CLIMATE CHANGE EXPOSURE FOR GABON

PROCESS

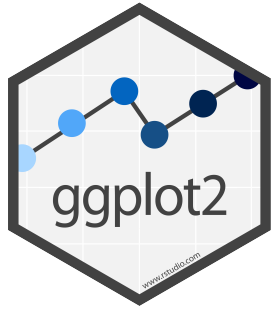
DOWNLOAD CLIMATE DATA

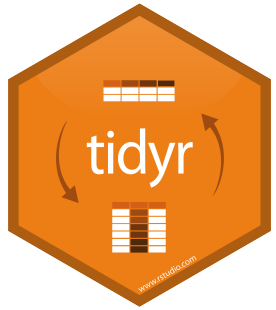
PROCESS CLIMATE DATA

TREND ANALYSIS

VISUALIZATION

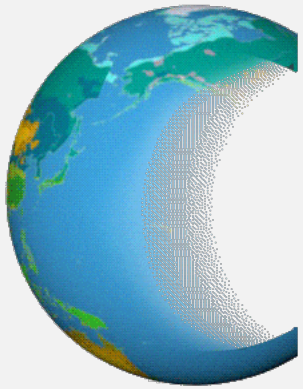
IMPLICATIONS





CLIMATE DATA

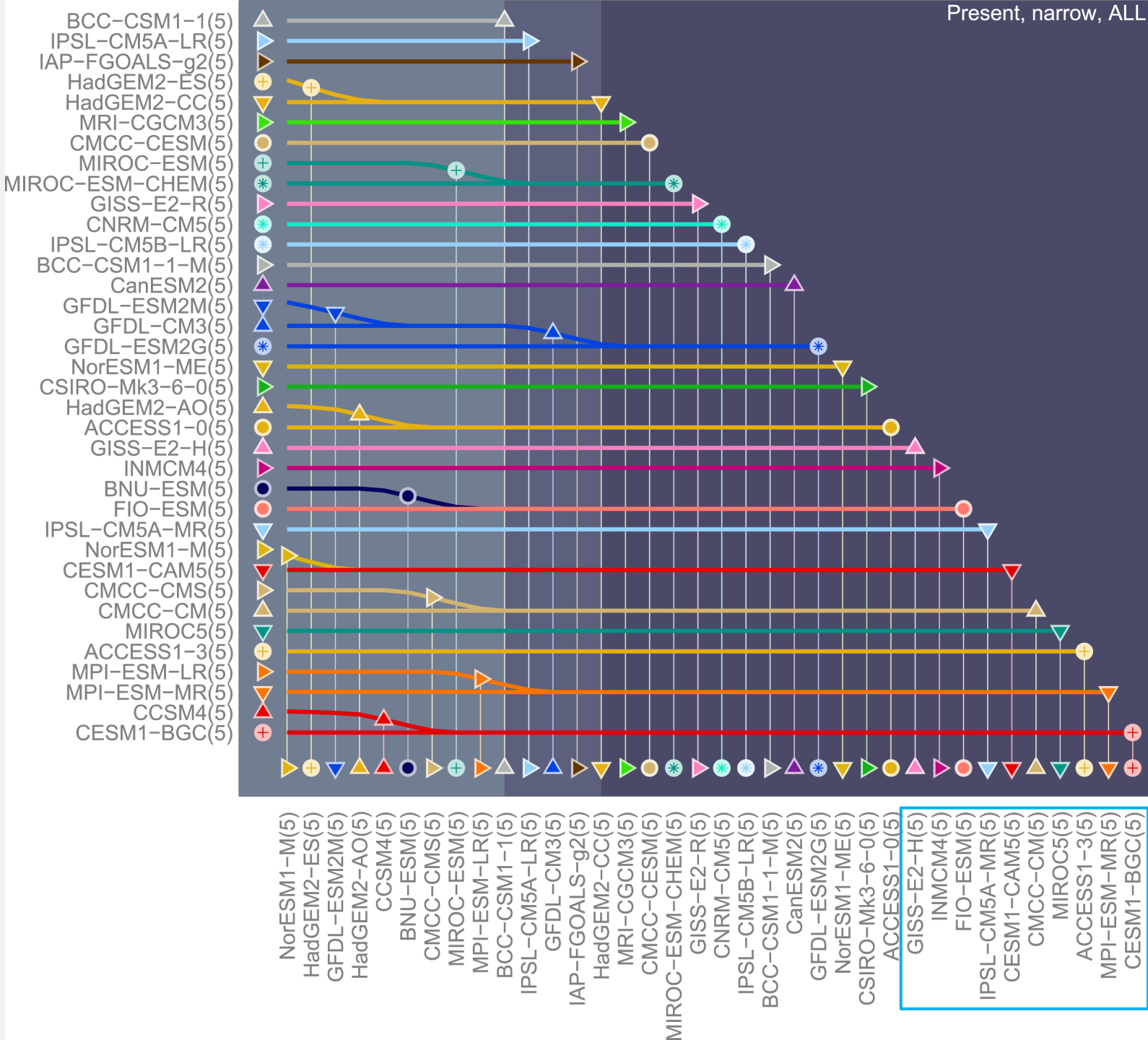
- CHELSA
  - Algorithm incorporates topoclimate (e.g. orographic rainfall & wind fields).
- Monthly mean temperature and precipitation
- Resolution: ~1km
- Time-periods
  - Recent: 1979 – 2013 (time-series)
  - Future: RCP 8.5 2061-2080
  - 10 GCMs



