

°CLIMTAG

Climate Information Tool for Agriculture

Validation

9–11 oktober 2023



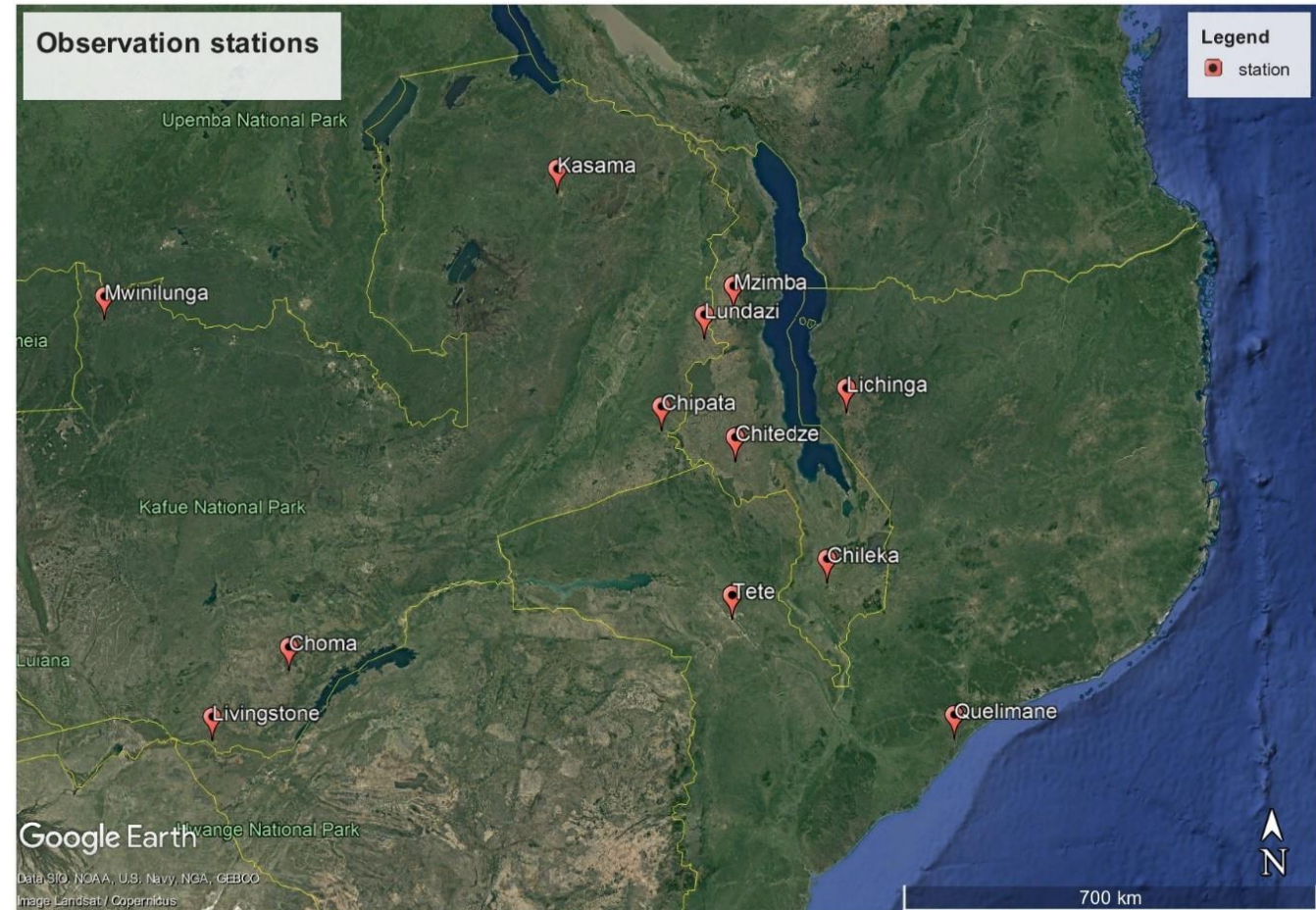
Flanders
State of the Art



vito.be

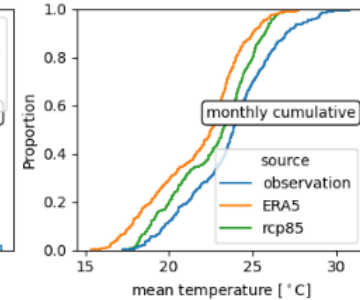
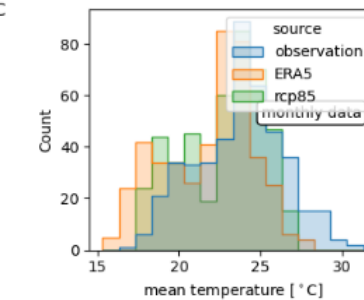
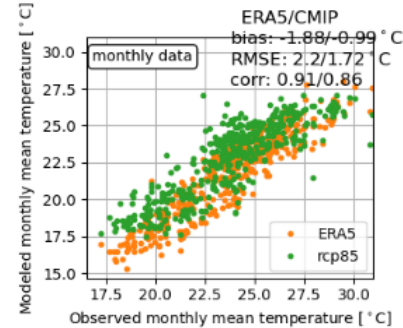
