Monitoring the deformation of the Earth's crust in Northeastern Bulgaria based on SAR data

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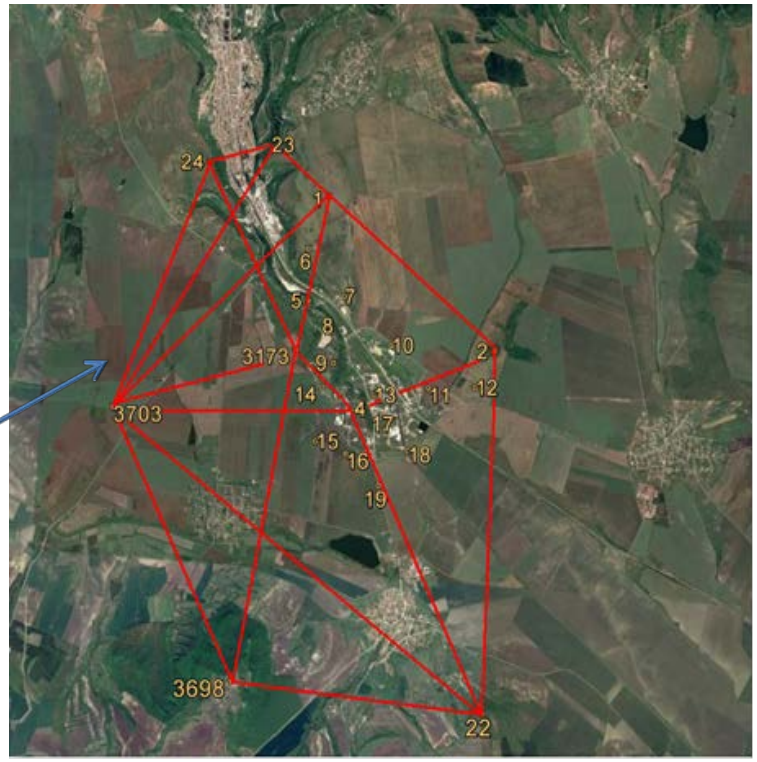
Ground deformations in industrial area

Region

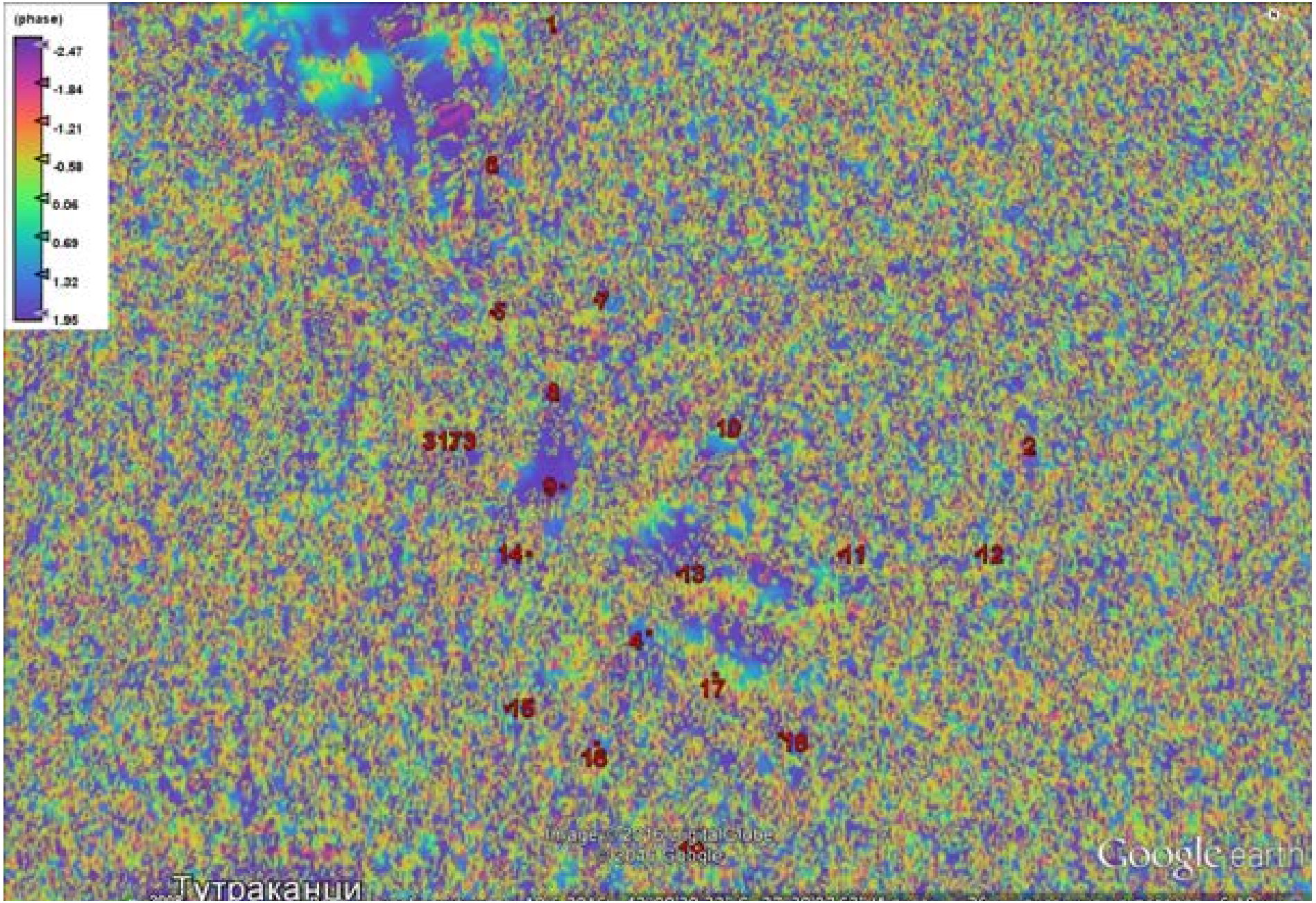
Located in northeast Bulgaria Mirovo salt deposit site and acts as *buffer zone* in the realization of the tectonic tensions of the conflicting movements of several tectonic plates.



