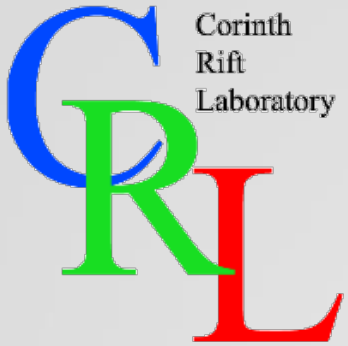
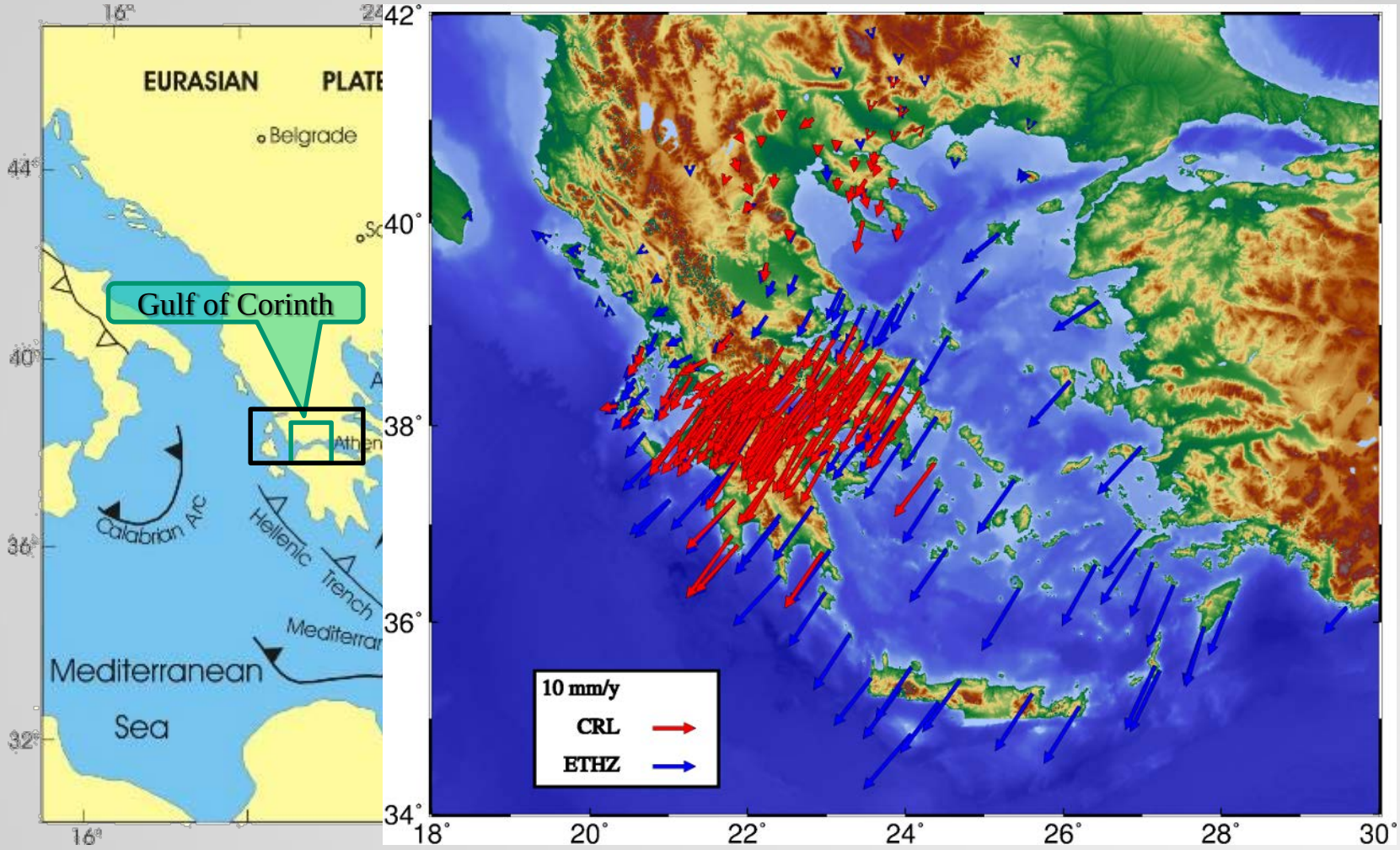
The space component of the monitoring system in the Corinth Rift Near Fault Observatory



