Towards Platform-based Georisk Assessment using Earth Observation data

D.Raucoules, C. Negulescu, M. Foumelis, M. de Michele

Objectives of the project:

→ Use of SAR Interferometry measurements (from GEP) as input for Vigirisk platform in order to produce risk assessment (notably building damages probability) for geohazards related to ground surface displacements (landslides, subsidence)

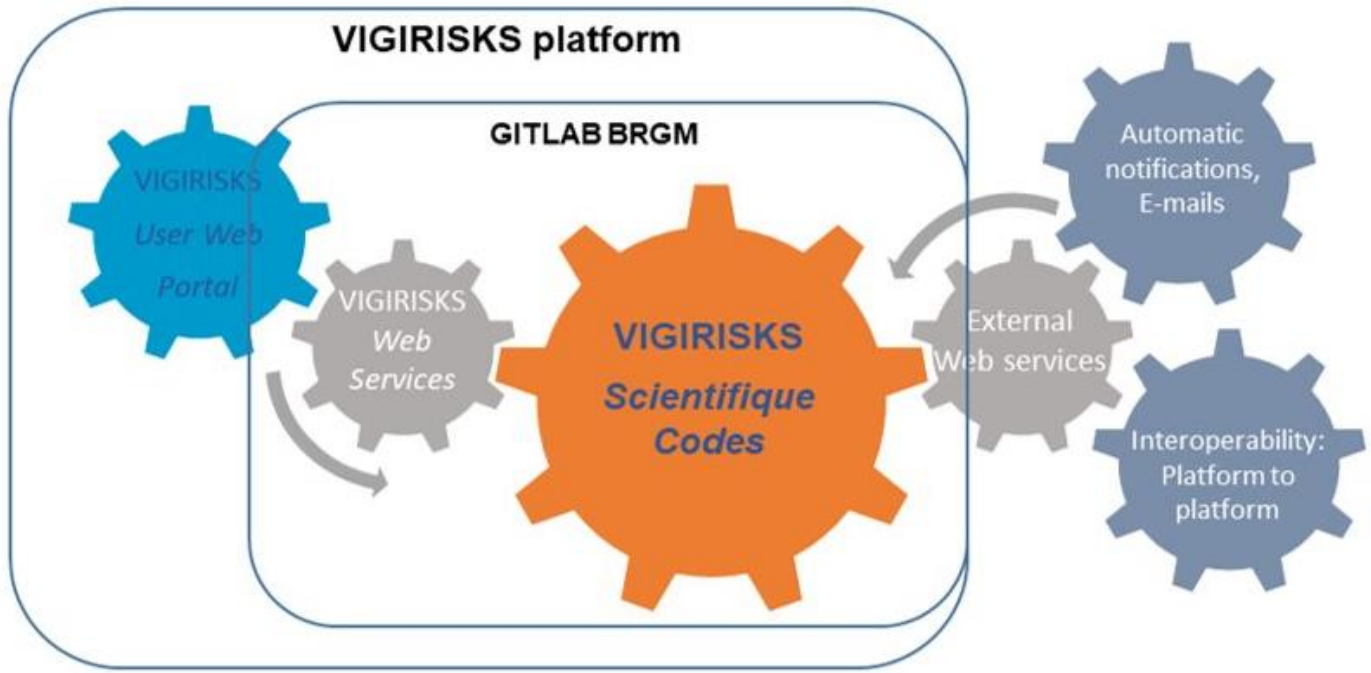
