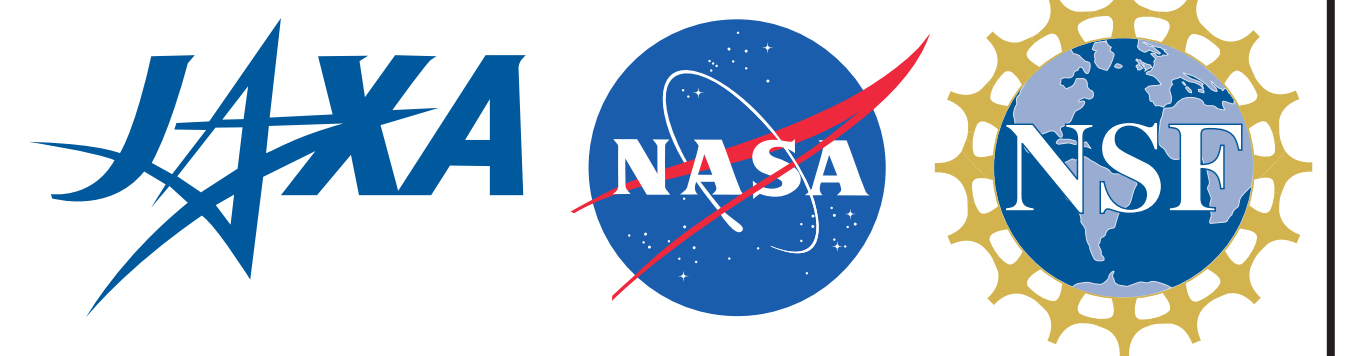


Monitoring volcanic unrest in Kyushu, Japan with time series InSAR



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1- Summary

Motivation: Volcanoes **deform** in various ways: pre-eruptive uplift due to pressurization caused by magma accumulation, co-eruptive subsidence and/or followed by post-eruptive deflation due to the cooling of magma reservoir. A key challenge for volcanological science and hazard reduction and management is that **only a fraction** of the world's volcanoes are effectively **monitored**.

Study Area: Kyushu, SW Japan

Technique: InSAR (Radar Interferometry) time series analysis

Data: JERS (1992-1998), ALOS (2006-2011)

Signals found:

• Cooling Magma / Hydrothermal activities:

1. Mt. Hoshisho, Kuju
2. Nakadake, Aso since early 2011
3. Fugendake, Unzen
4. Shimoedake, Kirishima
5. Kitadake, Sakurajima

• Volcanic Inflation:

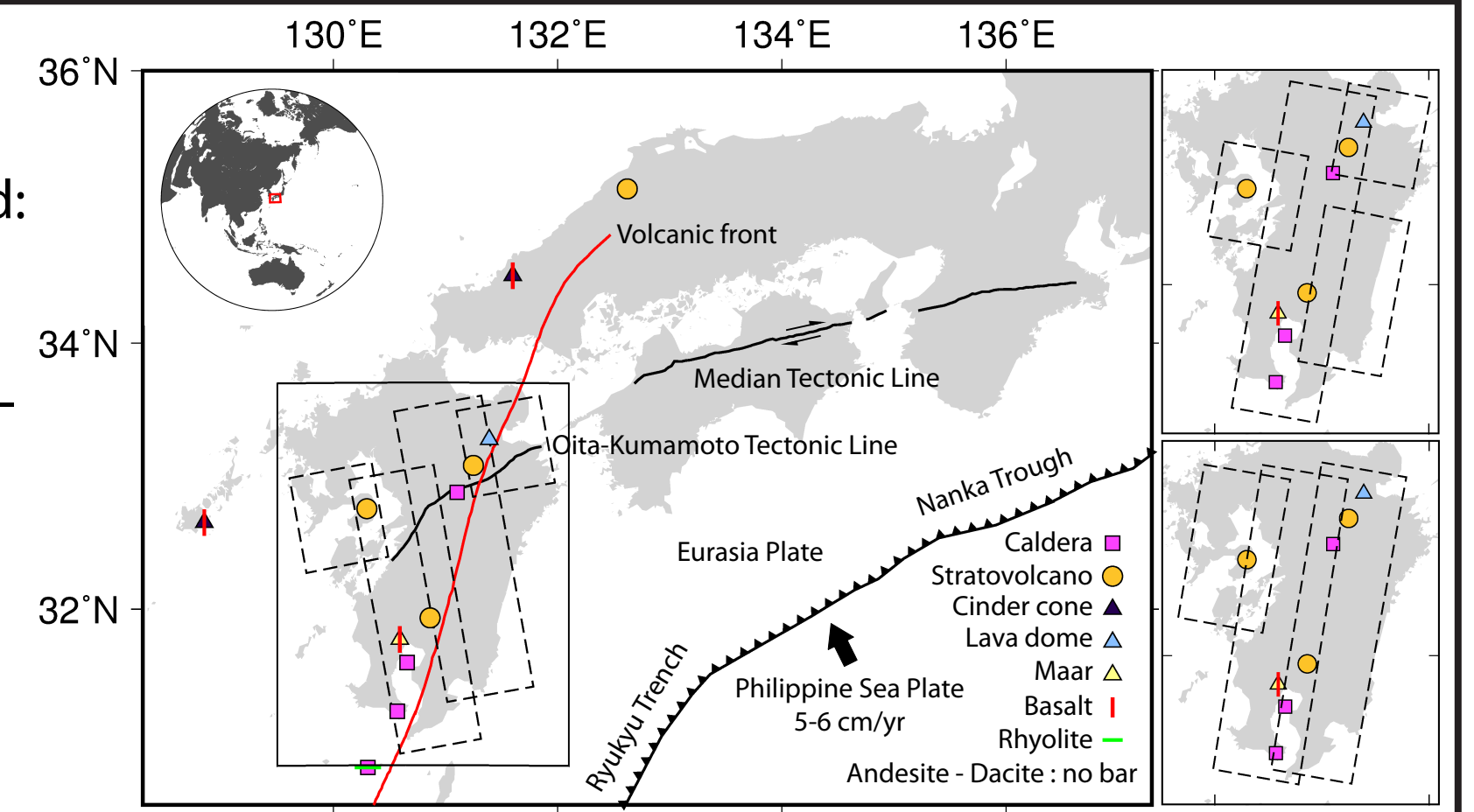
1. Aira caldera
2. Sakurajima, North flank
3. pre-eruptive inflation, Kirishima

