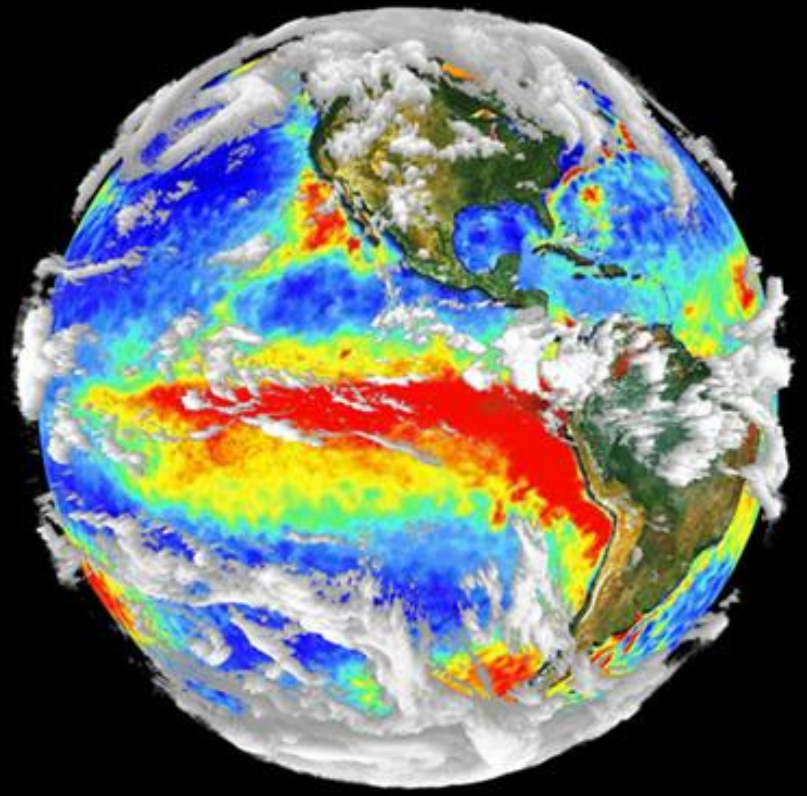
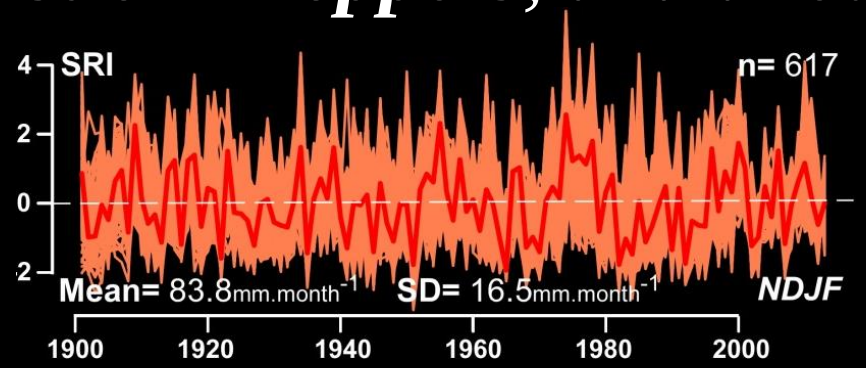
Past, Present, and Future Impacts of Climate Change & Variability on Flood Hazards in Sub-Saharan Africa

