

Assessing Water Availability for Development in Africa using GRACE Satellites

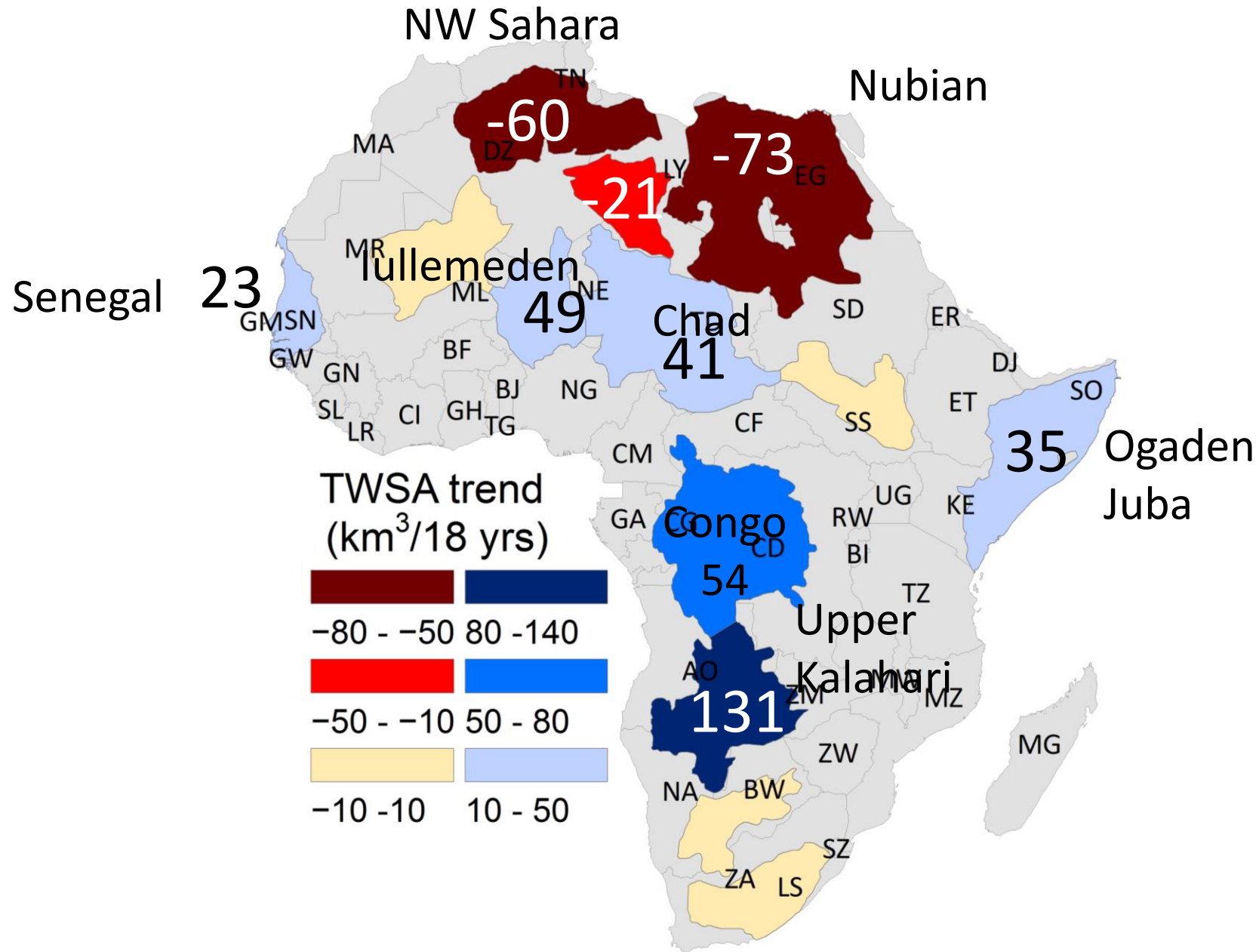


Bridget Scanlon, Ashraf Rateb, and Hua Xie*

