What caused the floods in Kerala?

Study by IIT professor identifies four major factors for the disaster

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A combination of four factors led to extreme flooding across Kerala this year, a study says. Above normal seasonal (May-August) rainfall, extreme rainfall events occurring almost across the State during the season, over 90% reservoir storage even before the onset of extreme rainfall events, and finally, the unprecedented extreme rainfall in the catchment areas of major reservoirs in the State led to the disaster.

The summer monsoon rainfall in Kerala from May to August this year was 2,290 mm, which was 53% above normal. The average rainfall during the summer monsoon period (June-September) is about 1,619 mm. This makes 2018 Kerala's third wettest year in the last 118

A file photo of a rescue effort in Alappuzha, Kerala.

years (1901-2018); 1924 and 1961 were the wettest years with about 3,600 mm of annual rainfall.

Second, till August 21, the State witnessed few extreme rainfall events covering almost the entire State. These extreme rainfall events have very low probability of recurrence in any given year.

Third, Kerala received

1634.5 mm rainfall during the period May 1 to August 7, which is more than the average rainfall (1619.37 mm) during the summer monsoon period (June-September).

As a result, six of the seven major reservoirs in the State had over 90% storage before August 8, well before Kerala received the unprece-

dented extreme rainfall events.

Finally, the catchment areas of major reservoirs in the State received extreme rainfall never before witnessed in the State. The role of other factors such as changes in how infrastructure has grown at the expense of vegetation and drainage remains to be studied.

"The State-wide flooding shows that reservoirs can play a major role in improving or worsening the flood situation," says Prof. Vimal Mishra from the Civil Engineering Department at IIT Gandhinagar.

The results of the study were posted on September 14 in Hydrology and Earth System Sciences Discussions, and the manuscript is being peer-reviewed.