

Relationship between sedimentary environment and change in type/magnitude/frequency of paleo-hazard history recorded in the sediment of Lake Suigetsu during the late Holocene

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Occurrences of floods and earthquakes could cause the inflow of enormous material to sedimentary basin and consequent deposit of “event deposits (event layers)”. Event deposits could be the recorder of hazard events in the geological past, exceeding the limit of observation and historical record. However it is not easy to distinguish the cause of deposition of event layers and magnitude of each event. In addition, it is also necessary to consider the change of sedimentary environment which could affect the boundary conditions of deposition and scale of event layers. In this study, we tried to reconstruct the record of heavy precipitation and flood events on the last 7000 years using sediment of Lake Suigetsu (SG12 core) based on correlation of observational record and sediment. As a result, depositional processes for recording the occurrence of heavy precipitation and flood events are revealed as below;

1) Flux of detrital material from drainage area increases with the frequency of heavy precipitation (>50mm/day).

2) Light gray event layer is deposited with the occurrence of flood event and its thickness represents the total amount of precipitation in the flood event.

In addition to this result, we reconstructed the flux of sediment components including detrital material from different sources and correlated the result with other environmental record obtained from the sediment of Lake Suigetsu. As a result, local environmental changes described below are revealed.

1) Flux of detrital material would increase and keeps high level in ~100 year time scale occasionally after the deposition of event layers. This could be caused by the increase of erosion rate triggered by slope failures.

2) After the deposition of event layers which are correlated with historically recorded earthquakes, flux of detrital material would increase and keep high level in ~1000 year time scale. This could be the result of topographic change of drainage area caused by fault movements.

Related to this presentation, establishment of proxy for reconstructing heavy precipitation and flood event based on correlation of sediment and observation is presented in H-SC07 session, and correlation of the result of flood event in the late Holocene with regional climate change would be discussed in M-IS 06 session.

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