3.2.1. **GEOPHYSICAL DATA PROCESSING**

The next step in the geophysical investigations was data processing. In order to easy the geological interpretation, the geophysical data were processed in an advanced manner for providing more intuitive images, helping the interpreter to link them to their geological backghround. Among the approaches employed it is worth mentioning *upward/downward continuations,vertical gradient,horizontal gradient. reduction to the pole of geomagnetuic data,pseudo-gravity. apparent susceptibility*.The following figures provide some examples.

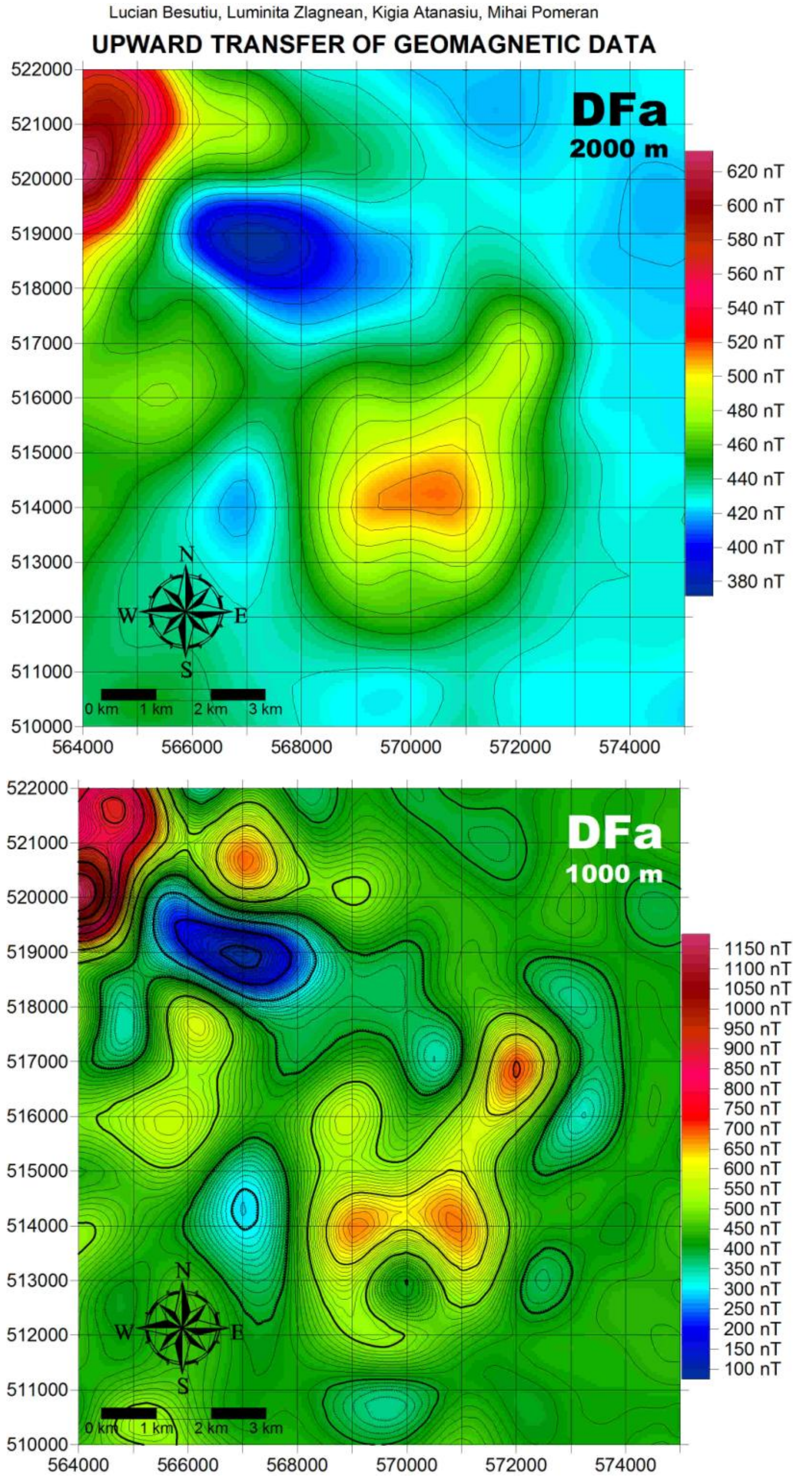

Fig. 15 Upward transfer of geomagnetic anomaly from 1000 m to 2000 m above the sea level within Ciomadu volcano area

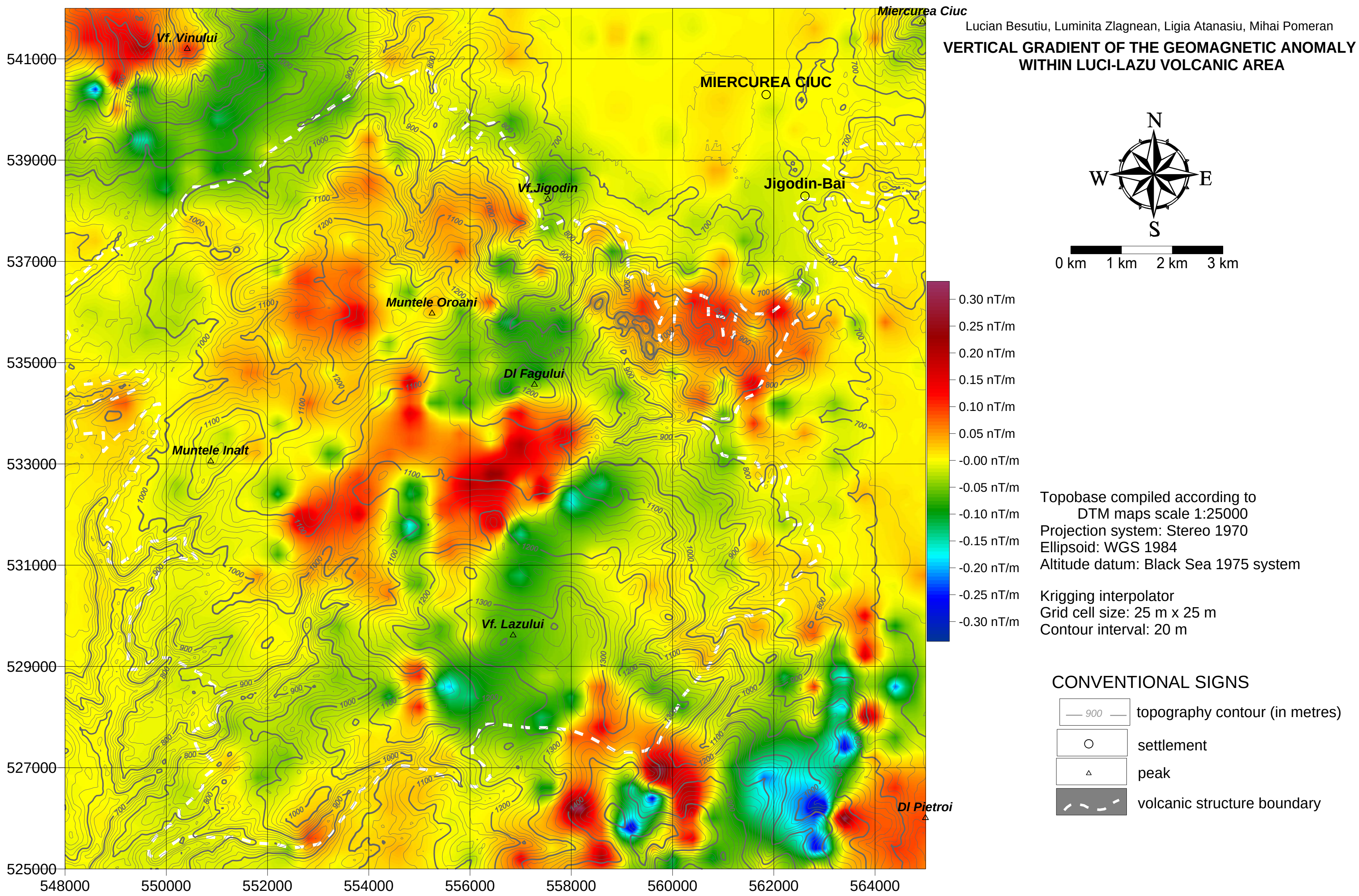

Fig. 16 Vertical gradient of the geomagnetic anomaly versus topography within Luci-Lazu volcanism area

