InsarViz

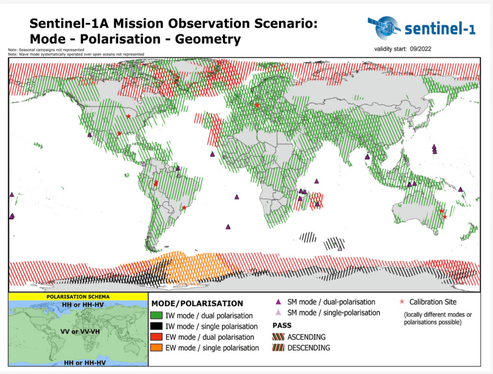
An Open-Source, interactive visualization tool for satellite SAR interferometry

Marc Coiffier[1], Renaud Blanch[2], Erwan Pathier[1], Franck Thollard[1]
(1) Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, IRD, IFSTTAR ; 38000 Grenoble, France
(2) Univ. Grenoble Alpes, CNRS, Grenoble INP, LIG, 38000 Grenoble, France

Context

COPERNICUS SENTINEL-1 :

Repeated, wide area monitoring



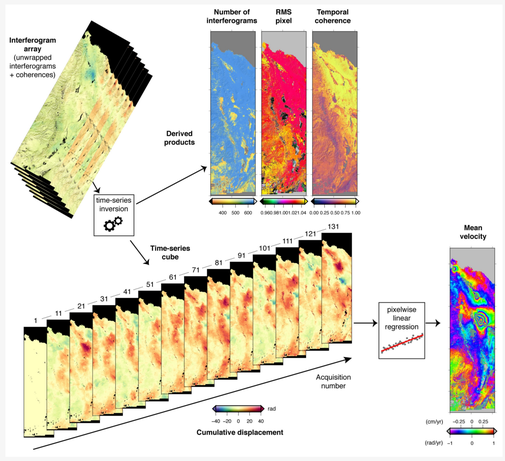
DATA TERRA

FormaTerre
DATA TERRA

FLATSIM

Processing service

NSBAS processing chain



↳ New tool needed !

InsarViz specs

python powered · Qt · OpenGL · GitLab

Free and Open Source

Easy to install / deployable on cluster

Documentation / user help

Handle large datasets with ease

Interactive data access and rendering

GDAL-type data formats

No aggregation (true to data)

Features

Time series analysis

Local to global visualization (minimap / zoom / pan)

Interactive and selection-based plotting

Multi-dimensional (space and time) slicing

Radar-geo mapping

Map background for georeferenced datasets

Interferogram network view

Curve fitting for common temporal models (seasonal, seismic step, …)

