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Title: Extended Range Prediction of 2013 North Indian Heavy Rainfall Event by an Ensemble Prediction System

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Abstract:

In 2013, the Southwest monsoon of India covered the entire country one month earlier than its normal date and concurrently, extreme rainfall was experienced in the northern state of Uttarakhand. This study investigates the scientific rationale behind the fast advancement of monsoon and the incidence of the extreme event, with a hypothesis that same meteorological conditions might have triggered both of them. It is found that the interaction between a monsoonal low pressure system and midlatitude systems possibly originated from the Arctic region helped both the early advancement of monsoon and the generation of the heavy rainfall event aided by orographic uplift. The predictability of Uttarakhand event by the ensemble prediction system based on both high (T382) and low (T126) resolution versions of the coupled general circulation model CFSv2 has also been explored. Although the models predicted the event 10-12 days in advance, they failed to predict the midlatitude influence on the event. In both the models, the event was produced by the generation and northwestward movement of low pressure system developed in Bay of Bengal.

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