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## **Optimal allocation of water resources under natural and social complexities in Lincang, a border city of China and Burma**

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A two-stage interval fuzzy credibility constraint programming method is proposed to deal with the uncertainties of fuzzy variables, discrete intervals and probability distributions, and to reflect the dynamic uncertainties and related decision-making processes. Lincang City is located in the southwest border of China. It is a frontier window and an important channel for China to face the "radiation center" of Southeast Asia and South Asia. It is the only intersection of the Tropic of cancer and the geographic water distribution lines of the Pacific Ocean and the Indian Ocean. Its hydrological and water resources are unique. Considering lincang city, yunnan province as the research object, and considering the uncertainty of the amount of available water resources within the region, a two-stage fuzzy credibility constraint programming model was built to optimize the allocation of regional water resources. The objective function of the model is to maximize the economic returns of the system. Fuzzy variables, discrete intervals and probability distribution are introduced to represent the multiple uncertainties in the system. The confidence level is set to solve the problem of fuzzy risk with violation probability. The results show that the model can effectively deal with the uncertainty of the allocation system, and reflect the trade-off between the system benefits and risks, so as to reduce the risk of water shortage and low economic penalty, and achieve efficient allocation of water resources.