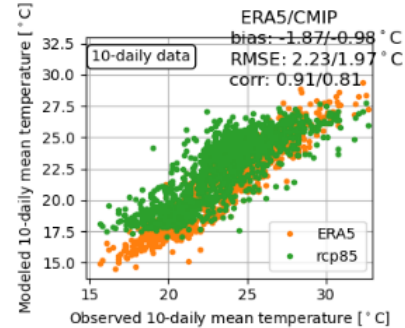
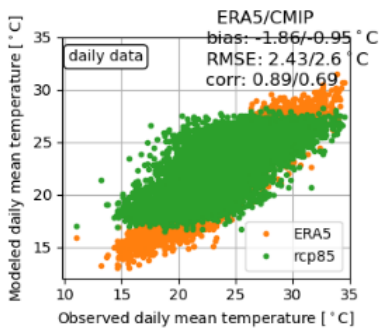
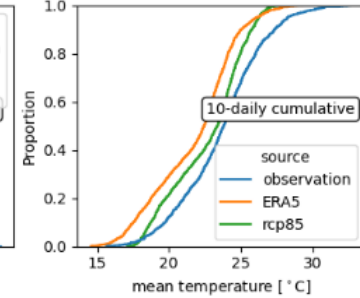
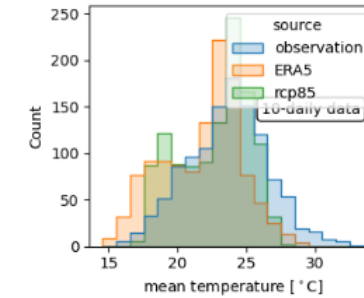
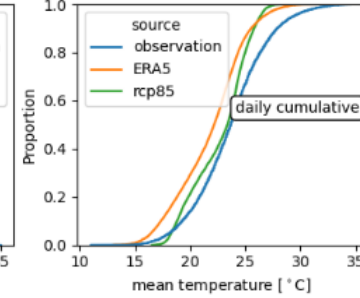
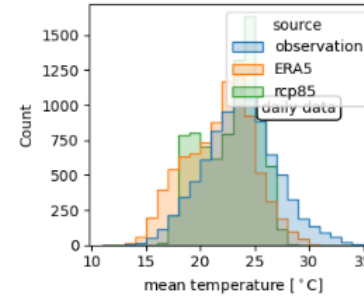
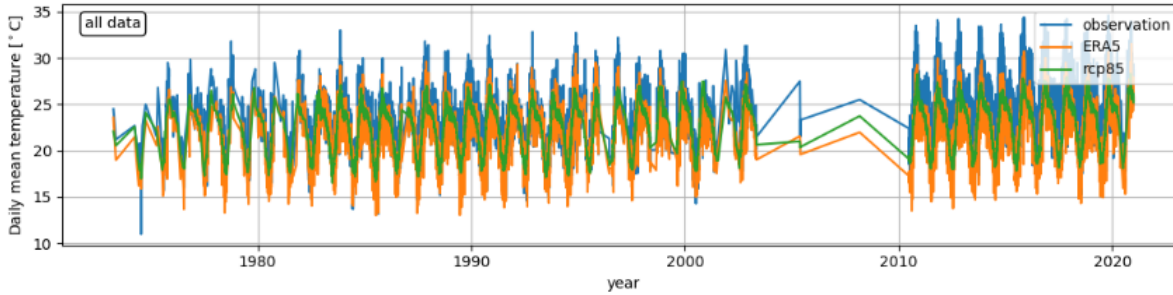
CLIMTAG VALIDATION

