Identification and temporal characteristics of earthquake clusters in selected areas in Greece

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Supplementary Material

The Supplementary Material contains 16 figures. Figure S1 is part of the analysis for the determination of the completeness magnitude for the three datasets. Figures S2-S16 are part of the cluster analysis for the three study areas.

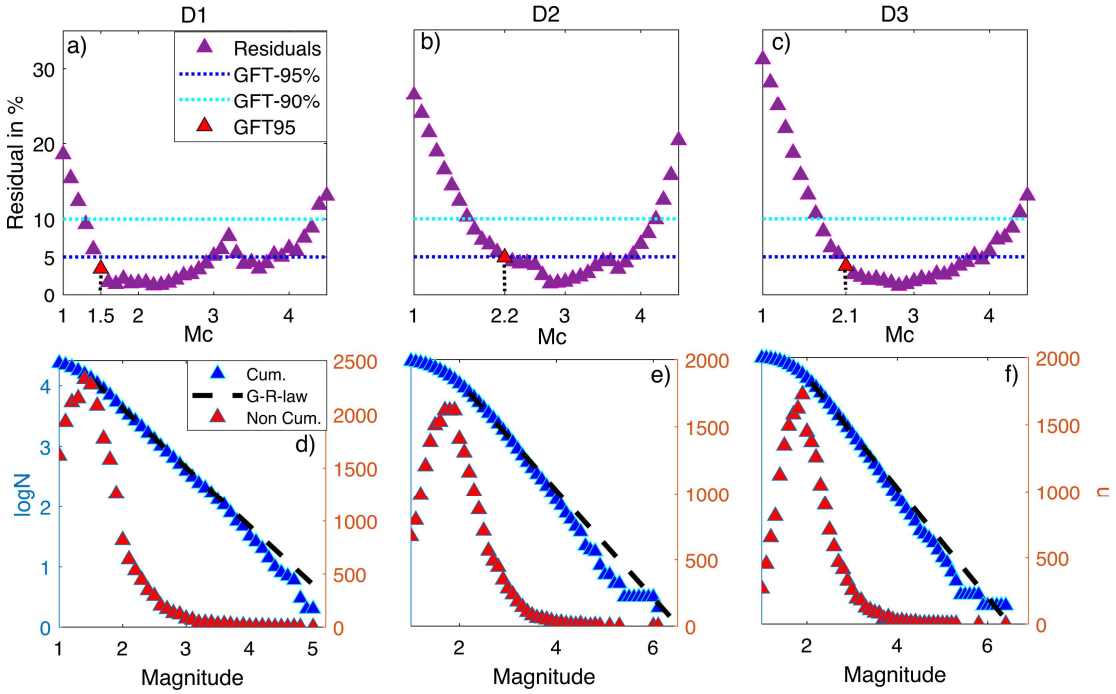


Figure S1 (a-c) Residuals (purple triangles) as a function of minimum cutoff magnitude, M_c, for the D1, D2 and D3 datasets, respectively. Blue and cyan dotted horizontal lines indicate the 10% and 5% residual thresholds, respectively. M_c (red triangle) is found as the first magnitude cutoff at which the confidence 95% is reached. (d-f) incremental (red triangles) and logarithmic cumulative frequency (blue triangles) as a function of magnitude. The black line is the GR law fit according to the GFT method with $M_c = 1.5, 2.2, 2.1$ for datasets D1, D2 and D3, respectively.

