Macro Roundup Article

Headline: Changing Intensity of Hydroclimatic Extreme Events Revealed by GRACE and GRACE-FO

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Summary: Distortion of the water cycle, particularly of its extremes (droughts and pluvials), will be among the most conspicuous consequences of climate change. Here we applied a novel approach with terrestrial water storage observations from the GRACE and GRACE-FO satellites to delineate and characterize 1,056 extreme events during 2002–2021. Dwarfing all other events was an ongoing pluvial that began in 2019 and engulfed central Africa. Total intensity of extreme events was strongly correlated with global mean temperature, more so than with the El Niño Southern Oscillation or other climate indicators, suggesting that continued warming of the planet will cause more frequent, more severe, longer and/or larger droughts and pluvials. In three regions, including a vast swath extending from southern Europe to south-western China, the ratio of wet to dry extreme events decreased substantially over the study period, while the opposite was true in two regions, including sub-Saharan Africa from 5° N to 20° N.

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