Provadia geodynamic network overlayed in GE

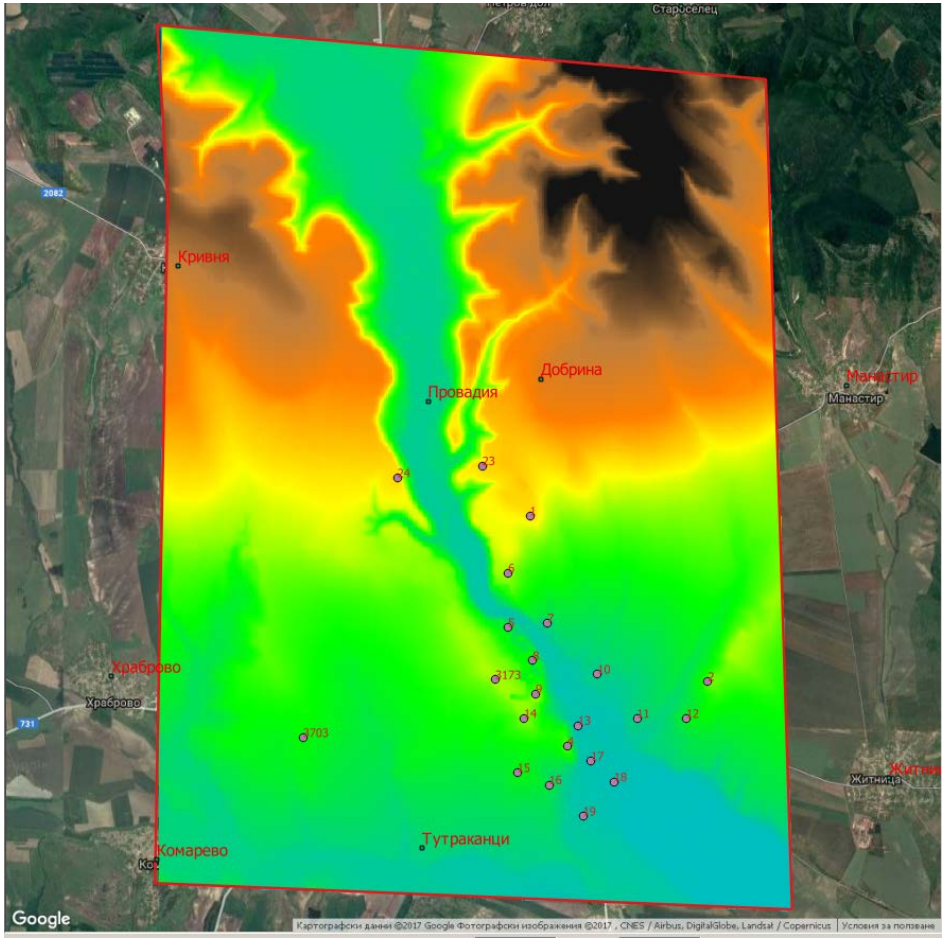
Seismic and geodetic networks have been built since until 2030 some 182 million tons of leached salt shall be produced.

