptibility model used to produce the first version of the 1 km cell size (approximately 1:1 million scale), generic European Landslide Susceptibility Map (ELSUS 1000 v1) in 2013. The map is the result of collaborative work between BGR (Hanover, Germany), JRC (Ispra, Italy), CNRS-IPGS (Strasbourg, France) and CNR-IRPI (Perugia, Italy), with help from many mapping organisations throughout Europe which provided landslide locations, in support to the EU Thematic Strategy for Soil Protection regarding the identification of landslide priority areas in Europe. This limited landslide inventory was needed to complete pan-European landslide susceptibility assessment since no nationwide inventory fairly representing landslide occurrence in Spain was published.

ALISSA is compiled from published documents, including mainly scientific literature, technical reports, and geological, geotechnical and geomorphological maps, complemented with media news for very recent landslides not yet published in the literature and unpublished work by the author in some areas.

The spatial dataset (inventory map) consists of point features corresponding to landslide centroids, which have been crosschecked, validated and geo-referenced on Google Earth to a location accuracy generally within 100 m, which for the smaller landslides is mainly dependent on Google Earth spatial accuracy. In areas where Google Earth imagery does not provide suitable spatial resolution landslide location validation is performed using web-based 2-D satellite/aerial imagery viewers available in the country such as Iberpix or SigPac, or even through interpretation of Panoramio photos on Google Earth. Landslide type, when documented, and locations are thus natively collected in kml format, while these and additional landslide attributes extracted from literature are finally stored in an ArcGIS database. In order to not “over-inventory” landslides in some densely mapped areas, some basic registration rules are applied, including neglecting very small landslides as well as small landslides affecting road cuts, and keeping a minimum distance of approximately 100 m between mappable landslide centroids, thus not over-registering rockfalls or partly reactivated large landslides.

Although the main purpose of the inventory was to collect fairly distributed landslide locations in Spain for synoptic landslide susceptibility mapping, ALISSA systematically includes also bibliographic references and information on lithology. Including harmonised, major landslide typology is often not possible because of lack of information on landslide type or the unclear classification used in a number of documents and maps. Other landslide properties such as volume or size, date of occurrence or reactivation, activity and damage caused are at the moment occasionally included as they are not relevant to the model used to produce ELSUS 1000 v1. It should be noted that the bibliographical references associated to the inventoried landslides will enable in many instances to collect additional information for engineering works and hazard and risk assessment.

ALISSA currently holds over 1800 landslides, including most large landslides and landslides causing major damage in mainland Spain and the Balearic Islands. Although it can be considered to fairly portray landslide distribution in Spain, especially large slides and flows, the inventory is quite far from including all the landslides occurred in the country, bearing also in mind the somehow restrictive landslide registration rules applied for the main purpose of the inventory. In particular, rockfalls and debris flows appear poorly covered. In addition, there are some landslide-prone areas where landslides are scarcely documented in the literature or where existing landslide information has not been published, chiefly in coastal cliffs. ALISSA is updated with new landslide locations when new published information becomes known. An updated inventory is planned to be used to produce a further, improved version of the European Landslide Susceptibility Map.