→ Implement the corresponding workflows

The Vigirisk platform

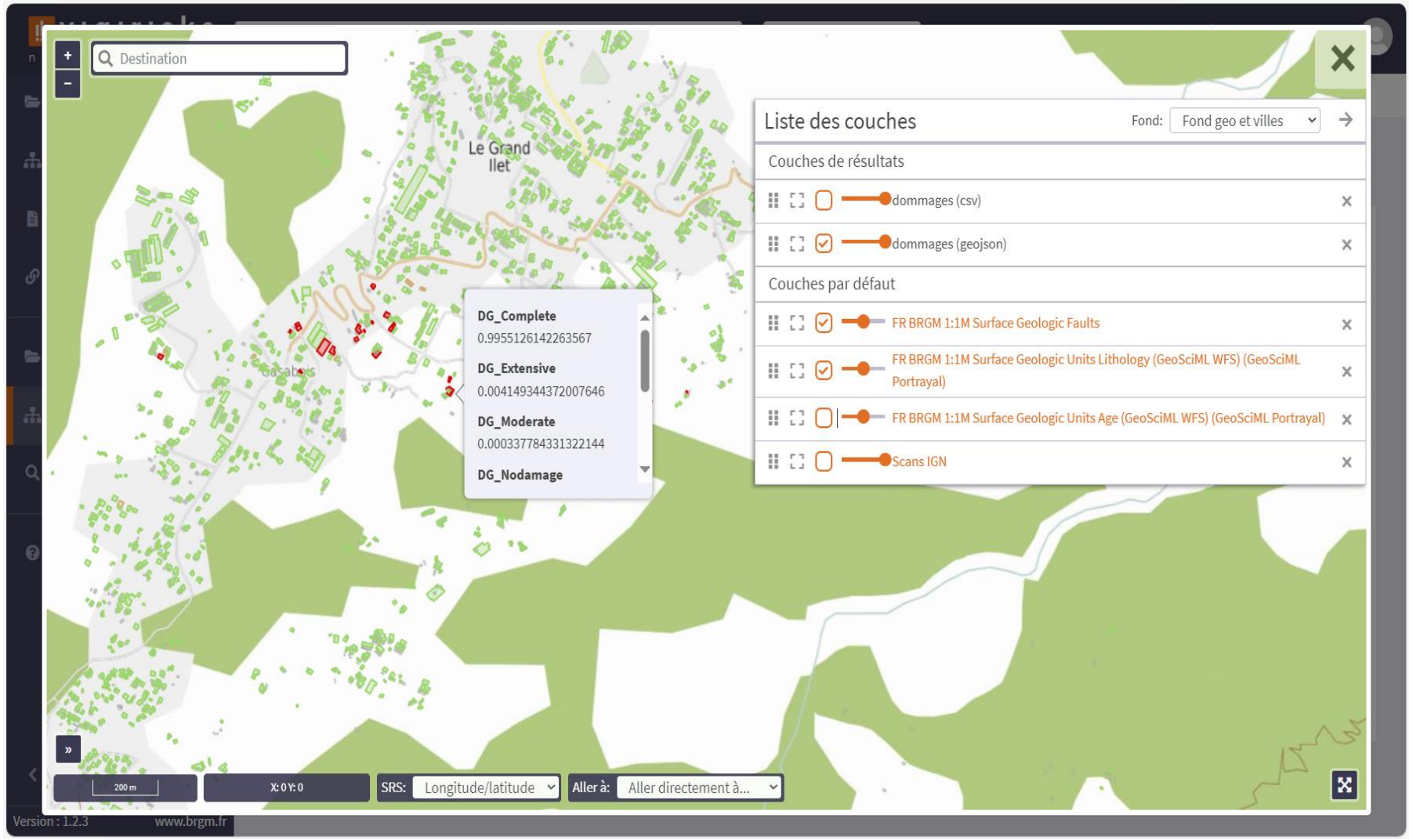
-> platform (including users' portal, services, and scientific codes) for georisks assessment
-> in this project: Landslides/subsidence geohazards

The Vigirisks IT architecture is composed of:

- **A user web portal,**
- **A web-service server,**
- **A GitLab for managing scientific codes.**