Results from InSAR – pair Nov 2015/Jun 2016



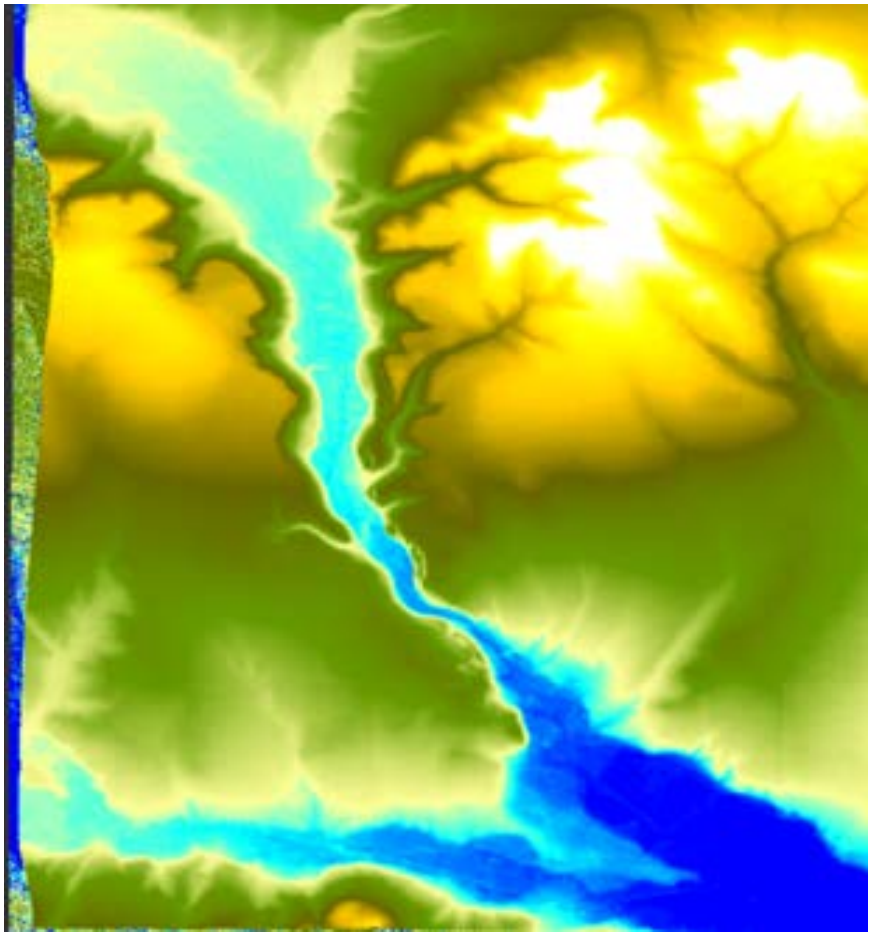
DEM produced from pair Jan 2015 – Feb 2017

