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津波数値解析に基づく2004年インド洋大津波によるサンゴ被害の評価

Evaluation of coral damages by the 2004 Indian Ocean tsunami based on numerical calculation.

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Physical impacts on coral bodies by the extreme wave have long been discussed by coral communities, especially after the 2004 Indian Ocean tsunami event. This is because the tsunami caused extensive damages along the coasts of the Indian Ocean countries, where coral reefs are regarded as important tourist resources (Chavanich et al., 2008). After the tsunami, many organizations and researchers surveyed damages on corals at Indian Ocean countries such as Thailand, Indonesia, and Maldives. However, it has been difficult to identify the major cause of coral damages by the tsunami, because of unsystematic damage patterns depending on the local factors. For this reason, it has been considered that coral damages by the tsunami are unpredictable (e.g., Satapoomin et al., 2007).
Kawamata et al. (2009) discussed the relationship between the tsunami hydrodynamic features and coral damages in the part of Similan islands in Thailand using tsunami numerical modeling results. They found that coral damages are severe where the maximum current velocities of tsunami are high. In addition,it was also found the current velocity of tsunami is one of the important factors for the damage of corals.
In this study, we further conducted numerical calculation of the tsunami in the coastal areas of Indian Ocean countries such as Surin islands in Thailand, Maldives, and Indonesia, where extensive emergency surveys on coral damages had been done immediately after the tsunami, to verify the applicability of proposed relationship between tsunami hydrodynamic features and coral damage by Kawanata et al. (2009).
As a result, we found that coral damages by the 2004 Indian Ocean tsunami were universally severe in the area where the maximum current velocities of the tsunami were high as like the case at Similan islands.

キーワード:インド洋大津波,数値解析,サンゴ被害

Keywords: Indican Ocean tsunami, Numerical calculation, Coral damage