Investigating Origin of landslide-like bathymetric feature at southern Mt.Kaimon using bathymetric and multichannel seismic reflection surveys

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The existence of a landslide-like bathymetric feature is reported (Japan Coast Guard, 2007) to the south of Mt.Kaimon volcano that started eruption at the shallow sea area about 4400 years ago. We conducted the multichannel seismic reflection and bathymetric surveys in March and October 2018 using T/S 'Fukae-maru' to investigate how the landslide-like bathymetric feature was formed and where the source was if it was formed by a landslide. The bathymetric data (Figure) are used to make hill-shade map, slope map and terrain ruggedness index map, which characterize bathymetric features. We acquired seismic reflection data sets along eleven survey lines across the landslide-like bathymetric feature (green lines in Figure), which allows us to provide eleven seismic reflection profiles. The seismic reflection profiles indicate that there is a clear reflection boundary, which divide into two areas: The lower layers below the reflection boundary observed at large area and were not affected by stress. Many reverse faults and folds in the upper layers above the reflection boundary with its thickness of about 70m, which were formed by horizontally compressional stress. The analysis of the reflection profiles and the bathymetric lead to, divide the landslide-like bathymetric feature area into four areas. We name each area North-Eastern, South-Eastern, Central and Western part, which shows characteristic features as bellows:

・North-Eastern part; this area is large rugged sea bottom and slope. In the reflection profile, the boundary of upper and lower layers is not so clear. Deeper layers are not observed.

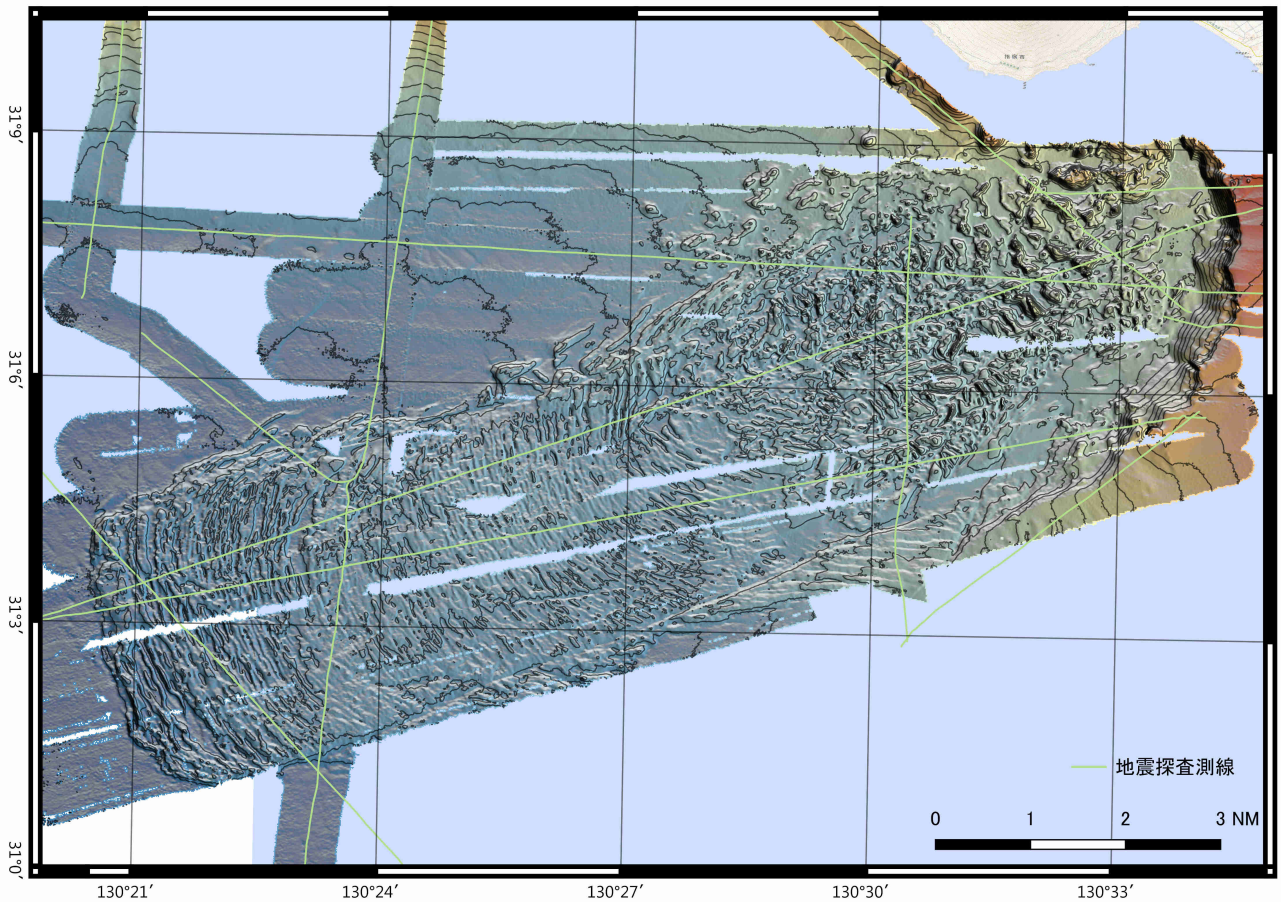
・South-Eastern part; this part is little rugged sea bottom and slope. In the reflection profile, there are some reverse faults and the fault strikes are East-West direction. Stratified structures are also found in spots.

・Central part; this part is the least rugged sea bottom and slope of four area. In the reflection profile, there are a lot of reverse faults. The fault strikes are always North-northwest-South-southeast direction. Stratified structures are found at eastern and western edge.

・Western part; this part is not as large as North-Eastern part, but large rugged sea bottom and slope. In the reflection profile, there are many (but less than Central part) reverse faults, and the fault strikes are North-South.

These characteristic features duggest that an event sweeping the ocean bottom was occurred at northern North-Eastern part, and directions the sweeping landslide are moving in south and west-southwest. It is because deeper layers are effected by collapse at North-eastern part, compressional stress is estimated by faults and folds (direction at the eastern part is North-South and at the central-western part is East-West) and bathymetric feature is more rugged at the eastern part.

Keywords: seismic reflection, ocean bottom topography, Kaimondake



国土地理院の電子地形図（タイル）に海底地形図と反射波地震探査の測線を追記して掲載