Local DEM used in IF formation

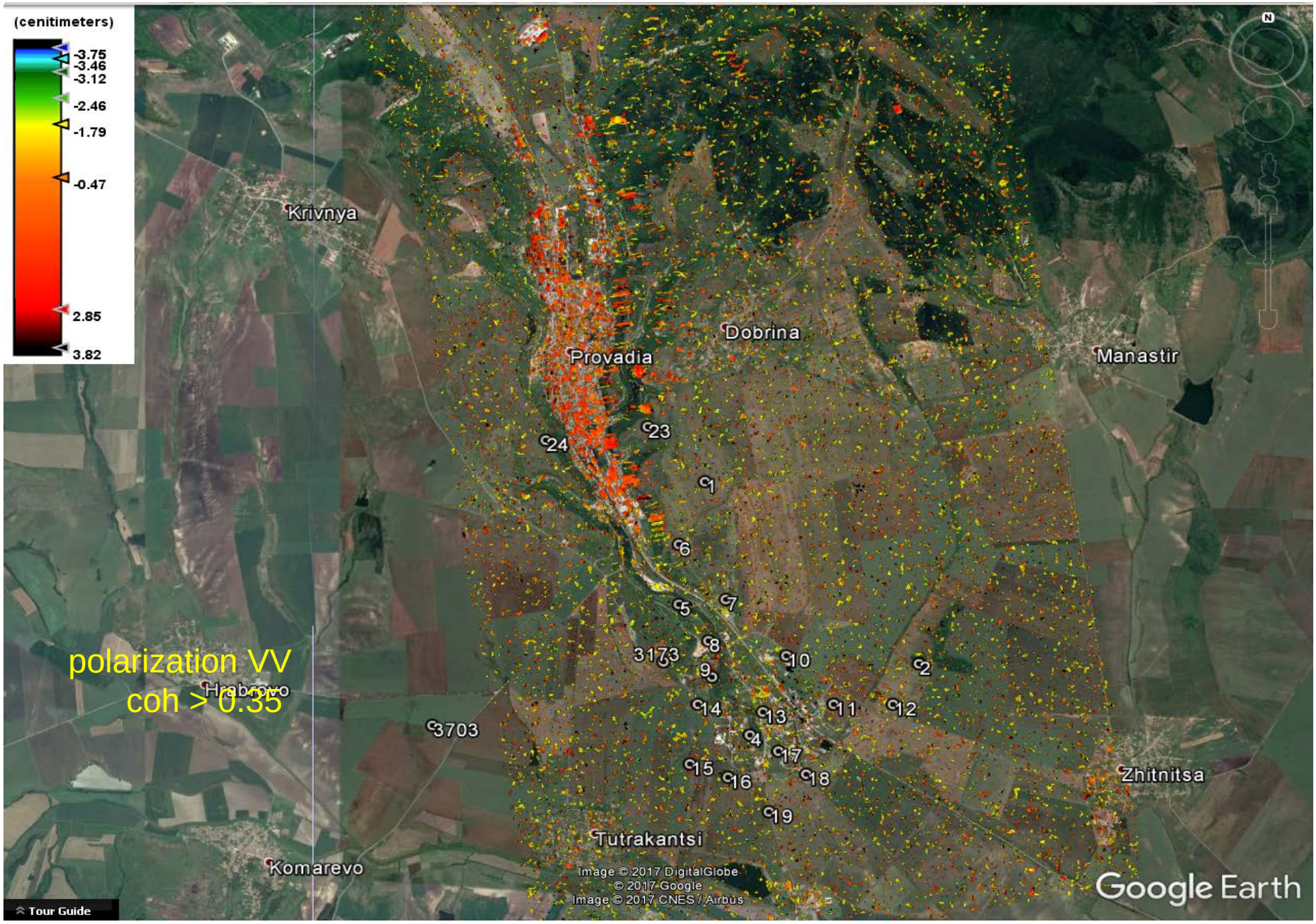


12 tiles of the local DEM were kindly provided by Geocad'93 Ltd. for this research.

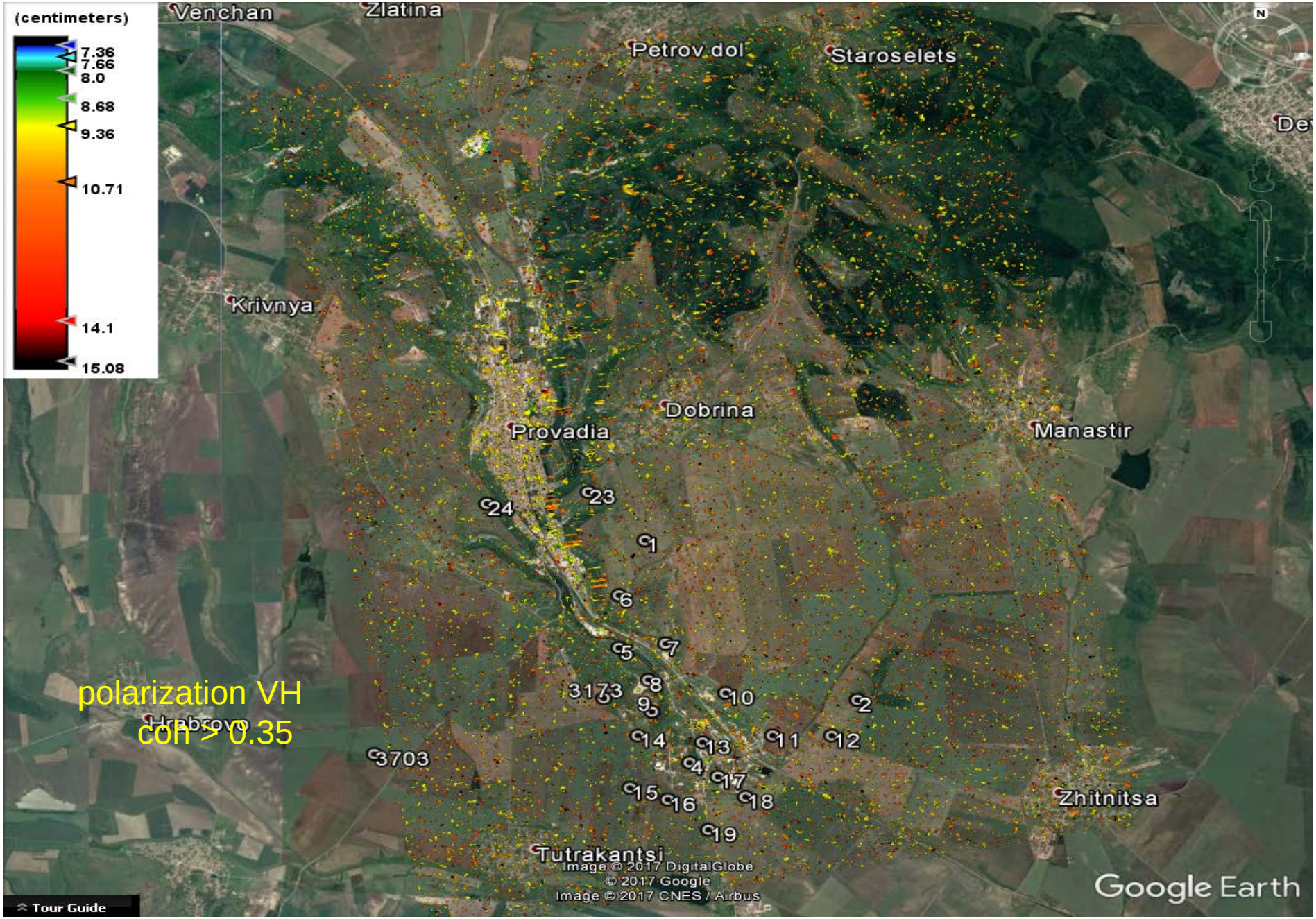
DEM produced as side product after IF formation