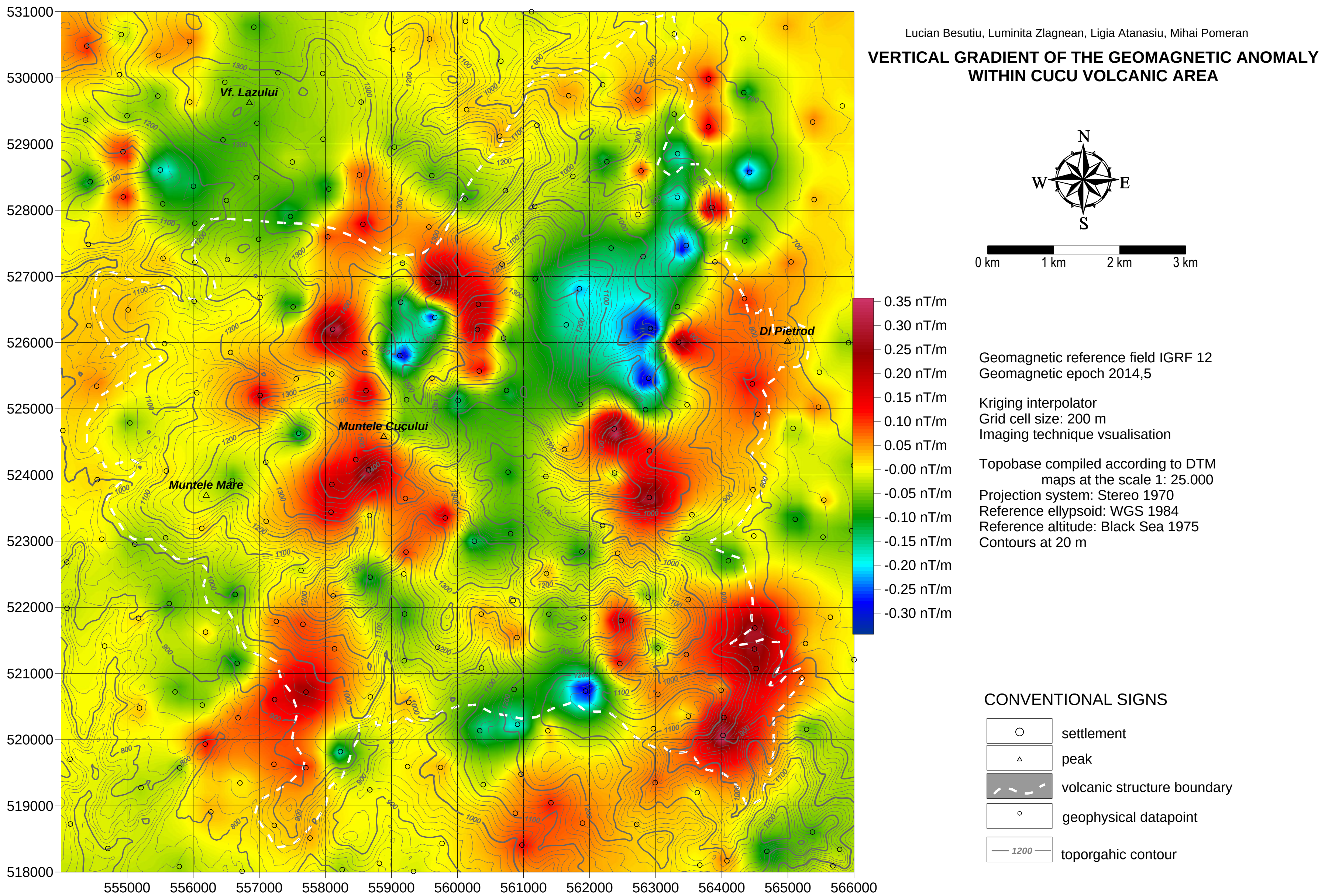

Fig. 17 Vertical gradient of the geomagnetic anomaly versus topography within Cucu volcano area

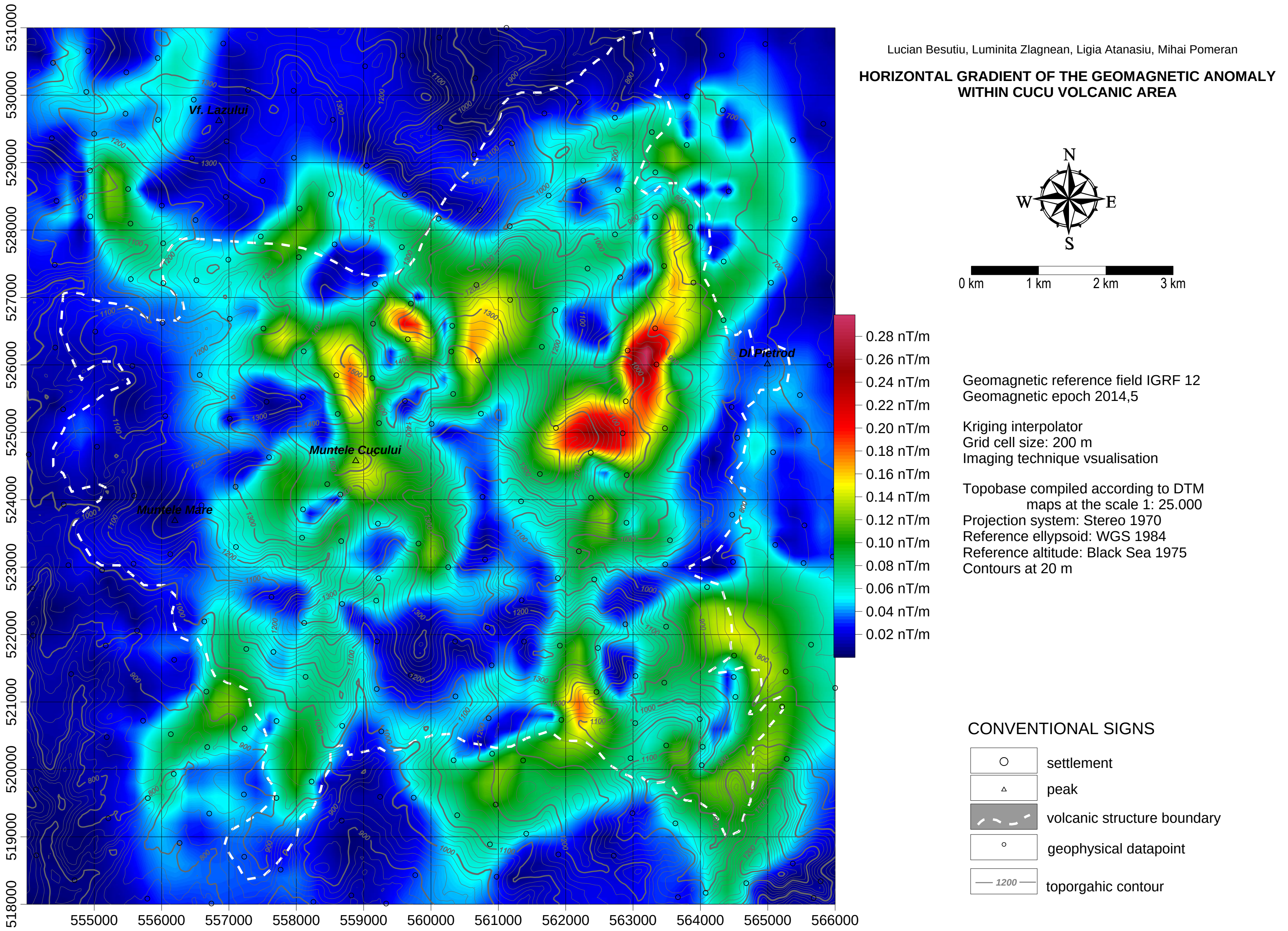

Fig. 18 Horizontal gradient of the geomagnetic anomaly versus topography within Cucu volcano area

