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Analysis of the 2021 March 27th Mw 5.2 earthquake sequence in the Adriatic Sea using new workflows for offshore seismicity monitoring

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On 2021 March 27th an Mw 5.2 earthquake occurred in the Adriatic Sea, between the Italia and Croatian coast. The earthquake sequence lasted for several months and consisted of more than 150 seismic events with a magnitude above 2. Analyzing offshore seismic sequences is challenging both for the lack of optimal seismic monitoring networks and detailed enough velocity models. These conditions strongly limit the data analysis procedures, leading to inaccurate results that may have severe effects on the identification of the seismogenic structure associated with the seismic sequence, bringing to wrong seismo-tectonic interpretations, with direct consequences in the seismic hazard assessment of an area. In this study, we analyze the March 2021 Mw 5.2 earthquake sequence that occurred in the Adriatic Sea with recently developed location techniques. Our workflow allows achieving a higher location accuracy, even when dealing with suboptimal monitoring conditions. We analyze this dataset using waveform-based location techniques and a recently developed location technique based on Distance Geometry Solvers (DGS). This last approach uses inter-event distances between earthquake pairs estimated at one or two seismic stations to get high-resolution locations of seismicity clusters. The application of such techniques led to different improvements in locating the seismic sequence, which is more clustered and clearly shows an N-S trending compatible with the geological setting of the area.