CHELSA

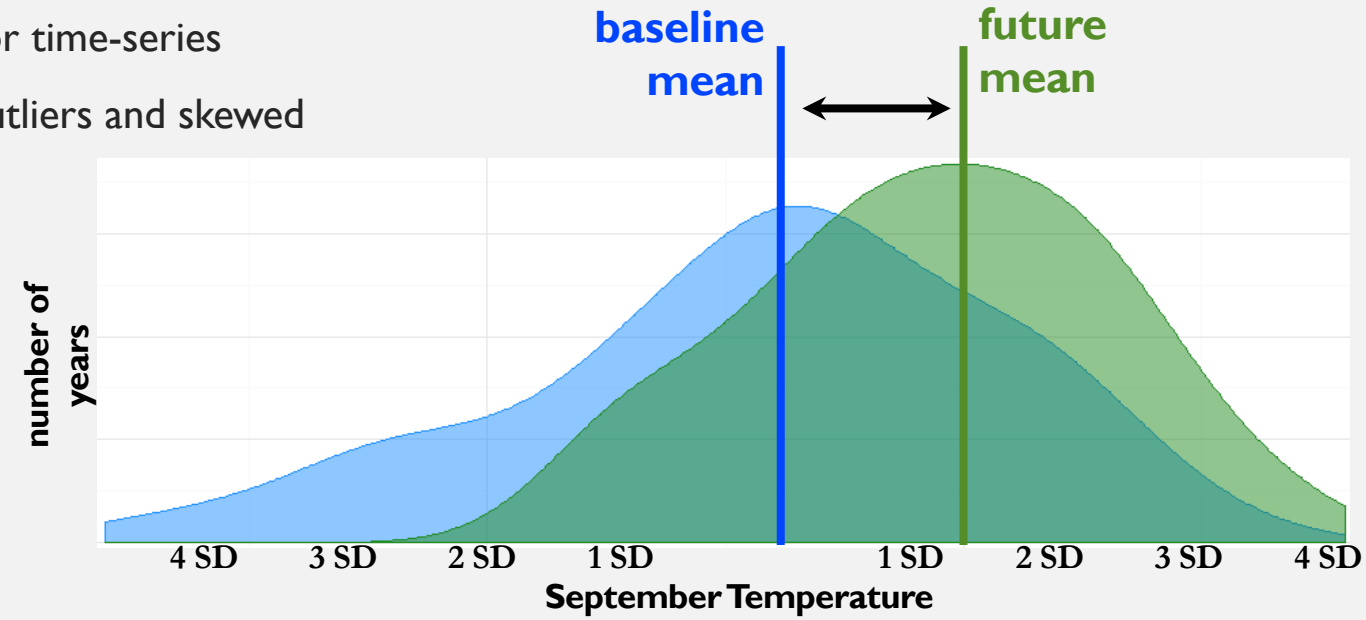
CLIMATE MODELS

- Sanderson et al. (2015) shows how models are interdependent.
- The plot shows the results of a process that eliminates interdependent models judged by the simulation of present-day climatology.