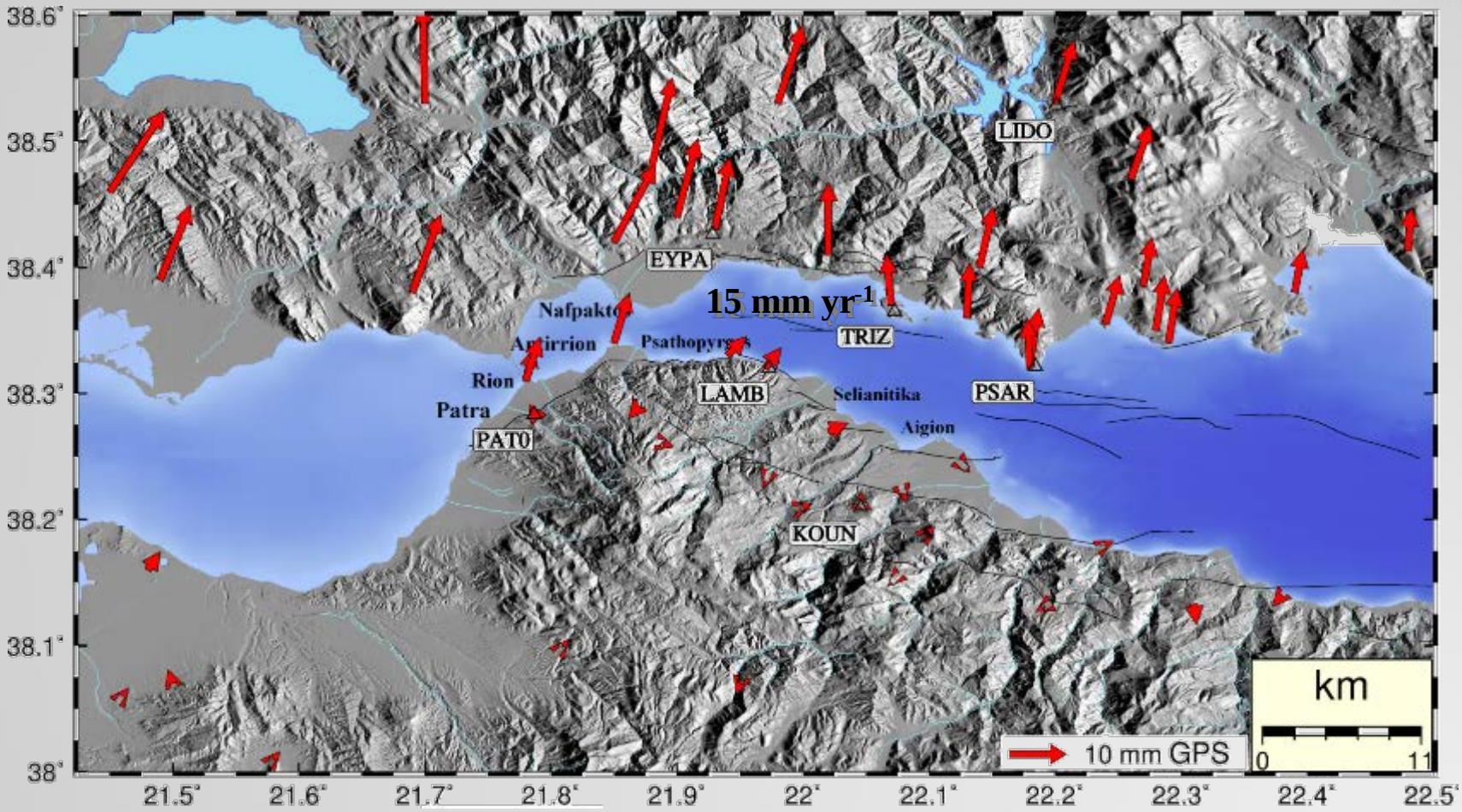
Panagiotis Elias and the CRL NFO team

National Observatory of Athens
Institute of Astronomy, Astrophysics, Space Applications and Remote Sensing

