

## **Numerical evaluation of the coral damages by the 2004 Indian Ocean tsunami at Similan Islands, Thailand**

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Coral reefs are ecologically and economically valuable. Thus, the influences against the marine ecosystem and the local economy are considerably large, when the coral reefs are damaged by the natural disasters such as outflow of red clay, the rise of the temperature of seawater, and hydrodynamic disturbances (e.g., cyclones and tsunamis). After the 2004 Indian Ocean tsunami, the damages on corals were extensively studied by various international teams. However, there is no quantitative study that evaluated the relationship between the degree of the damage on corals and the hydraulic values of the tsunami. In this study, we investigated the relationship between the coral damages by the 2004 Indian Ocean tsunami and the hydraulic value of the tsunami at Similan Islands, Thailand, based on the numerical modeling of the tsunami inundation. As a result, it was found that the current velocity of the tsunami was one of the important factors for the damage of corals. However, the degree of damage was highly variable depending on the relative position against the incident tsunami wave and the local bathymetry.