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[Abstract Title]

The increasing probability/conditional probability of tropical storm-related Natechs in the United States

[Abstract]

Chemical release accidents triggered by natural hazards are known as Natechs. Evidence from past Natechs shows that these types of cascading events can result in high economic losses and long-term environmental problems. One type of natural hazards, namely, tropical storms are becoming an important cause of Natechs in the United States (US) according to an analysis of chemical release accidents reported to the National Response Center (NRC) database. However, it is still unclear whether and how the probability/conditional probability of tropical storm-related Natechs changed, which could be important for Natech risk assessment from a regional view. This study used spatial analysis methods to analyze the trends of the probability/conditional probability of tropical storm-related Natechs reported to the NRC database from 1990 to 2017 on a regional basis. Based on that, the fragility curves to describe the conditional probability of tropical storm-related Natechs due to the wind energy of tropical storms are estimated. The results suggest that both the probability and the conditional probability of tropical storm-related Natechs are on the rise. Wind energy of tropical storms is found to be a good estimator of the conditional probability of tropical storm-related Natechs from a regional view.



[Keywords]

Natech, tropical storm. conditional probability estimation