

## **Paleo-environmental analysis during 1.5 Ma from organic matter in Lake Biwa (Japan) sediment**

Y. OCHI<sup>1</sup>, K. URABAYASHI<sup>1</sup>, S. YAMAMOTO,<sup>1\*</sup>

<sup>1</sup> Department of Environmental Engineering for Symbiosis, Faculty of Engineering, Soka Univ., Hachioji, Tokyo, Japan

(\*correspondence: syama@soka.ac.jp)

The Lake Biwa 1400 m Core was taken from the north part of Lake Biwa (Japan) to reconstruct paleo-environment of the Asia-monsoon region. This core age was determined as ca. 1.5 Ma by fission track method and tephra layer. We attempted to further understand the paleo-environmental variation based on various biomarker records, especially lignin phenols, fatty acids, cutin acids and perylene, which were determined by off-line tetramethylammonium hydroxide (TMAH)-pyrolysis-GC/MS.

The total concentration of eight lignin phenols ( $\Sigma 8$ ; vanillyl [V], syringyl [S] and cinnamyl [C] series), which are mostly derived from terrestrial vascular plants, had increased during warm periods. This result implied that terrestrial vascular plants around Lake Biwa had been affected by the variation of temperature occurred in glacial-interglacial cycle.

The high concentration of perylene, which are often found in fungal pigments, coincided with the high concentration of S series, which are likely derived from tissues of angiosperms. Previous studies suggested that angiosperms increased in warm and humid climate and that perylene indicates a humid continental climate<sup>[1]</sup>. Thus, our results suggested that the vegetation around Lake Biwa had been affected by not only humidity but also temperature during 1.5 Ma. Our results also emphasized that the variation of precipitation did not always coincide with temperature.

[1] R. Ishiwatari, H. Uemura, and S. Yamamoto., (2014), *Organic Geochemistry*, Volume 76, 194-203.