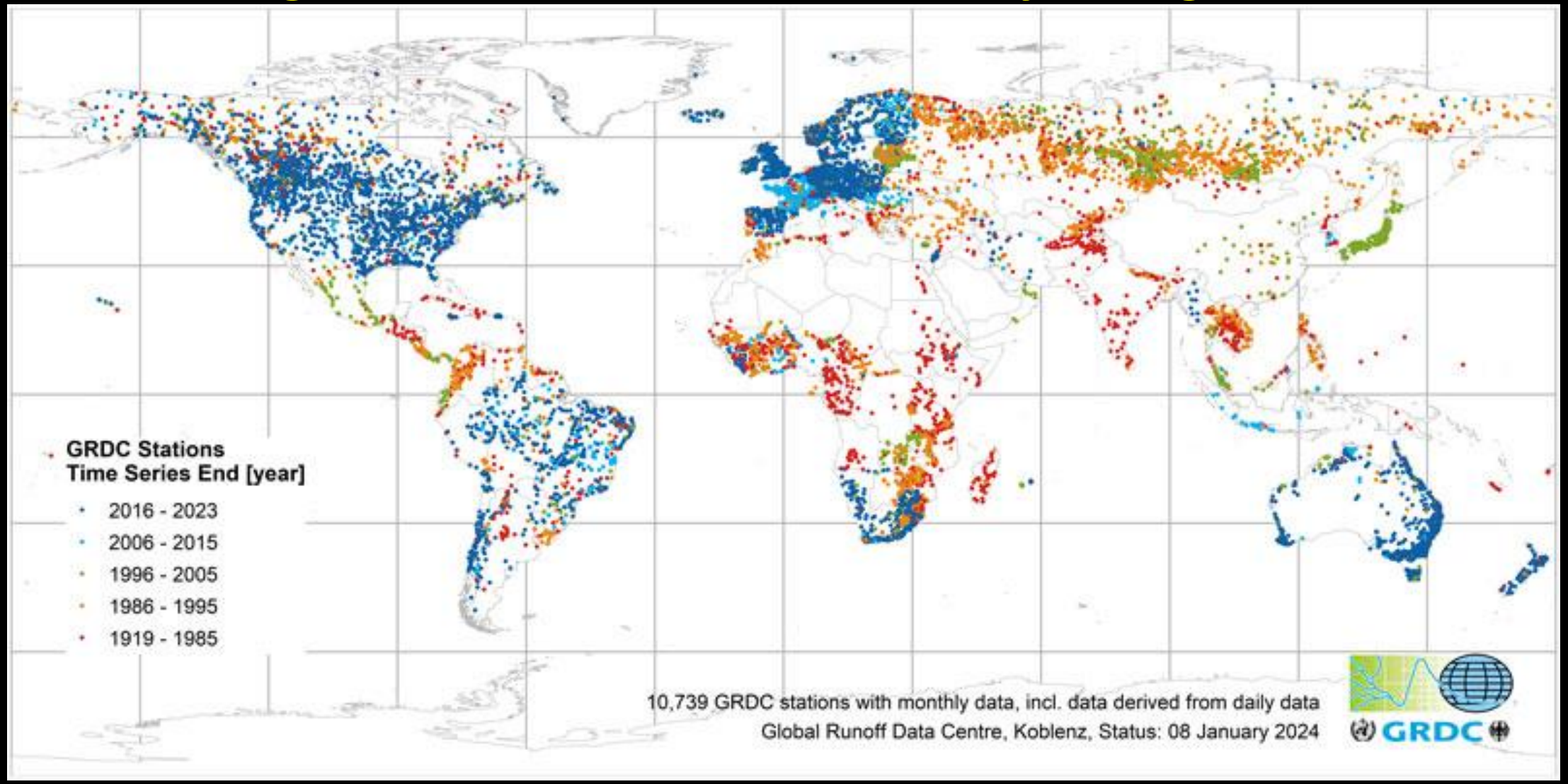
Job Ekolu, ***Bastien Dieppois****, and a lot of people!*