• Subsidence at Geothermal field:

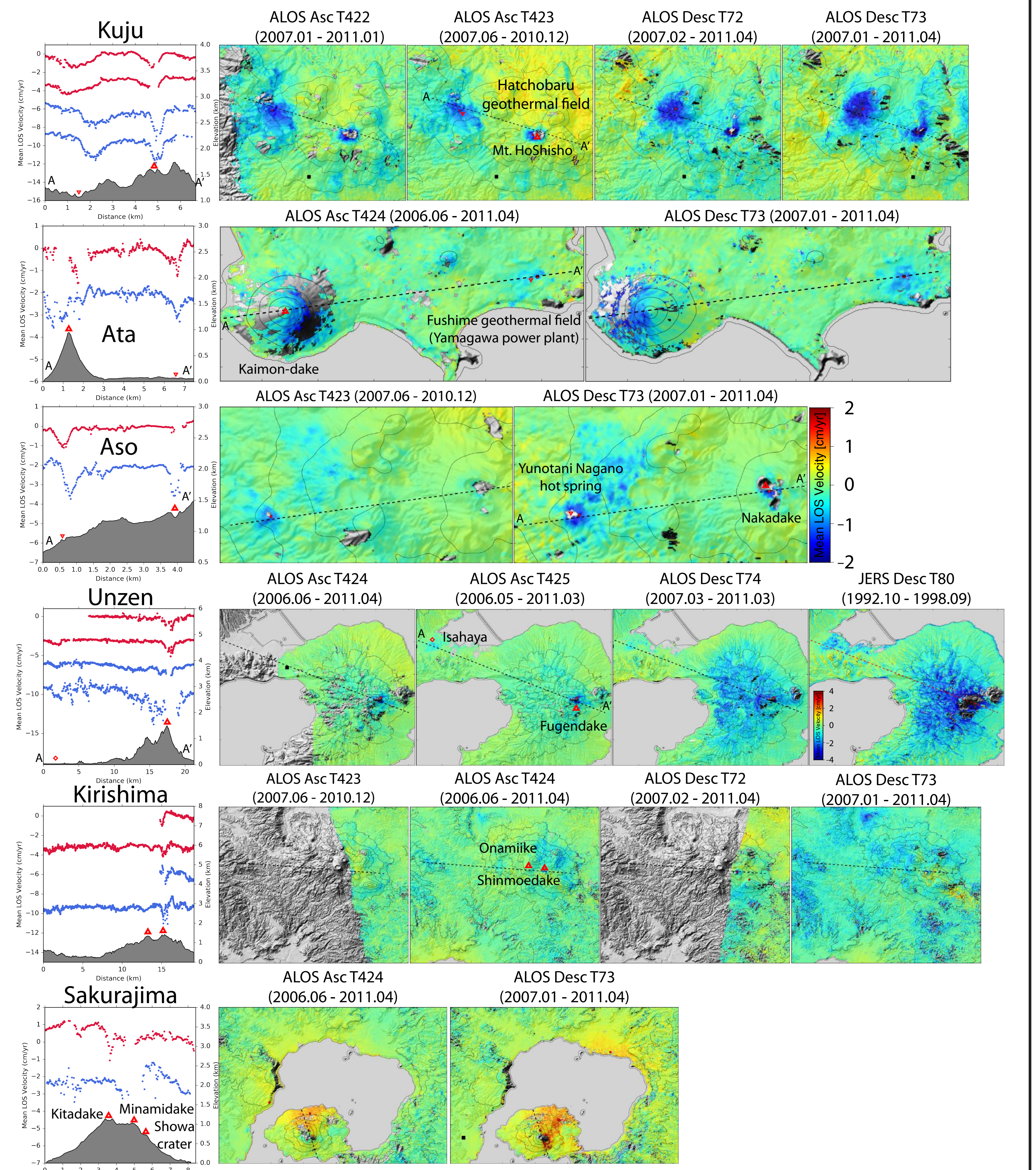
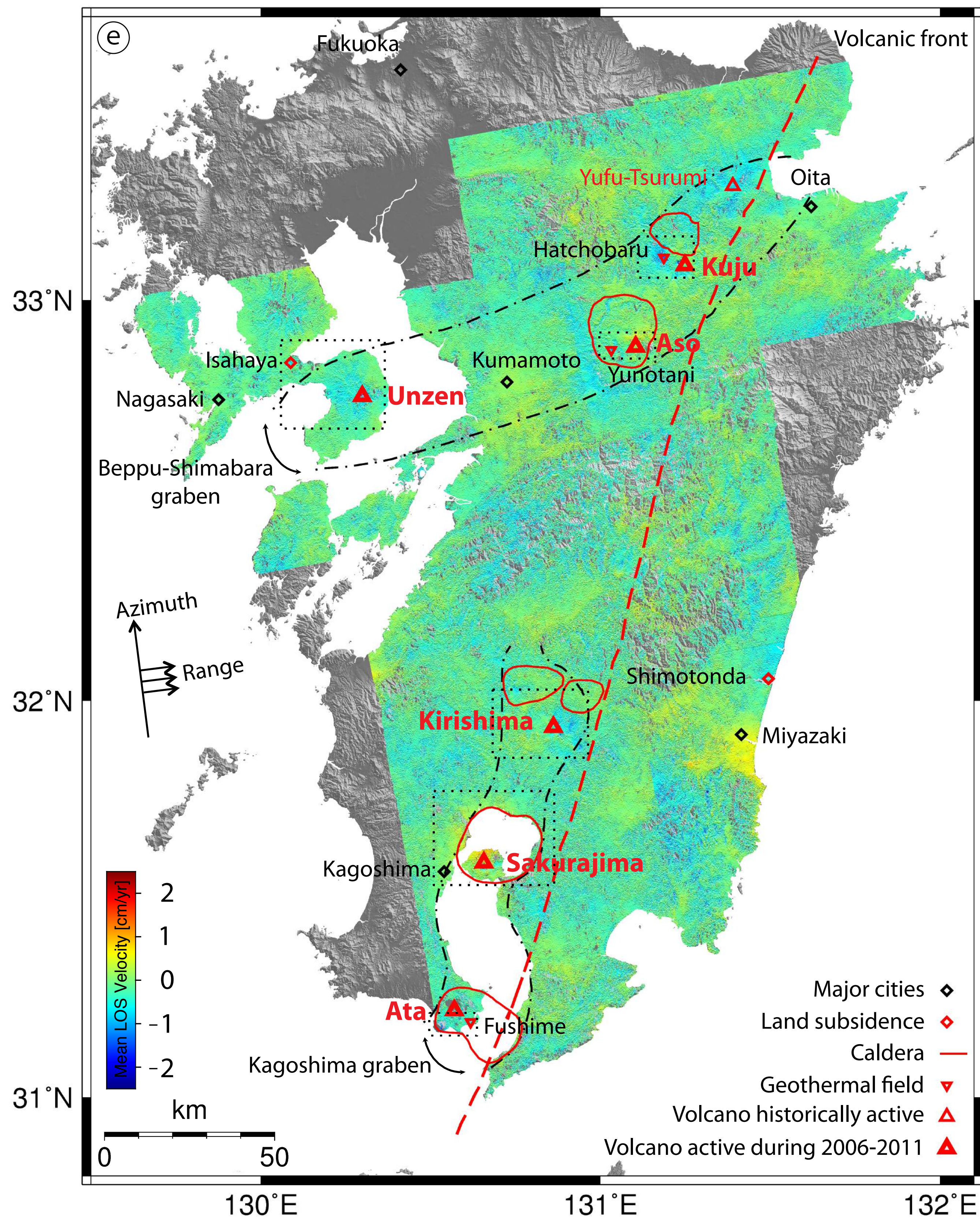
1. Hatchobaru power plant
2. Yunotani Nagano hot spring
3. Fushime geothermal field / Yamagawa power plant