The Gulf of Corinth



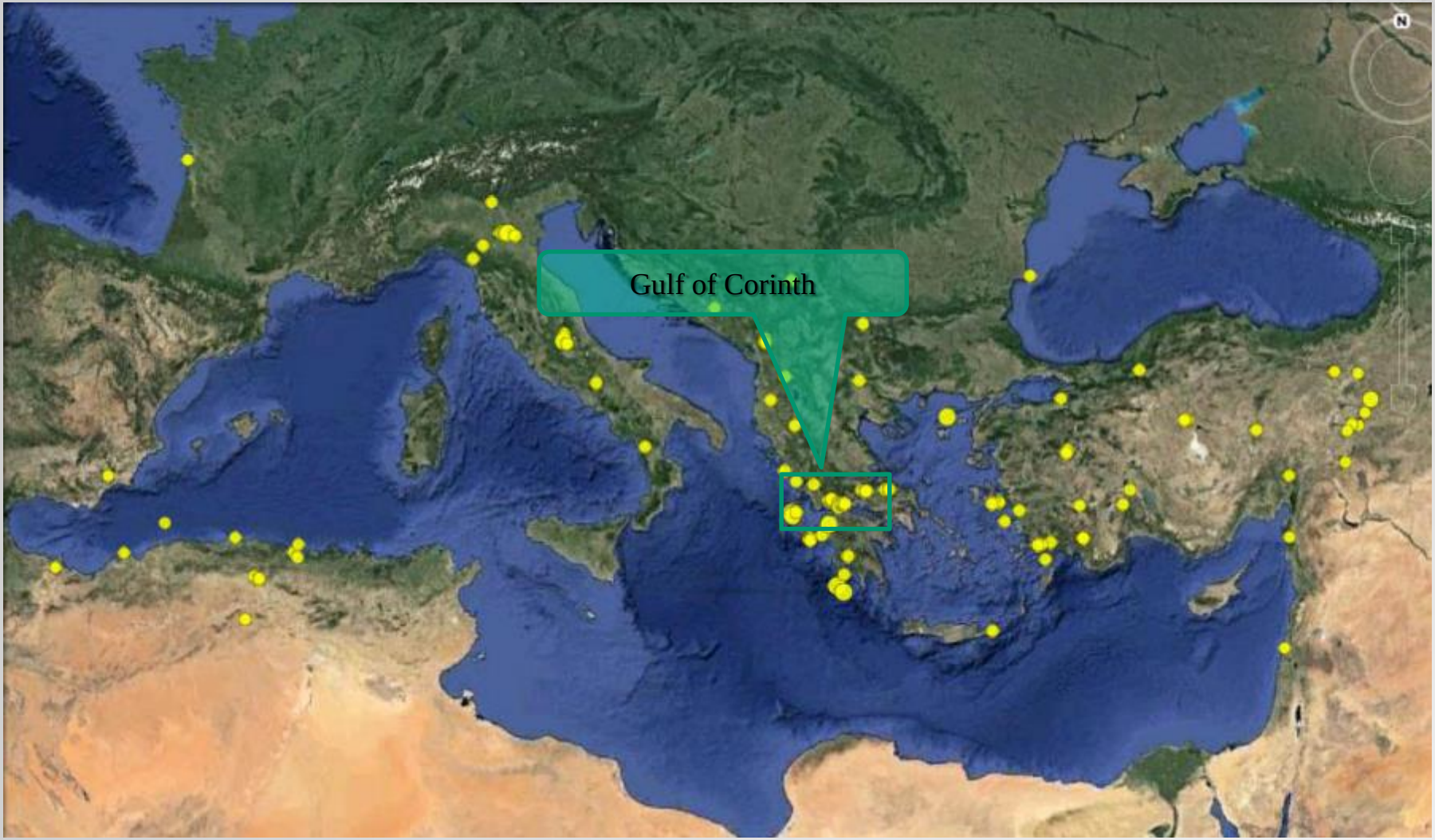
GNSS vectors of deformation rates



