# The Hawai‘i Supersite: 2-years on (and counting!)

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# Available Data

<u>Satellite SAR</u>

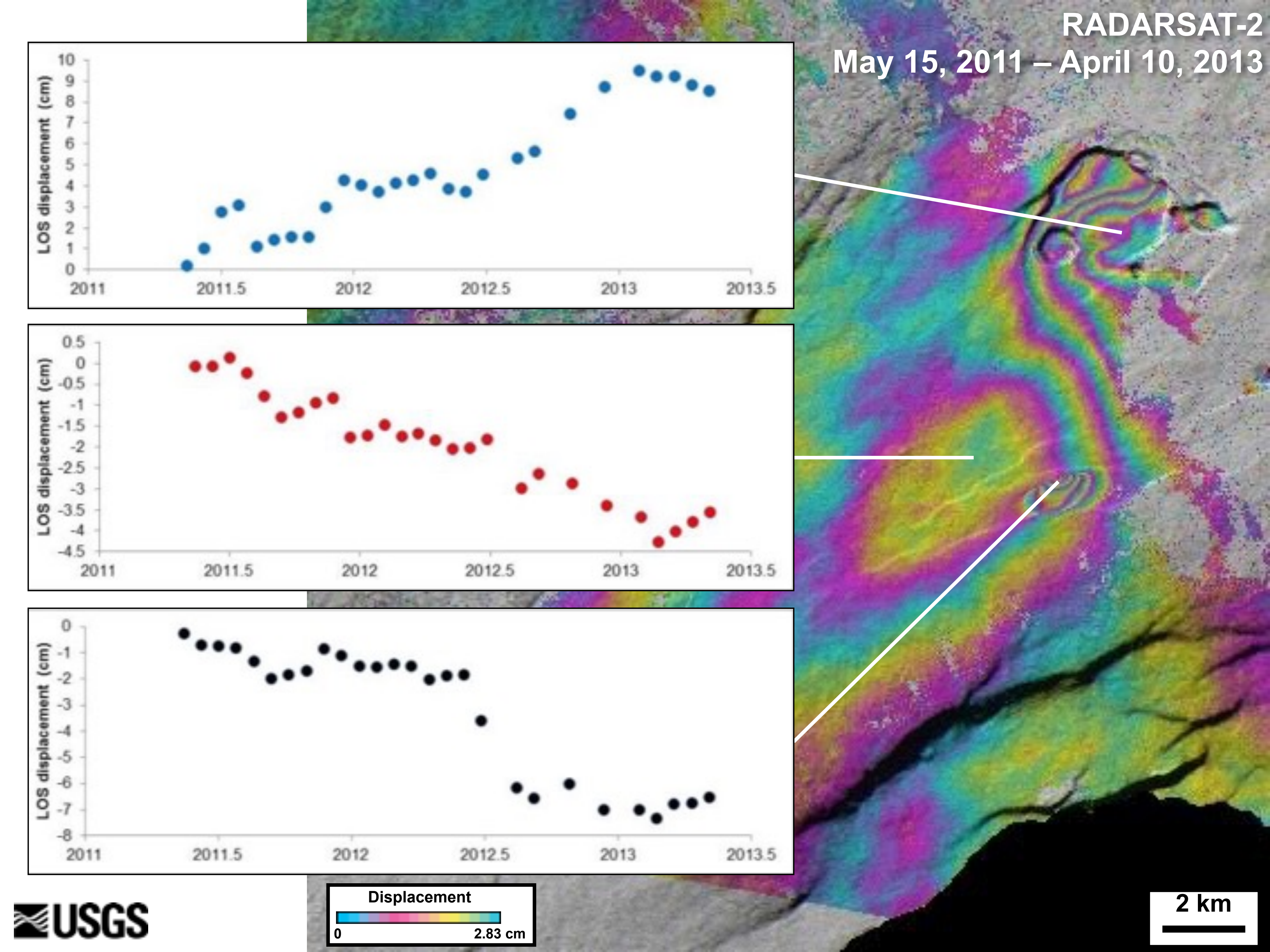
- ENVISAT (***756 scenes***)
- RADARSAT-1 (***500***)
- ALOS-1 (***414***)
- TerraSAR-X (***190***)
- COSMO-SkyMed (***450***)
- RADARSAT-2 (***268***)

