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Projecting the Reoccurrence of one in 100-year Caribbean Hurricanes under the Paris Agreement Goals

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Hurricanes are among the most destructive extreme weather events affecting humanity, in both social and economic terms. Hurricane Dorian (2019) caused widespread devastation when it stalled over the Bahamas as a category five hurricane bringing the most rainfall to the country from a hurricane in the reliable observation period, whilst secondary events such as flooding, landslides and disease left tens of thousands of people homeless. Climate change has been shown to influence hurricane activity, but so far there have been few studies that have explored hurricane response under the Paris Agreement goals especially in the case of stalling hurricanes. Here we show that extreme hurricane rainfall events, which affect the Caribbean region, are more likely in both of the Paris Agreement scenarios compared to the present climate with five of the six 100-year hurricanes studied occurring more often in these simulations. In particular, we show a currently one in 100-year rainfall event affecting the Bahamas is at least three times as likely under the Paris Agreement goals compared to the present climate.