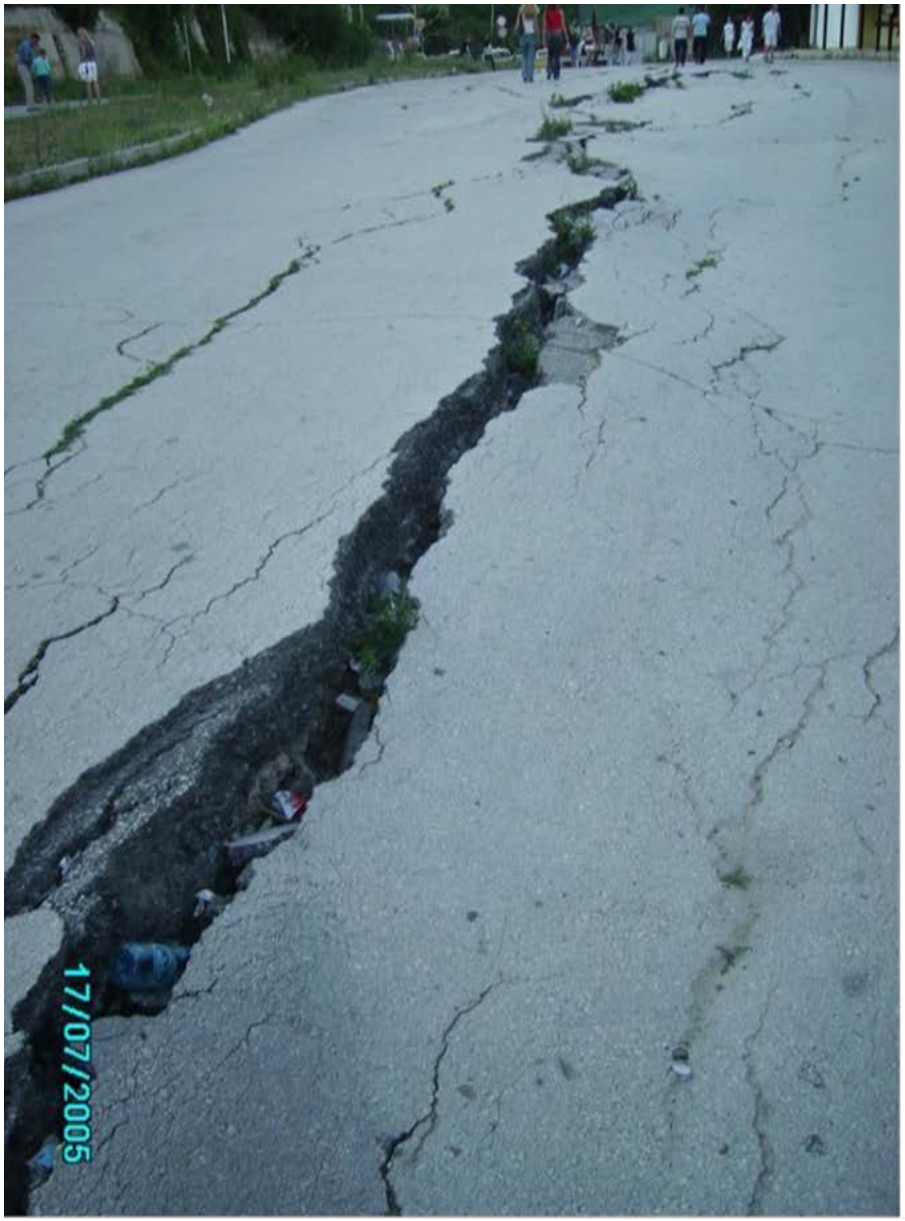
Results


(cenitimeters)
-3.75
-3.46
-3.12
-2.46
-1.79
-0.47
2.85
3.82
Krivnya
Dobrina
Provadia
Manastir
24
23
1
6
5
7
8
3173
9
10
2
14
13
11
12
3703
4
17
15
16
18
19
Zhitnitsa
Tutrakantsi
Komarevo
polarization VV
coh > 0.35
Image © 2017 DigitalGlobe
© 2017 Google
Image © 2017 CNES / Airbus
Google Earth
Tour Guide