3rd Global Flood Forecasting and Monitoring Annual Meeting – March 05-06 2024

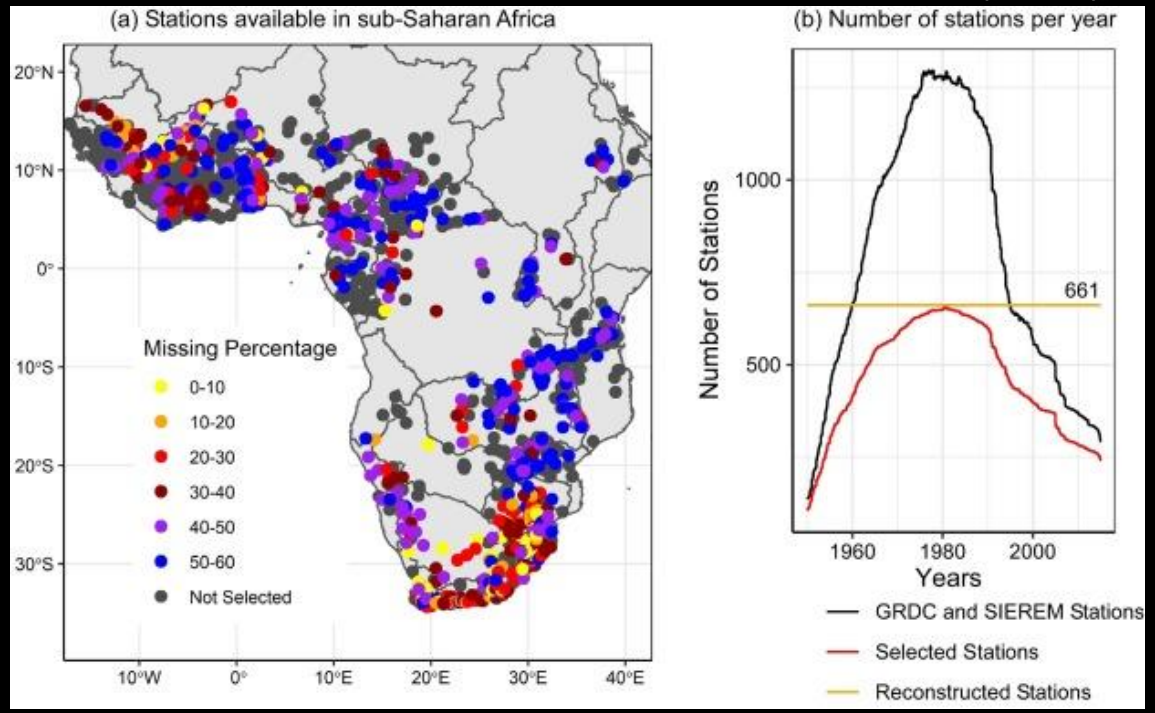
Africa is massively underrepresented in existing observational climate and hydrological datasets



Limiting our ability to assess historical/future trends and variability

But....

Ekolu et al. (2022)



Combining the GRDC & SIEREM database (1764 daily streamflow gauges)