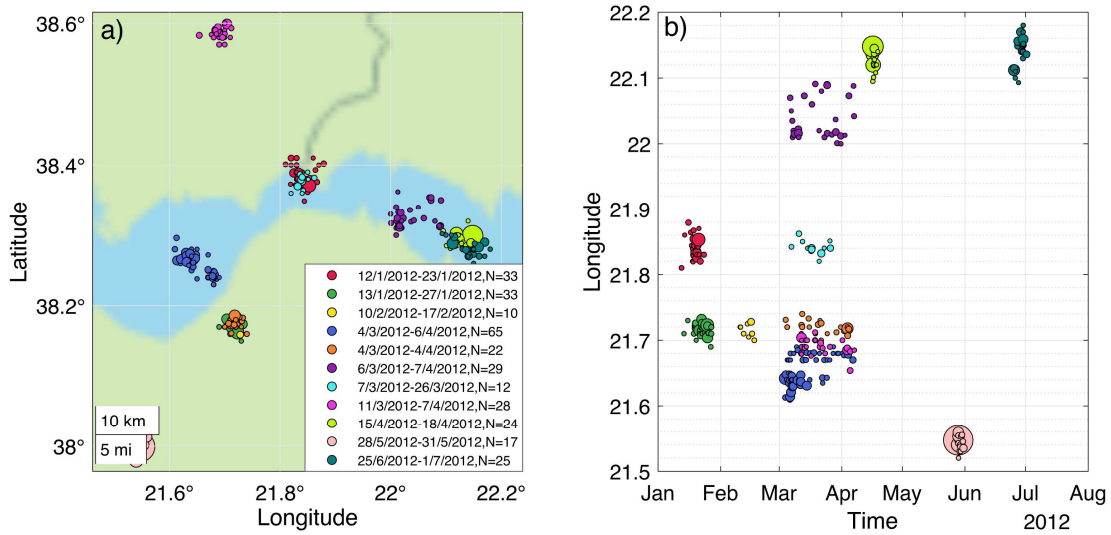


Figure S2 a) Epicentral map of the main seismic clusters during the first semester of 2012. Three major clusters are occurred, the C1, C2 and C3 and eight smaller clusters with $N \geq 10$ events. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

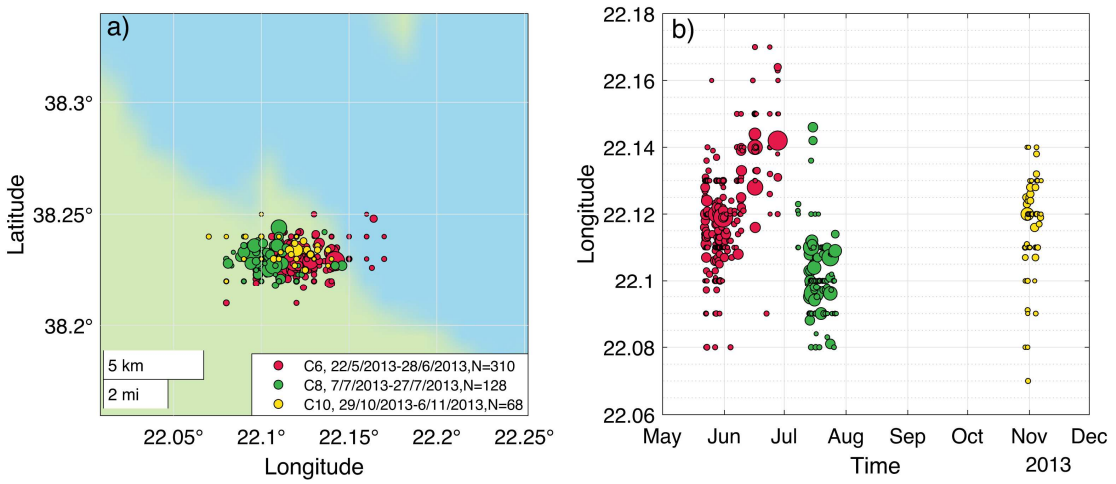


Figure S3 a) Epicentral map of the 2013 Aigion swarm and subsequent sequences in the area with $N \geq 10$ events. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