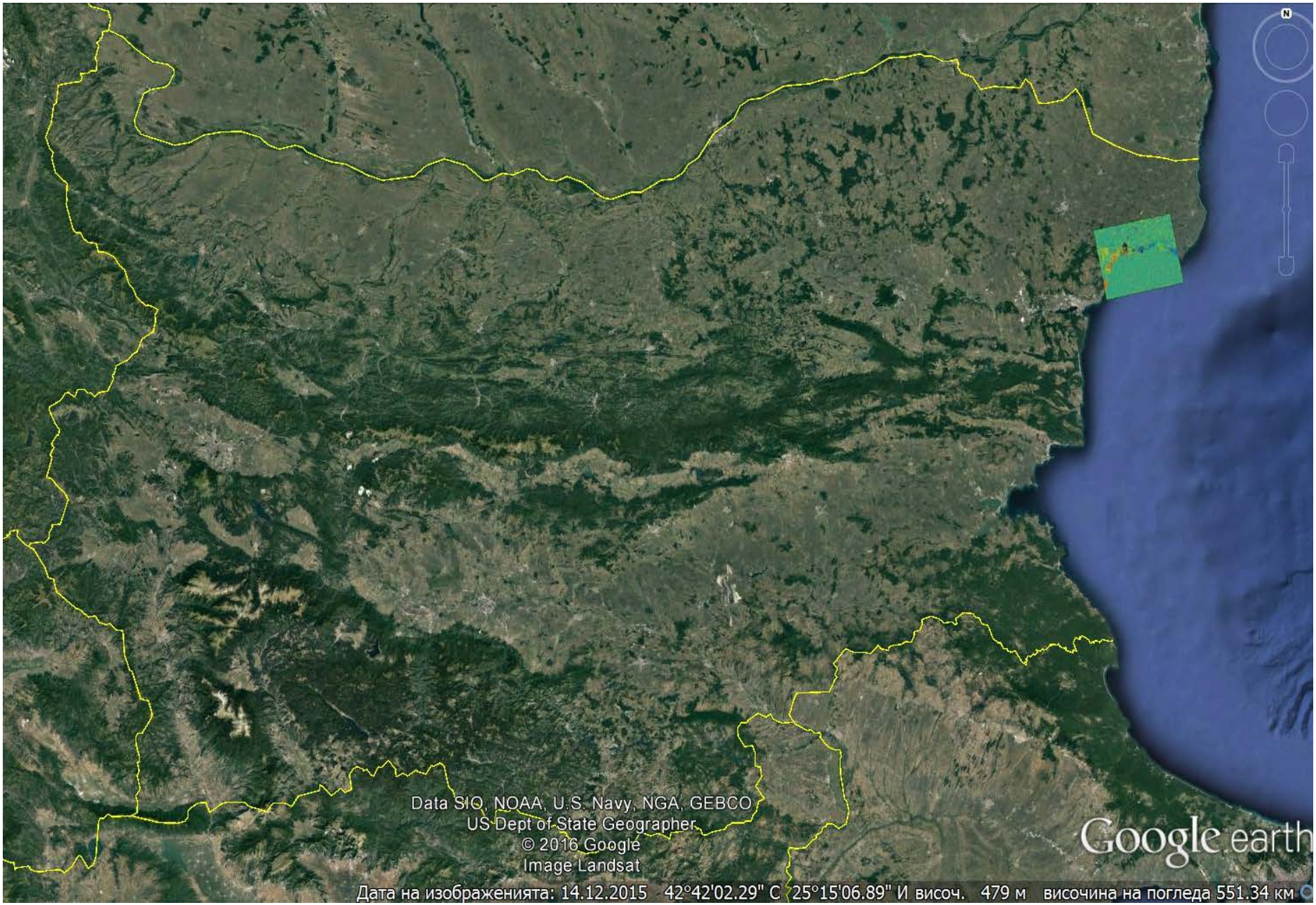
Results – cont'd



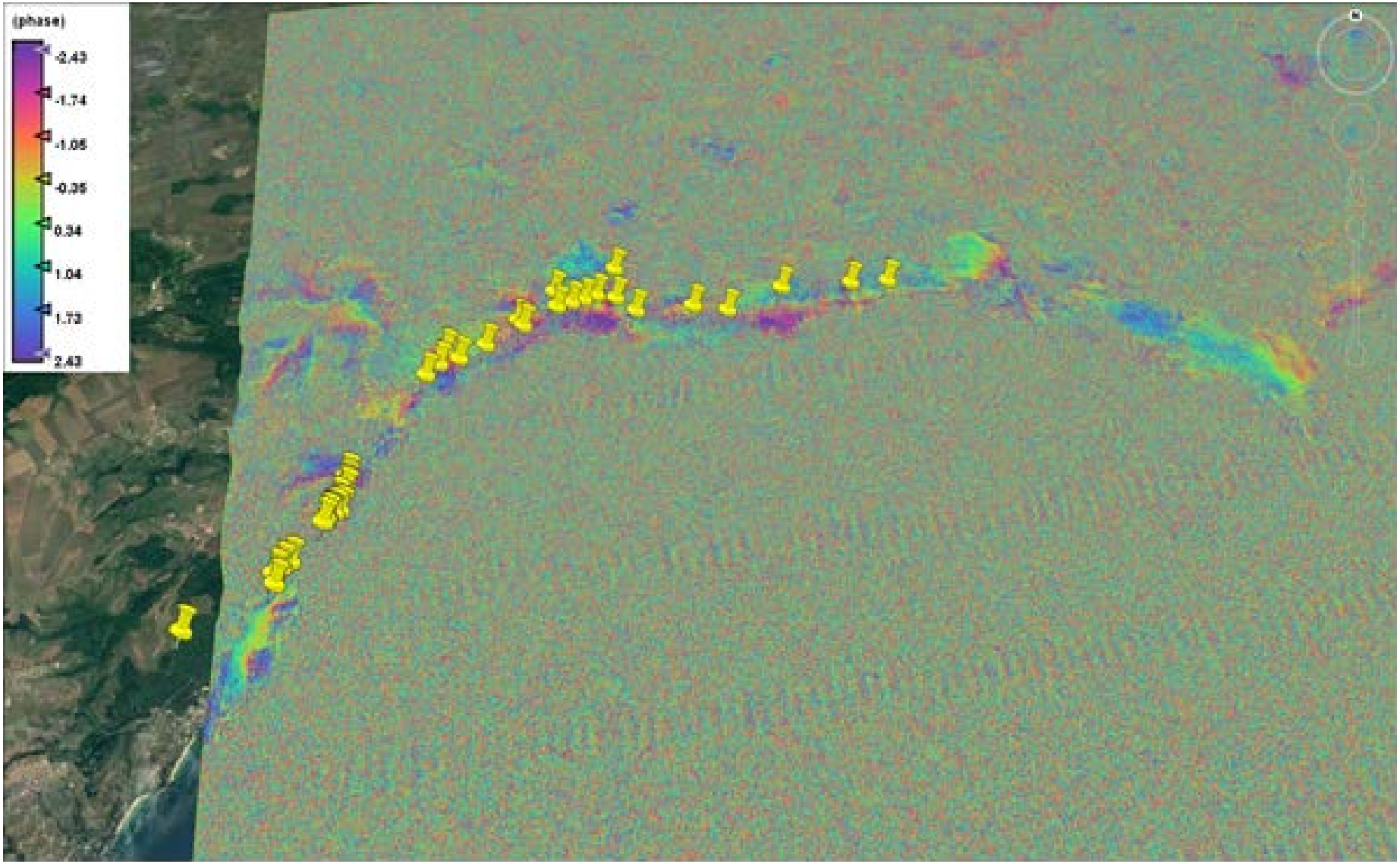
Landslides



Region


Data SIO, NOAA, U.S. Navy, NGA, GEBCO
US Dept of State Geographer
© 2016 Google
Image Landsat
Дата на изображенията: 14.12.2015 42°42'02.29" С 25°15'06.89" И височ. 479 м височина на погледа 551.34 км
Google earth

The interferogram produced via DInSAR processing for the area of Kranevo village – pair Nov 2015/Jan 2016



