



Connecting source-to-sink through carbonaceous materials (RSCM and vitinite reflectance)

Jiun-Yee Yen (1), Lihkae Chim (2), Shao-Yi Huang (1), and Louis Loung-Yie Tsai (3)

(1) National Dong Hwa University, College of Environmental Studies, Department of Natural Resource and Environmental Studies, Hualien, Taiwan (jyyen@mail.ndhu.edu.tw), (2) National Central University, Department of Earth Science and Institute of Geophysics, Taoyuan, Taiwan, (3) National Central University, Graduate Institute of Applied Geology

Sedimentary basins around active orogeny can serve as the time capsules that archive the evolution of the orogenesis. The Coastal Range of Taiwan, therefore, carries the opportunity to reveal associated source-to-sink routes of the remarkable arc-continent collision due to its unique location. Because of the oblique collision between the Luzon arc and the continent margin of the Eurasian plate, the Coastal Range was built up by a series of volcanic arcs and intra-/fore-arc basins.

Previous studies such as bulk mineralogy of sandstones, crystallinity of clay minerals, and fission track thermochronology all suggest that Pliocene to Pleistocene meta-sedimentary deposits within the preserved sinks of Coastal Range reflect the unroofing history of the emerging Central Range.

In this study, modern sediments from six drainages of the east Central Range (modern sources) and three basin sections of meta-sedimentary deposits from the Coastal Range (ancient sinks) were sampled to reconstruct the link between the source and the sink. Raman Spectroscopy Carbonaceous Materials (RSCM) method was applied to the collected samples to calculate the peak metamorphosed temperature as the Temperature Index (T.I.), which is then used to constrain the routing system between the source and the sink. Vitinite reflectance were used to characterize temperature of carbonaceous materials in the Coastal Range. Temperature derived from drift woods and concentrated carbonaceous materials from crushed rocks in the strata revealed two distinct trend, one increase in temperature down section, and one decrease in temperature down section. This indicates both burial history of the sink and unroofing history of the source can be recorded in the sedimentary basin and be revealed by temperature signals of carbonaceous materials.