

Building Resilient Coastal Communities: Coupling Typhoon Destructiveness and Social-Ecological Systems for Informed Planning



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One of the most dominant coastal hazards is tropical cyclones (TC) and it poses risk to millions of people and billions of worth of infrastructure, annually. This situation is particularly notable along the Chinese coastline due to the most active behavior of the associated TC basin (western North Pacific). In the face of intensifying TCs due to climate change, governments and policymakers particularly seek solutions to reduce TC-related damages and enhance resilience to avoid adverse impacts in future. In this context, I will present our proposed framework on how the integration of TC destructiveness with social-ecological systems via spatial information modelling can provide progressive opportunities for an informed future coastal planning. Using Mainland China's coastal regions as an example, the proposed framework is formulated to integrate geographic information system (GIS) with the evaluation of typhoon activity (spatial-temporal) and extend it to investigate the resilience of coastal communities. The framework consists of three work modules: 1) data acquisition and preprocessing of landed and formed typhoons, 2) identification of hotspots of typhoon destructiveness using geo-information models, and 3) community resilience assessment of these hotspots against landfalling TCs along with evaluating the long-term trends in TC destructiveness. In this talk, detailed methodology and results will be discussed along with presenting potential future work directions.



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