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Preparation of a Composite Seismicity Catalog in the Yellow Sea

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Earthquakes in Korea occur not only on land but also in the sea. However, medium to large earthquakes occur frequently in the seas surrounding Korea. The Yellow Sea is an epicontinental and semi-closed sea located between Korea and China. Recent earthquakes in the Yellow Sea including, but not limited to, the Seogyuckryulbi-do (1 April 2014, magnitude 5.1), Heuksan-do (21 April 2013, magnitude 4.9), Baekryung-do (18 May 2013, magnitude 4.9) earthquakes, and the earthquake swarm in the Boryung offshore region in 2013. Korea and China operate large-scale seismic monitoring networks to monitor seismic hazards of their countries. However, there are limitations in studying and observing the Yellow Sea earthquakes due to location of earthquakes far from the land seismic stations, despite the huge effort made by both governments. Joint effort is required not only to overcome the limits posed by political boundaries and geographical location but also to study seismicity and the underground structures responsible. The earthquake catalog from either country is biased to its own and cannot provide complete picture of seismicity in the Yellow Sea. In order to understand seismic hazard and tectonics in the Yellow Sea, a composite earthquake catalog has been developed in this study. We collected seismic data (total 36,931) from the various sources for land and sea around the Korean Peninsula and China including the Yellow Sea. Finally, the Yellow Sea composite earthquake catalog (YComCat) includes 847 earthquakes after deleting duplicated data. YComCat includes earthquakes with magnitude greater than 3.0 and occurred from 1898 to 2017. Since earthquake catalog plays critical role in the seismic hazard assessment, YComCat will provide improved input to reduce uncertainties in the seismic hazard estimations.