



Terrestrial biomarker records in Seomjin Estuary in the South Sea of Korea: Implication for terrestrial flux and environmental changes

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High-resolution records of terrestrial biomarkers, n-alkane compounds, were investigated in two gravity cores (SJP-2 and SJP-4) to evaluate variations in terrestrial organic matter influx. Based on ^{14}C dating, sediments in both cores were deposited during the mid-Holocene; the ages of the bottom sediments of SJP-2 and SJP-4 reached 5,500 Cal yr BP and 5,000 Cal yr BP, respectively. High concentrations of total n-alkanes (nC₂₅₋₃₅) in the two cores showed an increasing tendency from 4,500 yr to ca. 2,000 yr. The composition changed at the boundary of 2,500 yr in both cores, suggesting a variation in terrestrial biomarker influx at this time. Several indices including average chain length (ACL), carbon preference index (ICP), and paleo-vegetation index (Paq) showed coincident variations in both cores; ACL exhibited a narrow range of variations with a slight shift at 2,500 yr, CPI showed a decreasing tendency from 4,000 yr to 2,500 yr, and Paq increased during these intervals. Furthermore, the ratios of C₂₃/C₃₁ and C₂₅/C₃₁, indicate a relative abundance of epicuticular wax from vascular plants with coincident variations in both cores, and this also marched well with Paq. CPI excursions suggested that the total n-alkane proxy of the two cores might not only be linked to local climatic variability but also to local oceanographic conditions due to the different sedimentation rates. Variations in paleovegetation and paleoclimate around the study area might be strongly associated with the influx of terrestrial organic compounds derived from vascular plants. Additional ^{14}C dating and isotope study of individual n-alkane biomarkers will provide detailed information on paleoclimatic and paleovegetation changes.