

Attribution of 2017 Brahmaputra Floods: Implications for Loss and Damage

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Bangladesh is listed as one of the countries most vulnerable to climate change. It has one of the largest population densities in the world, resulting in high pressure on land and water resources. When an extreme weather event such as flooding occurs, millions of people are displaced and both freshwater supply and agricultural production are affected. The Risk Evaluation of Brahmaputra Inundations for Loss and Damage (REBuILD) project looks at quantifying the human induced change in likelihood of the 2017 Brahmaputra flood. Output from the weather@home distributed computing project is fed into three hydrological models (SWAT, Lisflood and RFM) enabling multi-model inter-comparison. Human induced aerosols currently mask the effect of greenhouse gas emissions on 10-day precipitation and river runoff. This has implications for clean air policy in Bangladesh; aerosol reduction will reveal already committed increases in magnitude and frequency of flooding from greenhouse gas emissions. Experiments comparing climate limited to 1.5 and 2 degrees of warming above pre-industrial levels show a risk increase of 1.46 and 1.73 over present day conditions. Even with global mean warming limited as set out in the Paris Agreement goals, flooding events of the Brahmaputra will become more likely.

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