<u>Ground / Air / Space</u>

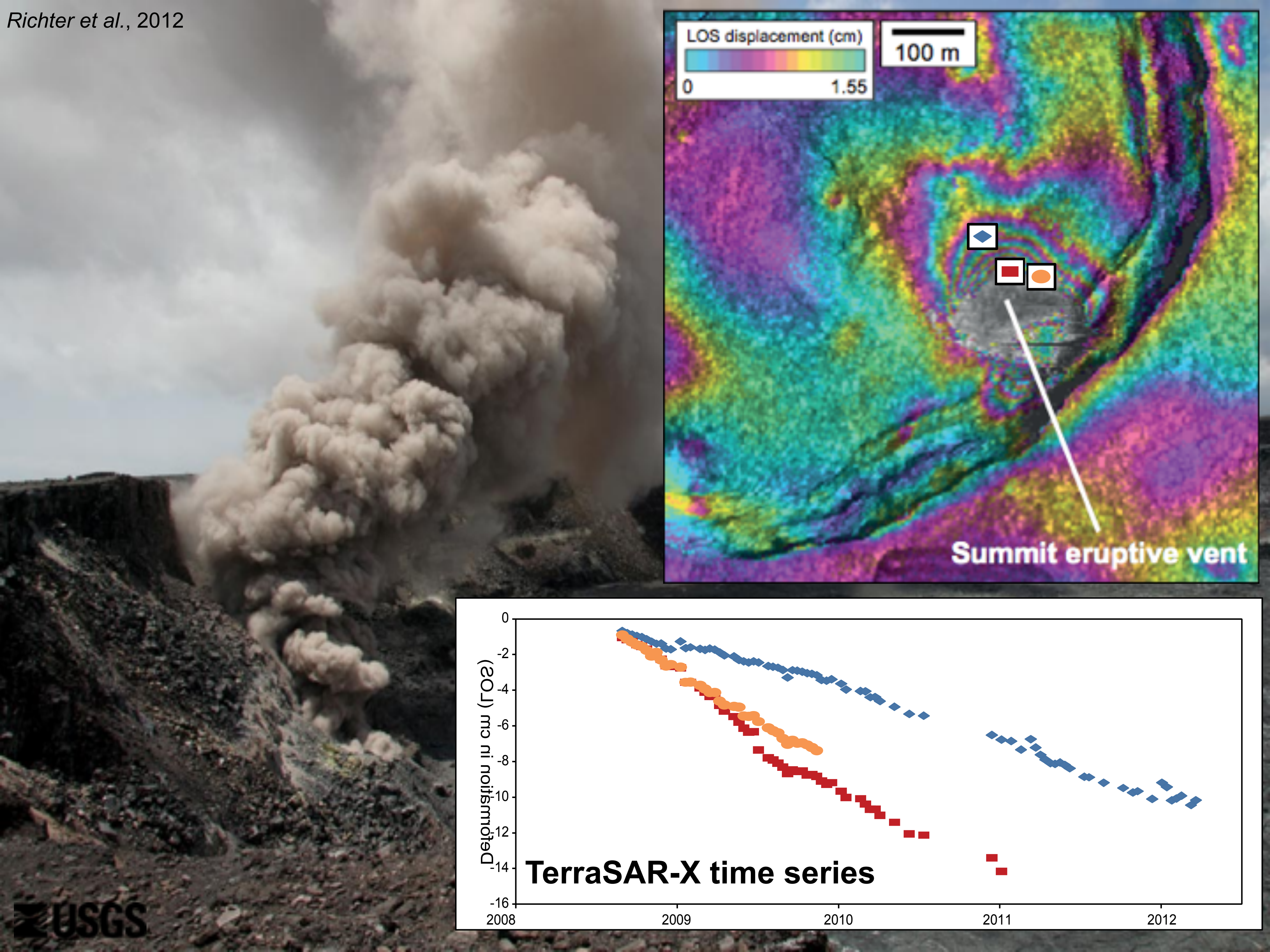
- GPS/tilt/strain
- Seismic
- Gravity
- Gas emissions
- Geologic mapping
- Camera
- UAVSAR
- EO Satellite data

