



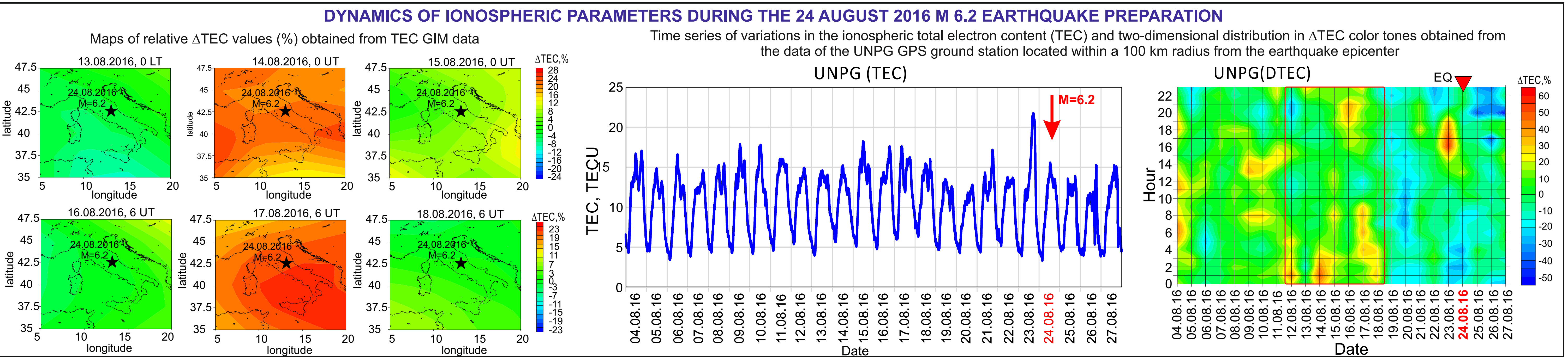
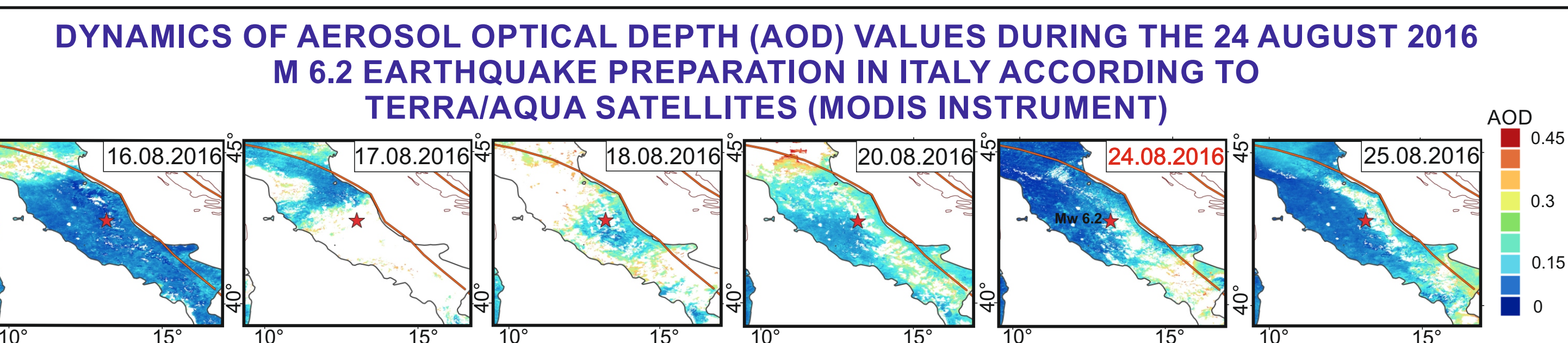
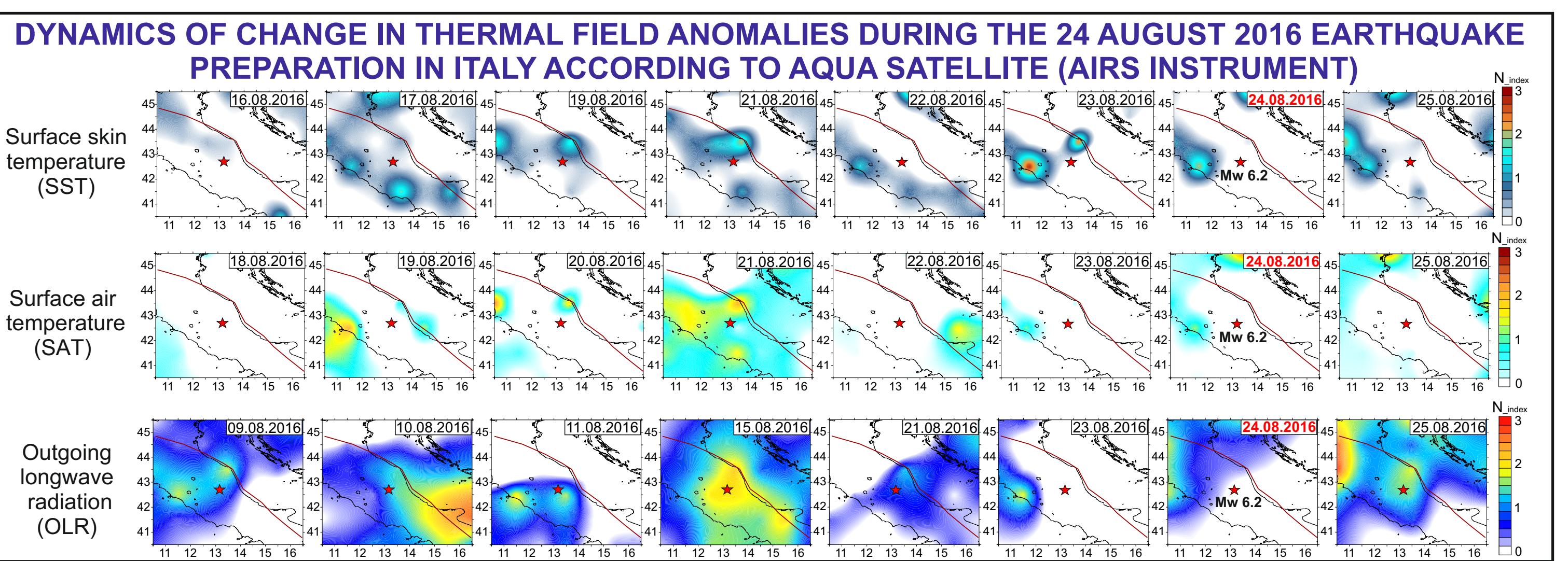
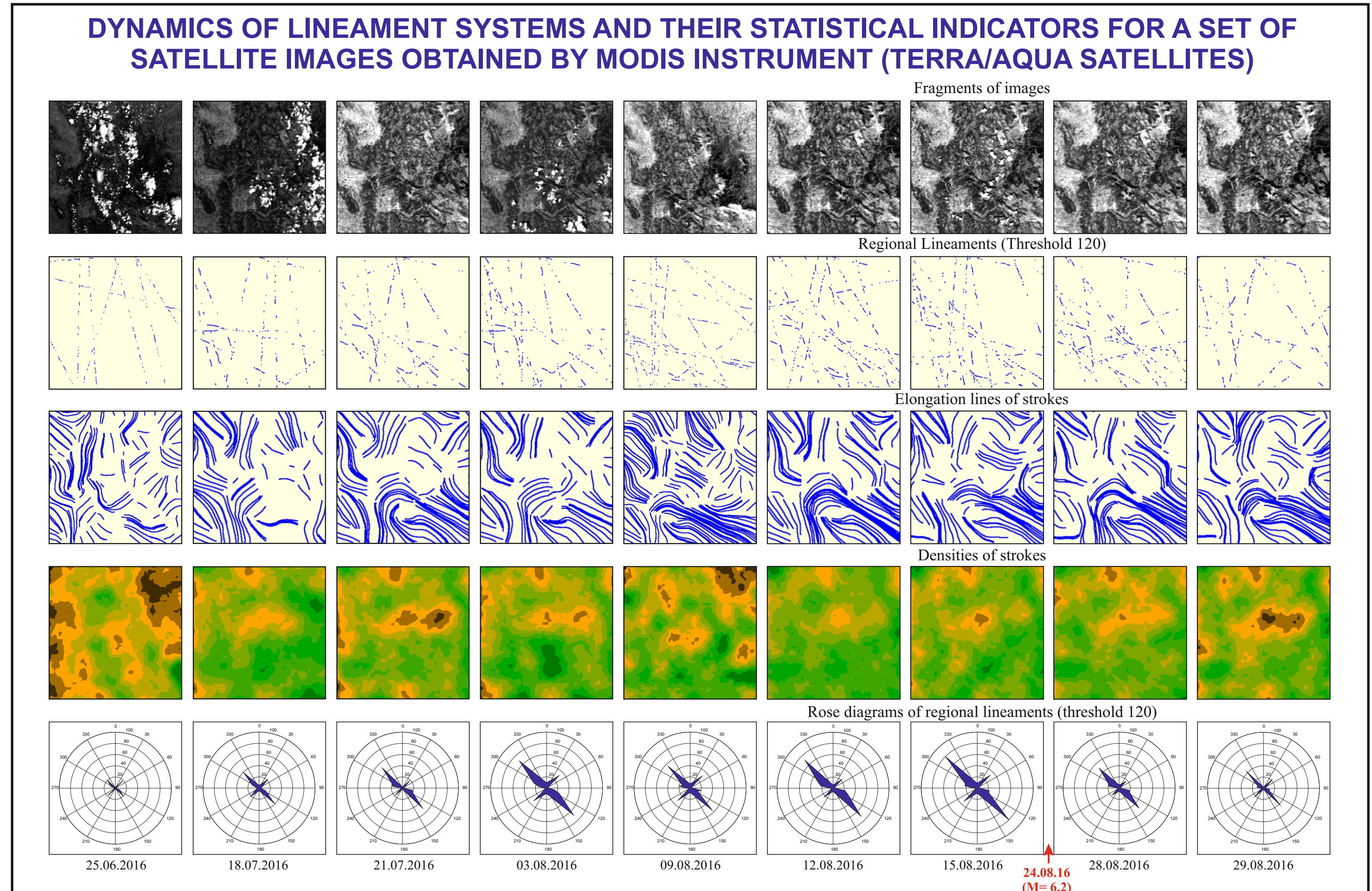
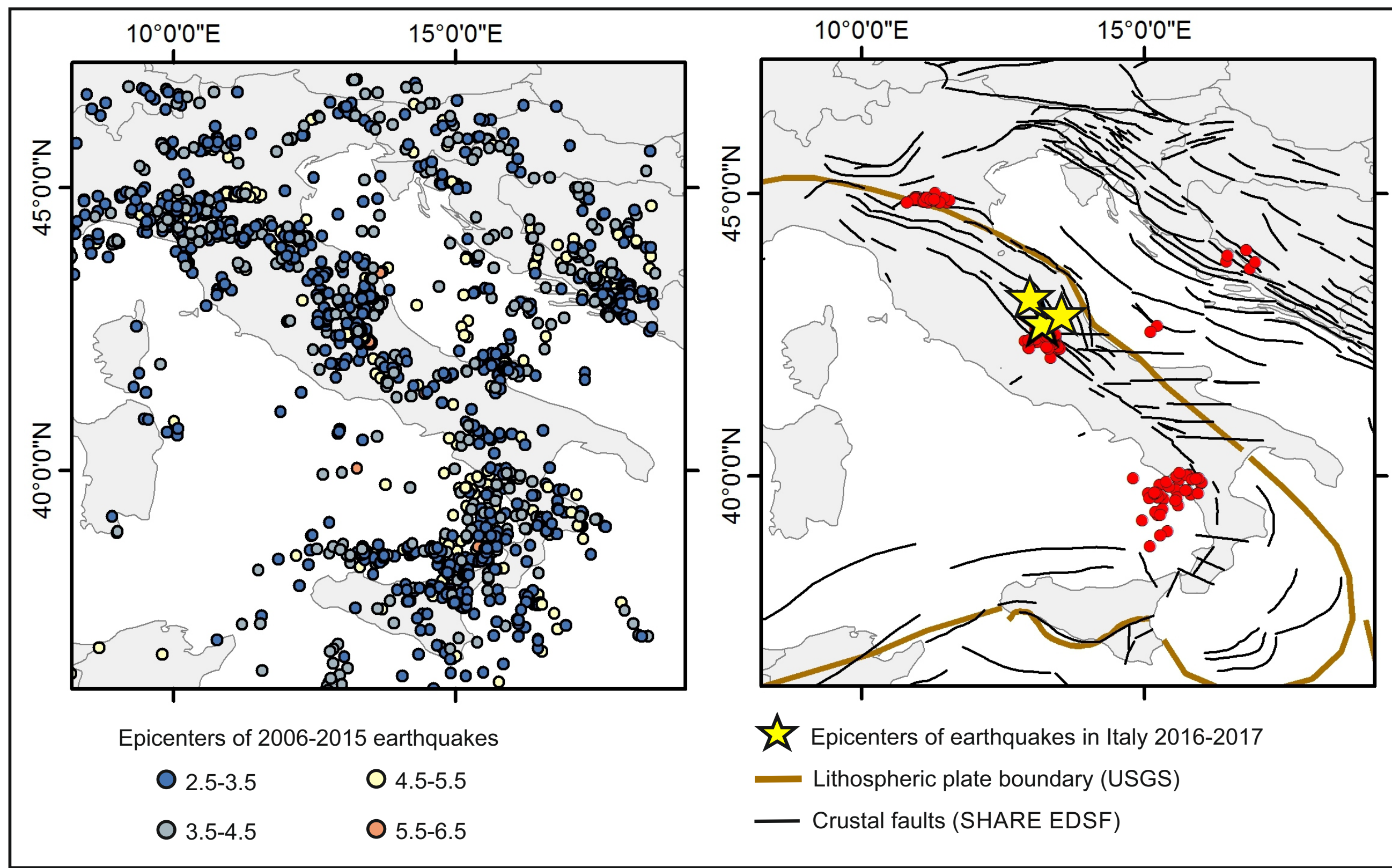
RESEARCH OF ANOMALOUS DISTURBANCES IN THE LITHOSPHERE-ATMOSPHERE-IONOSPHERE SYSTEM DURING 24 AUGUST 2016 EARTHQUAKE PREPARATION IN ITALY ACCORDING TO SATELLITE MONITORING DATA