- The validation work is done by comparing the observed and modeled results in the three pilot countries: Zambia, Mozambique, and Malawi.
- The observation data is using the Daily Global Historical Climatology Network (GHCN-DAILY) data, archived in NOAA, USA, and quality controlled by WMO.
- The GHCN observations mostly originate from weather stations operated by the National Meteorological and Hydrological Centers of the countries.
- Validation of ERA5 and CMIP5 daily source data at their native resolution. (Not yet downscaled climatologies)



TEMPERATURE

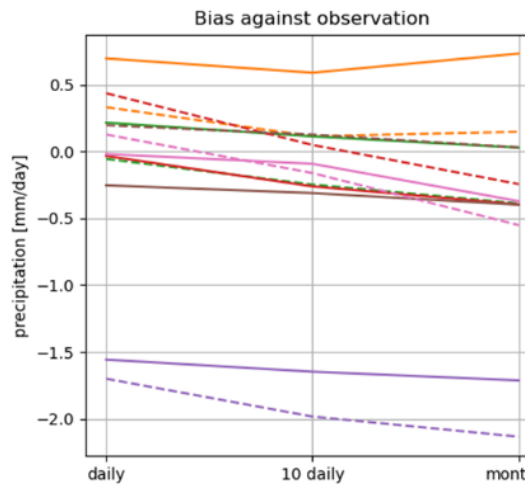
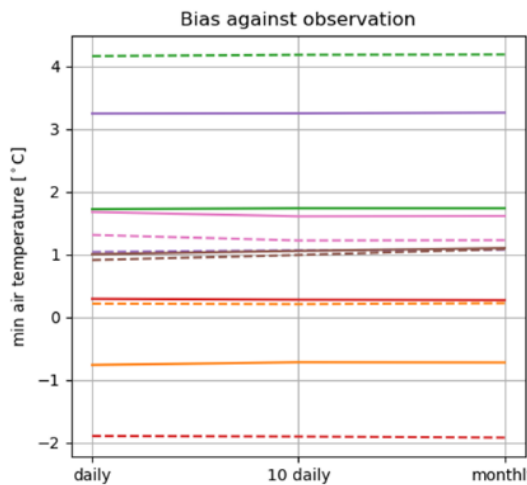
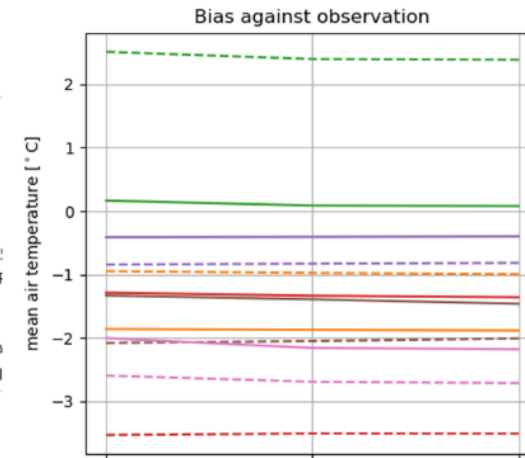
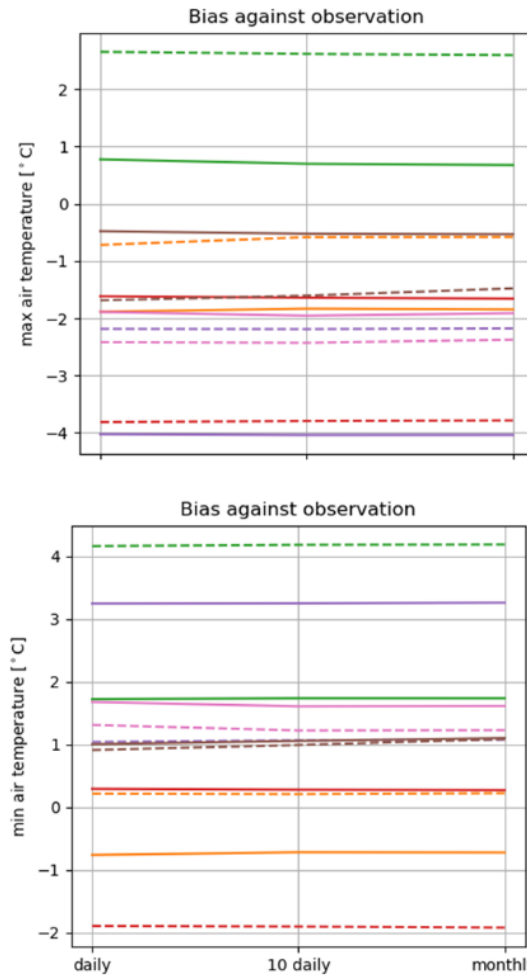
mean temperature at Chileka, Malawi(767.0m)