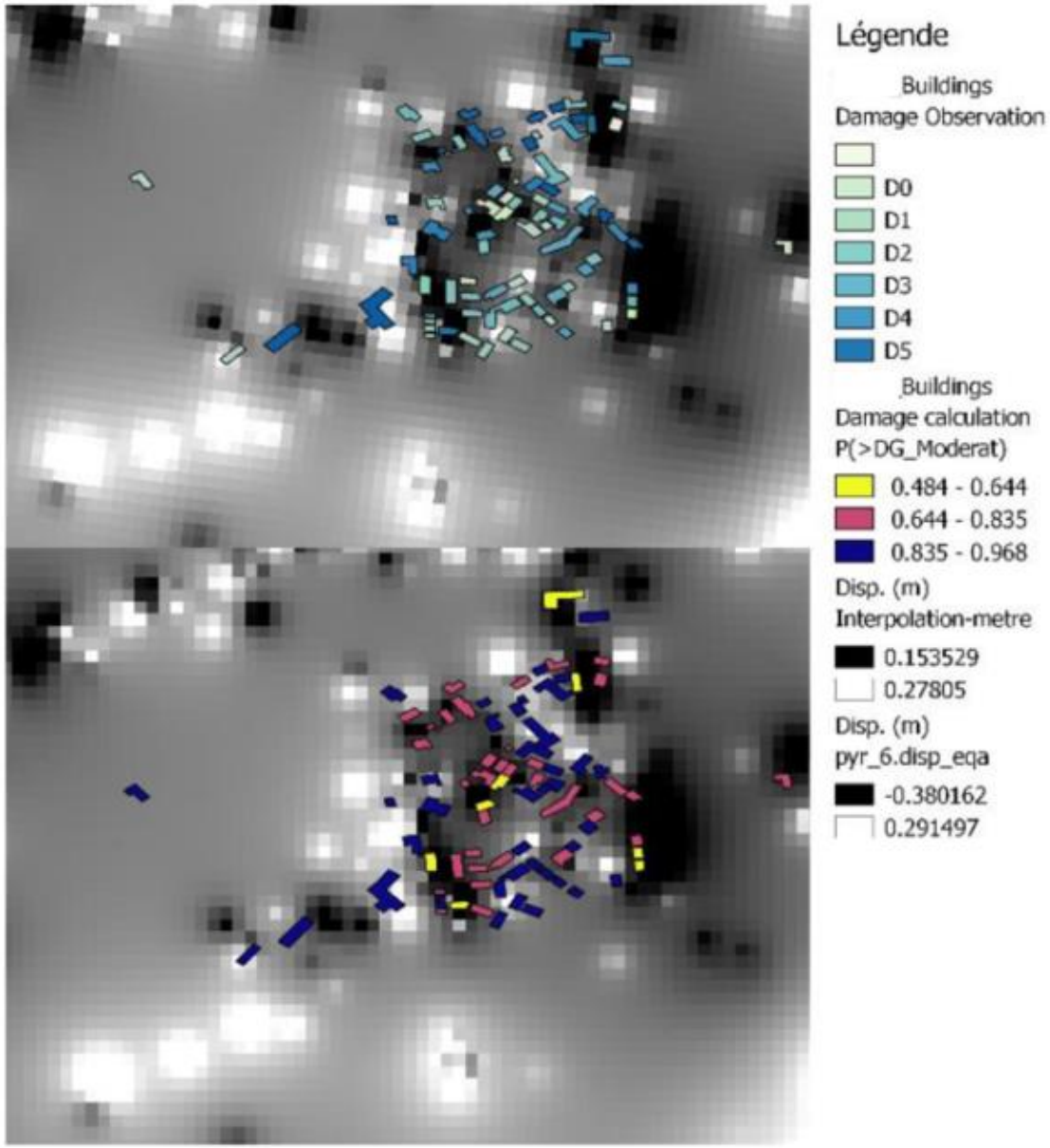
Example of damage forecasting based on SAR interferometry displacements measurements.
Salazie (La Réunion) Area affected by landslides.



output of VIGIRISKS - probability of damage on buildings.

