Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

HQR010-P14 Room:コンベンションホール Time: May 26 17:15-18:45

Tephrostratigraphy in the late Quaternary sediments of the eastern margin of Japan Sea

Antonio Freire[1*], Toshihiko Sugai[1], Ryo Matsumoto[1], Fumio Akiba[2], Maki Suzuki[1]

[1]The University of Tokyo, [2]Diatom Minilab Akiba Co. Ltd

This study is based on the analysis of sediment samples collected by piston-coring along the eastern margin of Japan Sea, where tephra layers are frequently recognized and identified by chemical and petrographic features. The characterization of marker-tephra layers constitutes the basis of tephra studies and it is carried out using a combination of parameters, as chemical composition, petrography, and stratigraphic and geographic distribution. These layers are correlated to source volcanoes of both Japan and Korea, and they were spread out by the dominant westerly wind. We used twelve piston-cores distributed from the central Honshu, offshore Kanazawa City, to western Okushiri Island, offshore Hokkaido, more than 500 km far at water depths varying from 900 m to 3600 m. Samples were analyzed by SEM-EDS and their chemical composition and glass shape were compared with those of cataloged marker-tephras in and around Japan. Main marker-tephras as Aso-1, K-Tz, Aso-4, AT, and U-Oki were recognized in piston-cores promoting a good correlation along the eastern margin of Japan Sea. On the other hand, four unknown tephra layers tentatively called as Jo-1, Jo-2, Ok-1, and Ok-2 were identified and their chemical and petrographical characteristics were revealed for local and regional correlation at Joetsu Basin and at the western Okushiri area. Age control using 14C of foraminiferal tests and the identification of diatoms species supported the recognition of tephras, and was used together to construct sedimentation rate curves for each location. Seafloor topography strongly controls both accumulation and erosion rates, which are different between troughs and ridges where condensate sections are present.

Keywords: Japan Sea, Joetsu Basin, Okushiri Ridge, tephra, volcanic ash, volcanic glass