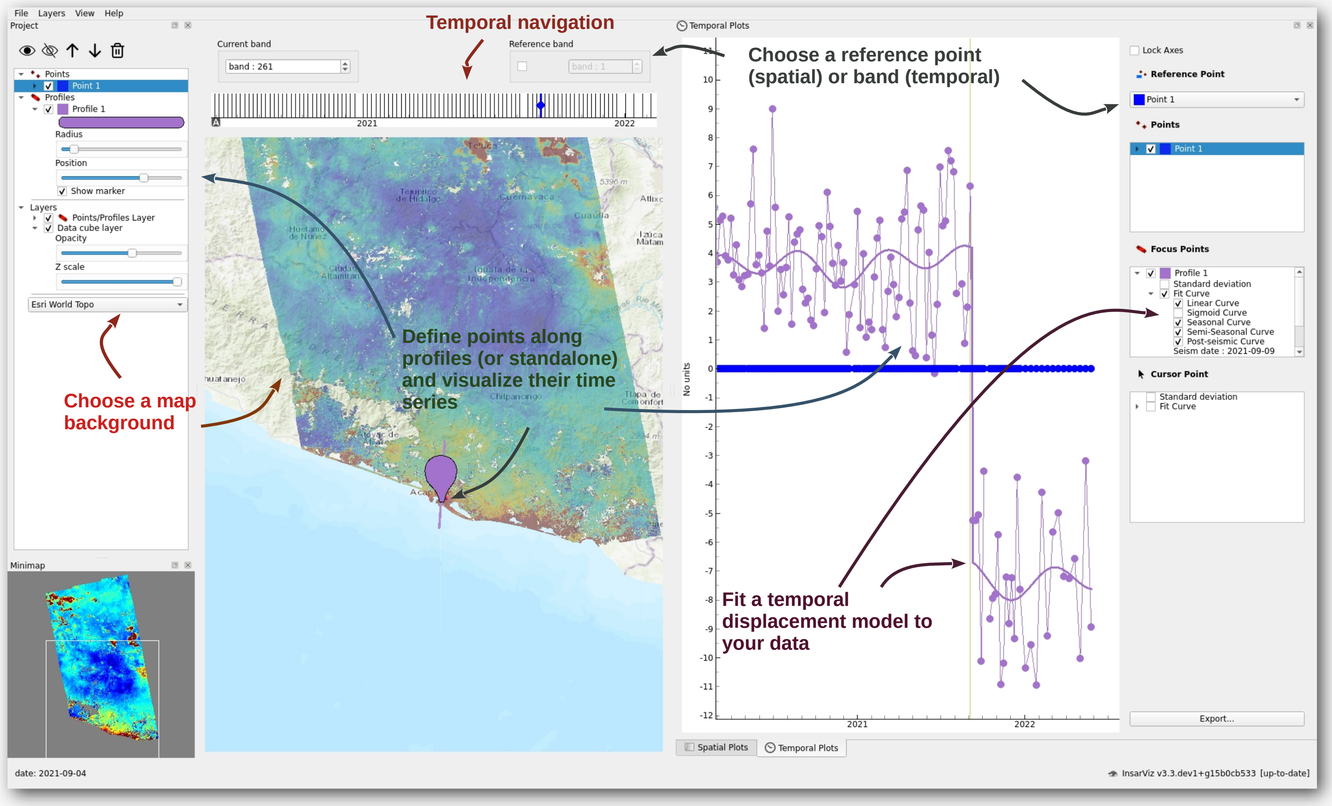
Get InsarViz Here :

