



## **Analysis of the Economic Impact of Natural Disasters on Tourism Industry – Case Studies on Cities Threatened by Floods in China**

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Currently tourism is a strategic industry in many parts of China. However, the tourist industry can be significantly affected by serious threats of floods. Now most tourism research has been focused on assessing the direct economic loss induced by the flood and putting forward risk management policies, and few focus on the indirect economic loss of the tourism due to the tourist reduction, site closure and transportation interruption caused by the flood disaster. In this study, firstly a real-world tourism system is represented through an Agent Based Model (ABM) to simulate the interaction of system elements. The feature, preference and behavioural rules of different agents (i.e. tourist agents, accommodation agents, residential agents and government agents) are generated in accordance with actual conditions derived from the data collected through survey, literature review and statistical yearbook. Thirdly, different extent flood disaster scenarios (including flood area, flood duration time) are generated and the influenced agents are identified and classified by using the Geographic Information System platform. Finally, long-term tourist trends are used as well as the tourist disaster risk preference to calculate the tourist number reduction in different flood disaster scenarios. Then, the tourism revenue loss is estimated by multiplying the decreased number of the tourists by the expenditure of touristic activity considering different preference during the flood disaster scenarios. Two cities in China have been used as case study sites: Lishui in Zhejiang and Dechang in Sichuan with contrasting socioeconomic and environmental conditions. This study is one of the few to consider the economic effects of flood disaster on the tourism via ABM. The results of this paper can provide a better understanding of tourism agent behaviours in relation to the flood disasters and the resulting model can be used as a support tool to help local stakeholders make future tourism planning and flood disaster management. The study is supported by the RESIST project funded by NERC (UK) and NSFC (China), and China Scholarship Council (China).

**Keywords:** Tourism industry, Agent Based Model, Tourist trend lines, Natural disasters, Economic impact, Lishui and Dechang