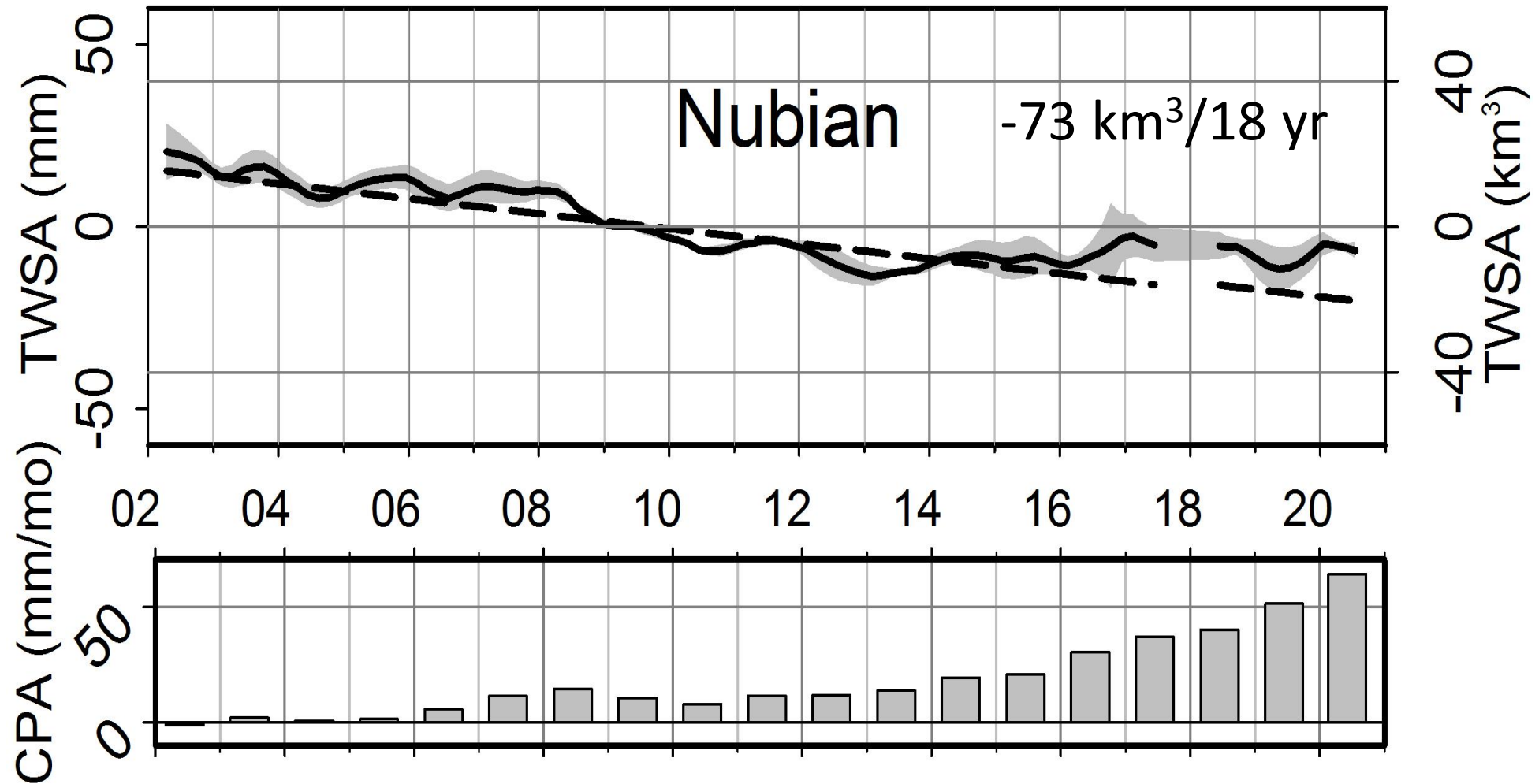
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Trends in Total Water Storage from GRACE (km³/18 yr; 2002 – 2020)