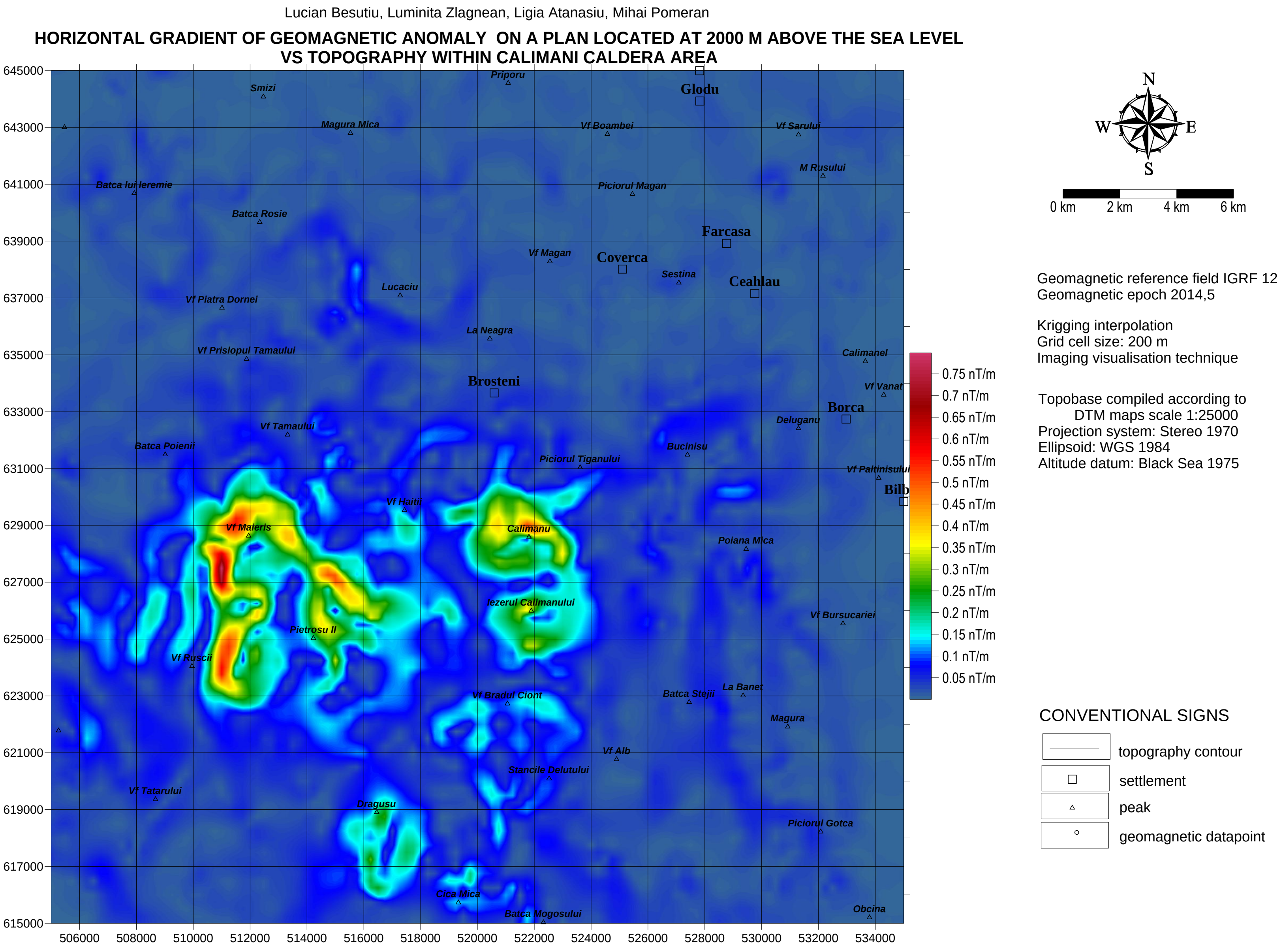

Fig. 19 Horizontal gradient of the geomagnetic anomaly within Călimani caldera area

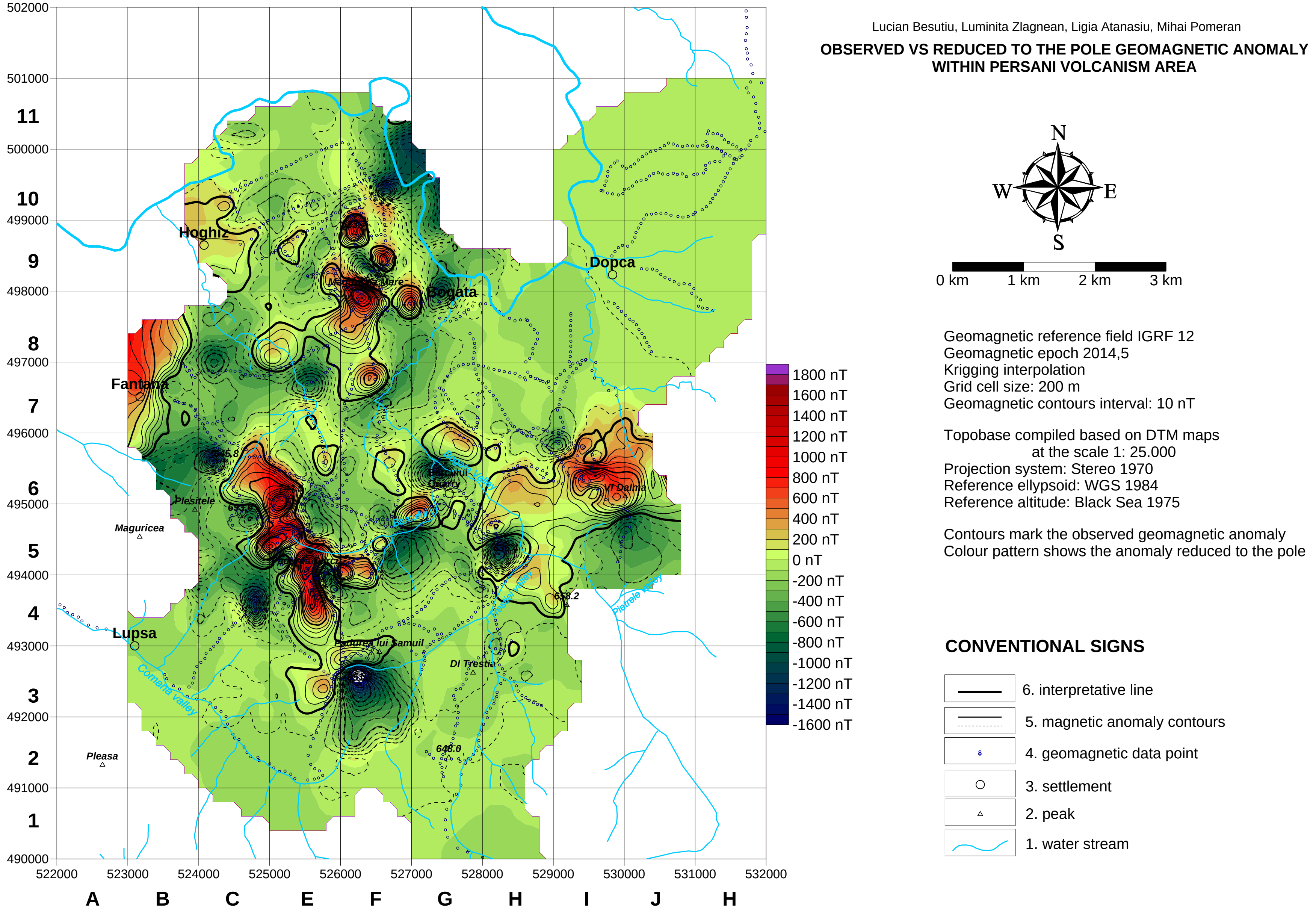

Fig. 20 Observed (contours) versus reduced to the pole geomagnetic anomaly (colours) within Perşani volcanism area

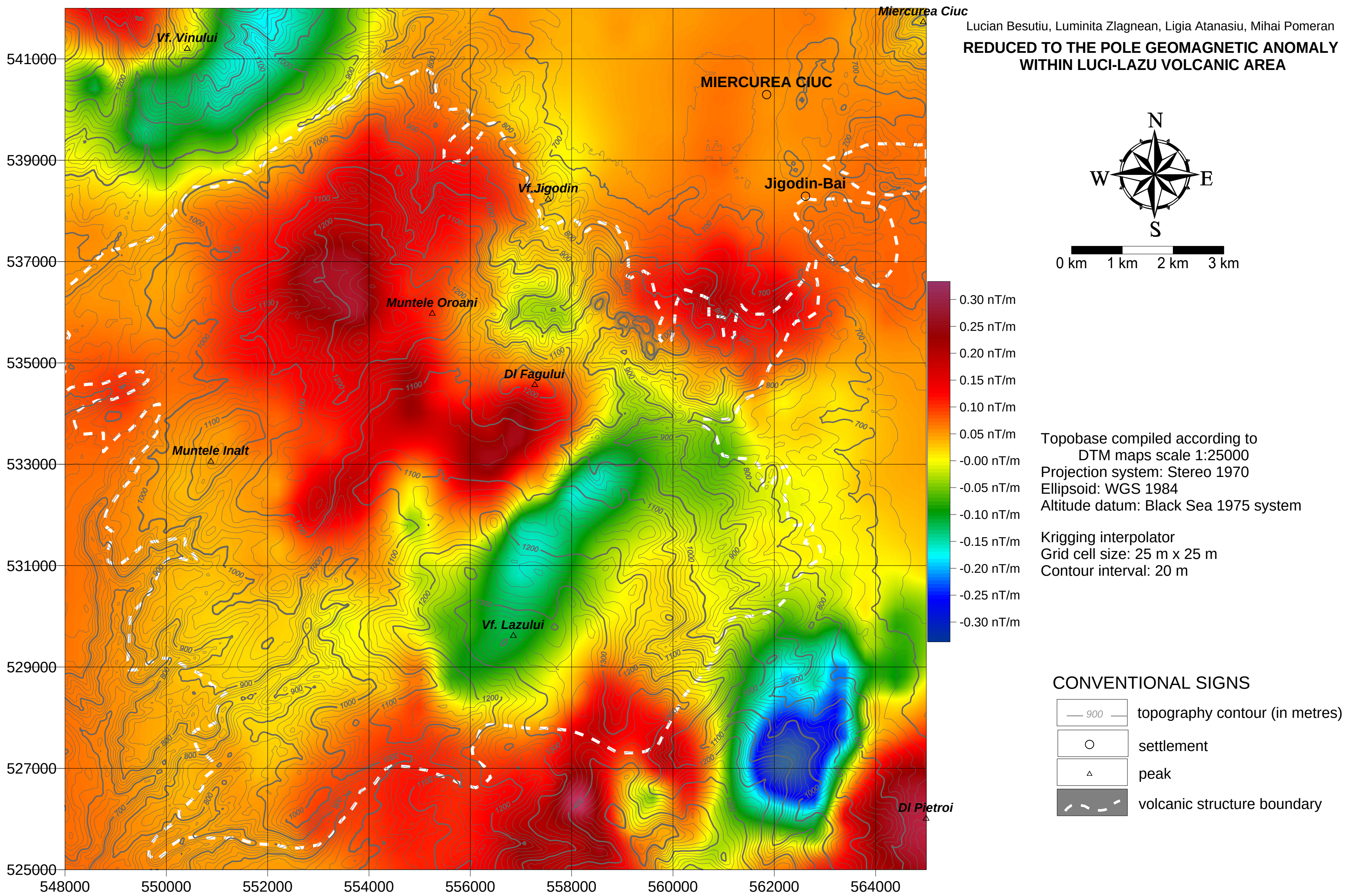

Fig. 21 Reduced to the pole geomagnetic anomaly versus topography within Luci-Lazu volcanism area