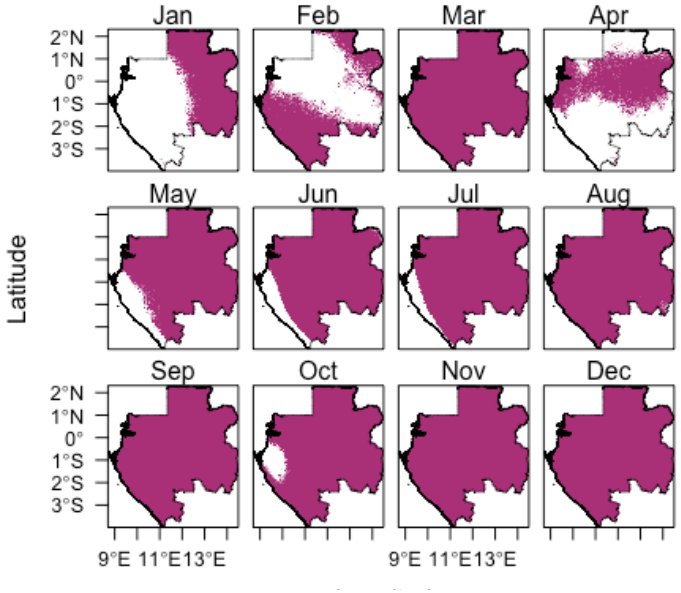


METRICS

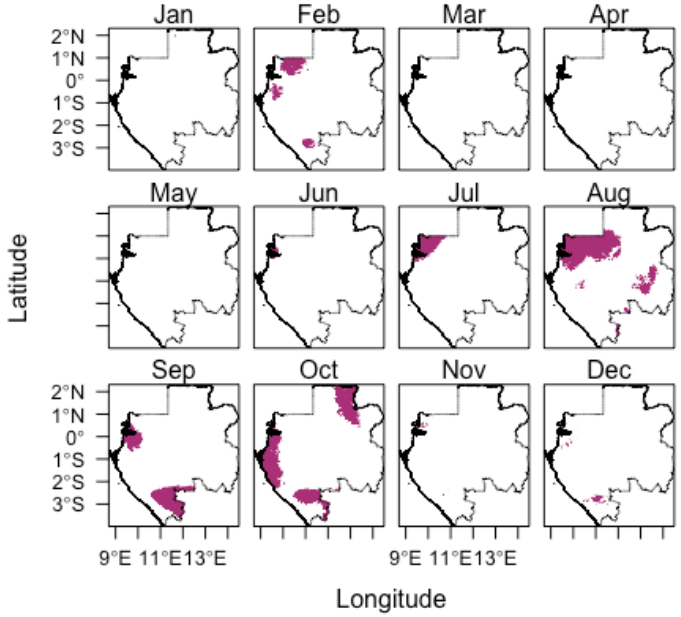
- Future: Z- scores
  - standardized anomaly z-score is a measure of climatic difference between two time-periods relative to the historical range of climatic variability at a location.
- Recent: time-series: Mann-Kendall significance test
  - non-parametric regression for time-series
  - It is much less sensitive to outliers and skewed distributions