+

Random Forest gap filling

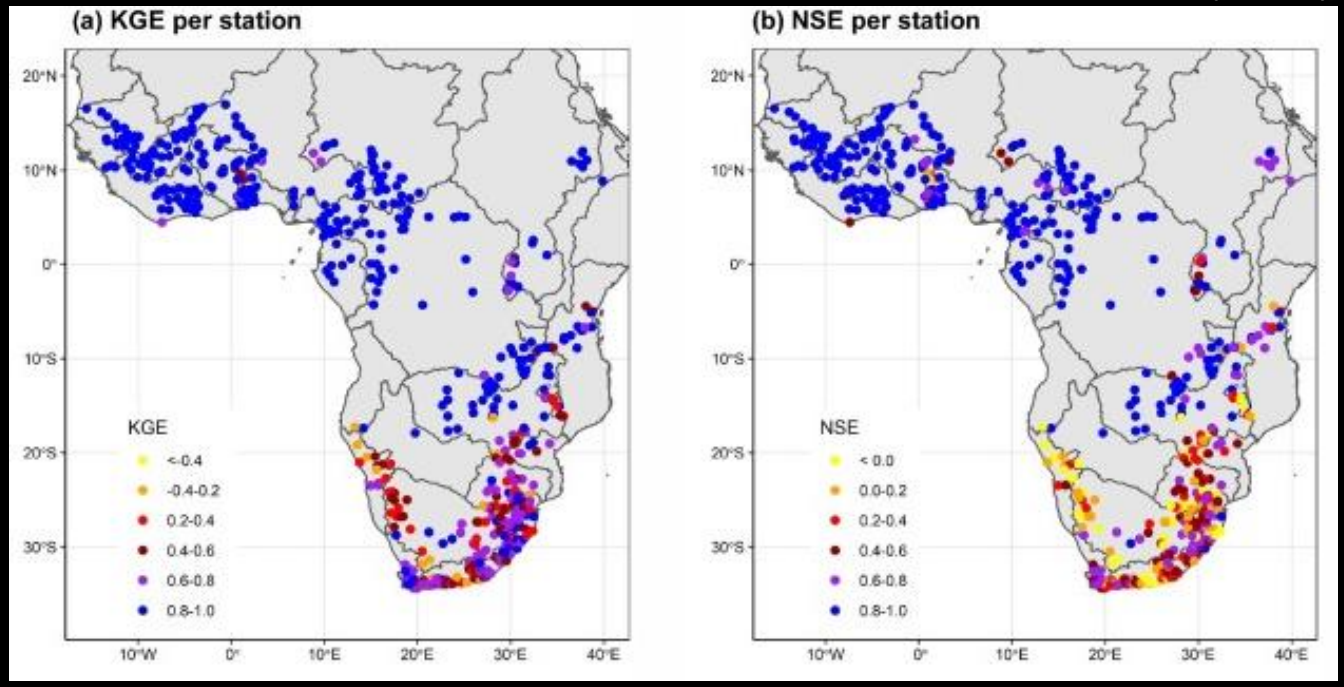
=

661 complete daily streamflow timeseries across SSA

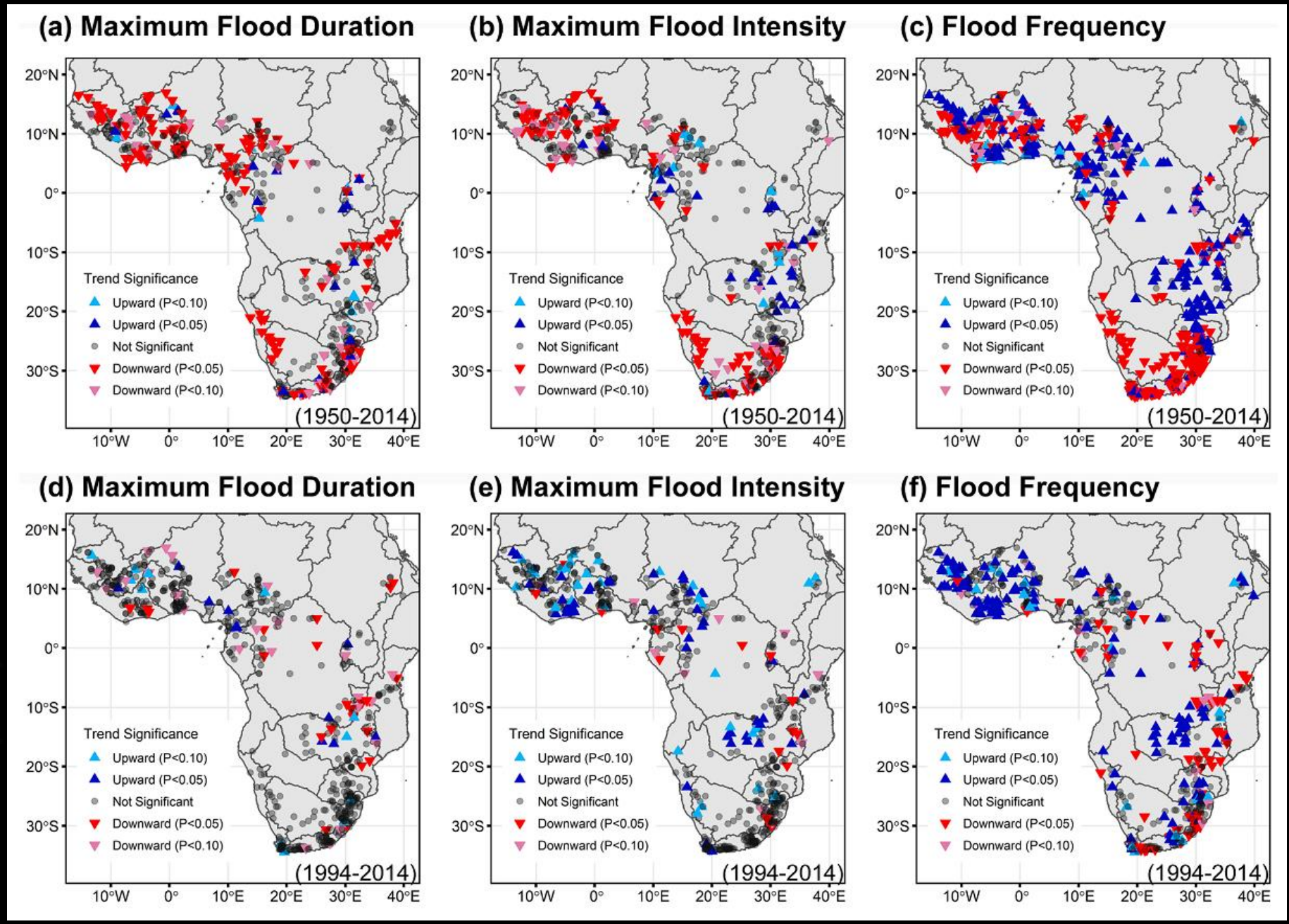
Cross-validation

Gauges with less than 40% of data, potentially strongly influenced by human activities (visual inspection), or with low cross-validated performances were excluded.

Ekolu et al. (2022)

