



Onset of Holocene sedimentation by the East Korean Warm Current (a branch of Tsushima Warm Current) in the Hupo Trough of the southwestern East Sea

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During the test cruise of IB Araon in 2014, a box core (ES14-BC02; 45 cm long) and a gravity core (ES14-GC02; 628 cm long) were collected at site ES14-C2 (36°42.03'N, 129°39.36'E, 189 m deep) located in the western margin of the Hupo Trough bordered by the Hupo Bank to the west of the Ulleung Basin in the East Sea. A variety of paleoceanographic proxies (biogenic opal, total organic carbon (TOC), total nitrogen (TN), CaCO₃, C/N ratio) along with AMS 14C dates were analyzed for the purpose of revealing the onset of Holocene sedimentation by the East Korean Warm Current (a branch of Tsushima Warm Current). Core-top of the gravity core was preserved well by the great similarity of analytical data between the uppermost of gravity core and box core. According to the AMS 14C dates, the bottom of core ES14-GC02 records about 30,500 yrBP. Until about 7.0 ka, sedimentation rate was very low (about 5~10 cm/kyr), and the abrupt increase of biogenic opal, TOC, and TN, the gradual increase of CaCO₃, and the sudden decrease of C/N ratio were distinct between ~8.0 ka and ~7.0 ka. In contrast, since ~7.0 ka the sedimentation rate was very high (about 60~120 cm/kyr), and all sediment properties except for the biogenic opal are consistently constant, whereas the biogenic opal shows the several large-amplitude fluctuations. Such kind of paleoceanographic change in the Hupo Trough is related to the evolution of East Korea Warm Current during the postglacial period. The hydrographic processes related to the East Korea Warm Current began to deposit the sediments probably derived from the Nakdong River at about 8.0 ka and the depositional condition was stabilized since 7.0 ka in the Hupo Trough.