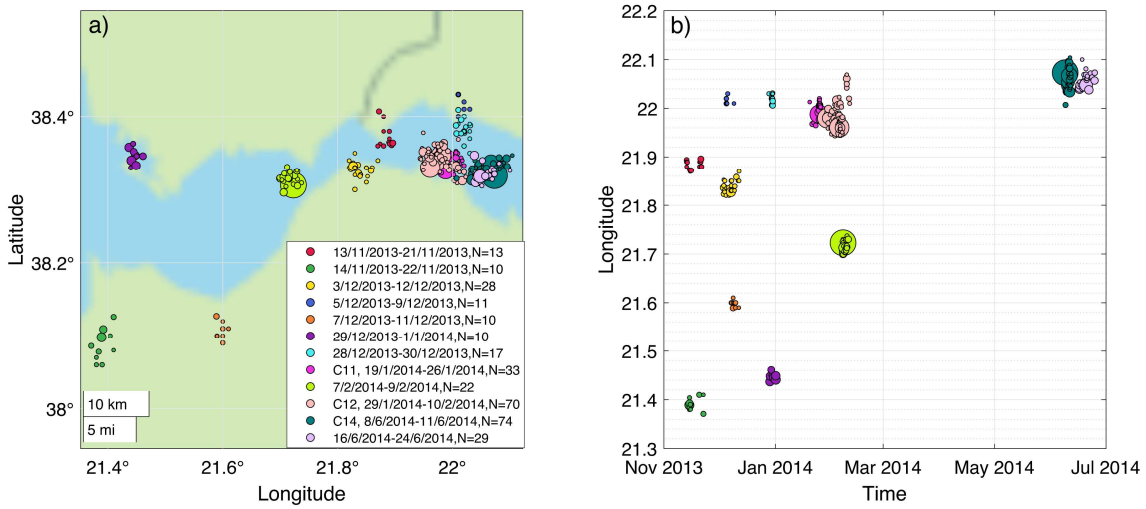


Figure S4 a) Epicentral map of the seismic activity between November, 2013 and June, 2014. Twelve clusters with $N \geq 10$ are occurred, including the C11, C12 and C14 clusters. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

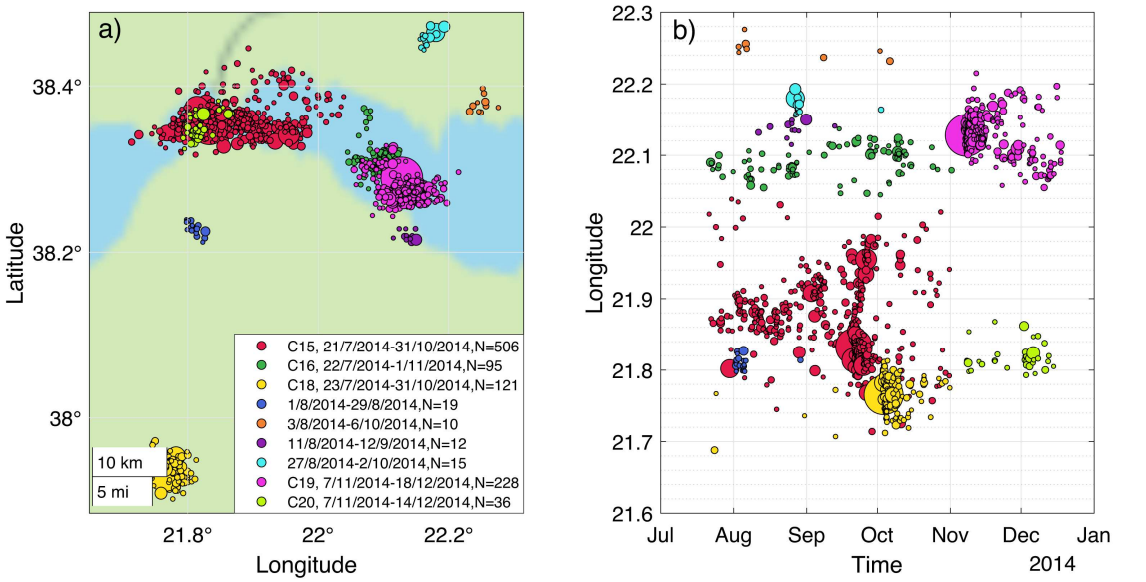


Figure S5 a) Epicentral map of the intense seismic activity during the second half of 2014. Five major clusters are occurred, the C15, C16, C18, C19 and C20 and four smaller clusters with $N \geq 10$ events. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