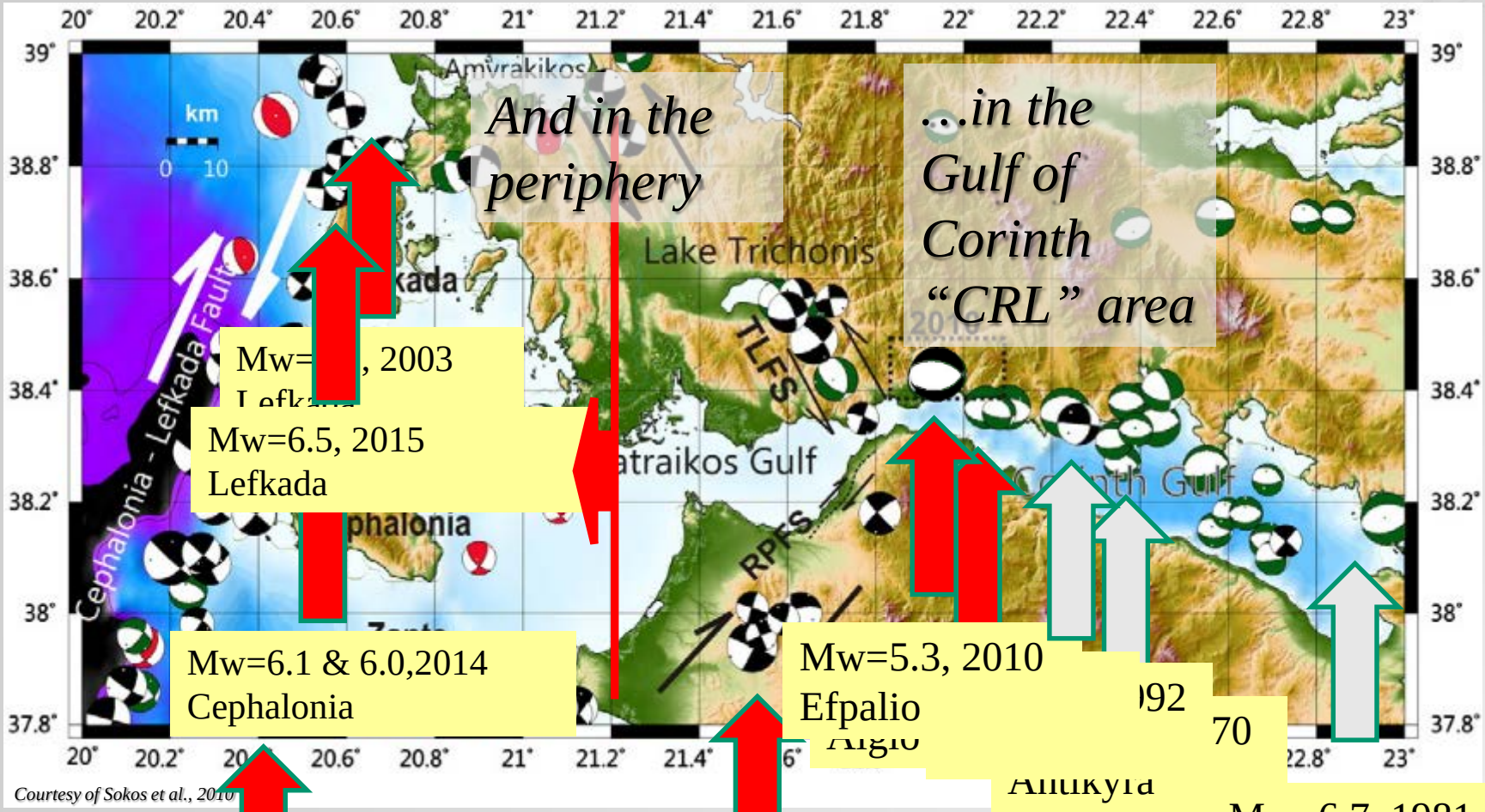
Briole et al., 2000, Avallone 2003, Briole et al., in preparation