# So, what have we learned?

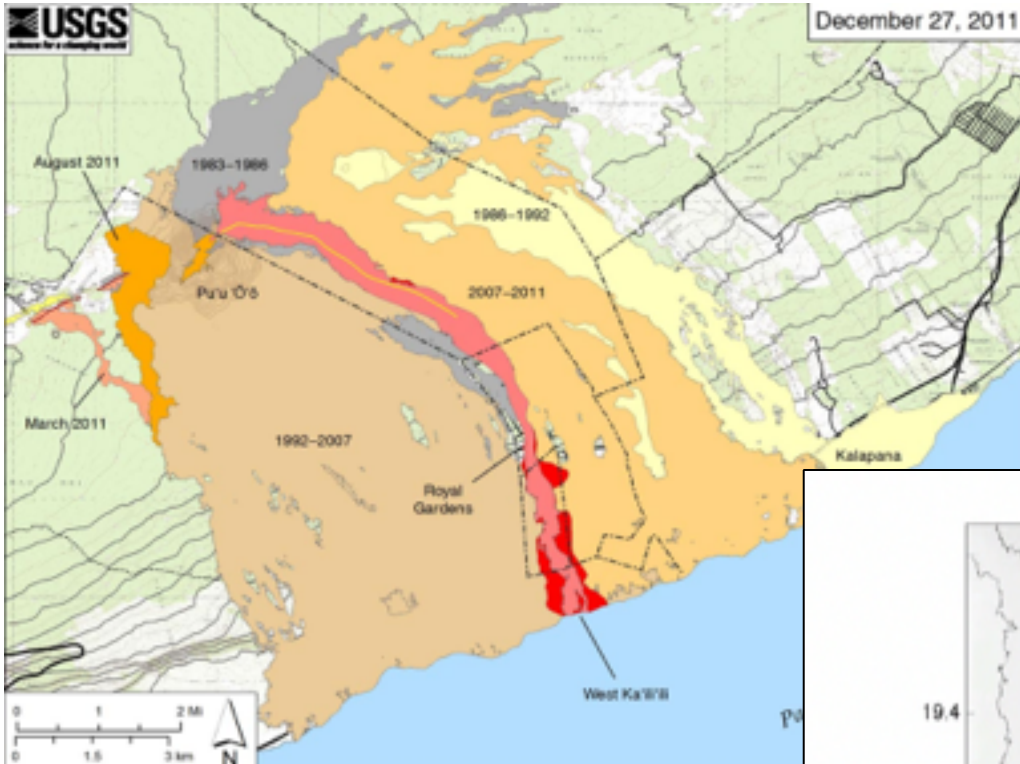
- Earthquake and volcano deformation
- Lava flow dynamics
- Magma plumbing
- Flank instability

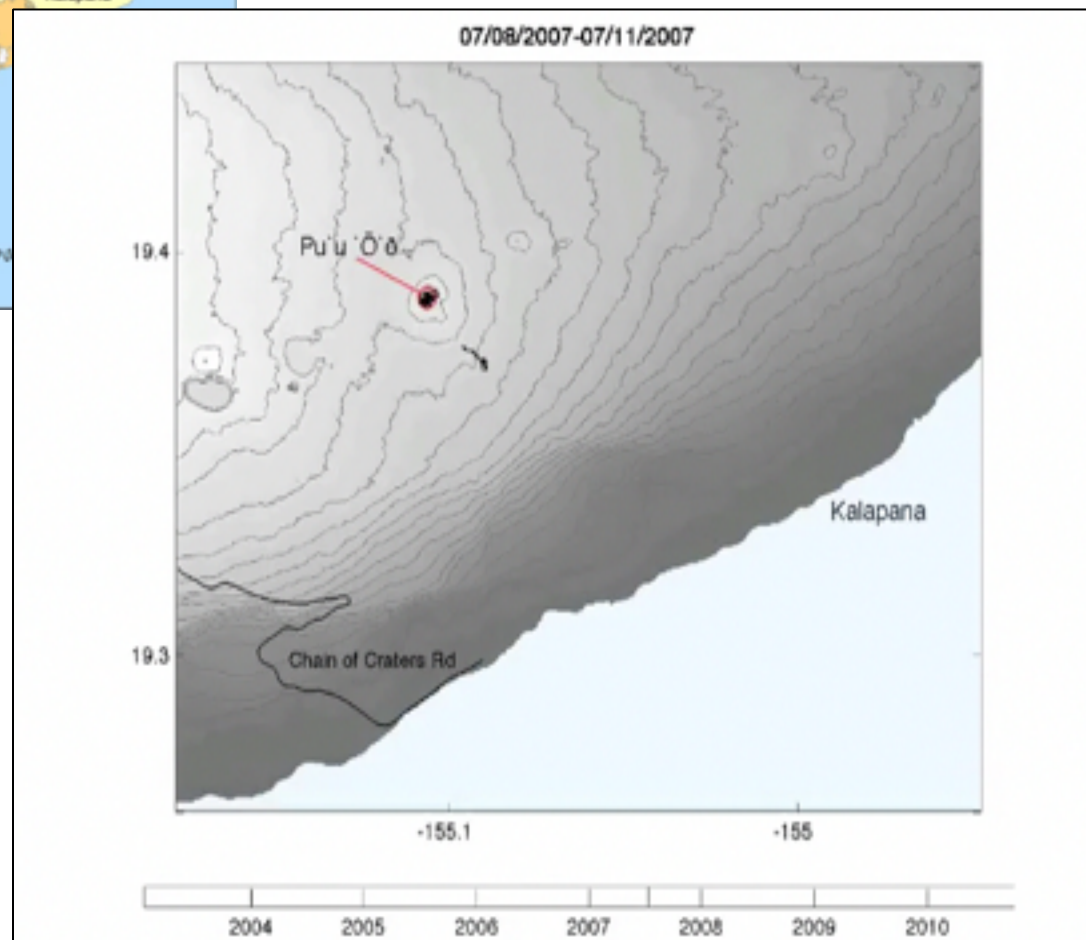


RADARSAT-2
May 15, 2011 – April 10, 2013
LOS displacement (cm)
2011
2011.5
2012
2012.5
2013
2013.5
Displacement
0
2.83 cm
2 km
USGS