Temperature



Precipitation

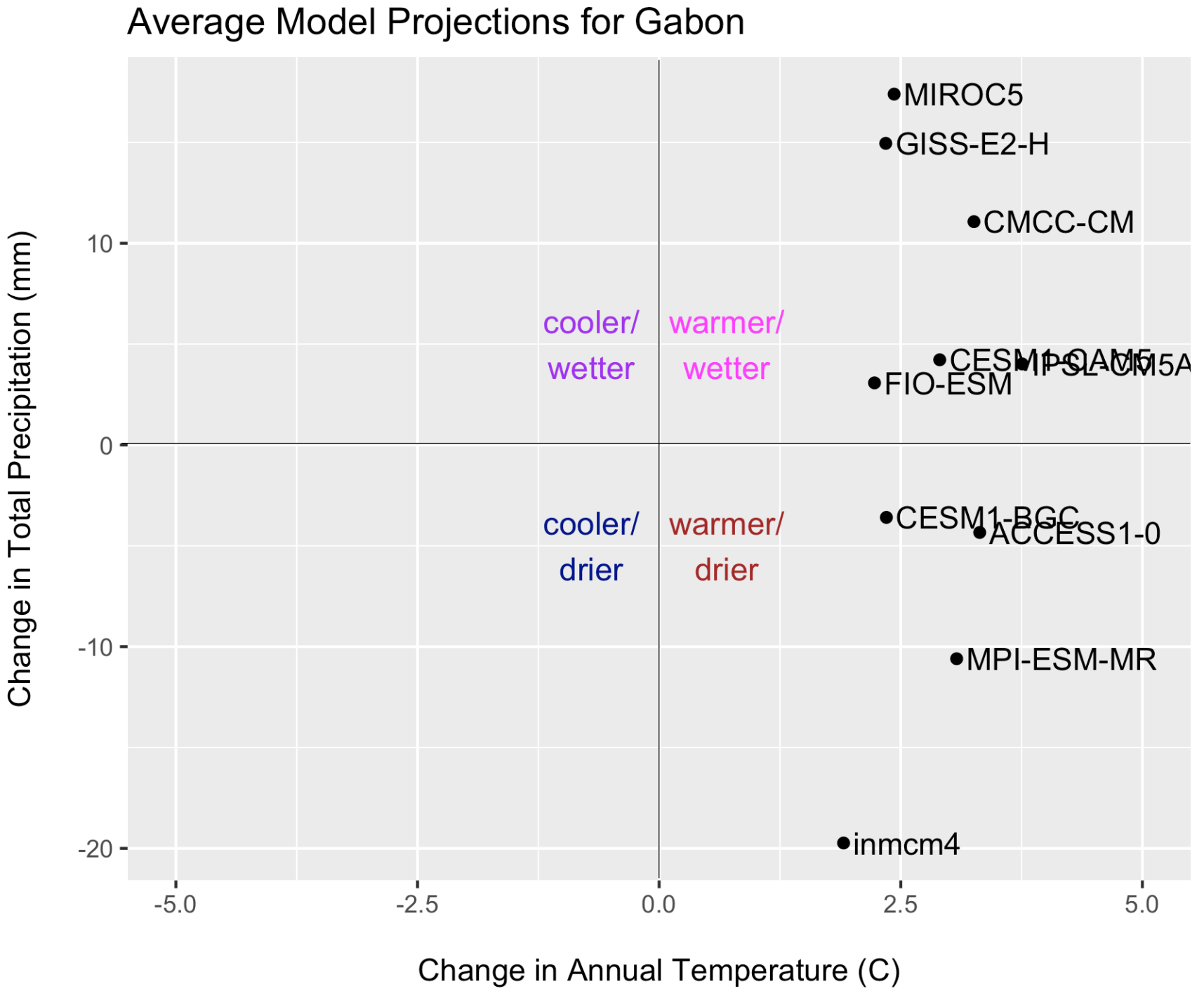


RECENT CHANGE (1979-2013)

- Statistically significant change at 95% confidence level (p-value <.05).
- For temperature, all months have statistically significant change
- Much less statistically significant change for precipitation.