It is among the fastest extending continental regions in the world

Mw > 5, 2004 - 2014



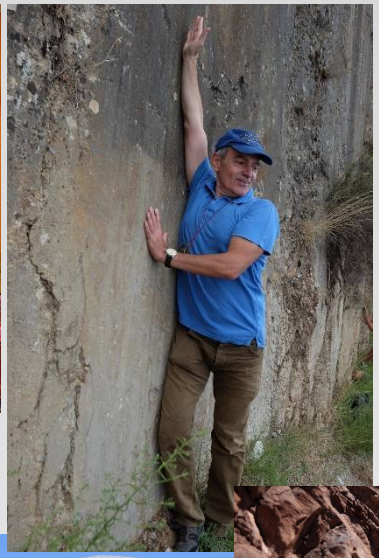
Recent Seismicity

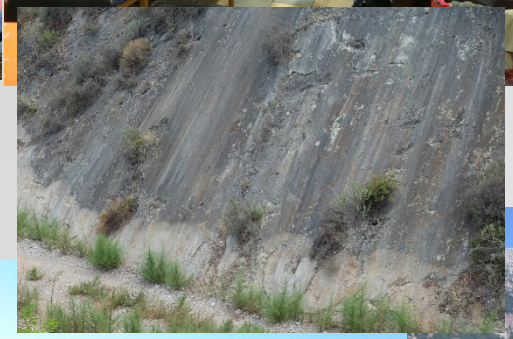


It has one of the highest seismicity rates in the Euro-Mediterranean region

…a really “near fault” …



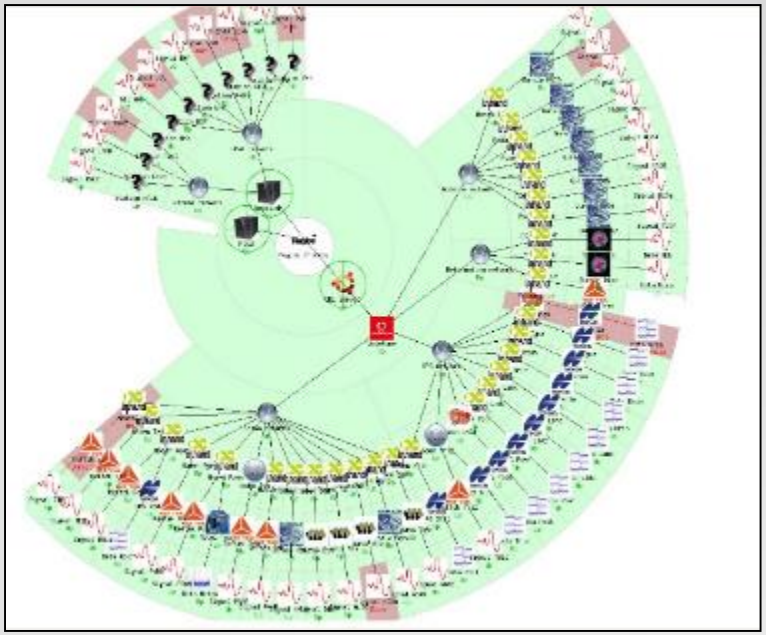