Richter et al., 2012
LOS displacement (cm)
0
1.55
100 m
Summit eruptive vent
TerraSAR-X time series
Deformation in cm (LOS)
0
-2
-4
-6
-8
-10
-12
-14
-16
2008
2009
2010
2011
2012
USGS

# Mapping lava flows

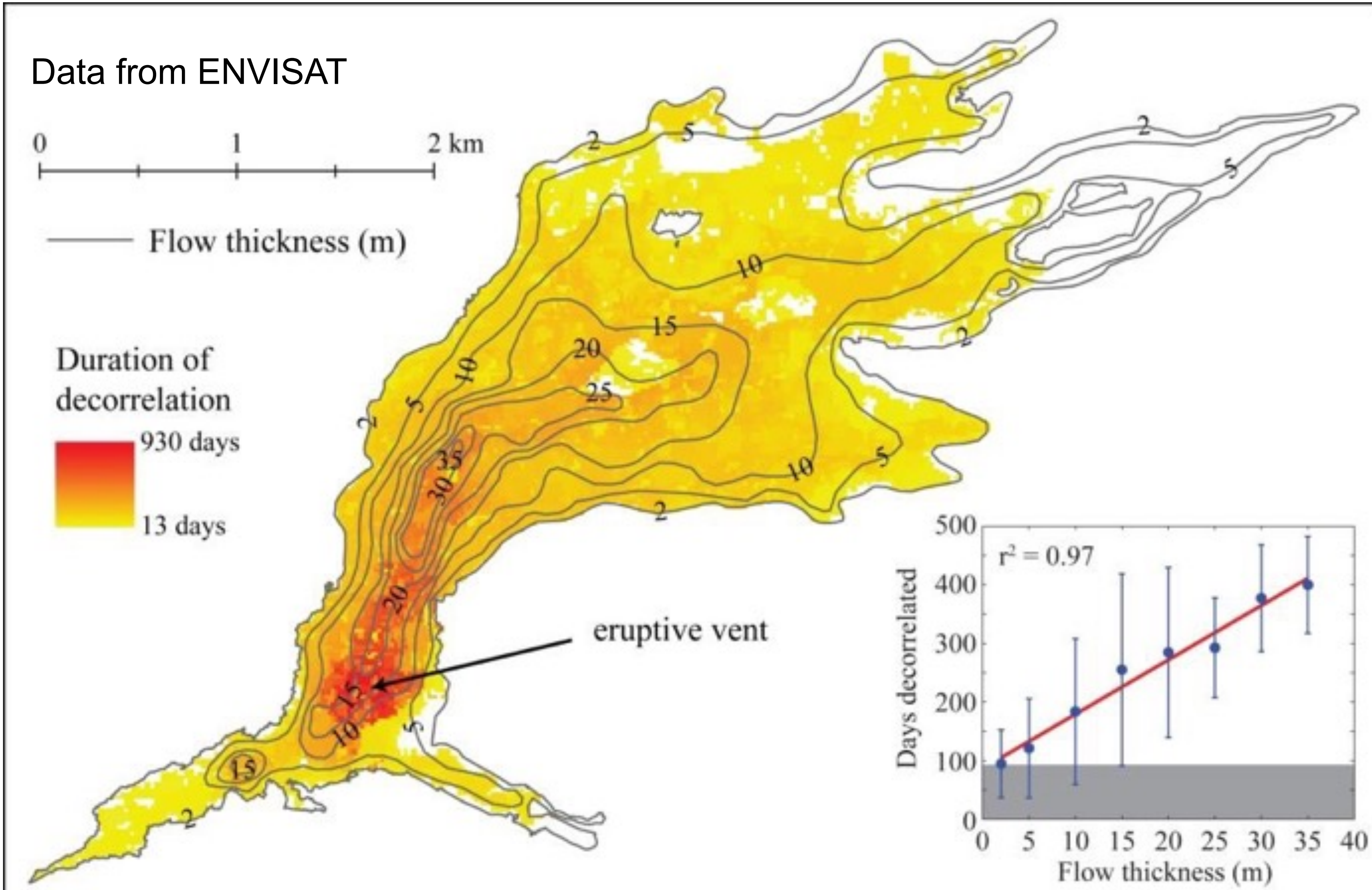



Coherence from multiple satellites and look angles can be combined to develop a temporally dense time series of lava flow activity.