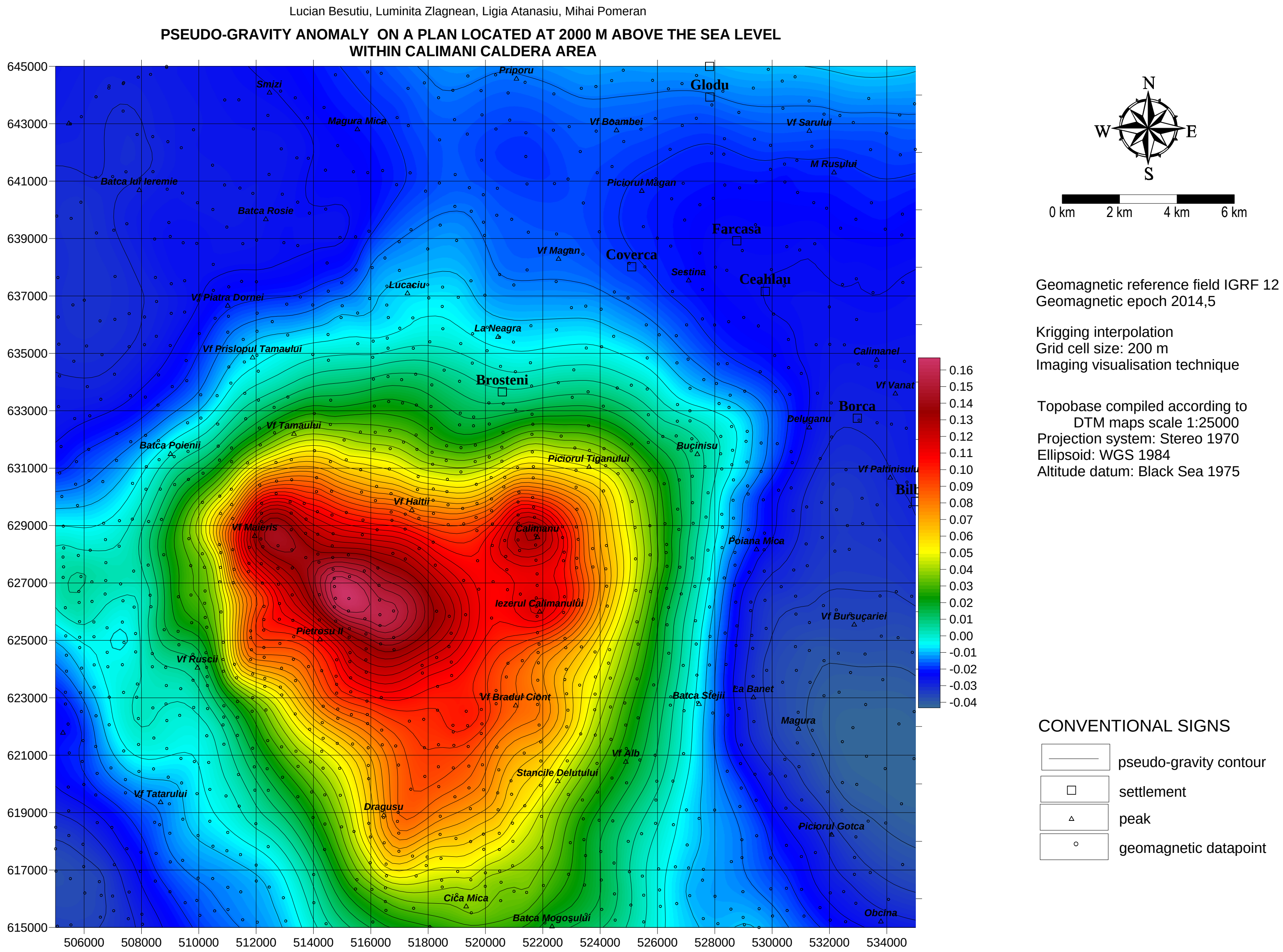

Fig. 22 Anomaly of the pseudo-gravity within Călimani caldera area

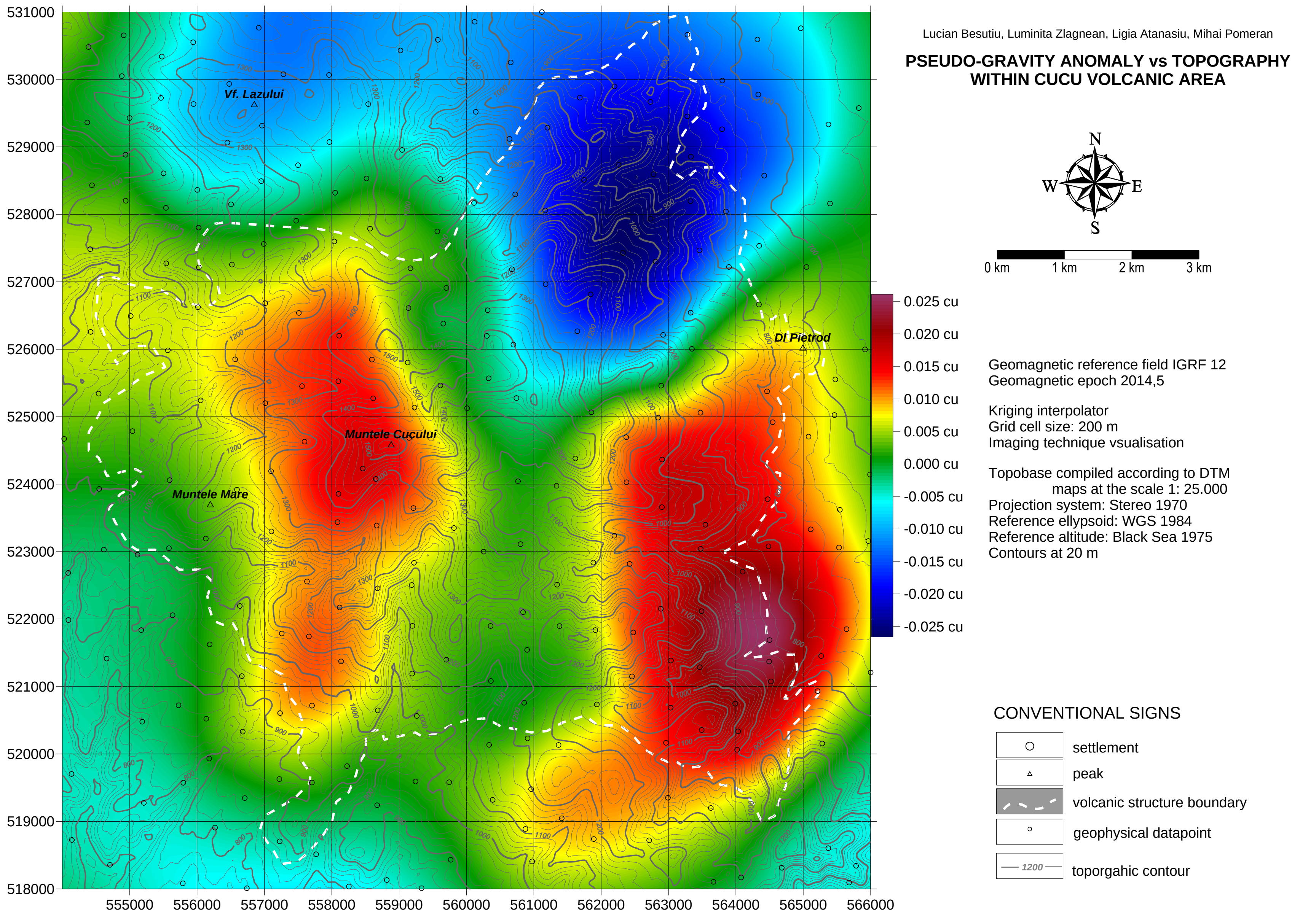

Fig. 23 Anomaly of the pseudo-gravity versus topography within Cucu volcano area

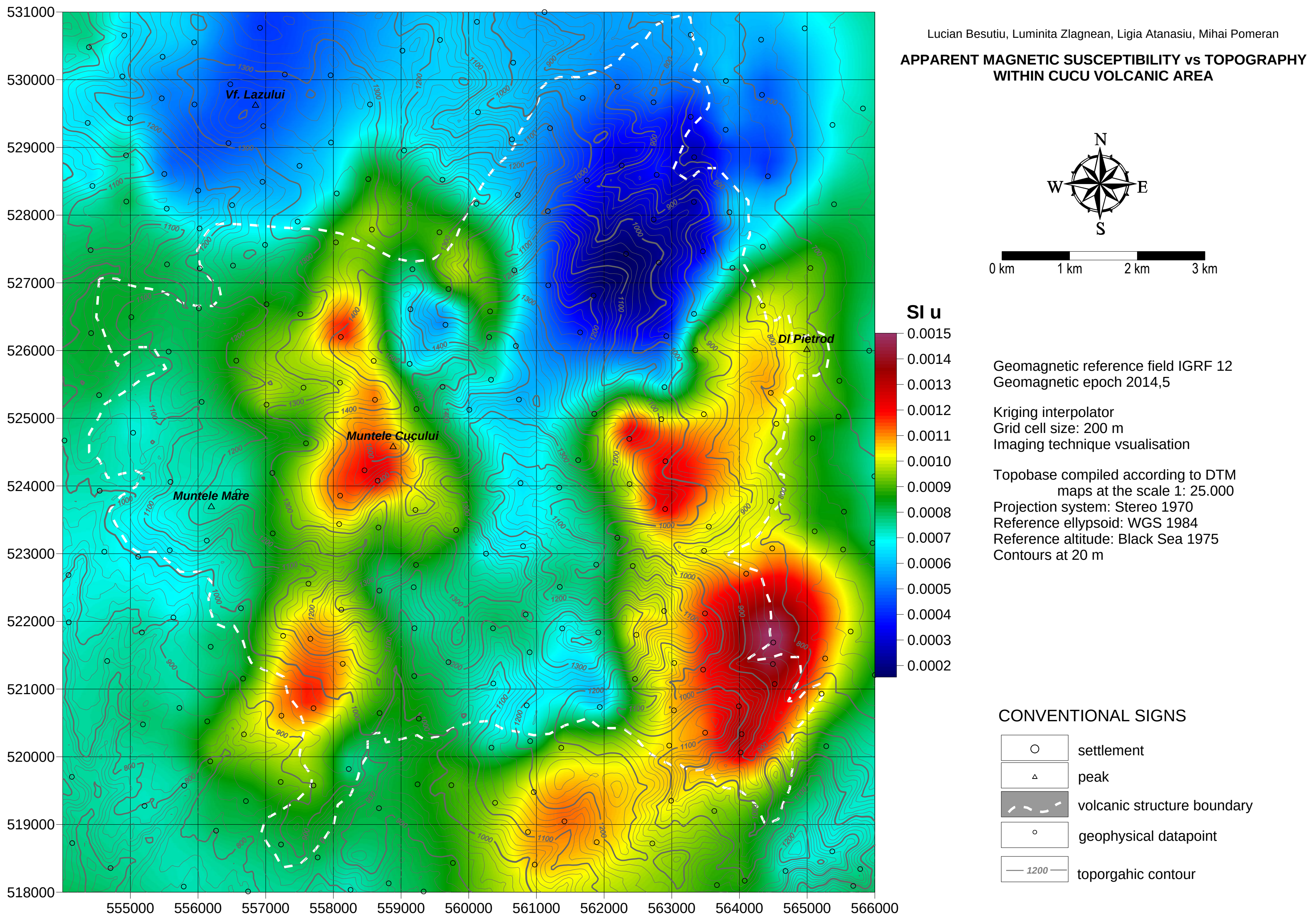

Fig. 24 Apparent susceptibility versus topography within Cucu volcano area

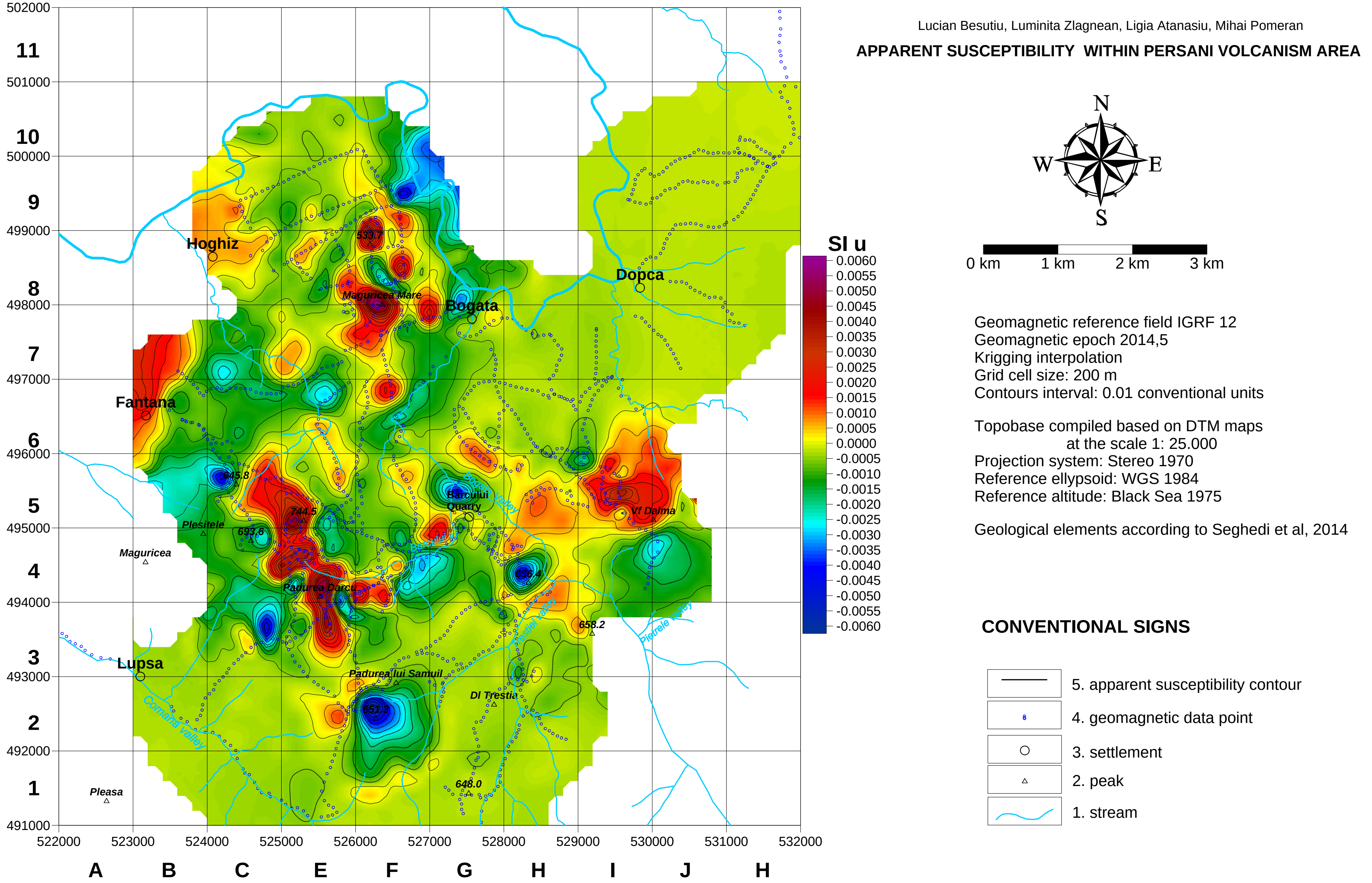

Fig. 25 Apparent susceptibility within Persani volcanism area

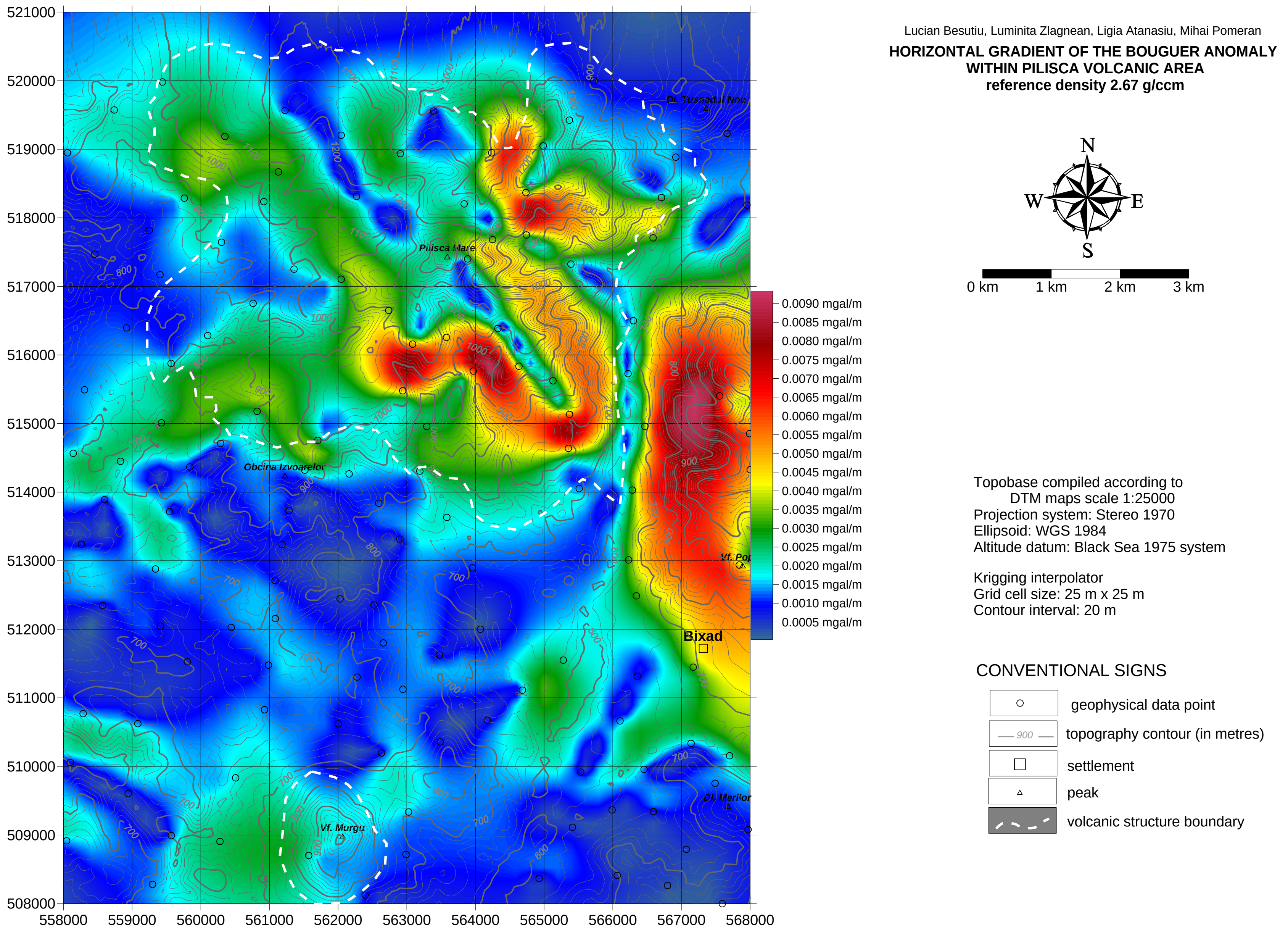