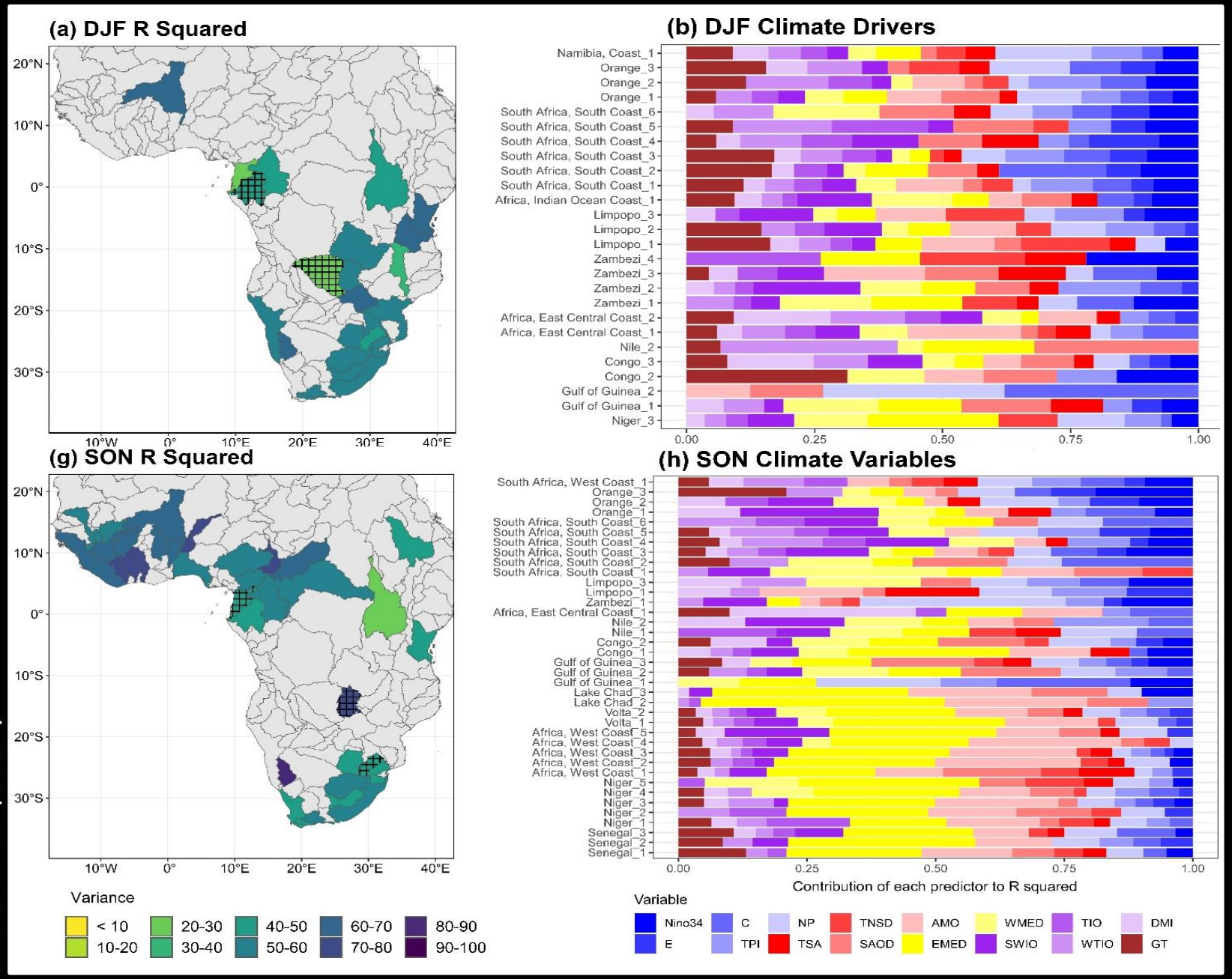


Large-scale trends and variations in