

Seamounts and Submarine Landslides: Study Case of Island Arcs Area in North of Sulawesi

Authors : Muhammad Arif Rahman, Gamma Abdul Jabbar, Enggar Handra Pangestu, Alfi Syahrin Qadri, Iryan Anugrah Putra, Rizqi Ramadhani.

Abstract : Indonesia lies above three major tectonic plates, Indo-Australia plate, Eurasia plate, and Pacific plate. Interactions between those plates resulted in high tectonic and volcanic activities that correlates into high risk of geological hazards in adjacent areas, one of the areas is in North of Sulawesi's Islands. This case raises a problem in terms of infrastructure in order to mitigate existing infrastructure and various future infrastructures plan. One of the infrastructures that is essentials to enhance telecommunication aspect is submarine fiber optic cable, that has risk to geological hazard. This cable is essential that act as backbone in telecommunication. Damaged fiber optic cables can pose serious problem that make existing signal to be loss and have negative impact to people's social and economic factor with also decreasing various governmental services performance. Submarine cables are facing challenges in terms of geological hazards, for instance are seamounts activity. Previous studies show that until 2023, five seamounts are identified in North of Sulawesi. Seamounts itself can damage and trigger many activities that can risks submarine cables, one of the examples is submarine landslide. Main focuses of this study are to identify new possible seamounts and submarine landslide path in area North of Sulawesi Islands to help minimize risks pose by those hazards, either to existing or future plan submarine cables. Using bathymetry data, this study conduct slope analysis and use distinctive morphological features to interpret possible seamounts. Then we mapped out valleys in between seamounts and determine where sediments might flow in case of landslide, and to finally, know how it affect submarine cables in the area.

Keywords : bathymetry, geological hazard, mitigation, seamount, submarine cable, submarine landslide, volcanic activity

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