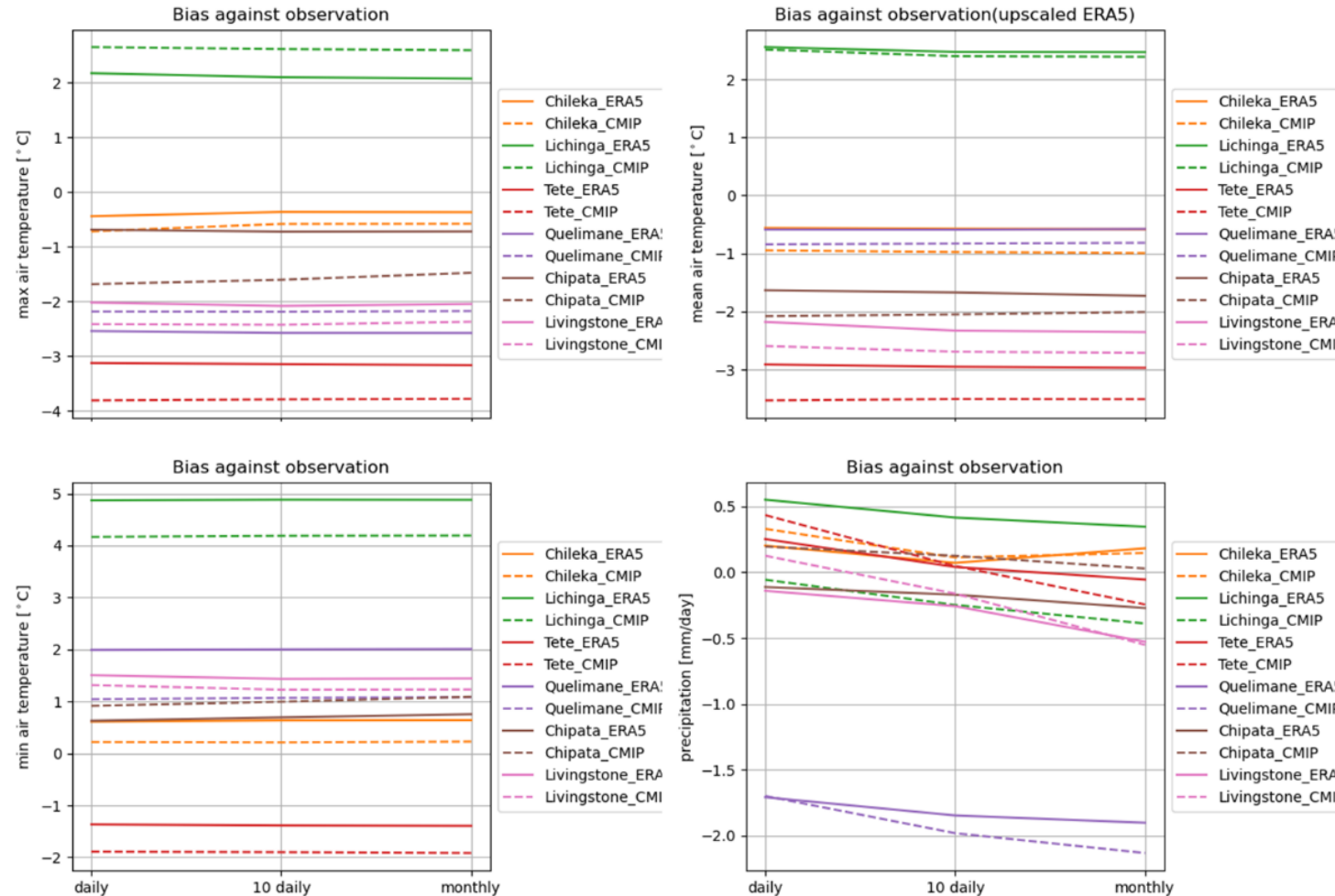
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- **Conclusion: Good correlations**, but **substantial biases** especially for CMIP5, which varies from station to station.
- **Reason:** Validation is on the coarse data, not on downscaled climatology. **Benefit of downscaling** as provided by CLIMTAG is **not taken into account** yet.
- **Improvements:**
 - **Validation of downscaled climatologies**, but this **needs more continuous station data** without missing years so that their climatology can be calculated.
 - Update CLIMTAG to provide **downscaled data** not only on 30-year statistics but also **statistics for the separate years**. These fields can be compared with the station data for the years at which sufficient data is available. This is available, but validation need to be implemented