flood hazards



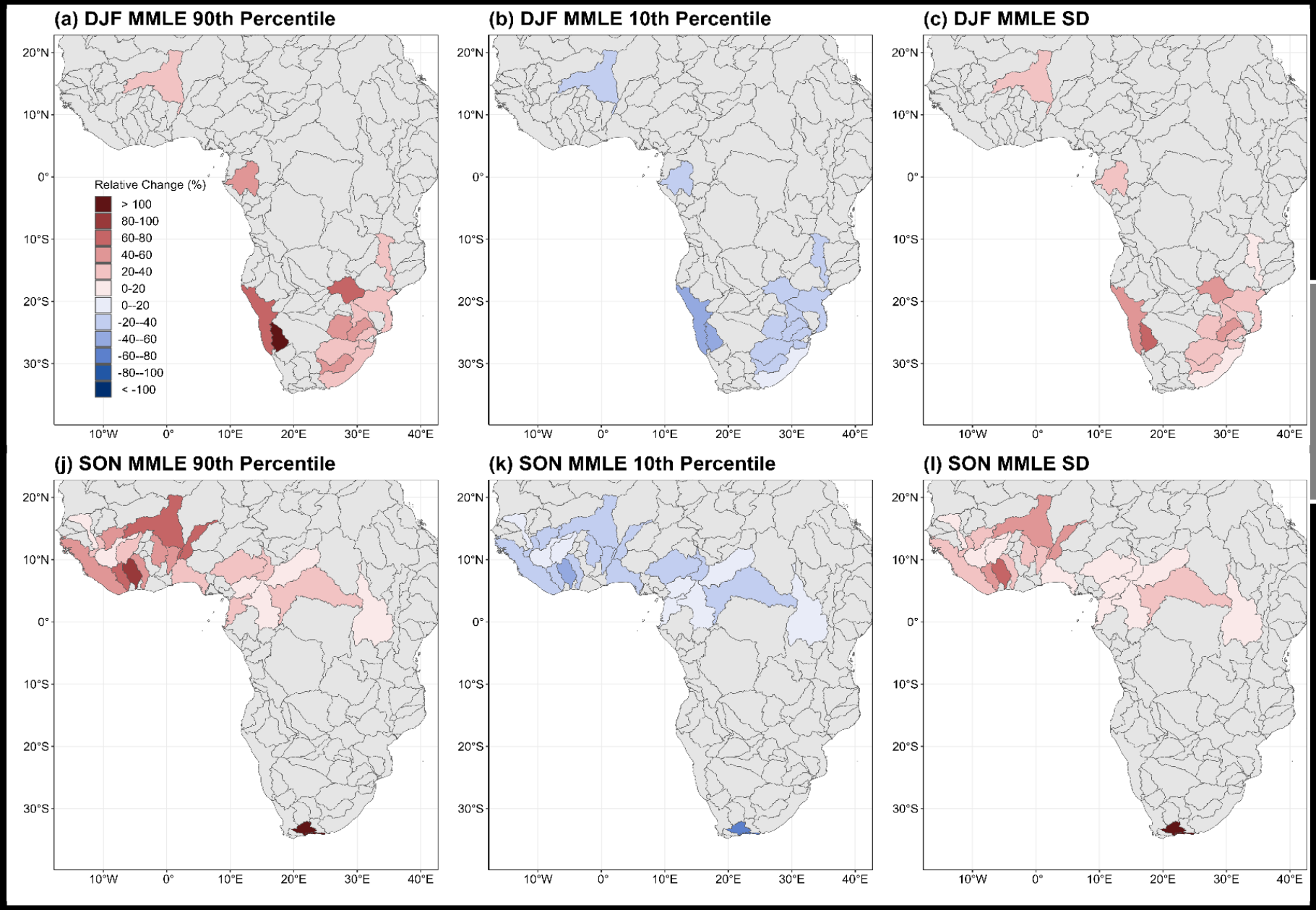
Ekolu et al. (2022)

