



## **Identifying the origin of organic matter and tephra layers in the eastern and western parts of the Ulleung Basin, East/Japan Sea**

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Eight piston cores, collected from the eastern and western parts of the Ulleung Basin in the East/Japan Sea were used to determine the geochemical characteristics of the late Quaternary sediments including several tephra layers. Almost the C/N ratio has a range from 4 and 10, and  $\delta^{13}\text{C}_{org}$  values lie between -23 ‰ to -20 ‰. These results suggest that the organic matter in the cores was originated from the marine algae rather than the land vascular plant. On the contrary, the Rock-Eval pyrolysis indicates that the organic matter was derived from a land vascular plant (Type III) and is plotted at the thermally immature stage. This discrepancy could be due to the heavily oxidized organic matter while the marine algae sank down to the seafloor or post-deposited in the sediments. In the cores, several tephra layers are also found, in which the Ulleung-Oki (U-Oki; 10.1 cal. ka), Aira-Tanzawa (AT; 23 cal. ka) and Ulleung-Yamato (U-Ym; 30.9 cal. ka) tephra layers are identified. Based on the XRF data and cluster analyses, the U-Oki and U-Ym layers can be clearly distinguished from the AT layer. However, it is difficult to differentiate the U-Oki layer from the U-Ym layer, which are the almost same in their morphological as well as geochemical characteristics. Accordingly, it seems that the volcanic fractions in both of the Ulleung tephra layers were originated from the same magma chamber in the Ulleung Island.