

EGU22-13262

<https://doi.org/10.5194/egusphere-egu22-13262>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



An Empirical Approach for Developing Vulnerability Functions of critical infrastructures to Tropical Cyclones

Kai Liu, Jiatong Zhu, and Ming Wang

National Safety and Emergency Management, Beijing Normal University

Tropical cyclones pose great risks to infrastructures. We used records of road and electric power system damage from TC events in Hainan Province, China, to construct vulnerability models that quantify the relationship between road and electric power system damage level and different TC intensity measures. These measures include cumulative precipitation and maximum wind speed, as well as their joint effect. We found that the derived vulnerability model of the joint effect of precipitation and wind speed outperforms models constructed with single TC intensity measures. The derived functions show a good fit to the observed data and can provide an accurate estimate of road and electric power system damage from TCs, as validated by historical damage records.