Fig. 26 Horizontal gradient of the Bouguer anomaly (reference density 2.67 g/ccm) and topography within Pilişca volcanism area

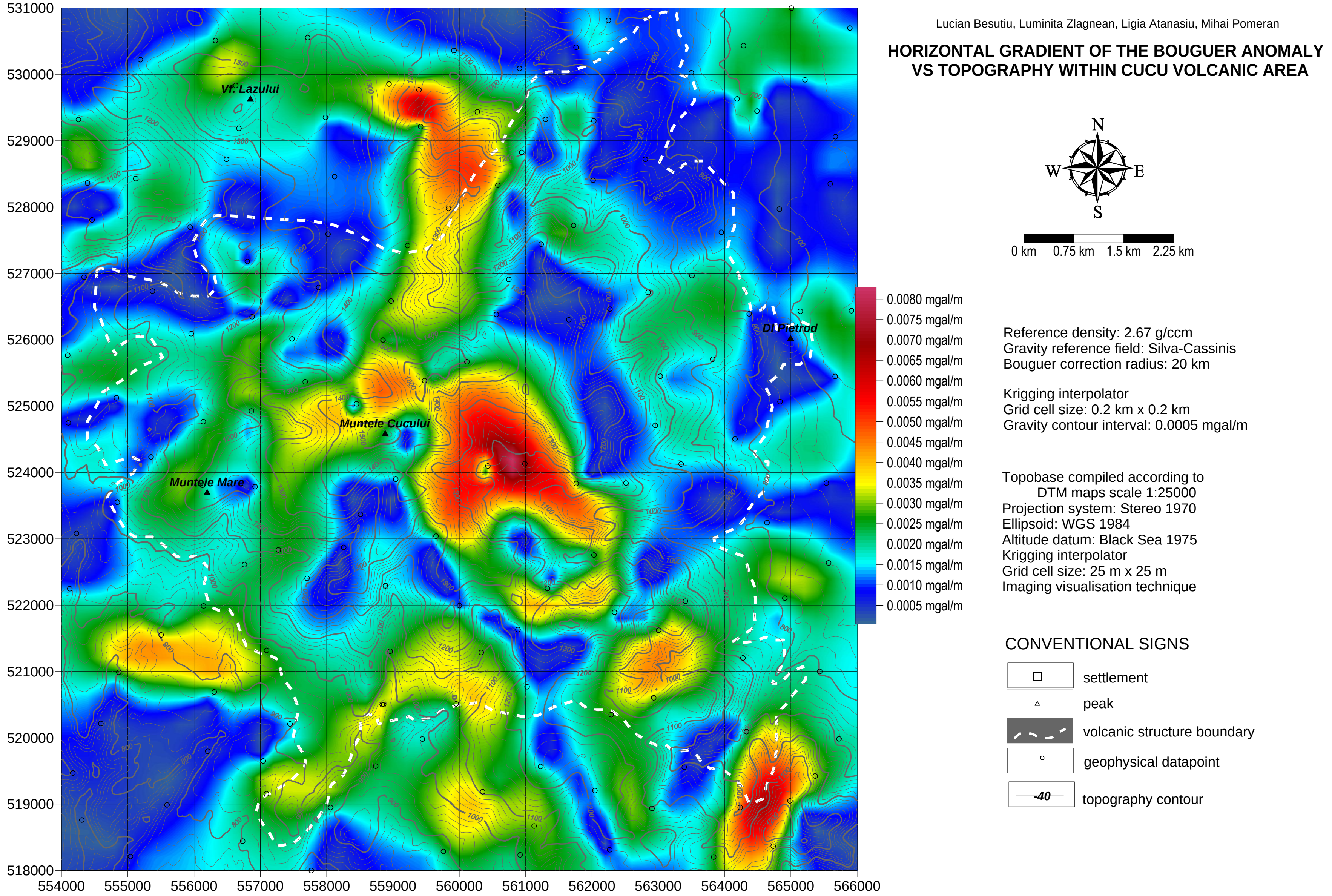

Fig. 27 Horizontal gradient of the Bouguer anomaly (reference density 2.67 g/ccm) and topography within Cucu volcanism area

GEOPHYSICAL DATA MODELLING

To help advancing knowledge on the in-depth extent of the volcanic structures within the study areas, some attempts to construct geological models based on the quantitative interpretation of the geophysical data were conducted.

Basically, 2D modelling algorithms have been used along several interpretative lines located within the Perşani and Ciomadu areas. For Ciomadu volcano, preliminary 2D models have been constructed for preparing the implementation of a 3D approach.

The GM-SYS 2D software run on OASIS platform has been used for practical inplementation.

Perşani area

Within Perşani area, 2D models have been achieved based on the interpretation of geomagnetic data. Fig. 28 shows the location of the interpretative lines.