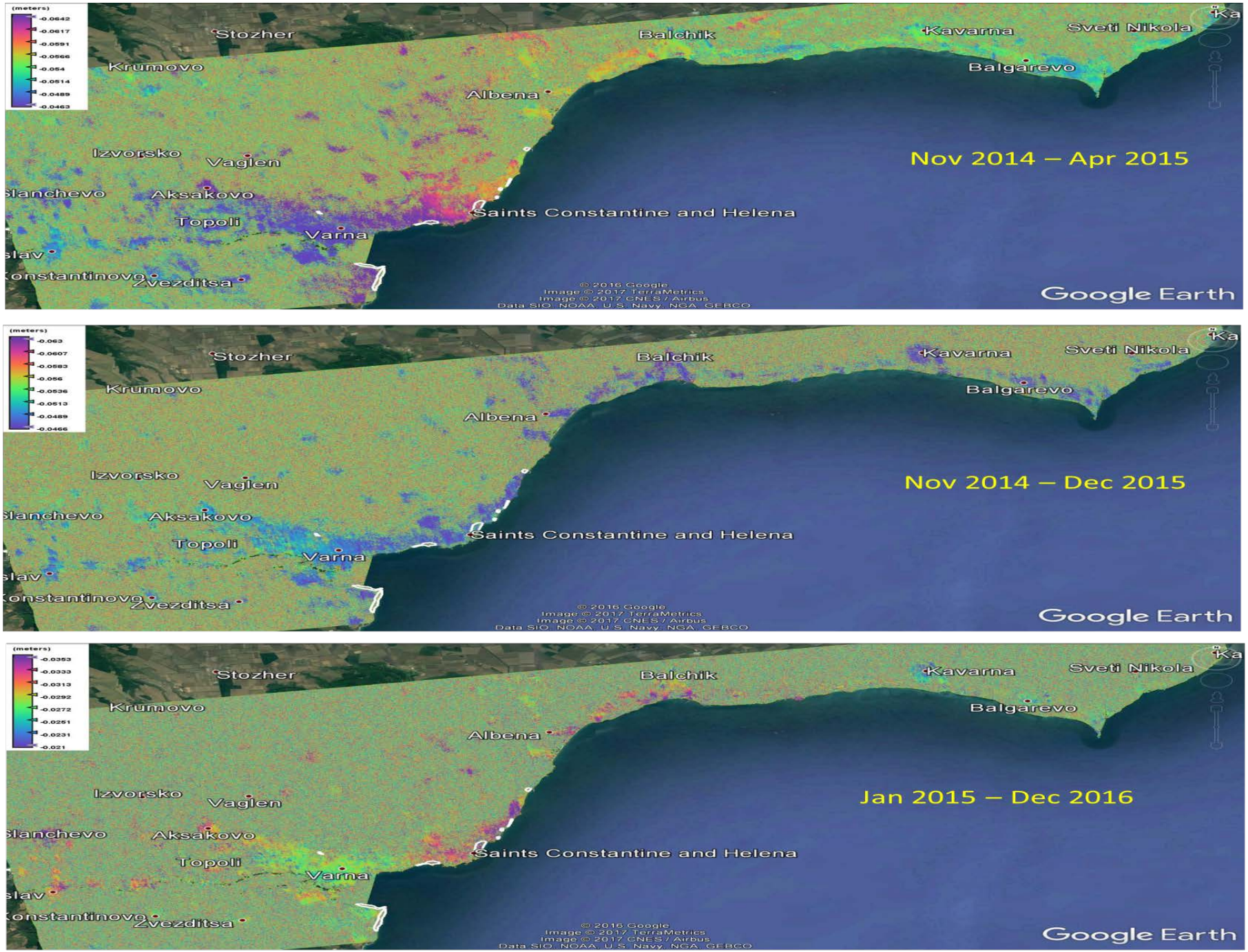
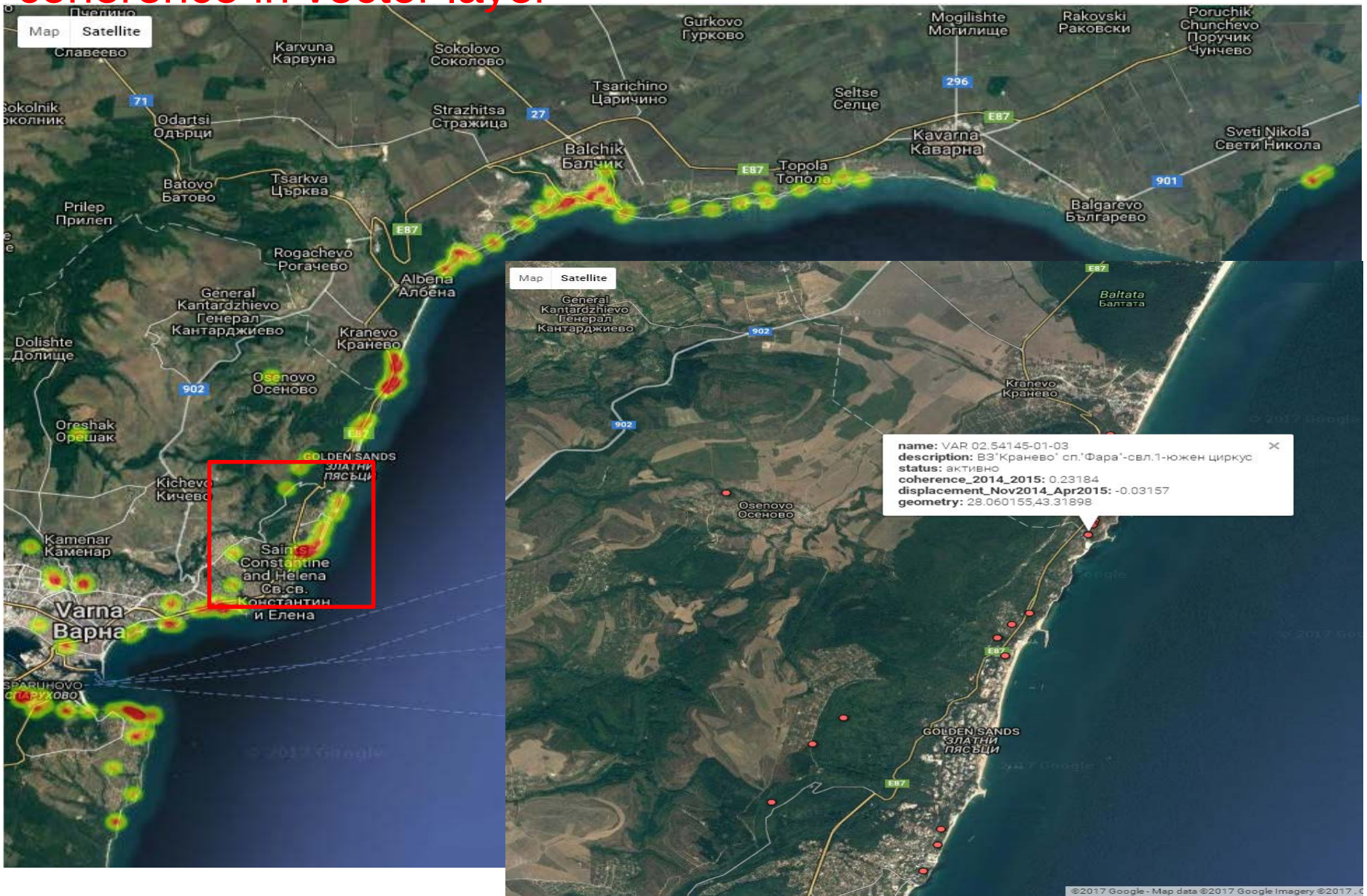


Figure 3 Resulting raster maps for displacements after phase unwrapping and geocoding

Raster heat map based on displacement values at the points of landslides (left) and excerpt with extracted displacement and coherence in vector layer



Thank you for your attention!

Questions?