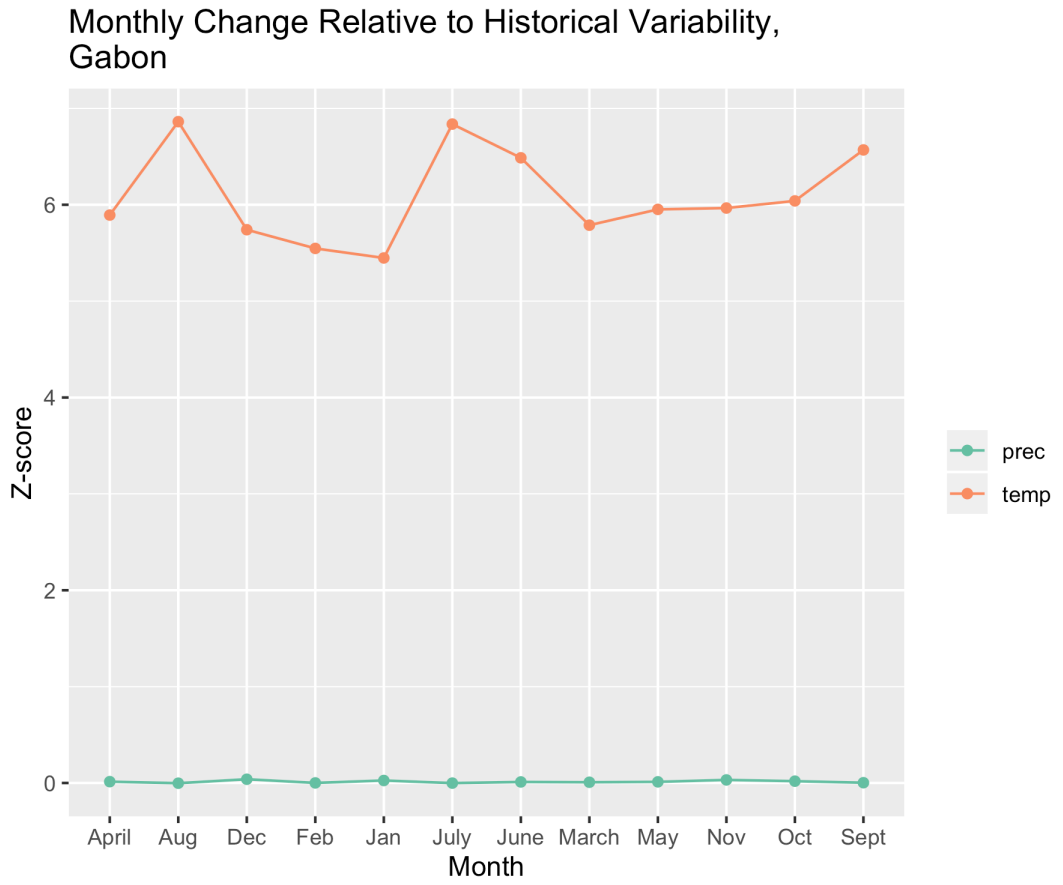
FUTURE CHANGE (2061-2080)

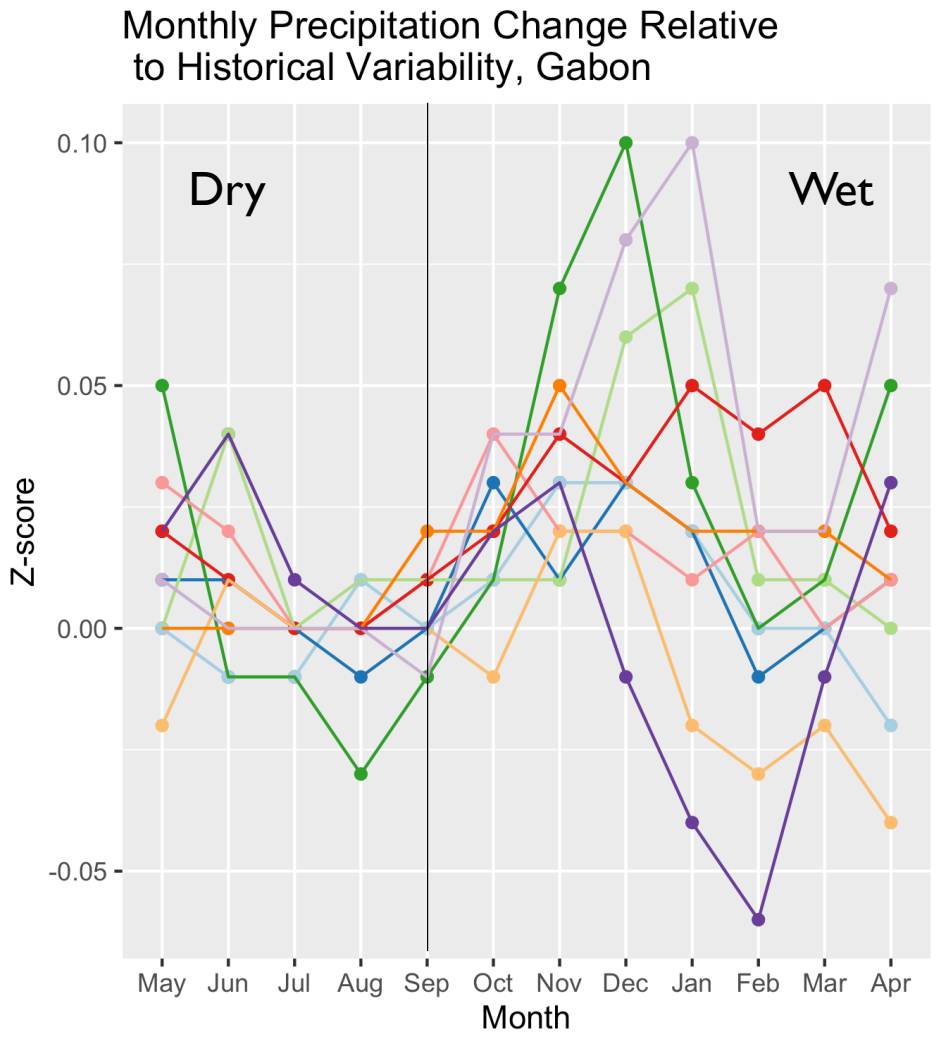
- All models agree on warming temperatures.
- Models disagree on whether precipitation will increase or decrease