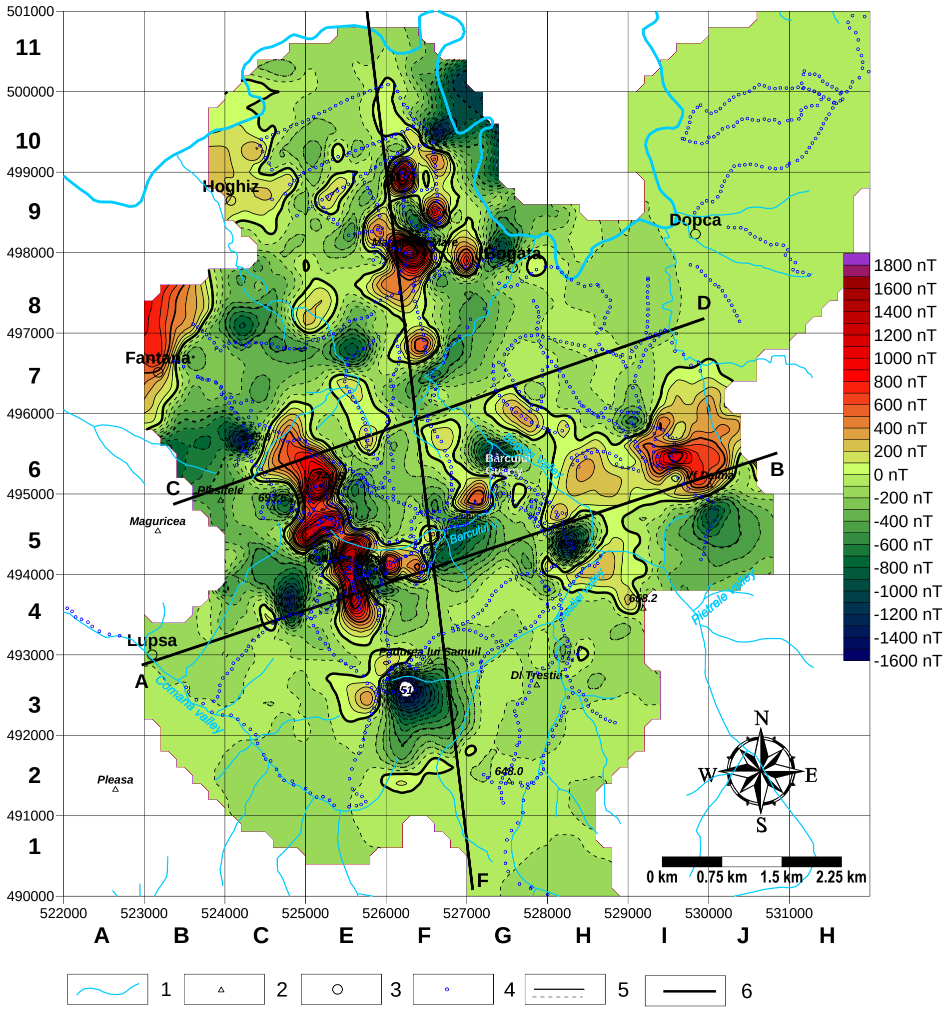

Fig. 28 The reduced-to-the-pole geomagnetic anomaly and location of interpretative lines within Persani area. 1, water stream; 2, peak; 3, settlement; 4, data point; 5, isoanomal; 6, interpretative line

Fig. 29 and 30 show the results obtained along the interpretative line CD, and EF.

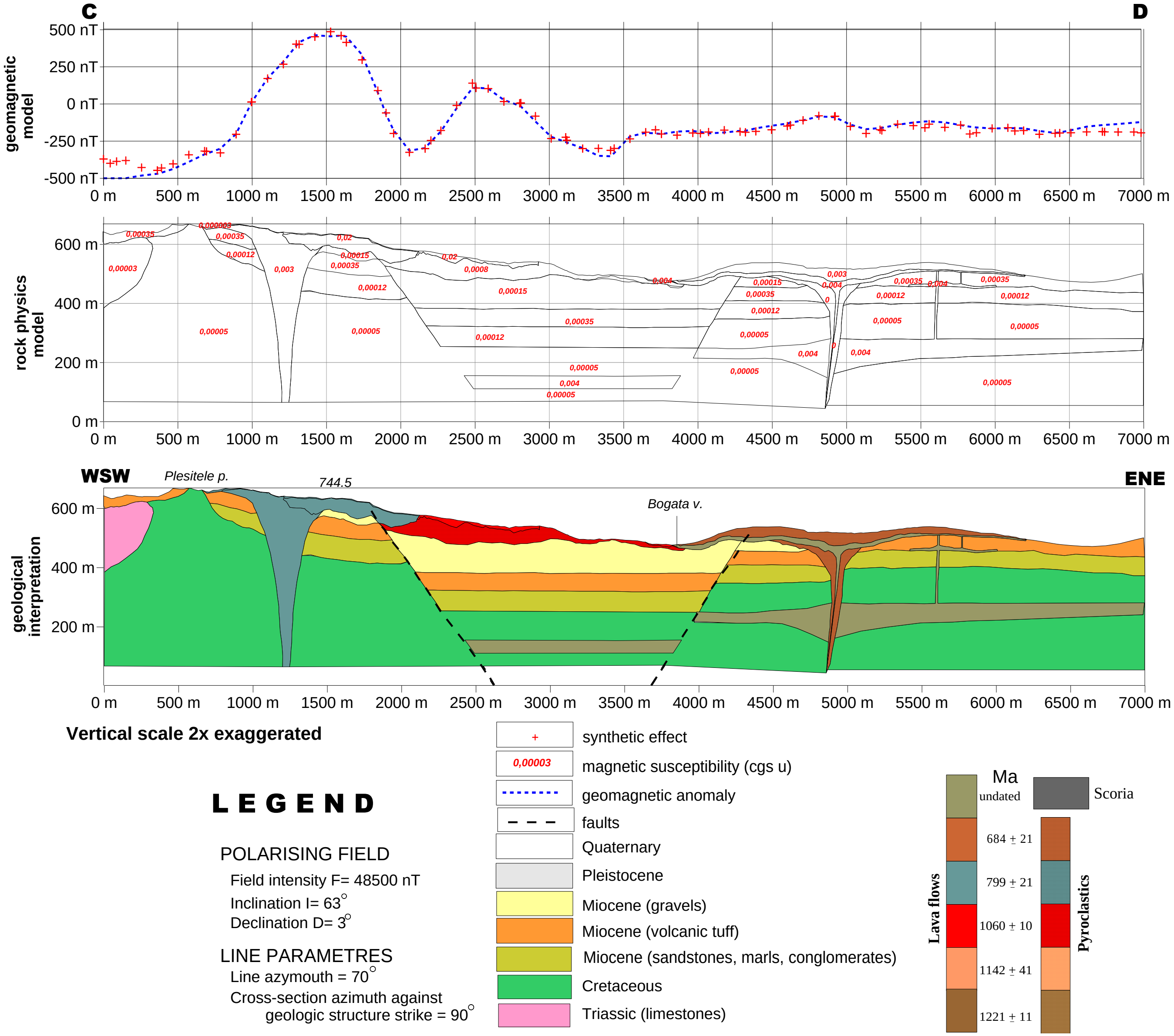

Fig. 29 2D modelling attempt within Perşani area along the CD line, based on the interpretation of geomagnetic data

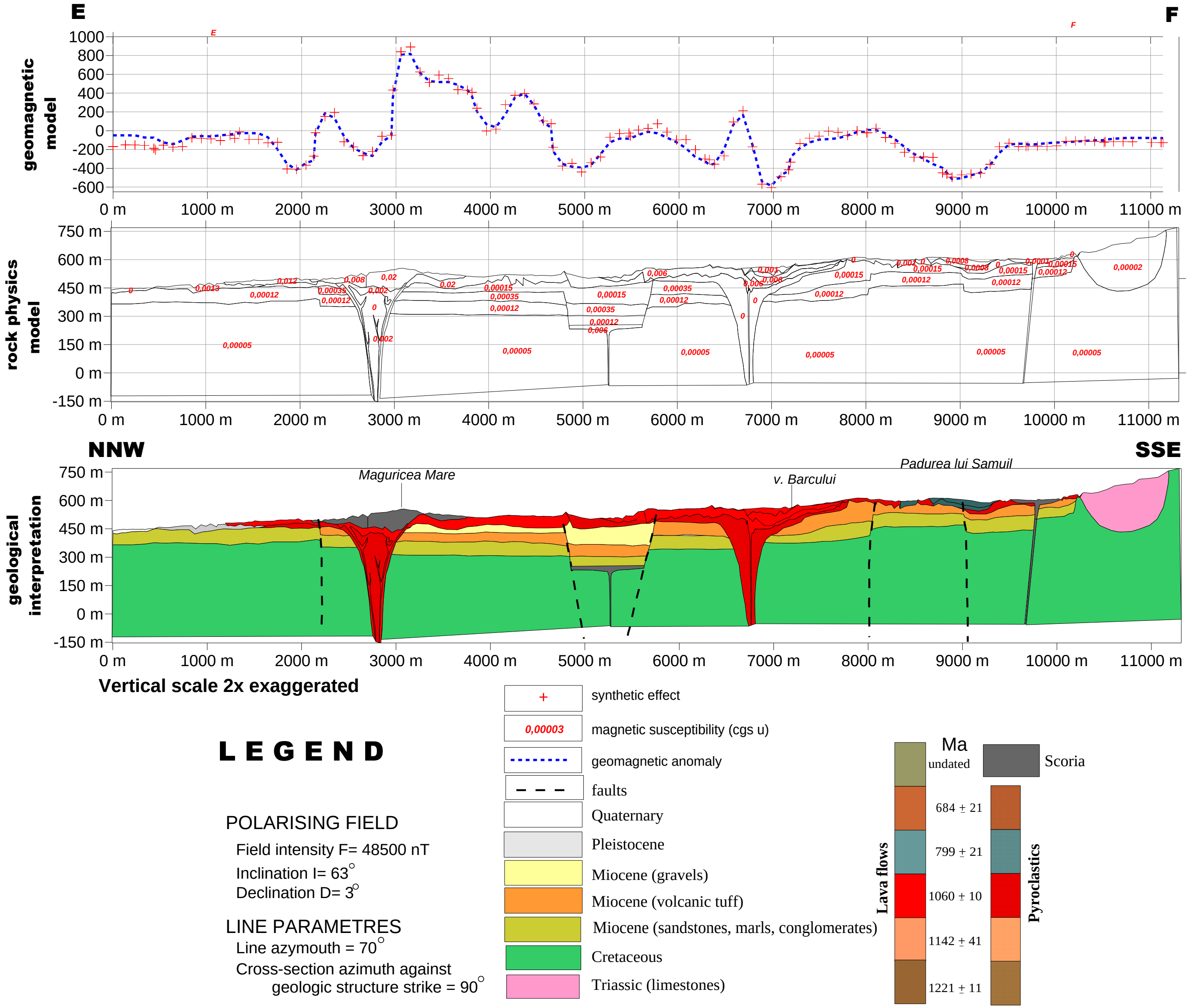

Fig. 30 2D modelling attempt within Perşani area along the EF line, based on the interpretation of geomagnetic data

Ciomadu volcano

In the attempt to construct a 3D model of the Ciomadu volcano structure, some preliminary 2D models were achieved at this stage, based on the integrated interpretation of the geomagnetic and gravity data, under the constraint of the rock physics information (Fig. 31-32).