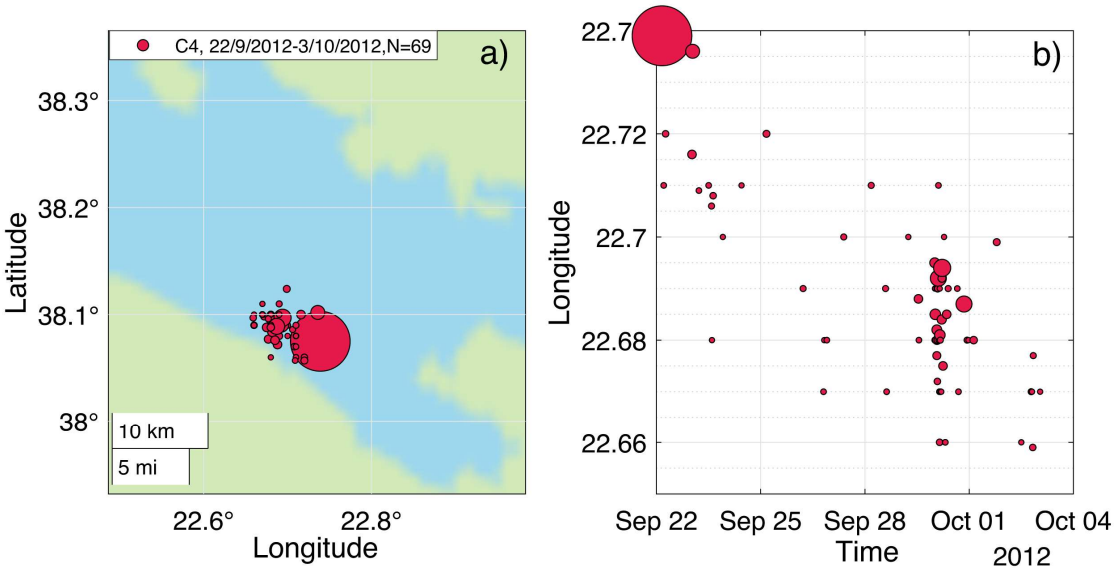


Figure S6 a) Epicentral map of the seismic sequence Offshore Perachora. One major cluster, C4, including two sub sequences, the first initiated on 22 September and the second on 30 September 2012. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

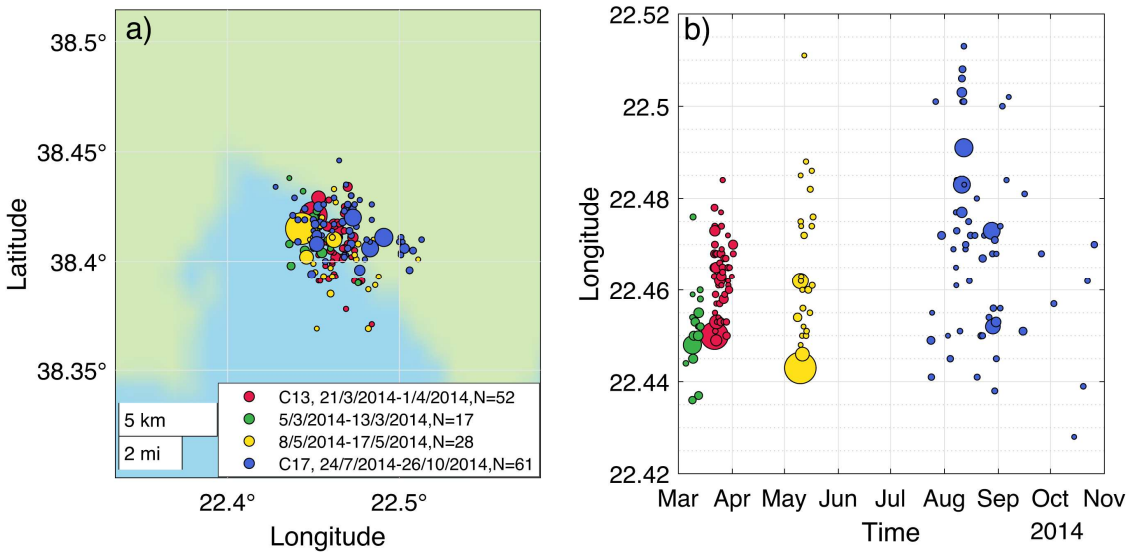


Figure S7 a) Epicentral map of the seismic activity near Itea Gulf during 2014. Two major clusters are occurred, the C13, C17 and four smaller ones with $N \geq 10$ events. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