*Dietterich et al.*, 2012

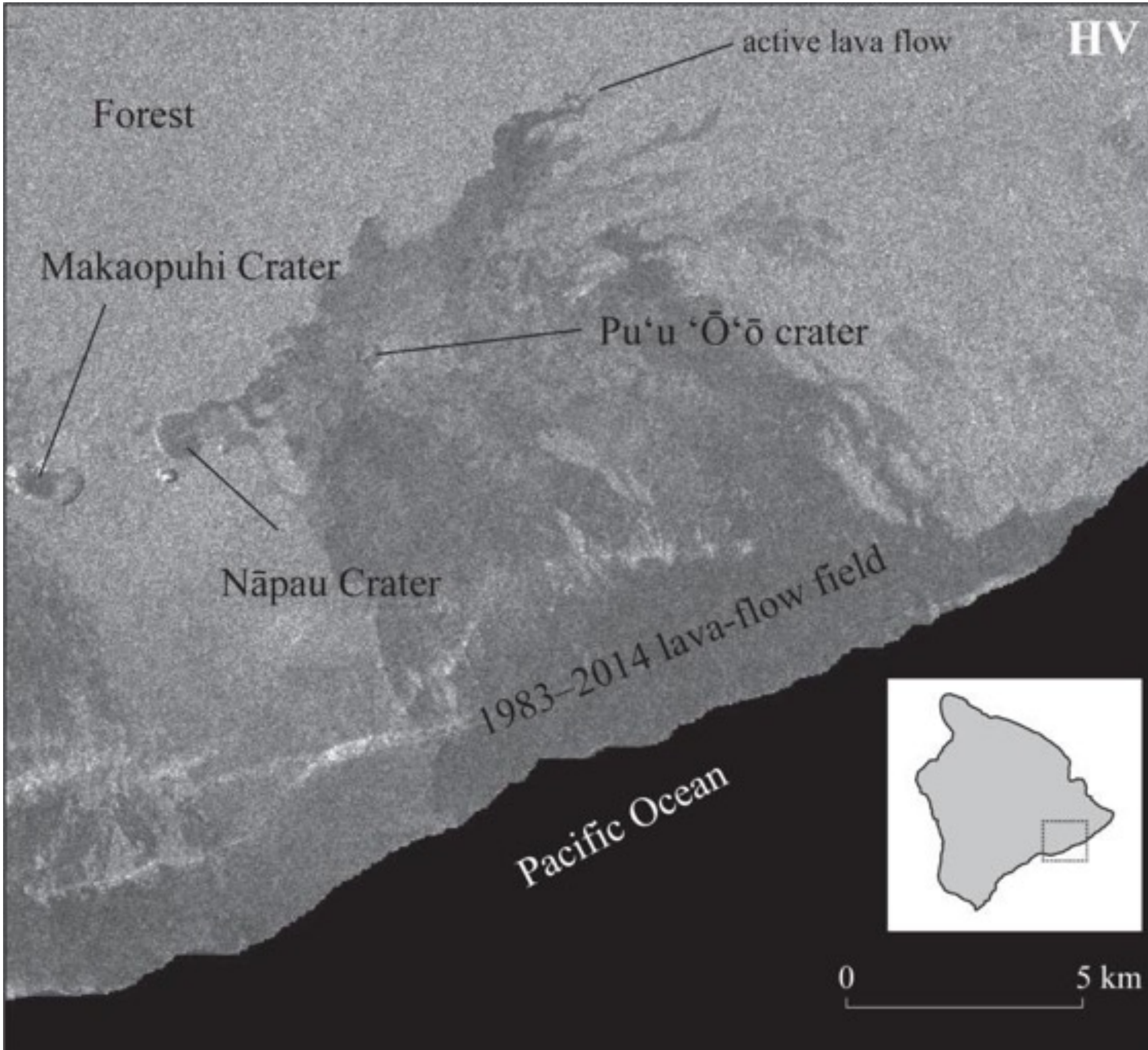
# Lava flow thickness from InSAR coherence




