



# How well do gridded datasets of observed daily precipitation compare over Australia?

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# Gridded Data Uncertainty

**Station Network**

**Interpolation  
Scheme**

- Are you aware of how interpolation uncertainty can affect your conclusions?

# Data sets

- **AWAP Daily Gridded Rainfall**
  - $0.5^{\circ} \times 0.5^{\circ}$  lat/long resolution
  - Interpolates anomalies
  - Long temporal coverage: 1900 - Present
- **TRMM 3B42 Daily V7**
  - $0.25^{\circ} \times 0.25^{\circ}$  lat/long resolution
  - Spatial Coverage: Quasi-global  $50^{\circ}\text{N} - 50^{\circ}\text{S}$
  - 1998 - Present
- **GPCP One-Degree Daily v1.2**
  - $1^{\circ} \times 1^{\circ}$  lat/long resolution
  - Complete global coverage
  - 1996 - Present
- **Six interpolated datasets**
- **Grid Station Average**



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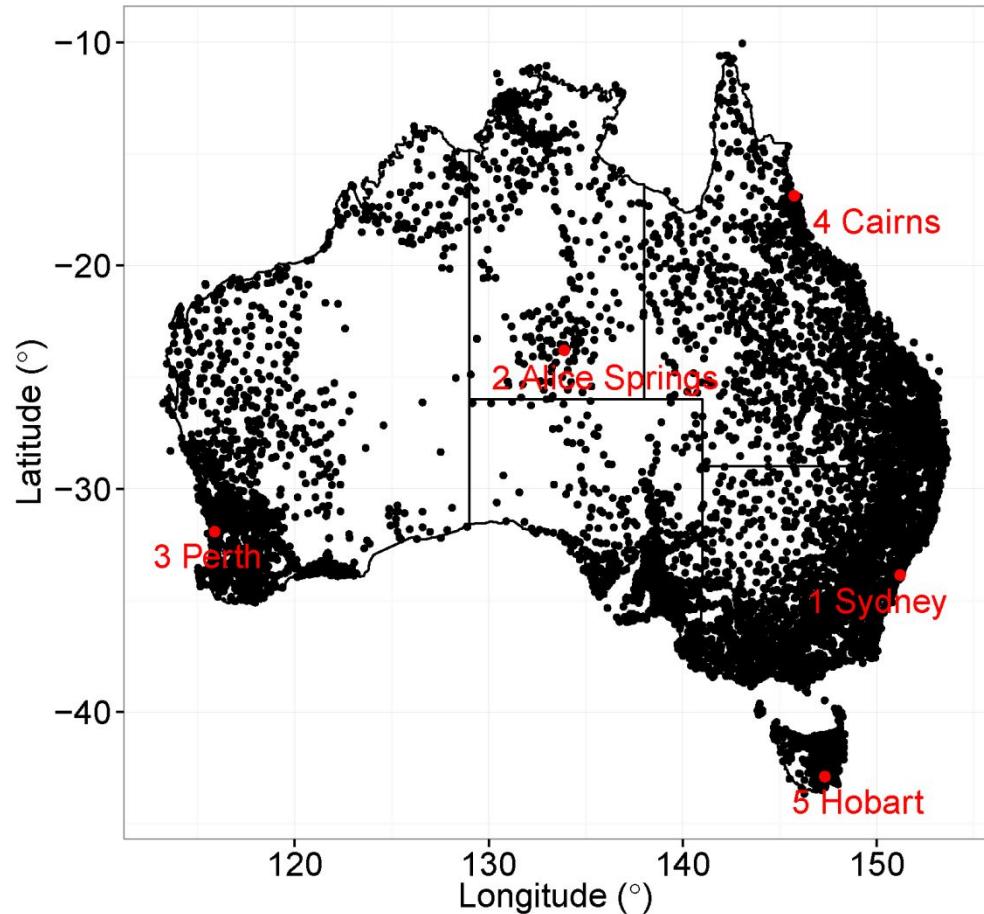