Large-scale climate drivers of multi-year variations in flood hazards



Ekolu et al. (2024)

Future impact of internal climate modes of variability on flood hazards

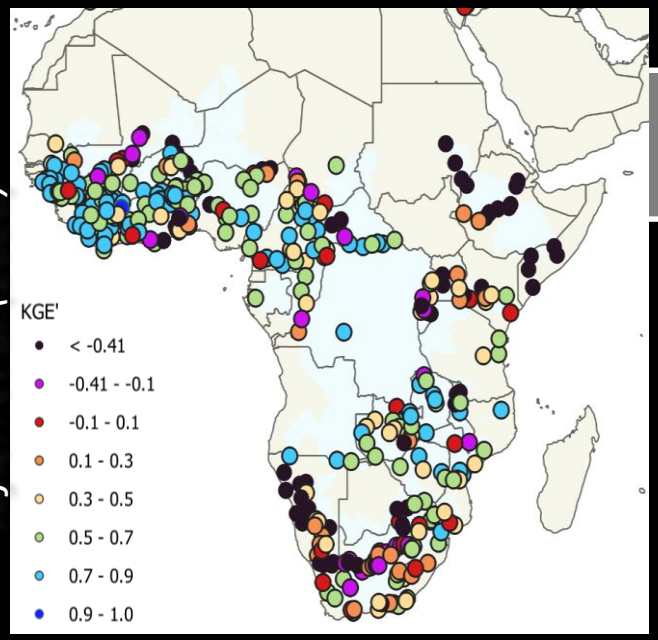


Internal climate variations could modulate future trends in flood occurrence by up to 50%

Ekolu et al. (2024)

Climate change impacts on flood frequency, magnitude, and duration

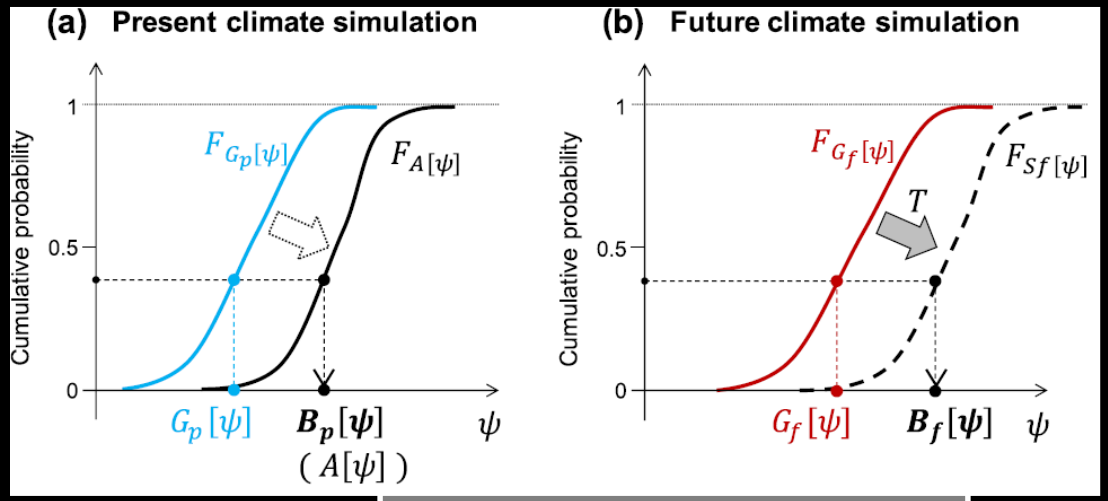
GloFASv4.0



Alfieri et al.(2020)