USGS

*Dietterich et al.*, 2012

RADARSAT-2 Fine-Beam, Quad-Pol

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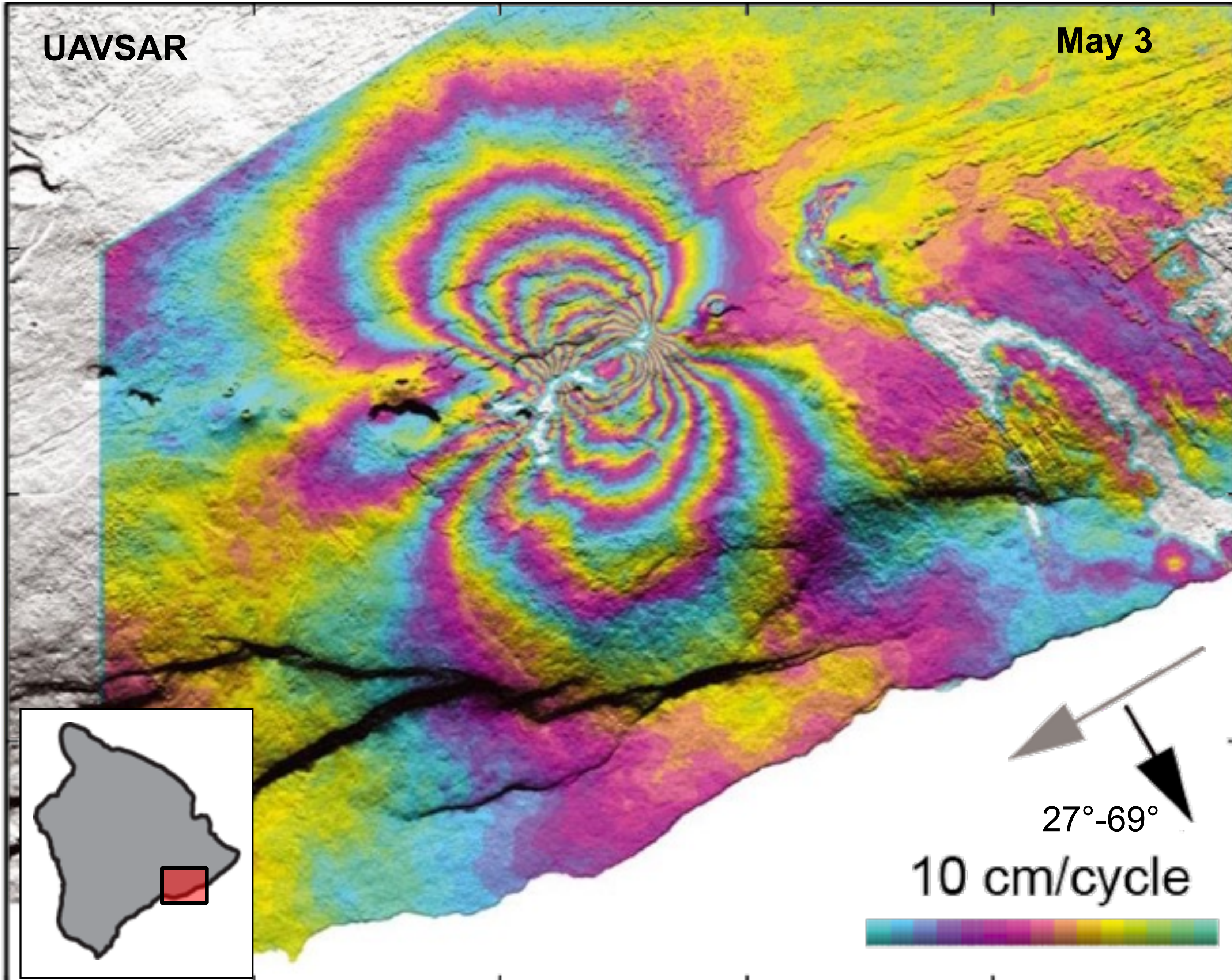
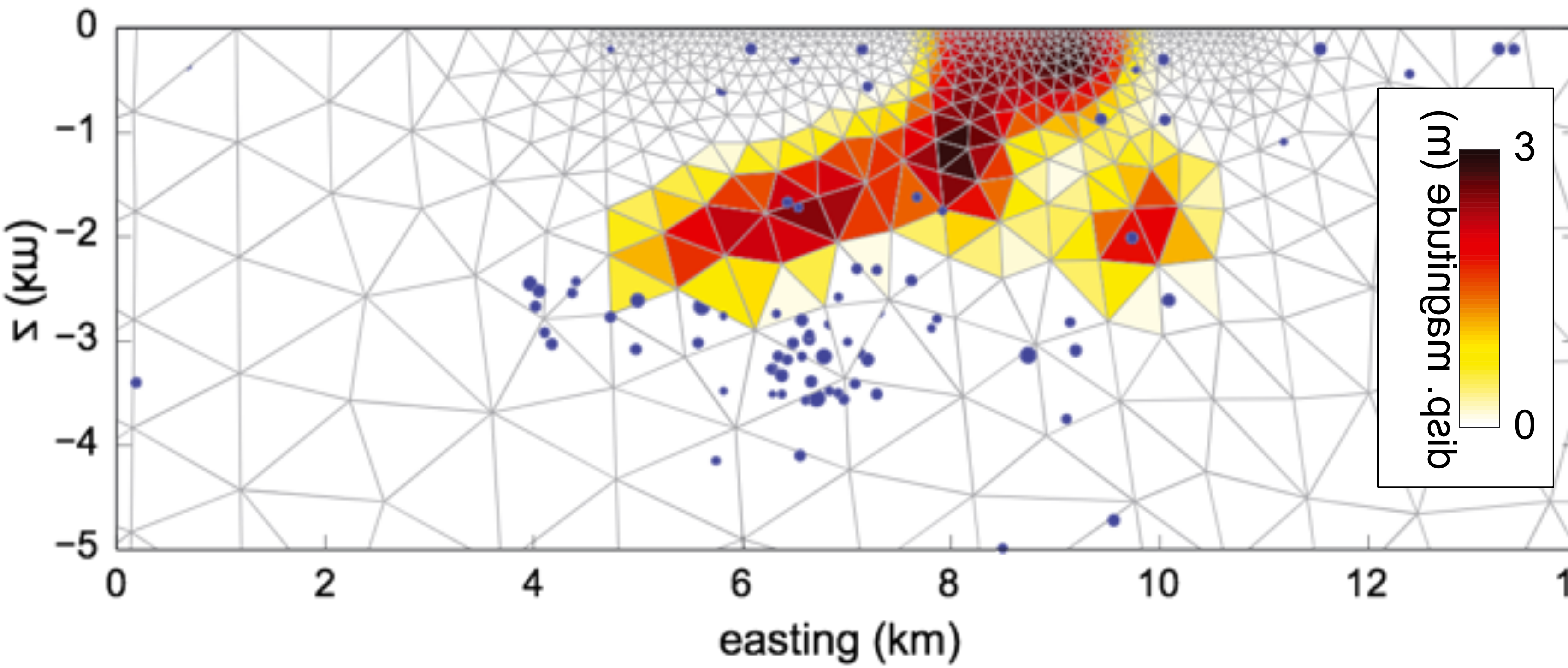
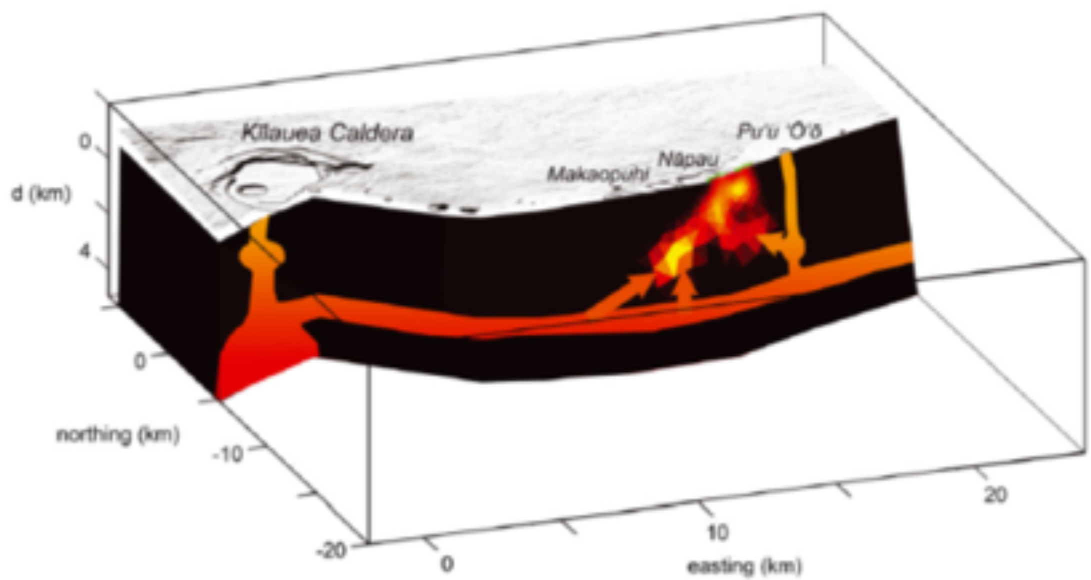