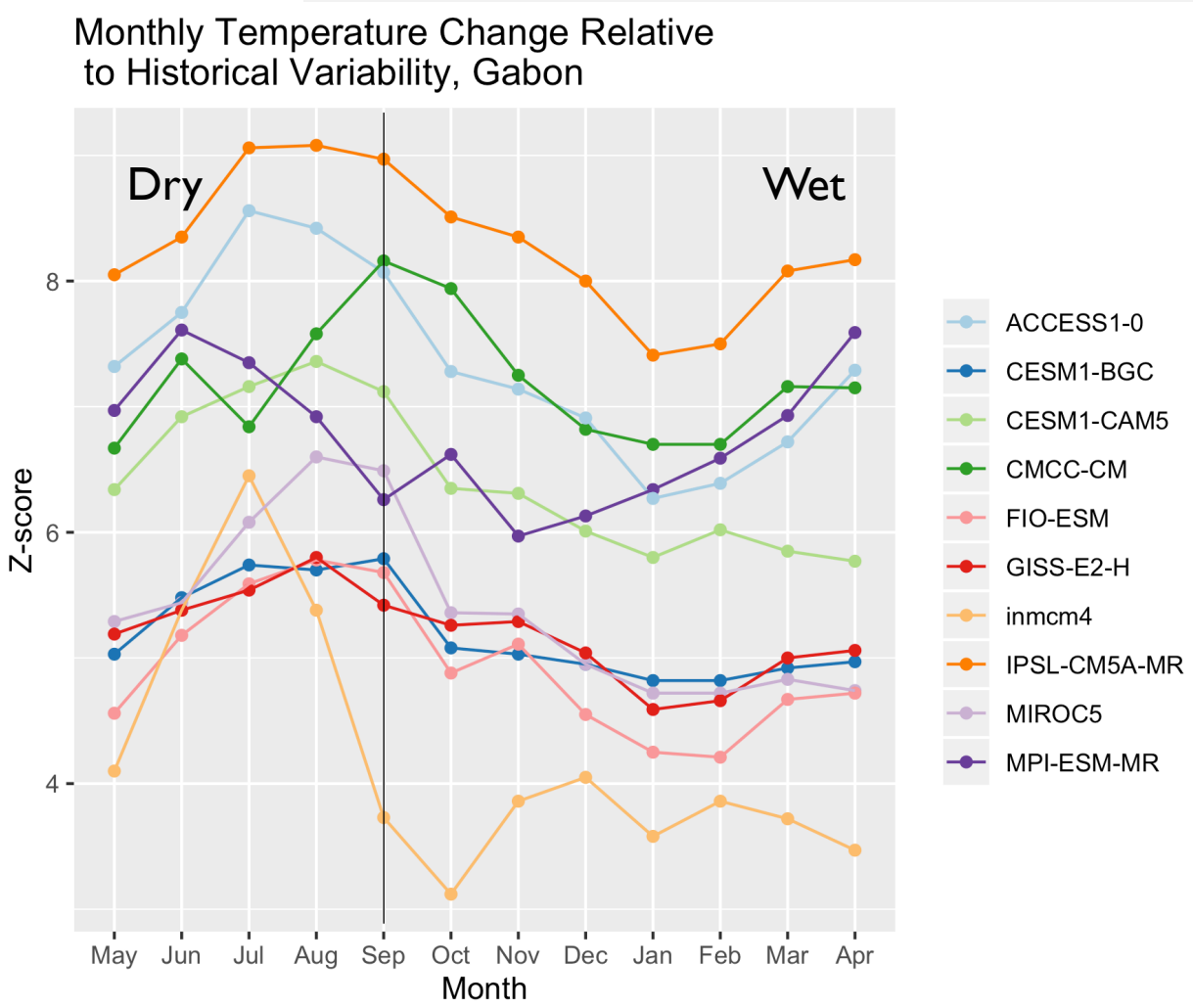


MODEL ENSEMBLE

- Model ensemble of monthly z-scores averaged for Gabon.
- Precipitation is not projected to change significantly compared to recent variability of 1979-2013.

