Identifying human contribution to more-intense precipitation extremes

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During the past decades, heavy precipitation events have become more intense over large parts of the Northern Hemisphere land area. It has been suggested that human-induced increase in greenhouse gases may be partly responsible for the observed intensification of extreme precipitation in line with the increased water holding capacity of atmosphere with warming. However, because of the limited availability of daily observations, most previous studies have examined only the potential detectability through model-model comparisons. In this study we compare observed and multi-model simulated extreme precipitation changes using an optimal fingerprinting technique, and provide the first evidence that human influence have contributed to the observed intensification of heavy precipitation events during the latter half of the 20th century. Model projected changes and their impacts may be underestimated because models tend to underestimate the observed increase in heavy precipitation with warming.