• Land Subsidence:

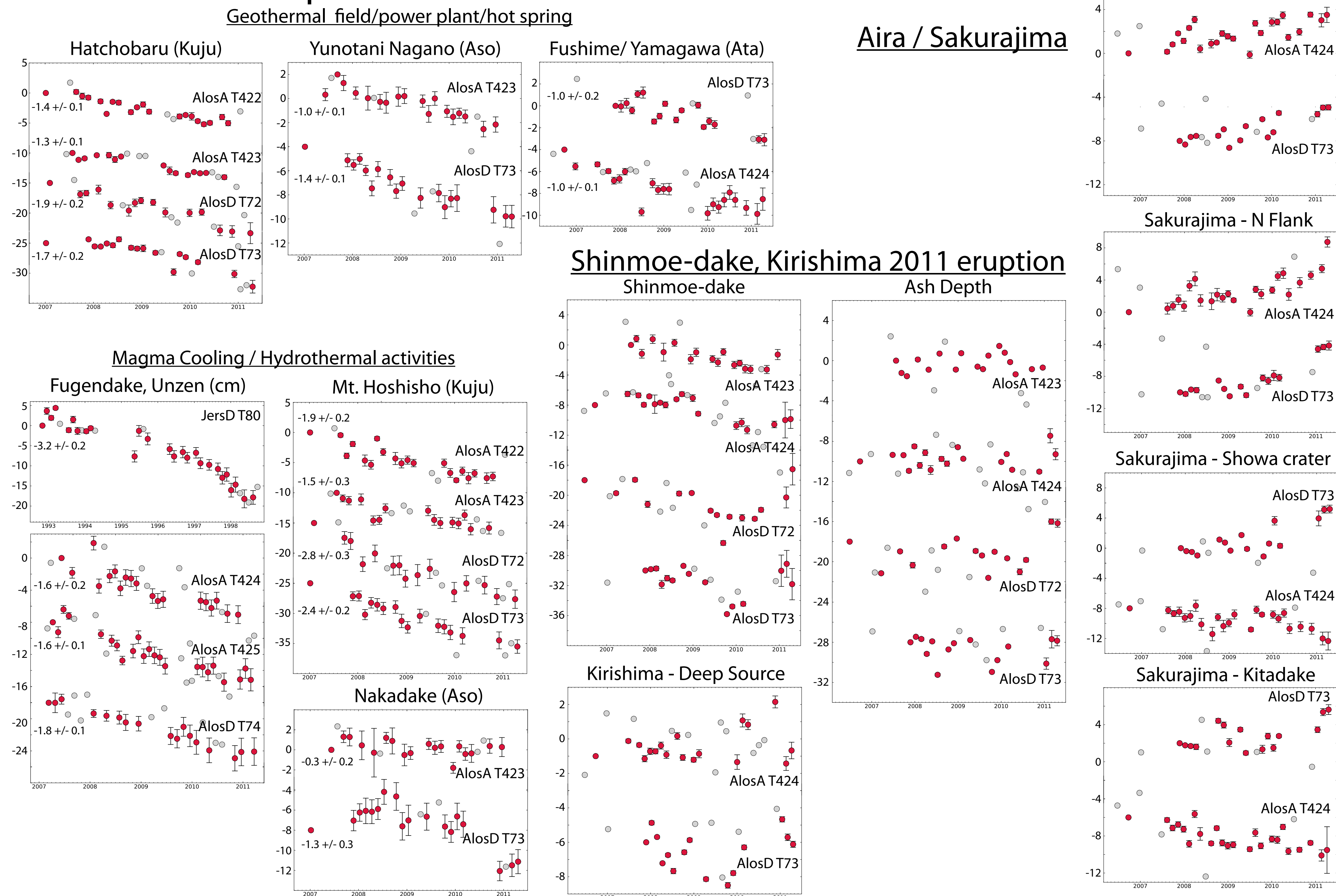
1. Isahaya, Nagasaki
2. Shimotonda, Miyazaki