https://deformvis.gricad-pages.univ-grenoble-alpes.fr/insarviz/latest/

InsarViz screenshots : case studies

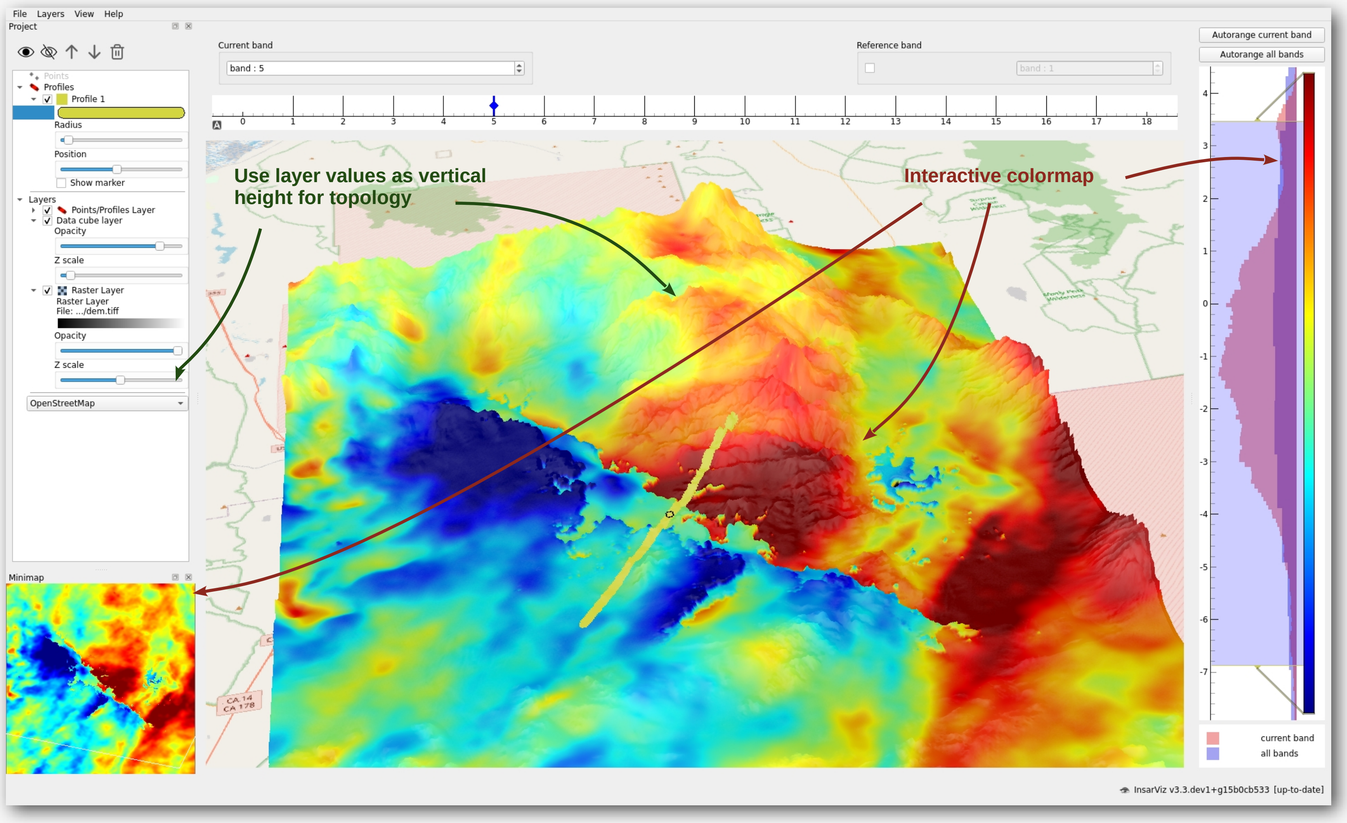
Acapulco, Mexico, September 2021

Datacube dimensions : 3045x4793x292 dates



Ridgecrest, California, July 2019

Datacube dimensions : 600x600x17 dates



Future developments

Extend radar-geo mapping (load custom layers on geo map)

Additional data types (mean velocity, amplitude/phase)

Plot spatial profiles of single band data

Load GNSS datasets for higher temporal density

Your needs ? Tell me !

Demo video

https://formater.osug.fr/demos/insarViz/insarViz-demo.mp4

References

Doin M.-P., Guillaso S., Jolivet R., Lasserre C., Lodge F., Ducret G., Grandin R., Presentation of the small-baseline NSBAS processing chain on a case example : the Etna deformation monitoring from 2003 to 2010 using ENVISAT data, Proceedings of the European Space Agency Symposium « Fringe », Frascati, Italy, 2011

Grandin R., Interferometric processing of SLC Sentinel-1 TOPS data, Proceedings of the European Space Agency Symposium « Fringe », Frascati, Italy, 2015

Thollard F., Clesse D., Doin M.-P., Donadieu J., Durand P., Grandin R., Lasserre C., Laurent C., Deschamps-Ostanciaux E., Pathier E., Pointal E., Proy C., Specht B. (2021), FLATSIM : The ForM@Ter LArge-Scale Multi-Temporal Sentinel-1 InterferoMetry Service, Remote Sens. 13 (18), 3734. doi:10.3390/rs13183734

Acknowledgements

The InsarViz project was supported by CNES, focused on SENTINEL-1, and CNRS.

The authors want to thank the OSUG for hosting the demo video.

The example datasets were produced by the FLATSIM service.

The InsarViz team thanks its users, who never fail to be kind while pushing the project forward.

Université Grenoble Alpes · ISTerre · LIG · cnrs · cnes CENTRE NATIONAL D'ÉTUDES SPATIALES