

Structure of submarine mass-transport complexes(MTCs) southern Mt.Kaimon

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We discovered submarine mass-transport complexes (MTC) at southern Mt.Kaimon, southern Kagoshima Prefecture, and we conducted seismic reflection and seafloor topography surveys to clarify its structure in detail. We obtained the reflection seismic data, using 60cubic inch air gun and 6-channel multi-streamer to derive seismic reflection sections through the general method processing and CMP gather. Further, multi-hill shade map, slope map, and Terrain ruggedness index map were created using the seafloor topographic data. The resultant terrain structure allow us to divide the submarine MTC into six characteristic areas: Area I : “Extensional ridges and blocks” of large-scale blocks with their length of more than 500 m, Area II : “Remnant Blocks” of small-scale blocks with their length of less than 500 m, AreaIII: “longitudinal shares and pressure ridges” , AreaIV: “pressure ridges” , Area V: “Outrunner blocks” Blocks on the edge, AreaVI: “Fold and thrust systems (and pop-up blocks)” . The seismic reflection results show following structures: Area I have been deformed by external force, and its basal shear surface (BSS) has been cut-off at the area boundary. In Area II , a slump structure and some deformed blocks were confirmed. In AreaIII, the sequence is clearly seen at the surface and bottom layer. A stratified structure remains between AreaIII and IV. AreaIV has a thrust that extends from BSS. Area V indicates a disordered surface at more shallow layer than other area. AreaVI shows clear Folds and Fault above the BSS layer. A continuous BSS is observed in Areas II -VI, while the BSS has been cut-off in Area I . In the area where is continuous BSS and east-west compression fault, the structure changes continuously from east to west. AreaVI has north-south compression folds and faults. Area I is considered to be an event that is temporally and spatially separated from the others, because Area I cuts the BSS (the flow is southward), is discontinuous in topography, and shows the structure of north-south compression. And AreaVI may have terminated this flow because of north-south compression. We propose the following scenarios based on these facts: The seafloor collapsed westward at the cliff east of MTC before Mt.Kaimon erupted, and swept away the seafloor(Area II - V). And Area I is estimated the flow from Mt.Kaimon after Area II - V had collapsed.

Keywords: Mt.Kaimon, mass-transport complexes(MTCs), seismic reflection(MCS)