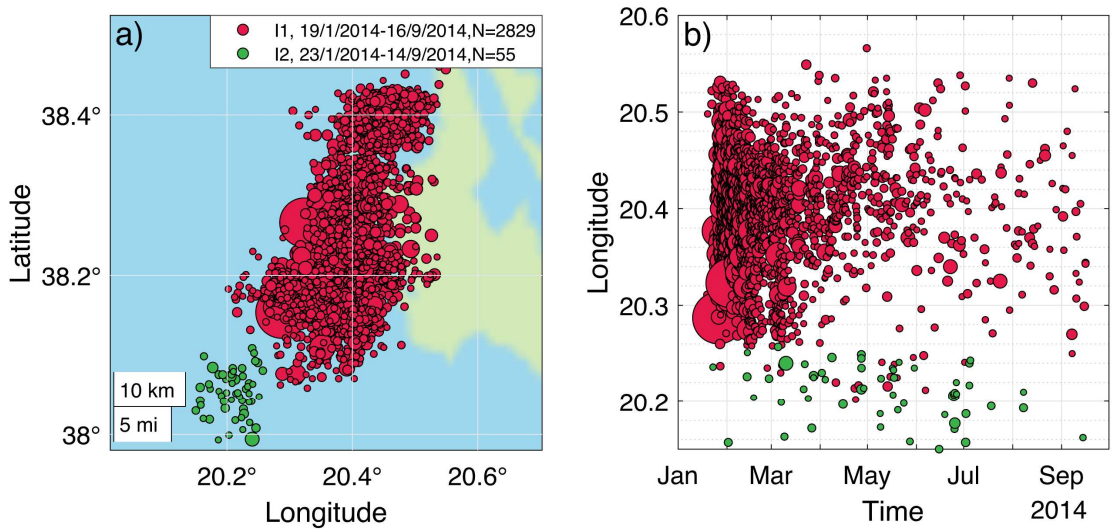


Figure S8 a) Epicentral map of the 2014 Kefalonia earthquake sequence, I1, and a sub-cluster, I2, that occurred offshore the southern part of Kefalonia Island. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

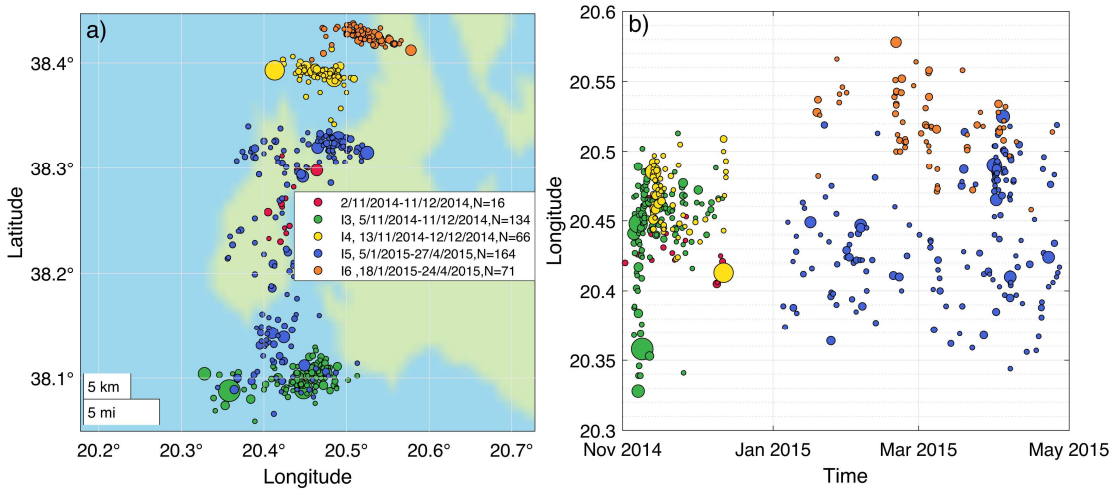


Figure S9 a) Epicentral map of four main clusters, I3, I4, I5 and I6 with $N \geq 30$ between November, 2014 and April, 2015. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