2 - Mean LOS Velocity



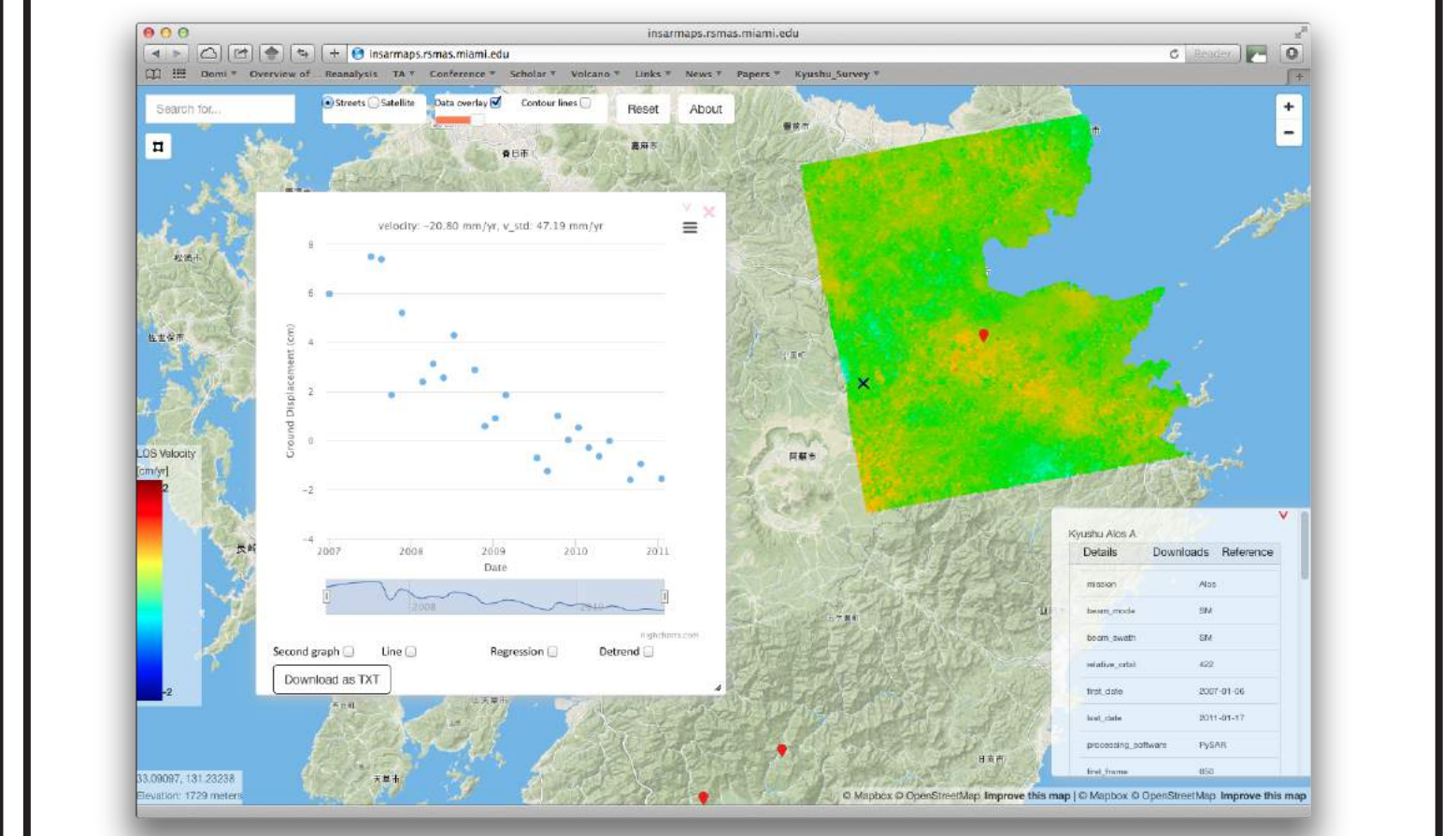
3 - Time Series Displacement



4 - Web Viewer

All the data on this poster is available through a web viewer of time series InSAR data developed at University of Miami through the link below:

<http://insarmaps.rsmas.miami.edu>



All InSAR time series analysis use PySAR developed at University of Miami. PySAR is open source package and available through Github: <https://github.com/yunjunz/PySAR>

Reference

- Yunjun Z., Amelung F., Aoki Y., (2017), A time series InSAR survey of volcanic and anthropogenic deformation in Kyushu, SW Japan, (in prep).
- Biggs, J., S. Ebmeier, W. Aspinall, Z. Lu, M. Pritchard, R. Sparks, and T. Mather (2014), Global link between deformation and volcanic eruption quantified by satellite imagery, Nature communications, 5.