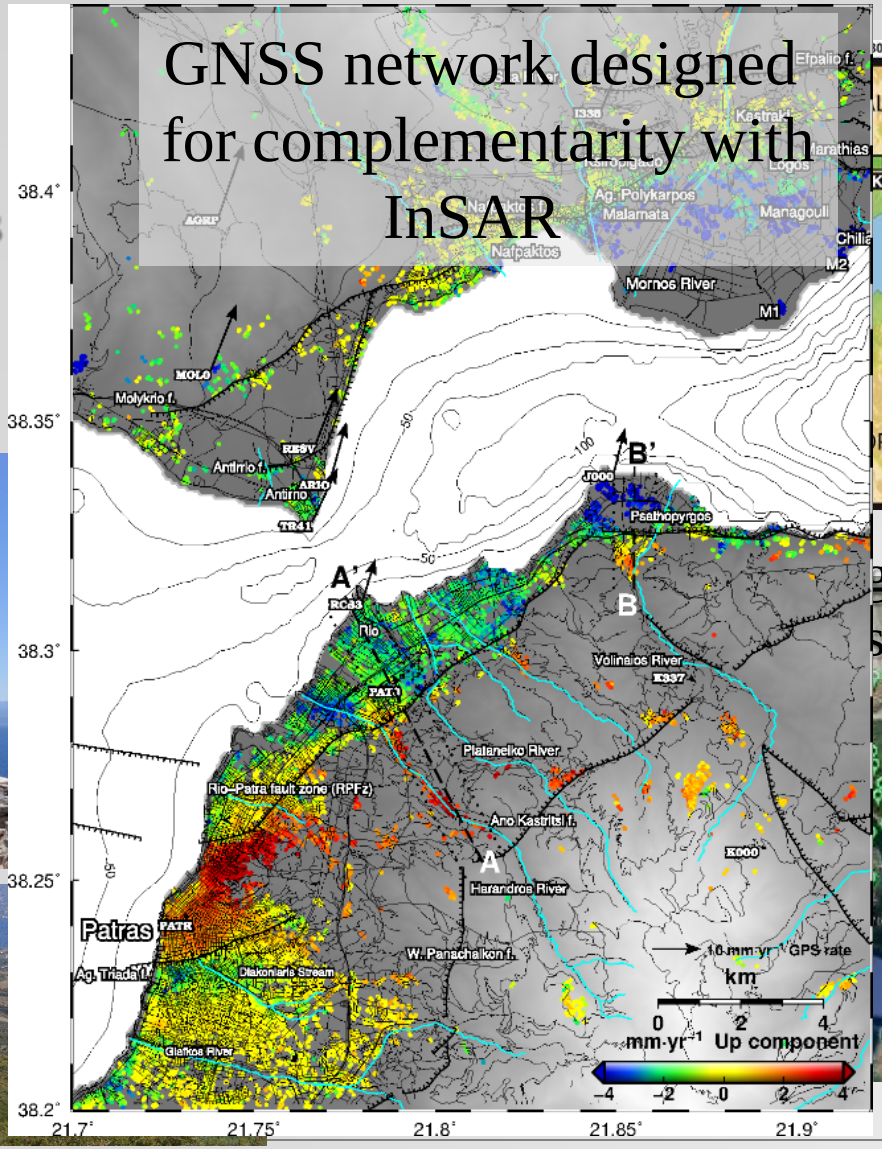

…observatory

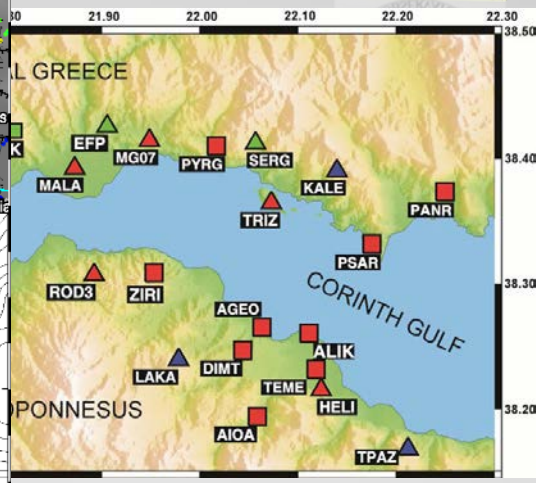
- CRL infrastructure is on the roadmap to have its own governance
- 83 (as of Sep/18) instruments deployed, with telemetry
- Data and products are disseminated through EPOS
- The cost of maintenance and operation (estimated at 1.5keuro per year) falls at the owner