USGS

*Lundgren et al.*, 2013

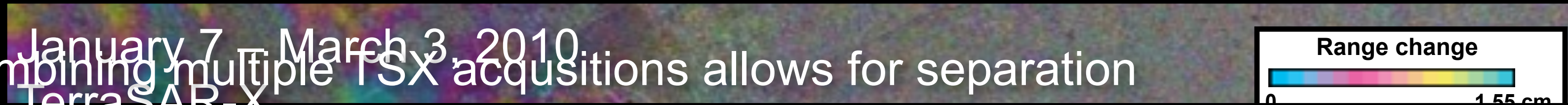


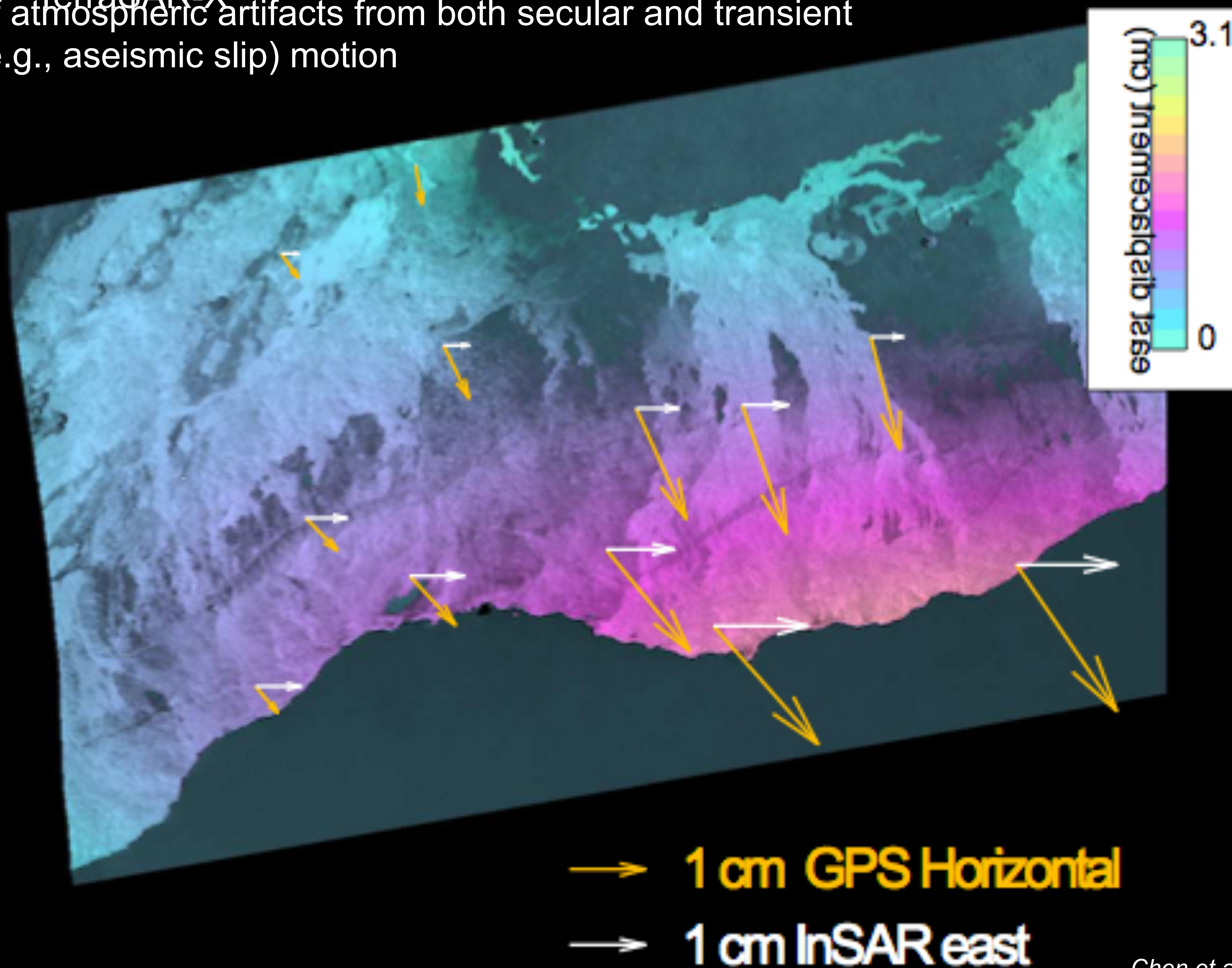




## Detailed modeling of dike emplacement

*Lundgren et al.*, 2013

Combining multiple TSX acqusitions allows for separation of atmospheric artifacts from both secular and transient (e.g., aseismic slip) motion

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*Chen et al.*, 2014

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# Issues

- Accountability
- Coordination between science teams
- RSAT-1 / ALOS-1 accessibility issues
- Timeliness of data delivery
- Archive for non-SAR datasets
- New user access to SAR datasets
- Supporting information (e.g., DEMs)
- Website (for data access and sharing results)

# Thanks to…

**<u>Contributing agencies</u>**

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**USGS (United States)**

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