



An Agent-Based Simulation Approach for Studying Human-Flood Interactions and Regional Evacuation Modelling

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The presented research focuses on studying the human-flood interactions during a flooding event and finding the critical factors that play an important role in regional evacuations in the Southern Sagaing Region in Myanmar, by using agent-based modelling. The existing literature on human-flood interactions and evacuations were researched and evaluated to better understand the reasons for a particular human behaviour at the time of an evacuation process. The main factors that help in deciding if an individual takes protection actions to mitigate the flood risk are risk perception, surroundings and the availability of resources to evacuate. The simulation model uses the basic human behaviour on a micro-scale to simulate the complex behaviour on a macro-scale. Several scenarios, related to lead time, the area of warning, flooding onset, and social parameters were tested and it appears that the characteristics do not affect the outcomes of the evacuations in any severe way. The research concluded that the main limitation in the evacuations is the road capacities. It was found that the major problems happen nearby the shelters, where the maximum human agents come together and create jams. This can result in severe problems if floodwaters hit these areas. The humans that are flooded commonly live near the river and therefore cannot evacuate on time from the flood zone, no matter which parameters are applied.