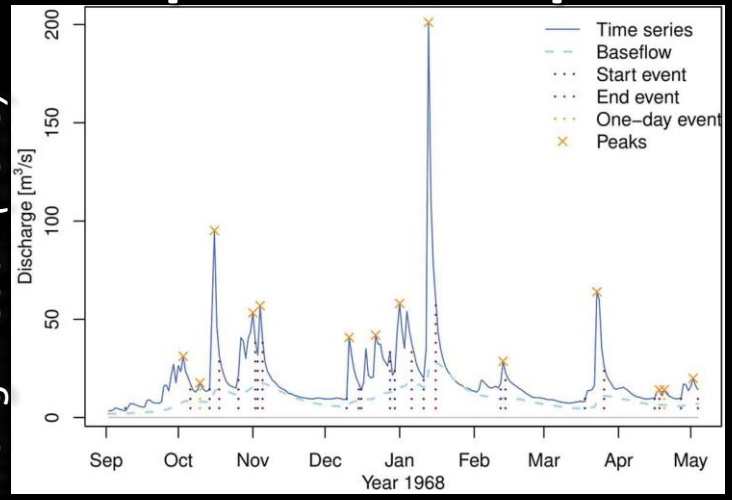
Lisflood calibrated with the ADHI database over Africa

Bias-corrected CMIP6 models



6 CMIP6 models
ERA5land as reference

Flood-peak Decomposition

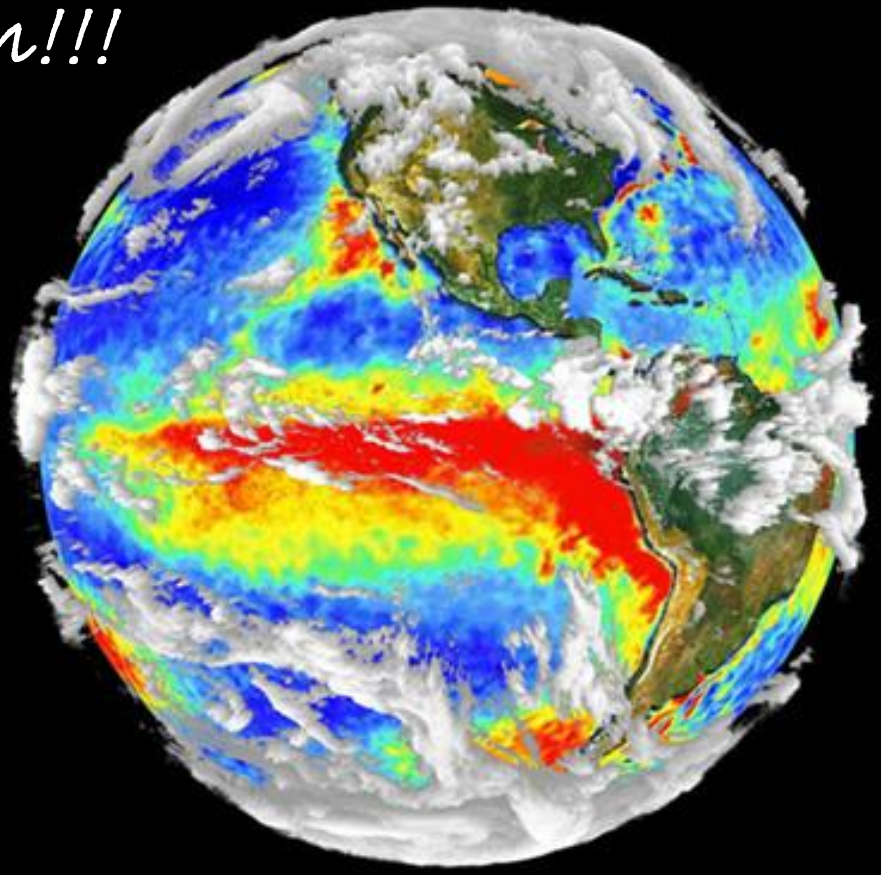


Mangini et al. (2018)

Analysis on-going!!!

Ekolu et al. (in prep)

Thank you for your attention!!!



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