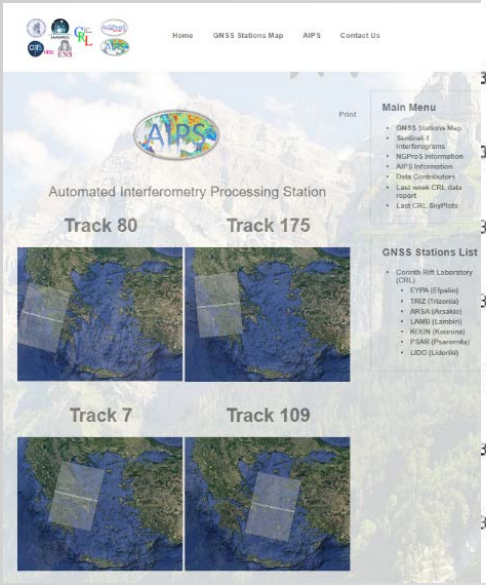
Instrumentation networks of the CRL

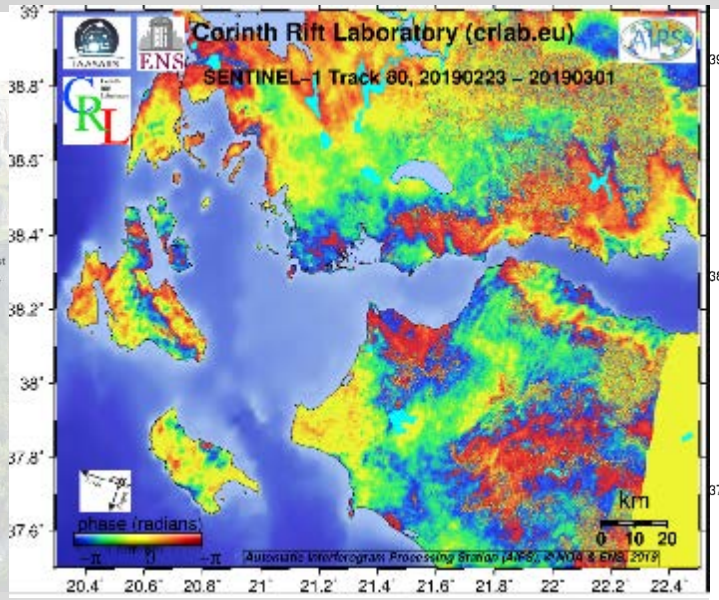
- 26 GNSS stations
- 32 Seismometers
- 17 accelerometers
- 5 tide gauges
- 1 dilatometer
- 1 strainmeter