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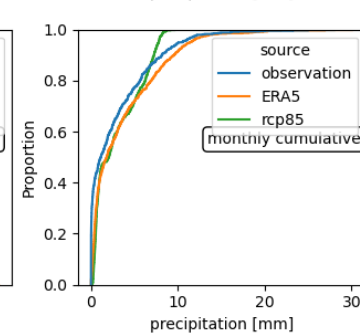
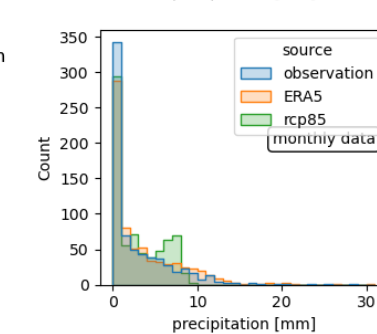
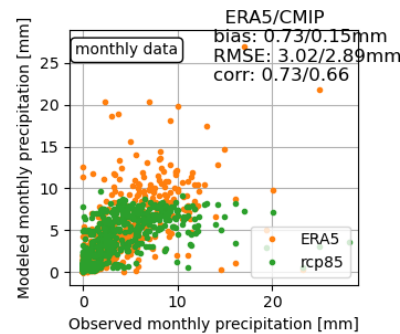
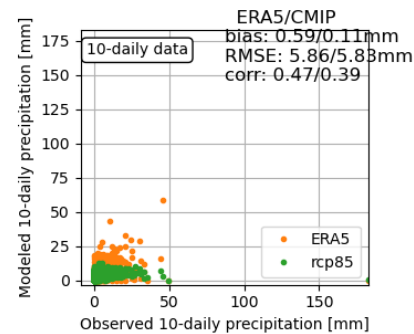
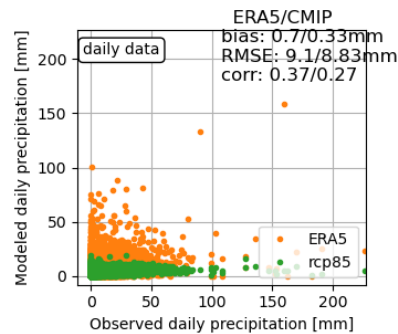