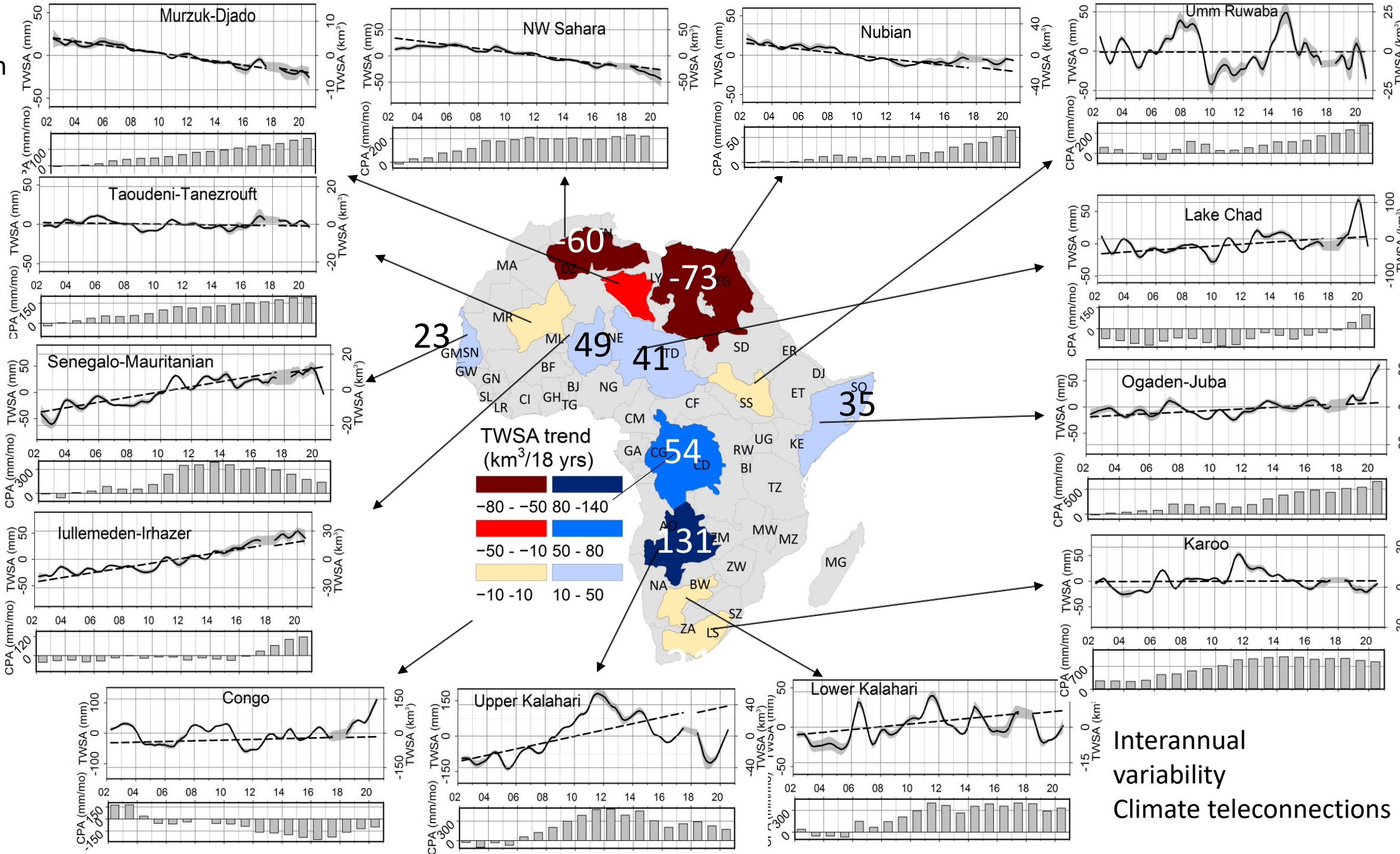


Trend in GRACE Total Water Storage



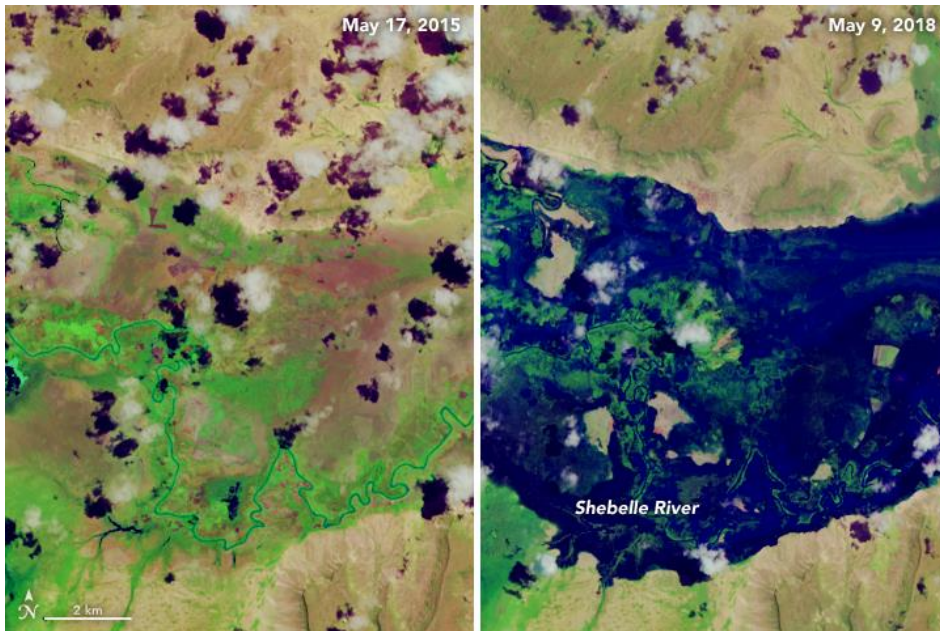
TWSA: Total Water Storage Anomaly; CPA: Cumulative Precipitation Anomaly