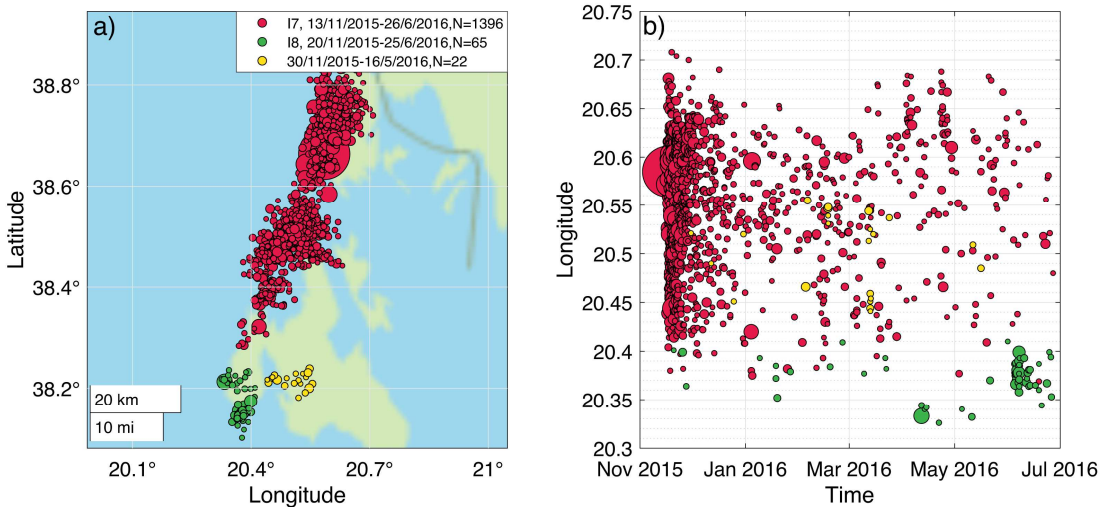


Figure S10 a) Epicentral map of the 2015 Lefkada sequence, I7, along with two sub-clusters in the southern part of Kefalonia Island. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

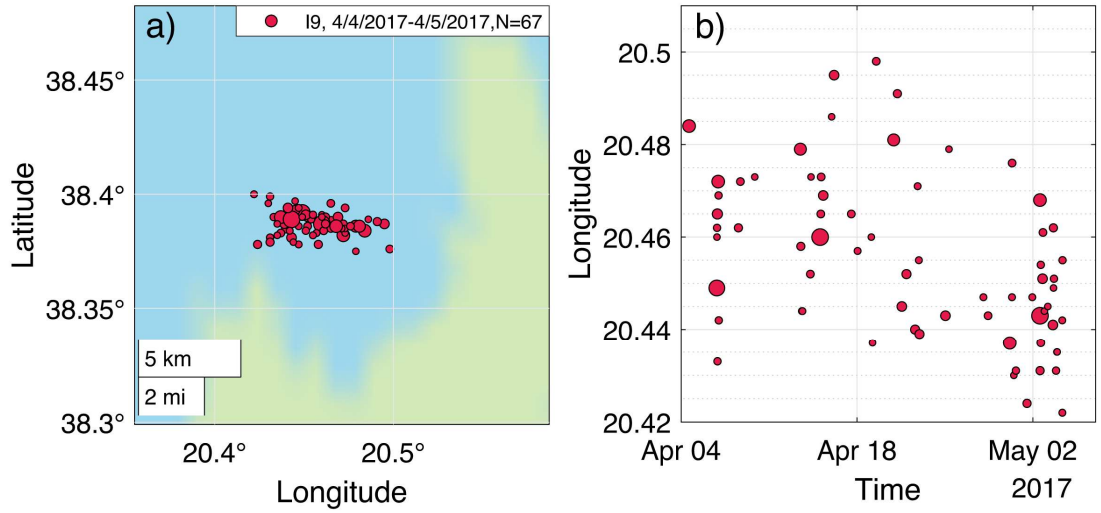


Figure S11 a): Epicentral map of cluster I9 located on the area between Lefkada and Kefalonia. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

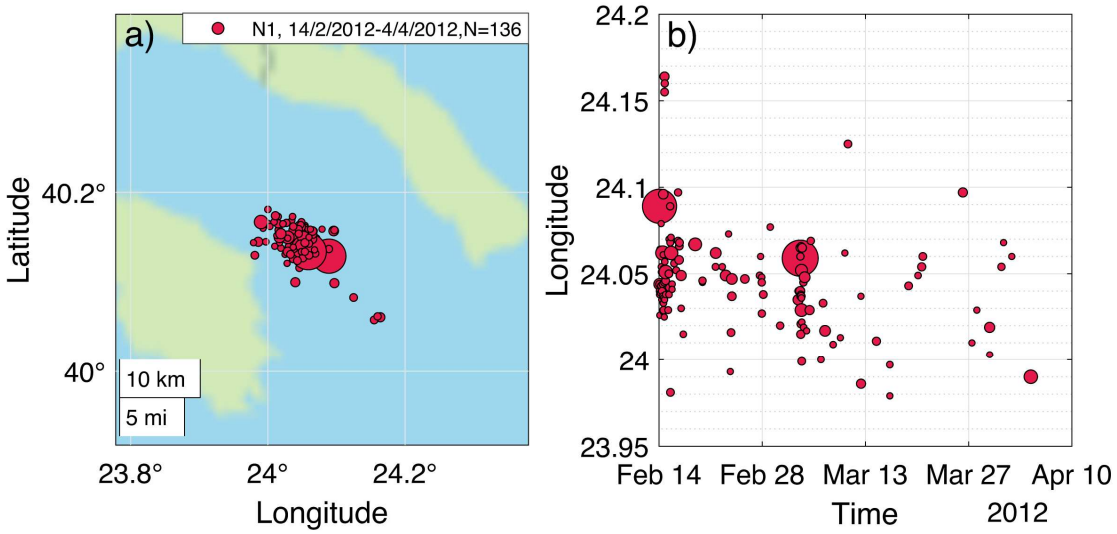


Figure S12 a): Epicentral map of cluster N1 comprised by two sub-sequences. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