Based on velocities obtained from Differential InSAR products

Example of damage forecasting based on SAR interferometry displacements measurements. French Pyrenees. Landslide area?



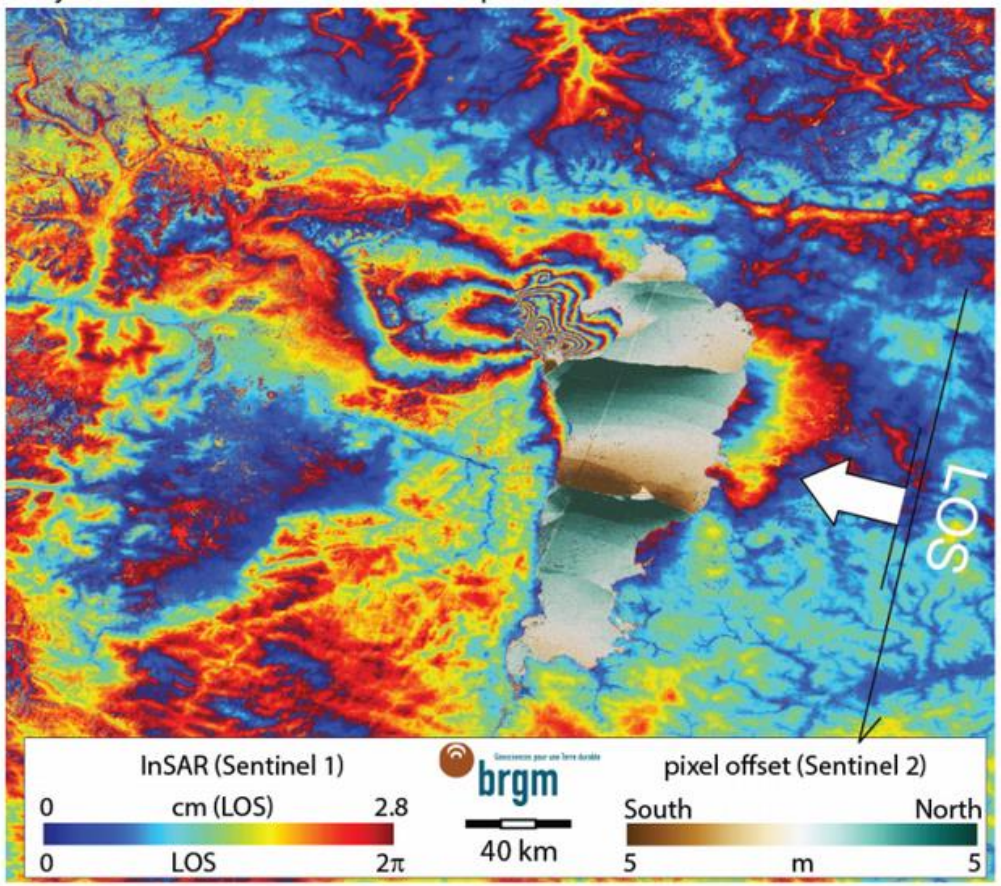
-> Based on interpolated PS Interferometry velocity data. Interpolation approach should be investigated.

Outlines

- Demonstration of the potential of integration GEP/VIGIRISK for Risk Assessment
- Approaches for better use InSAR data needs further investigation

Others examples processed in the framework of the present NoR sponsorship

The displacement field of the Mongolia Earthquake (Hovsgol, Mw 6.8, 11 January 2021) seen by Sentinel 1 InSAR and Sentinel 2 pixel offsets.



Sentinel 1 data processed with the Geohazard Exploitation Platform (GEP).
Sentinel 2 processed with COSI-CORR.

Sentinel 1 interferometric fringes (GEP calculation of the ground displacement in line of sight (LOS) between January 07 and 19, 2021) and the correponding displacement of the ice covering the Hovsgol lake from Sentinel 2 data.