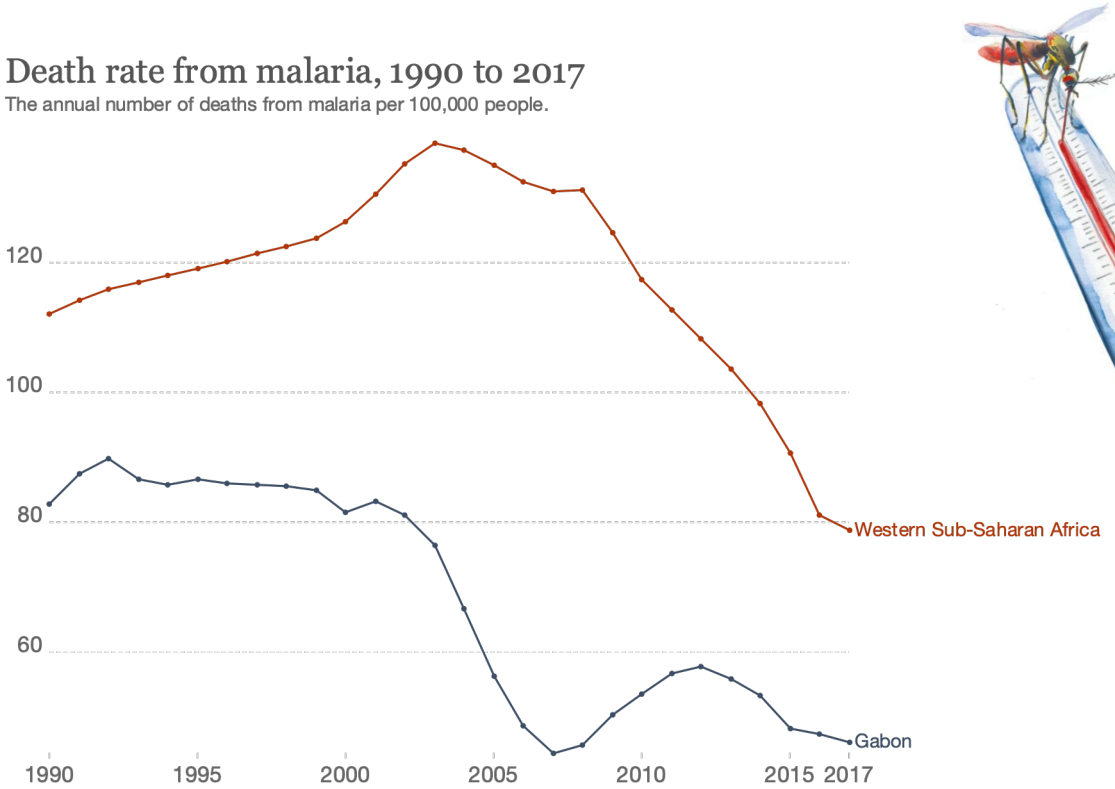


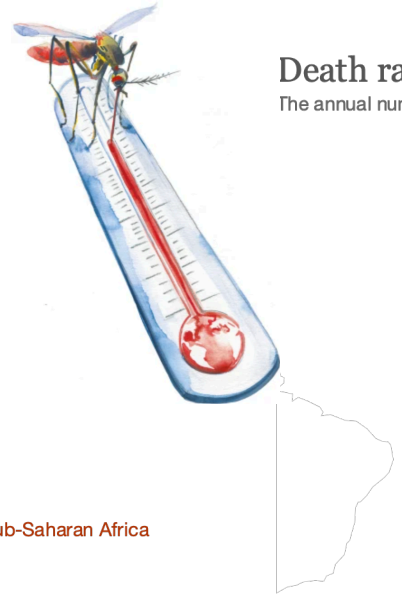


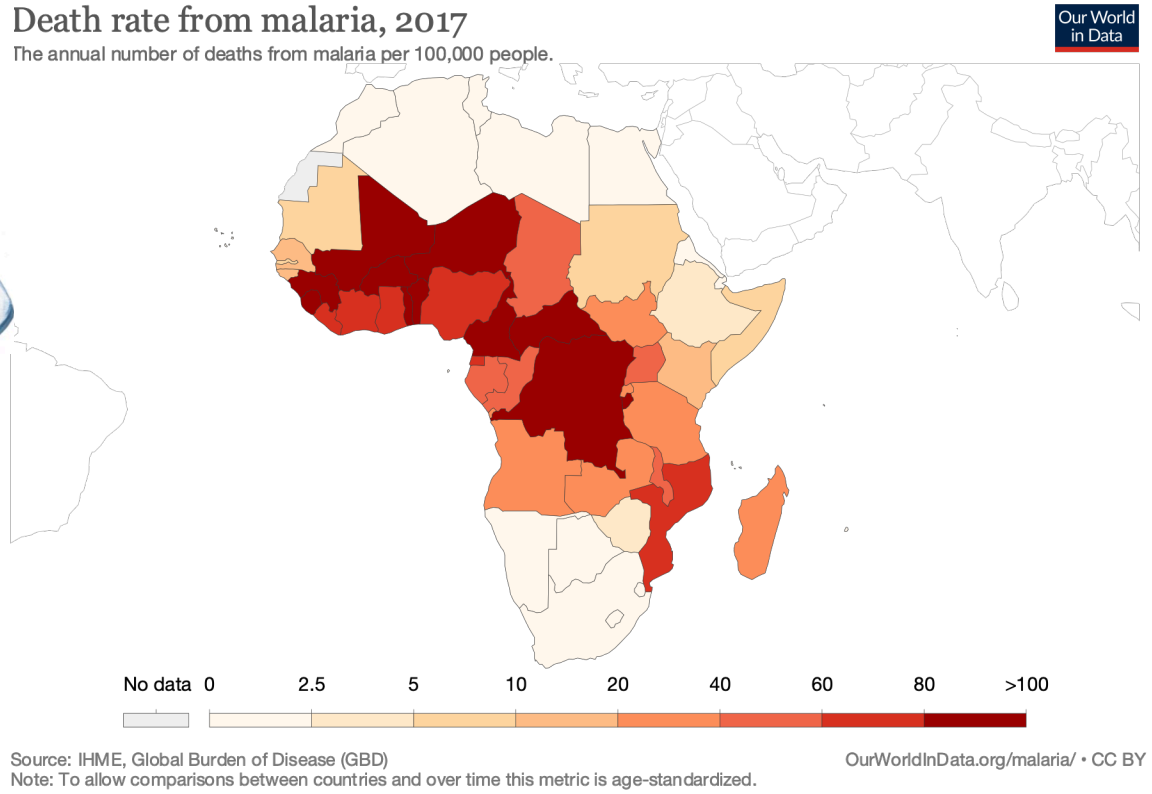


- Precipitation:
  - Model agree more in dry season than wet season
  - Overall small change relative to variability

- Temperature:
  - Models agree on direction of change for each season but vary in magnitude of change.







POSSIBLE IMPLICATIONS: VECTOR-BORNE DISEASE

- Survival and feeding of mosquitos and ectotherms will increase under hotter climates.
- Death rate from malaria has decrease but it was still leading cause of death for children under 5.
- Relationships between temperature and vector survival are complex

REFERENCES

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