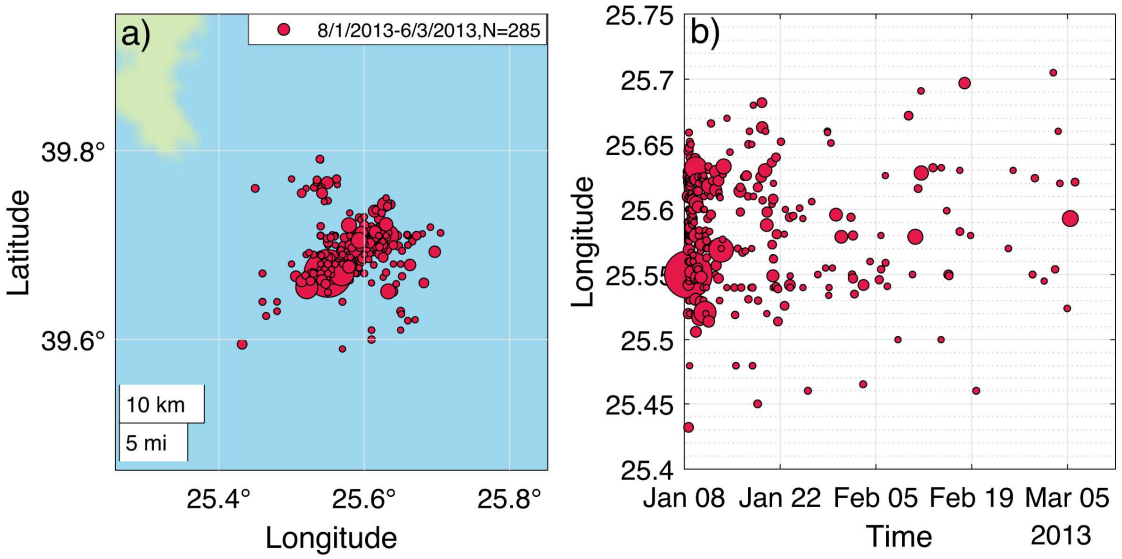


Figure S13 a) Epicentral map of the 2013 North Aegean sequence, denoted N3. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

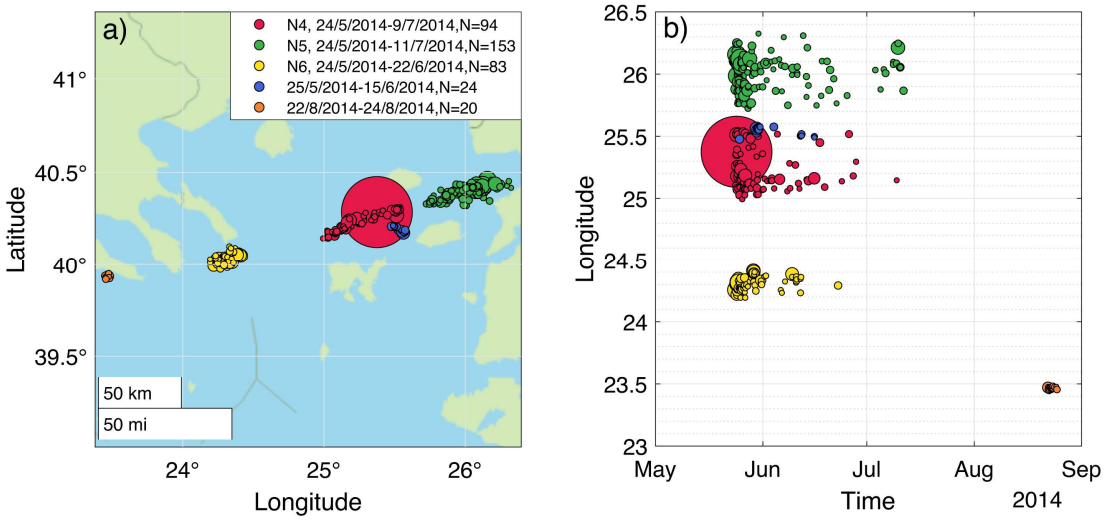


Figure S14 a) Epicentral map of the 2014, Samothraki sequence confined into three major clusters, N4, N5 and N6. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