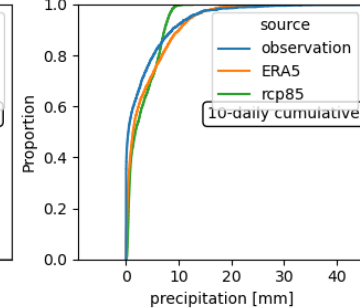
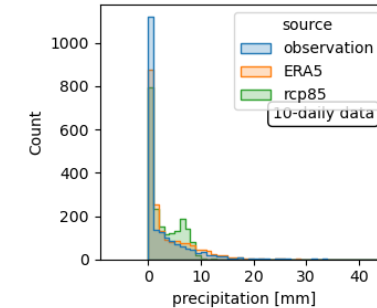
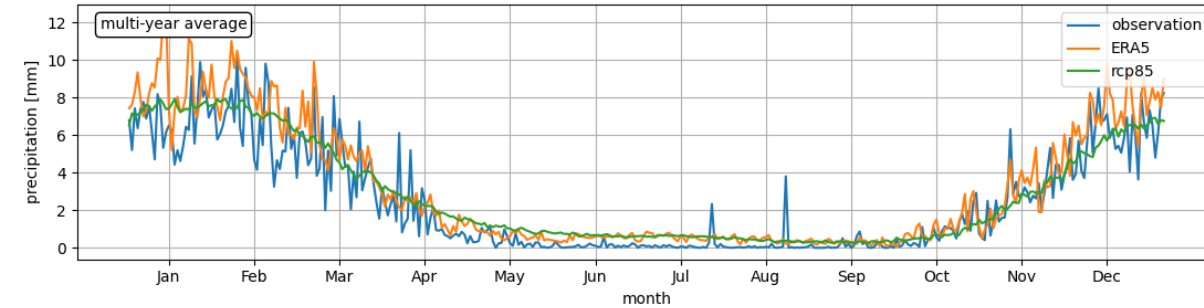
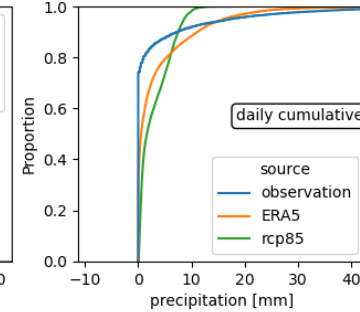
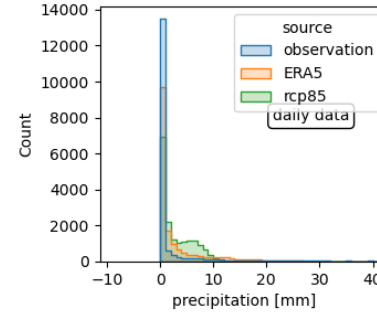
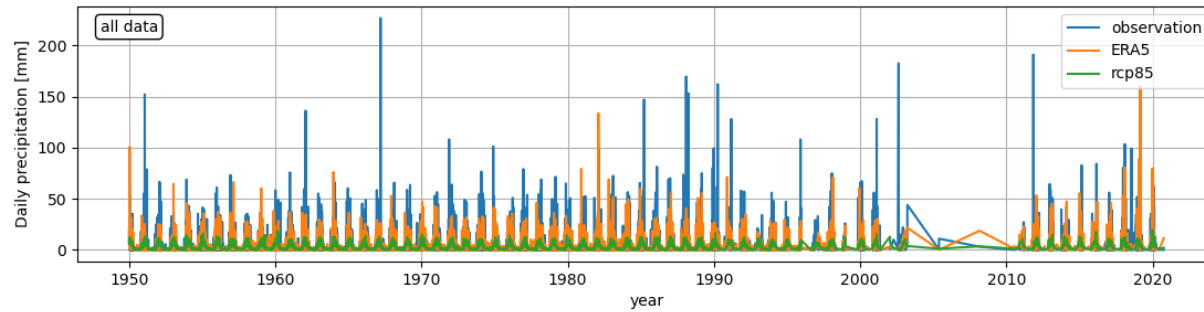