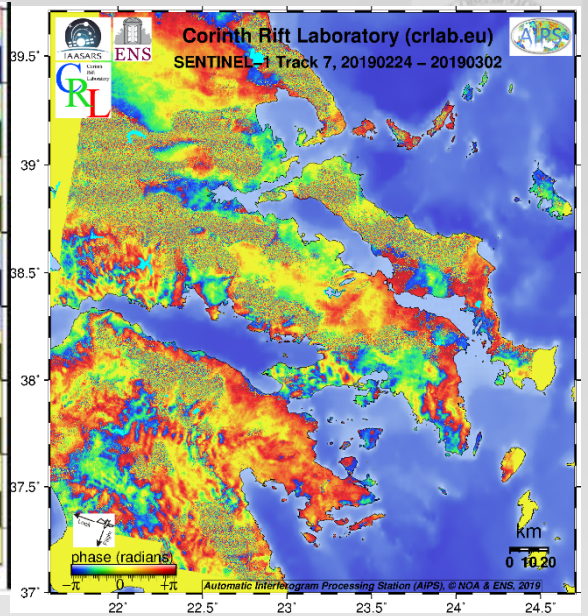


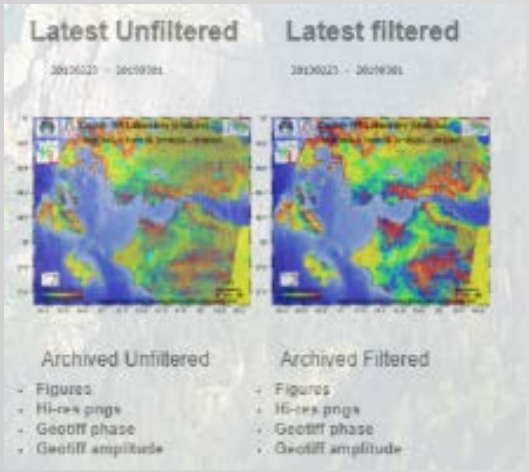


Automatic routine Interferograms Processing







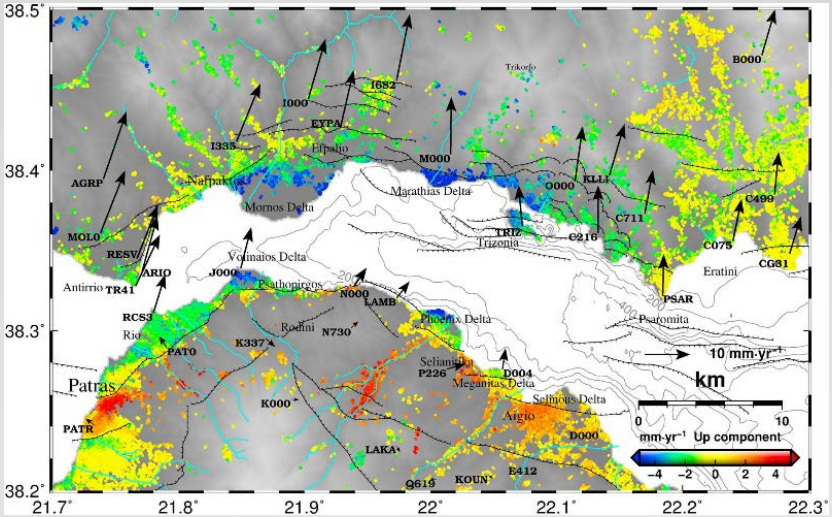


at NOA and ENS
…using SNAP

http://crlab.eu &
http://aips.space.noa.gr

Multipass, Multisensor, multprocessors' multitemporal interferometry

- There are many multitemporal InSAR processing methods each one having its own results
- There is the need of multiple solutions with different 'processors'
- …and different sensor in X-C-L and S bands

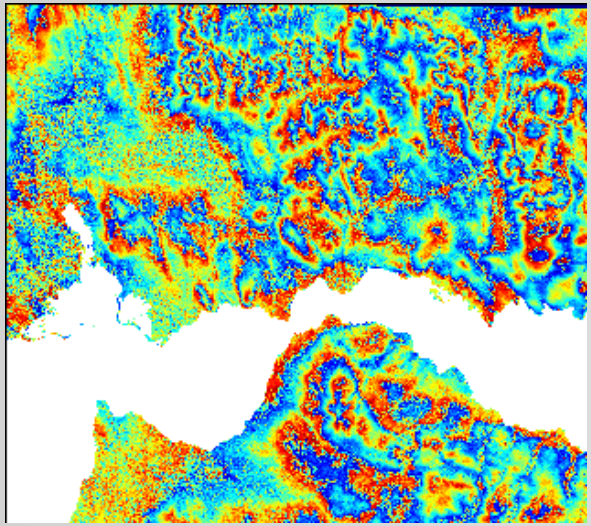


- There is the analogous is the GNSS orbit calculation using almost 10 solutions of different institutions
- The product emerged after their reconciliation is the safest one

Preparing Tropospheric correction service

A1x1km WRF model will run operationally producing phase delay maps of the Gulf of Corinth area (http://crlab.eu)

Interferogram
vs
Phase delay synthetic one



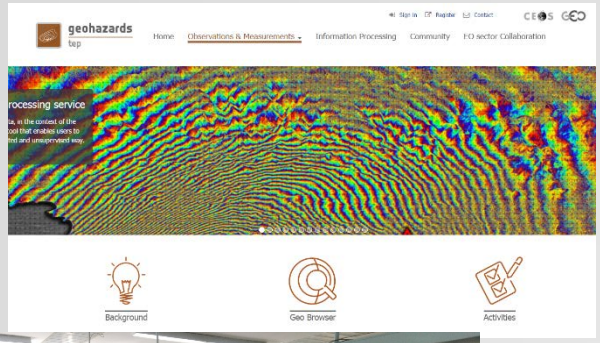
- troposphere is the major limitation in the accuracy of precise positioning. Reciprocally, and for the same reason, accurate tropospheric parameters can be retrieved from GNSS and InSAR data, and can be of major interest for constraining tropospheric models
- the efficiency of the WRF phase delay corrections to be applied to the real interferograms are under investigation
- ..but the most promising is the feeding of real interferograms to the meteo models
- the CRL were proposed to participate in the NASA NISAR mission as a pilot site towards this scope but also for cal/val activities.

Poster presented at InSARMeteorologuMiami2018 Conference, Miami, USA, March 1&2, 2018

InSAR observations, high resolution tropospheric models and extreme meteorological events in western Greece - Using CRL (http://crlab.eu) as a pilot site for the NISAR mission

The MOSAIC team: P Elias*, N Roukounakis, D Katsanos, P Briole, C Albinet, M Anzidei, A Avallone, P Bally, C Bignami, JL Carme, K Chousianitis, F Del Frate, JP Duvel, A Ganas, S Gandolfi, B Garayt, I Georgiev, M Ilieva, F Masson, A Papadopoulos, I Parcharidis, V Plicka, A Montuori, A Retalis, L Rolland, V Sakkas, G Schiavon, S Stramondo, L Testut, …

Corinth Rift Laboratory School



crlab.eu/crl-school