Bondur V.G., Tsidilina M.N., Gaponova E.V., Voronova O.S., Feoktistova N.V.

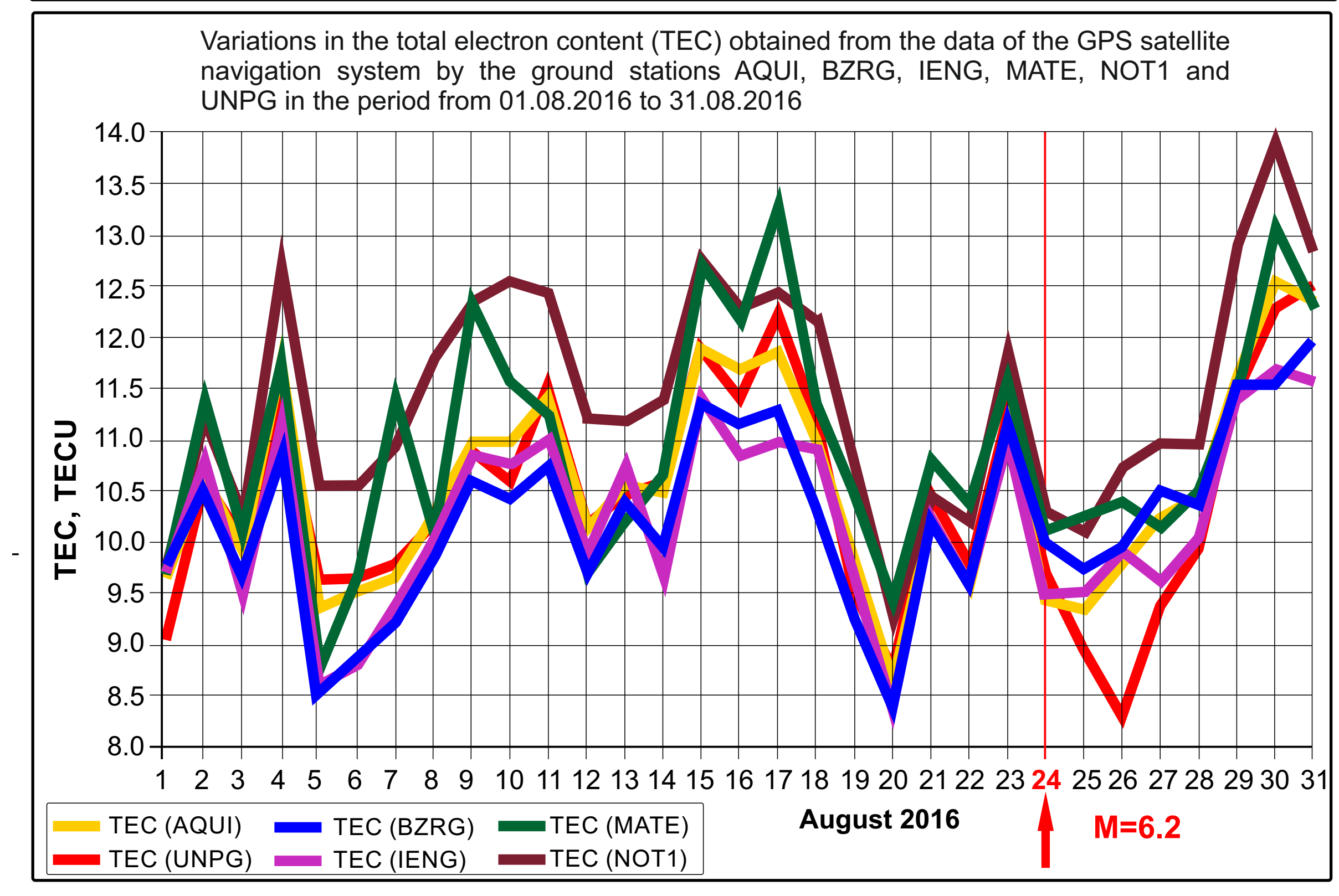
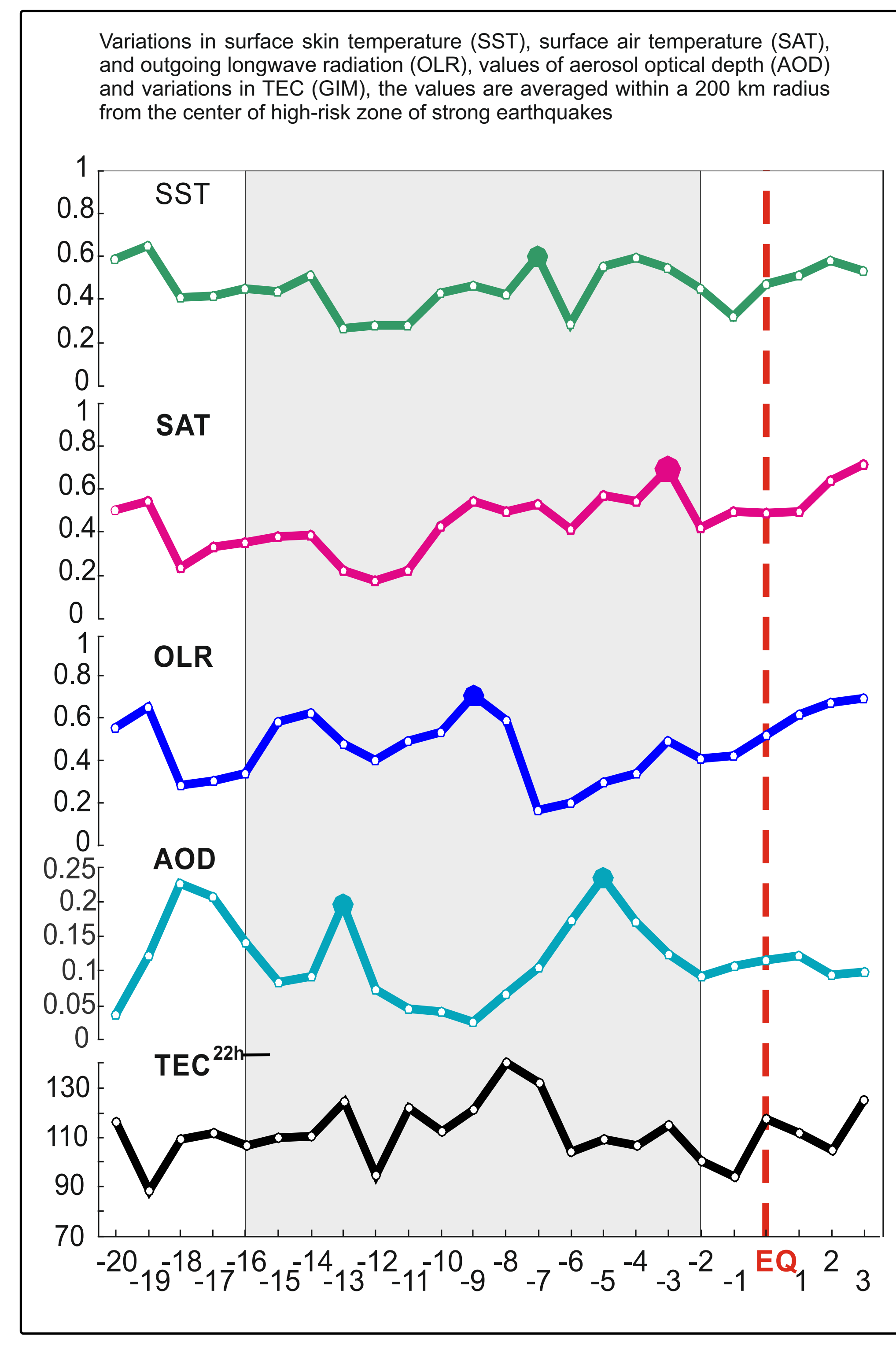
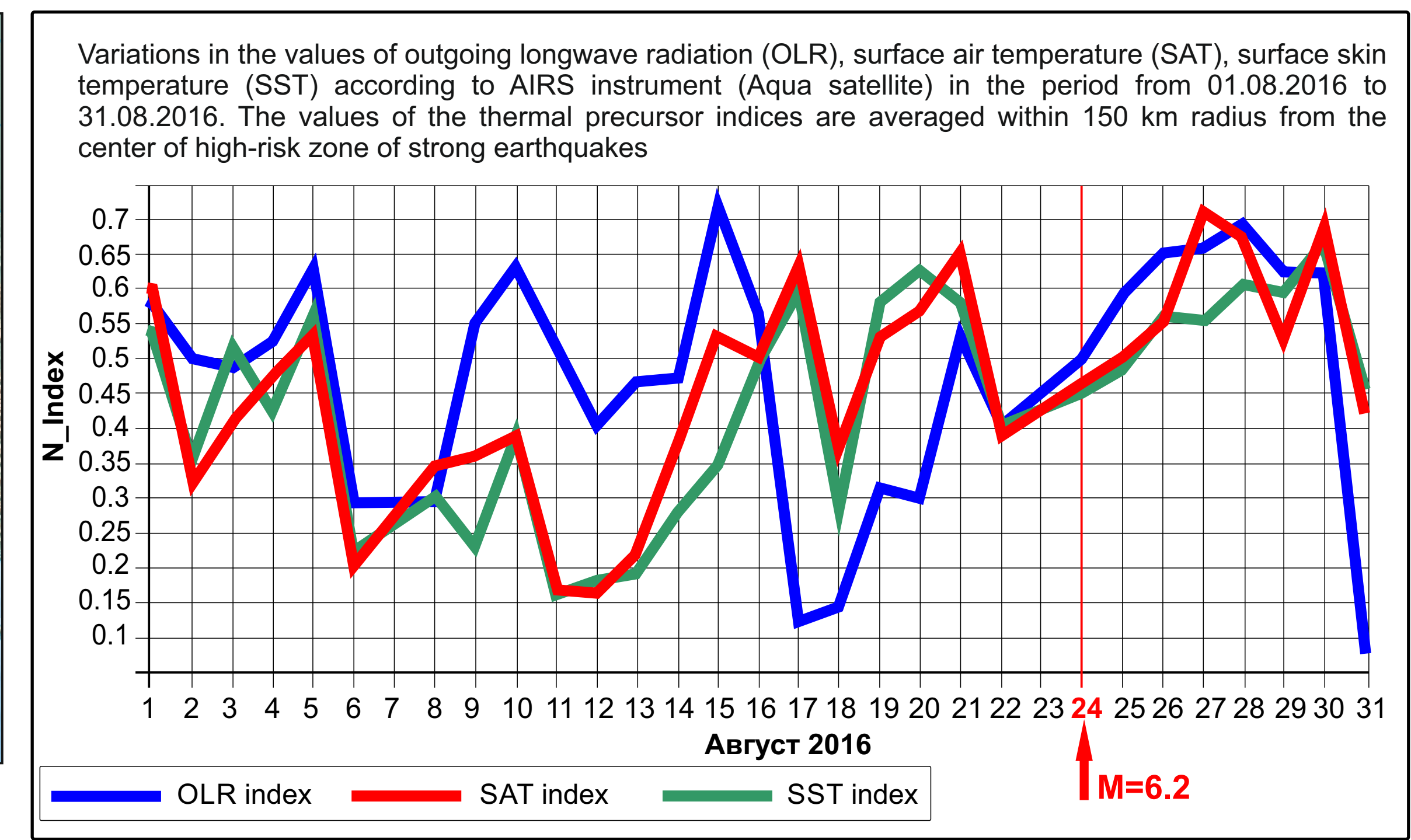
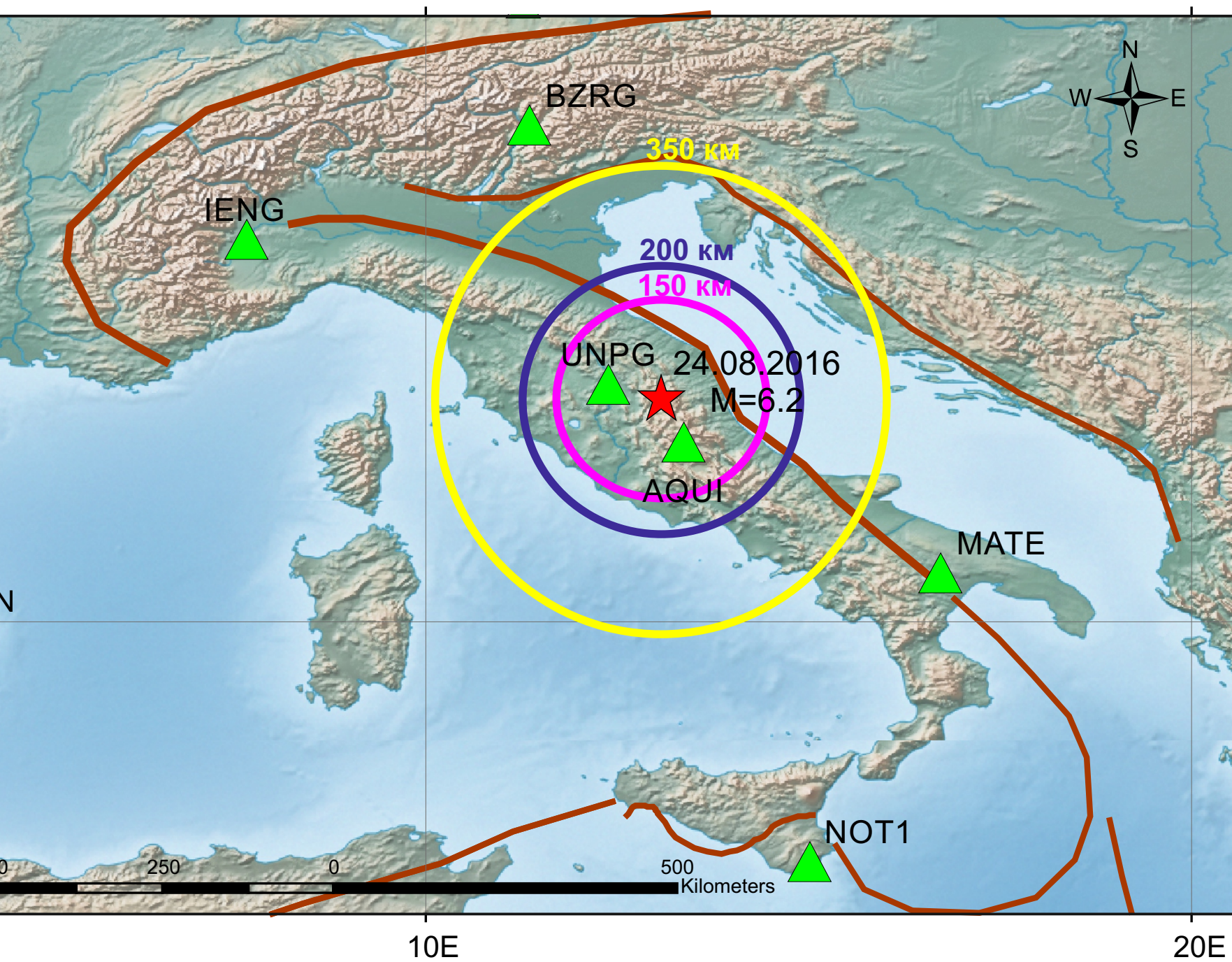
Institute for Scientific Research of Aerospace Monitoring "AEROCOSMOS", Moscow, Russia

