Geophysical Research Abstracts
Vol. 20, EGU2018-3807, 2018
EGU General Assembly 2018

Different Land Uses Flooding Vulnerability Maps in Subsidence Area

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This study aims at flooding vulnerability maps of different land uses in the subsidence area in southern Taiwan. Those areas are low-lying due to subsidence resulting from over-pumping groundwater for aquaculture. As a result, the flooding due to storm surges and extreme rainfall are frequent in this area and are expected to occur more frequently in the future. The main land uses there include residence, aquaculture, and fruit trees. The vulnerability maps of the three land uses are investigated.

The impact factors of the vulnerability for each land use are as follows: (1) residential area-population (PO), vulnerable population (VP), distance from river and seacoast (DR), waterproofing facilities (WF), and rescue facilities (RF); (2) aquaculture- inflow of turbid fluid (ITF), dike type (DT), and warning time (WT); (3) fruit trees- inflow of turbid fluid (ITF) and warning time (WT). A scenario with 24hr-700 mm of two-dimensional flooding simulation was carried out to obtain hazard parameters. Vulnerability mapping was drawn according to the factors and their corresponding grades. Combining with factors of hazard, the risk maps of flooding of different land uses in subsidence area can be made and those maps can be used for planning strategies for adaptations in the high-risk flooding areas.