



Improved age model of Mid-Holocene Ulleung-I tephra erupted from Ulleung Island, Korea

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Pyroclastic tephra originated from explosive volcanic eruption is a useful chronostratigraphic tool in marine sediments of the Ulleung back-arc basin, East Sea. The radiometric age of tephra or biogenic components was generally provided the eruption age of tephra. Recently, orbital- and millennial-timescales fluctuation records of marine sediments were also used to improve a precise eruption age of tephra in company with radiometric age model. Ulleung Island locates on the Ulleung back-arc basin between Korea peninsula and Japanese volcanic arc. The three plinian volcanic eruptions from Ulleung Island were reported in marine sediments as Ulleung-I, Ulleung-II, and Ulleung-III tephtras. The most explosive Ulleung-II tephra among three tephtras is stratigraphically situated a boundary between Holocene and deglaciation sediments in the Ulleung Basin based on the AMS 14C age data of planktonic foraminifer tests and orbital-scale sea level fluctuation sediment records. The Ulleung-I tephra is supplied by the youngest plinian eruption from Ulleung Island, which is characterized by scattered pumiceous lapilli by strong bioturbation of the deposition time. The Holocene hemipelagic sediments mostly consist of biogenic silica due to shallower carbonate compensation depth in the Ulleung Basin. The radiometric materials in marine sediments for age dating of the Ulleung-I tephra are rare and no millennial-timescales fluctuation records. In this study, the eruption age of the Ulleung-I tephra is measured by potassium feldspar pIR-IRSL method from the Ulleung-I tephra sample on Ulleung Island. The pIR-IRSL age is consistent with the linear sedimentation rate in marine sediments using the Ulleung-II tephra.