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MOMPA Project: interregional DInSAR monitoring and action protocol in the Eastern Pyrenees

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The MOMPA project (MONitorización de Movimientos del terreno y Protocolo de Actuación - MONitoring of ground Movements and Action Protocol) has been 65% co-financed by the European Regional Development Fund through the Interreg V-A Spain-France-Andorra programme (POCTEFA 2014-2020). POCTEFA aims to reinforce the economic and social integration of the French-Spanish-Andorran border. The study area of the project is in the Eastern Pyrenees, covering the whole Principality of Andorra, the Spanish areas of Alt Urgell and Cerdanya (Catalonia) and the French areas of Cerdanya-Capcir and Conflent (Occitanie). The aim of the Project is to provide a useful technical-operational tool for risk prevention and management, at a cross-border level, based on satellite DInSAR technique monitoring of ground movements. The tool includes two main elements: the assessment of the risk associated with active phenomena that affect structures and infrastructures; and the integration of the technique in an action protocol for Civil Protections. The results will be transferred to Civil Protections (associated partners of the project) and other organizations, such as local and regional Public Authorities.

The study area presents one main critical issue: it is not an easy area for what concerns the radar response. This means that the obtainable results in terms of displacement map (velocity map and time series of deformation), which is the main input of the project, can be strongly limited. A second issue is the variability of the available data (e.g. landslide inventory, geology, DEM) between Andorra, Spain, and France. In General, landslides inventories are not complete or exhaustive and do not cover areas far from human structures.

The project will face the risk assessment starting from the interregional scale displacement map (covering around 15,000 km²) and the extracted Active Deformation Areas (ADA), as inputs to then select movements with potential risk where focus the analysis at a local scale, based on traditional method (basically photointerpretation and field work). Both the medium-resolution, free data, acquired by Sentinel-1 and the high-resolution data acquired by COSMO-SkyMed will be used, the

results will be compared and evaluated.

Moreover, the project focuses his attention on the specific case of "la Portalada" (in Andorra). This is a huge landslide that occurred on August 2019. Today, there is a slow movement up slope that could affect a main road located in the bottom of the valley . Because of the high interest for the local authorities to monitor and characterize the current movement of the slope located upper to the landslide scar eight passive and one active corner reflectors have been installed along the steep forested slope. The data obtained will be integrated in the prevention risk protocol.

The project started the 1st of December 2019 and will finish in May 2022. The aim of this work is to present the project and the first results achieved through satellite interferometry.