Human
depletion
N Africa



Wet and Dry Climate cycles in Africa

Flooding E Africa May 2018 Shebelle River

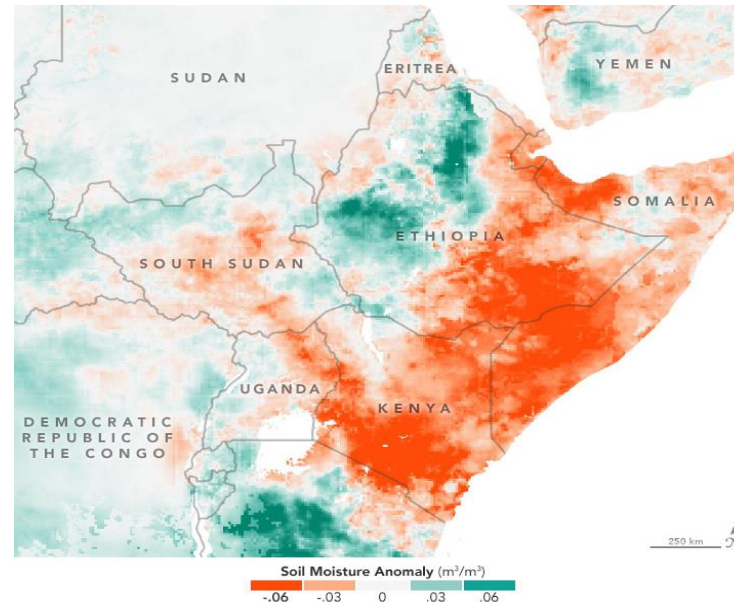


May, 2015

May, 2018

120,000 people displaced

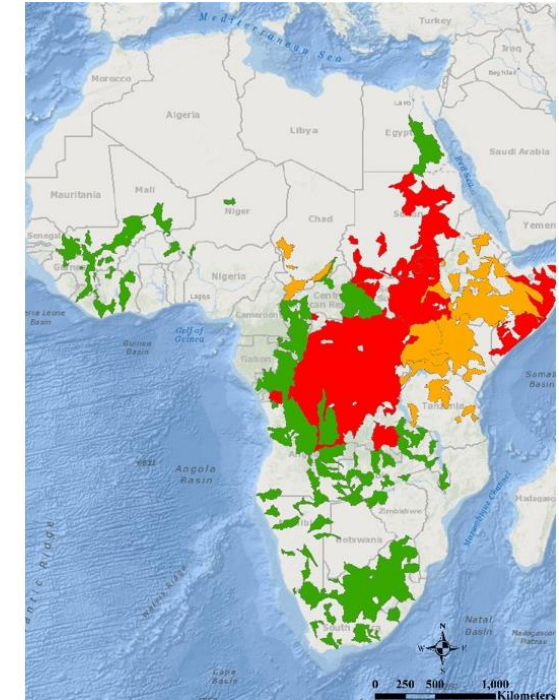
Food Crisis Grows from Dry Soils, 2019



Soil moisture, April, 2019

Somalia projected to face
severe hunger Jul-Sep, 2019

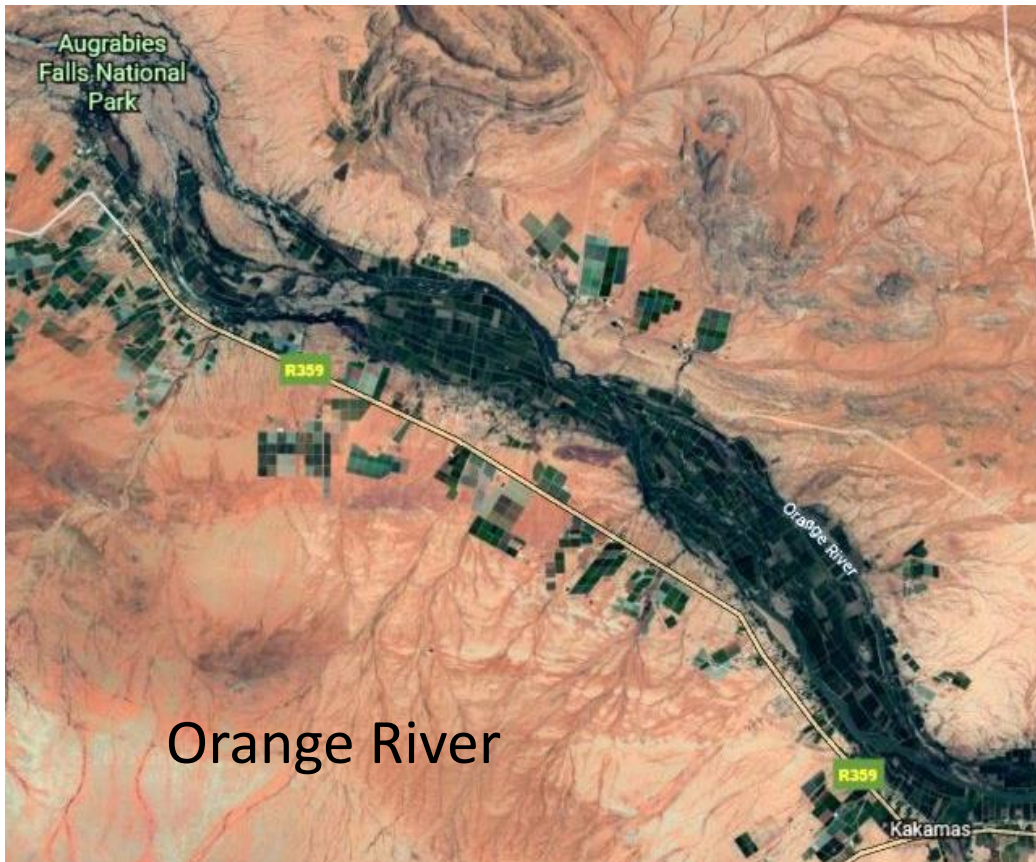
Flooding in 2020



Flooding May 2020
Red: flood watch;
Orange: warning;
Green: advisory

Adapt to Climate Extremes

- Store water from wet to dry periods (surface reservoirs, aquifers)
- Transport water (energy and economically expensive)
- Conjunctively use surface water and groundwater



Julian Conrad, GEOSS

Access to Water and Energy (AWE)



AWE

Access to Water & Energy

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