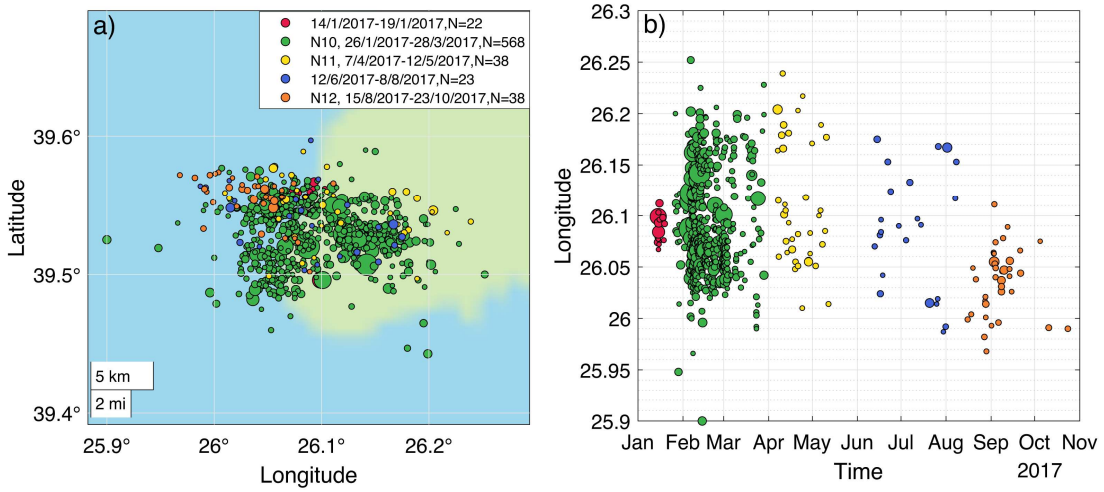


Figure S15 a) Epicentral map of the seismic activity near the Aegean coast of NW Turkey during January–October 2017 confined into three clusters, N10, N11 and N12. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.

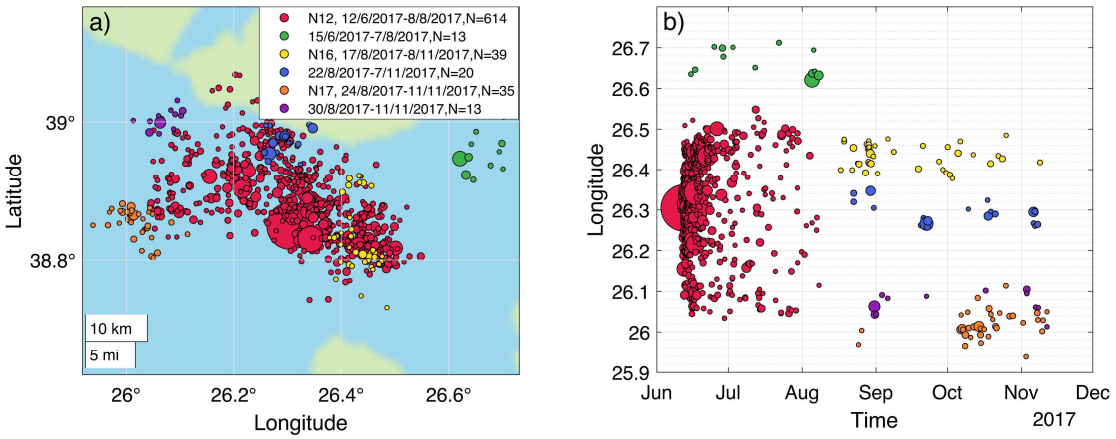


Figure S16 a) Epicentral map of the 2017 sequence (N12) that occurred offshore, south of the SE coast of Lesvos Island along with its intense aftershock activity. Two major secondary bursts of activity occurred concurrently on the west (N17) and east (N16) side of the sequence. b) Space-time evolution of seismicity. Colours correspond to different clusters and the size of circles is proportional to the earthquakes magnitude.