Monitoring area specification based on the results of the spatial analysis of earthquakes that occurred in the period from 2006 to 2015

The studied earthquake-prone region is experiencing a subduction of the Adriatic microplate under the Apennines from east to west, as well as the continental collision of the Eurasian and African plates and the opening of the Tyrrhenian basin to the west. To specify an observation area, a spatial analysis of more than 2000 earthquake events with a magnitude above 2.5 that occurred in Italy over the 2006-2015 period was carried out using the hot spot analysis method. It follows that in the studied region with increased seismic activity, 3 statistically significant zones can be distinguished with a 99% probability of an earthquake with a magnitude of above 4: 1) in northern Italy at the boundary of the lithospheric plate; 2) in the central part of Italy at the intersection of several crustal faults; 3) in the south of Italy



INTEGRATED MONITORING OF THE 24 AUGUST 2016 M 6.2 EARTHQUAKE IN ITALY



The median center of the high-risk zone for strong earthquakes in Central Italy was chosen as the center of the data averaging zone for joint analysis. The analysis of satellite data was carried out for three zones of 150 km, 200 km and 350 km radius. Surface skin temperature (SST), surface air temperature (SAT), and outgoing longwave radiation (OLR) were normalized using the mean square deviation of data for current year versus other years in that period to re-range values from 0 to 1. Normalized SST, SAT and OLR data were averaged within the radius. For comparison with thermal data and data on the state of the ionosphere during the earthquake preparation, the values of aerosol optical depth (AOD) were averaged along the tectonic fault within the radius. The averaging zone did not include data for northern Italy, which has high AOD values likely from industrial sources. For the joint analysis of ionospheric variations with other parameters, the night TEC (GIM) data averaged within studied area were used.

This work was financially supported by the Ministry of Science and Higher Education of the Russian Federation (Project No. AAAA-A19-119081390037-2)