

## Evaluation for provenances of plant fragments in marine sediments deposited by flood using biomarkers

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Gravity flow depositional processes in deep sea are mainly attributed to fluidization of shallow marine sediment and direct flood discharge from land to deep sea. Hyperpycnite is deposited during large flood event caused by heavy rain, and distributions of hyperpycnite possibly record the occurrence of heavy rain in the past. The hyperpycnite can be recognized by distinctive sedimentary structure such as coarsening upward at its basal part, although the structures are not always preserved. Recent studies indicated that provenances of plant fragments in the sedimentary sequence formed by flood-induced gravity flow are different from those by other gravity flow. In the present study, we analyzed plant biomarkers in river mouth sediments to discuss the transport processes of plant fragments during the flood events.

We used sediment core samples recovered from the mouth of Fujikawa River in the Suruga Bay (50 m water depth). These core samples were immediately recovered before and after a flood event caused by typhoon No.18 in 2013. The sample recovered before the flood event is composed of silty grains with few plant fragments, while the sample recovered after a flood event is characterized by plant-rich sandy sediment.

Compositions of biomarkers, particularly gymnosperm-derived diterpenoic acids, indicate variable provenances of plant fragments. The diterpenoid acids in the sample deposited before the flood is mainly composed of isopimaric and pimaric acid, despite of abundances of dehydroabietic acids in flood sediments. Tree-dominant vegetation (e.g. *Cryptomeria* and *Chamaecyparis*) area is located in the lower reach of the Fujikawa River. On the other hands, some families of *Pinaceae* are mainly distributed in the upper reach of the Hayakawa River, which is a tributary river of Fujikawa River. The dehydroabietic acid is known to be typical *Pinaceae* biomarker, while the *Cryptomeria* and *Chamaecyparis* do not contain. Moreover, hydrological observations show large contribution of water transport by Hayakawa River during the flood event. Thus, a large amount of plant fragments was presumably transported from the upper reach of Hayakawa River due to the high energy of river flow by only flood system.