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PRECIPITATION

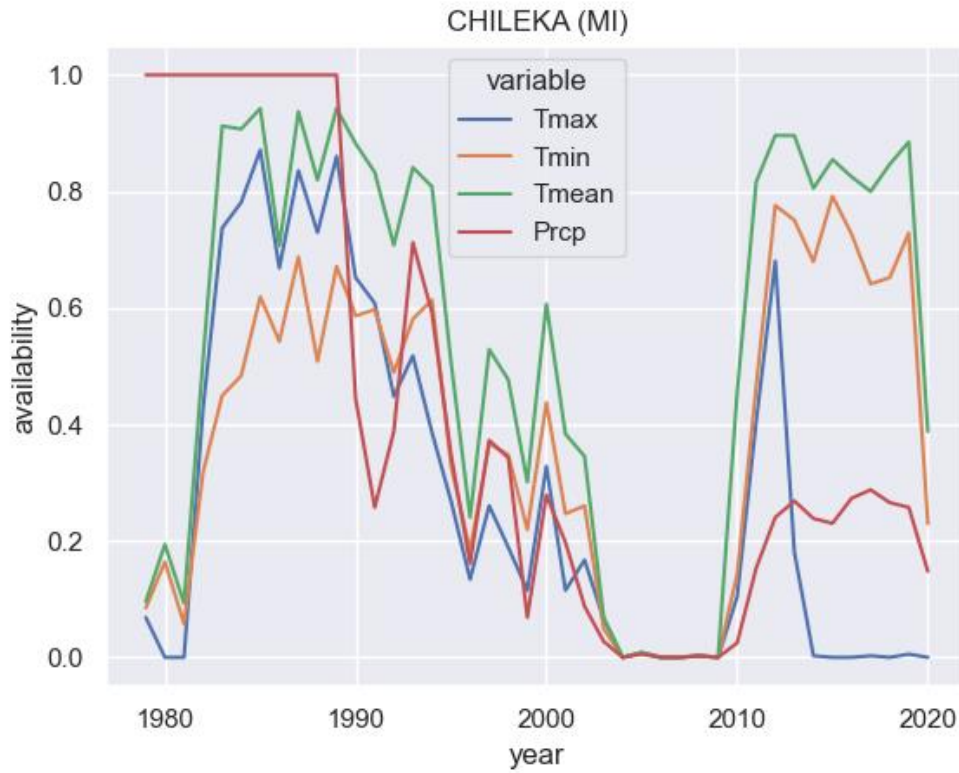
precipitation at Chileka, Malawi(767.0m)



PRECIPITATION

- **Conclusion:**
 - **Low biases, but not well correlated.**
 - However, **aggregation to 10-daily (decadal), monthly and annual values** as considered by CLIMTAG give **much better correlations.**
 - Still, precipitation **extremes** are **underrepresented** (also for minimum and maximum daily temperatures)
- **Reason:**
 - **Drizzle effect** of the **coarse** CMIP5 and ERA5 fields
 - **Missed** (extreme) **events.**
- **Improvements:**
 - Additional **statistical downscaling techniques** considering the extremes
 - Additional **data sources** (in-situ data, satellite data, CMIP6, high-resolution climate models CORDEX-AFRICA...)

DISCUSSION ON DATA AVAILABILITY



LONG-TERM CONTINUOUS HISTORICAL OBSERVATIONAL RECORDS ARE NEEDED TO

- Improve seasonal weather forecasts and climate models (model improvements, bias correction, downscaling,...)
- Link any meteorological conditions and hazards with sectoral impacts