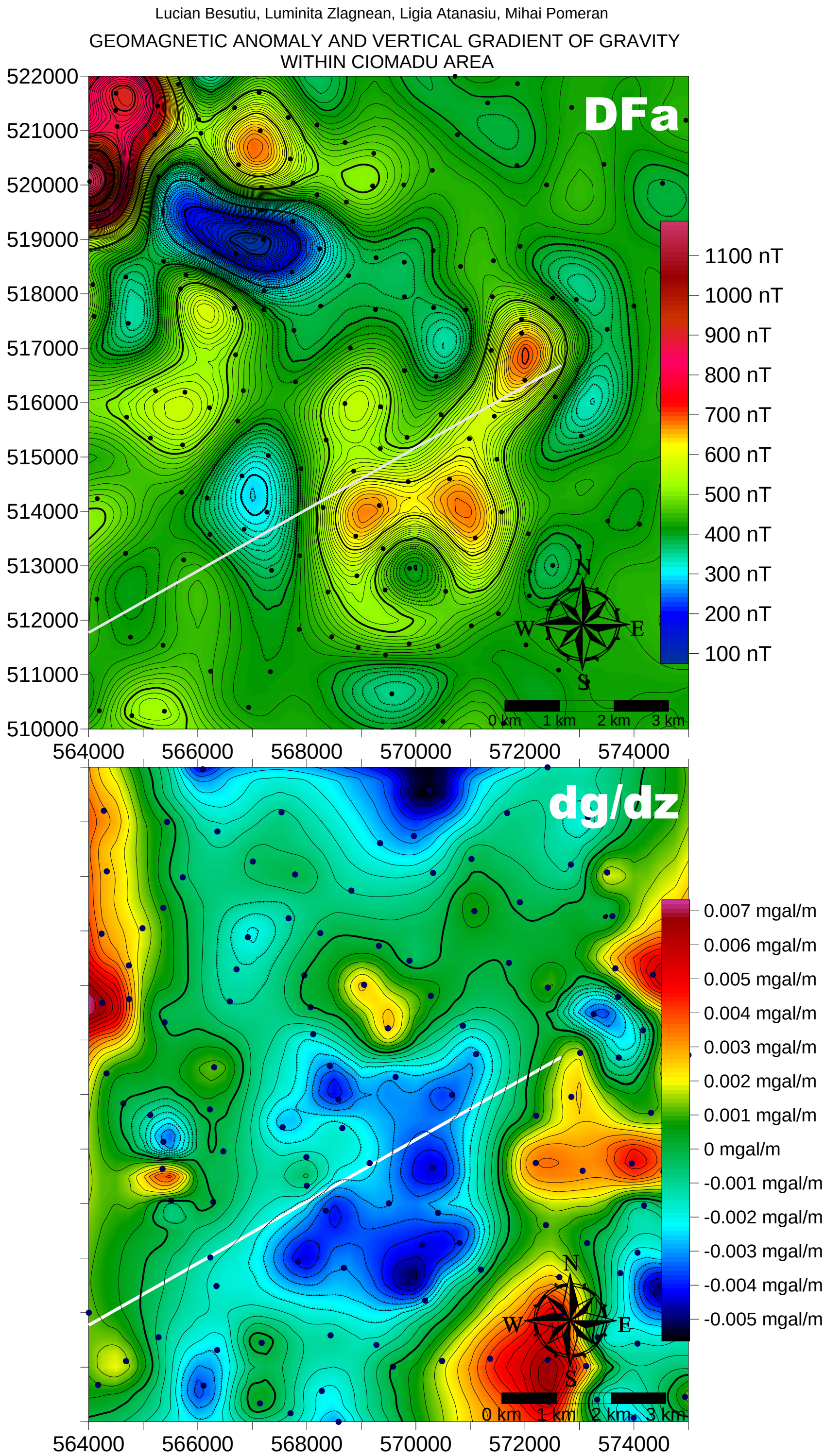

Fig. 31 Geomagnetic and gravity data within Ciomadu area and location of the interpretative line

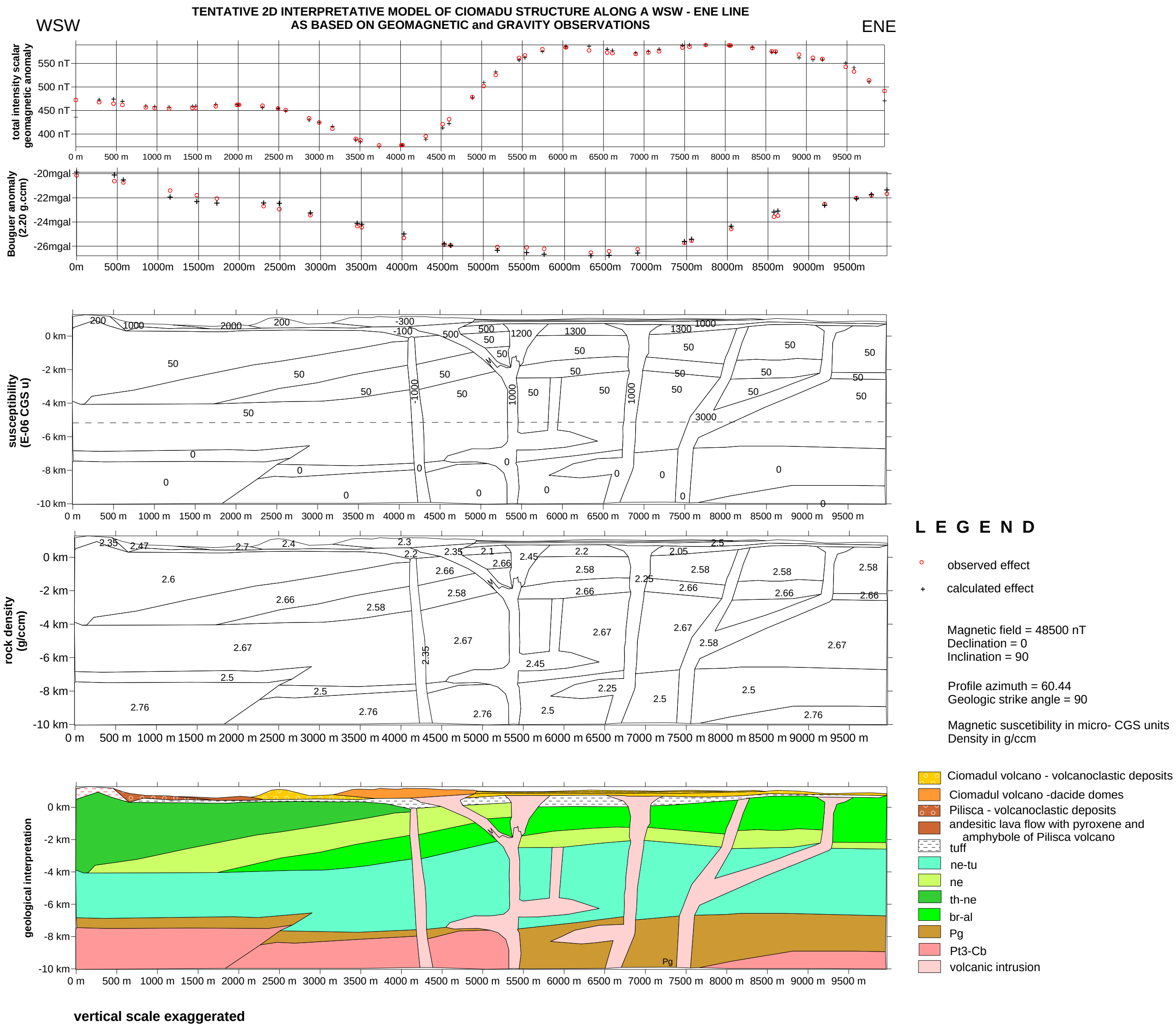

Fig. 32 Tentative 2D modelling of the geological structure of Ciomadu volcano across the StAna lake and Mohos swamp based on the integrated interpretation of geomagnetic and gravity data