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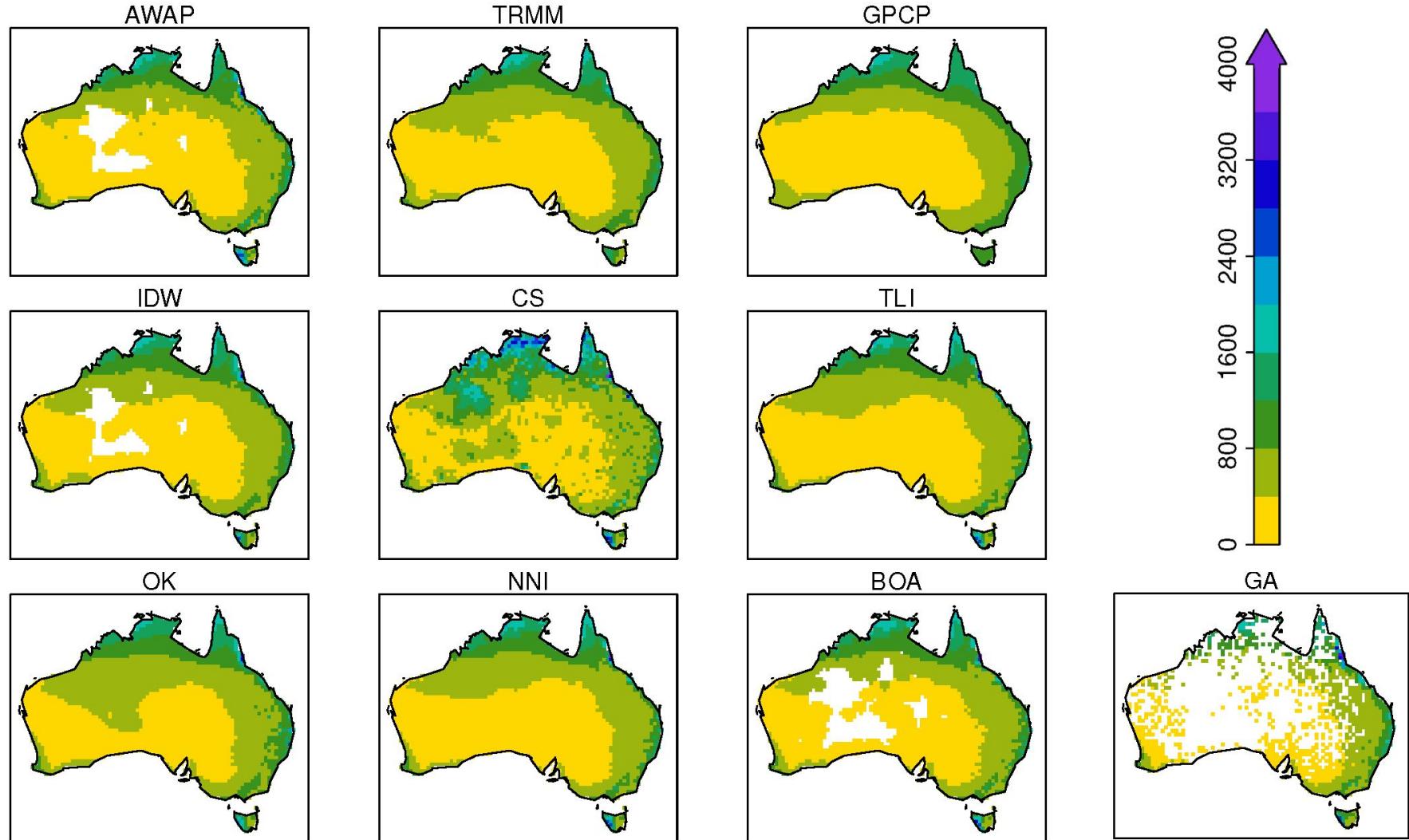
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# Interpolation Schemes

- Inverse Distance Weighting (IDW)
- Cubic Splines (CS)
- Triangulation with linear interpolation (TLI)
- Ordinary Kriging (OK)
- Natural Neighbour Interpolation (NNI)
- Barnes Objective Analysis (BOA)

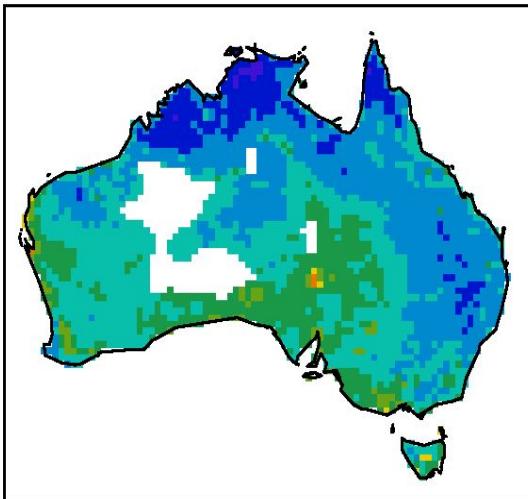


# Climatology



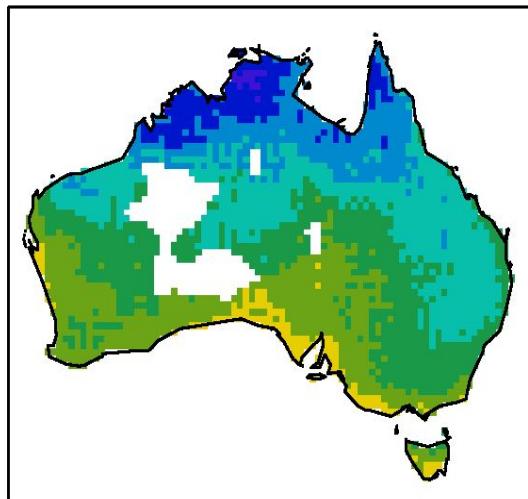
# Temporal Variability

AWAP vs TRMM



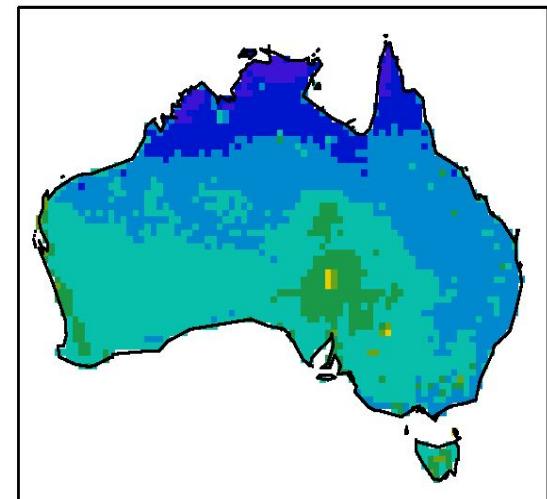
mean correlation = 0.58

AWAP vs GPCP



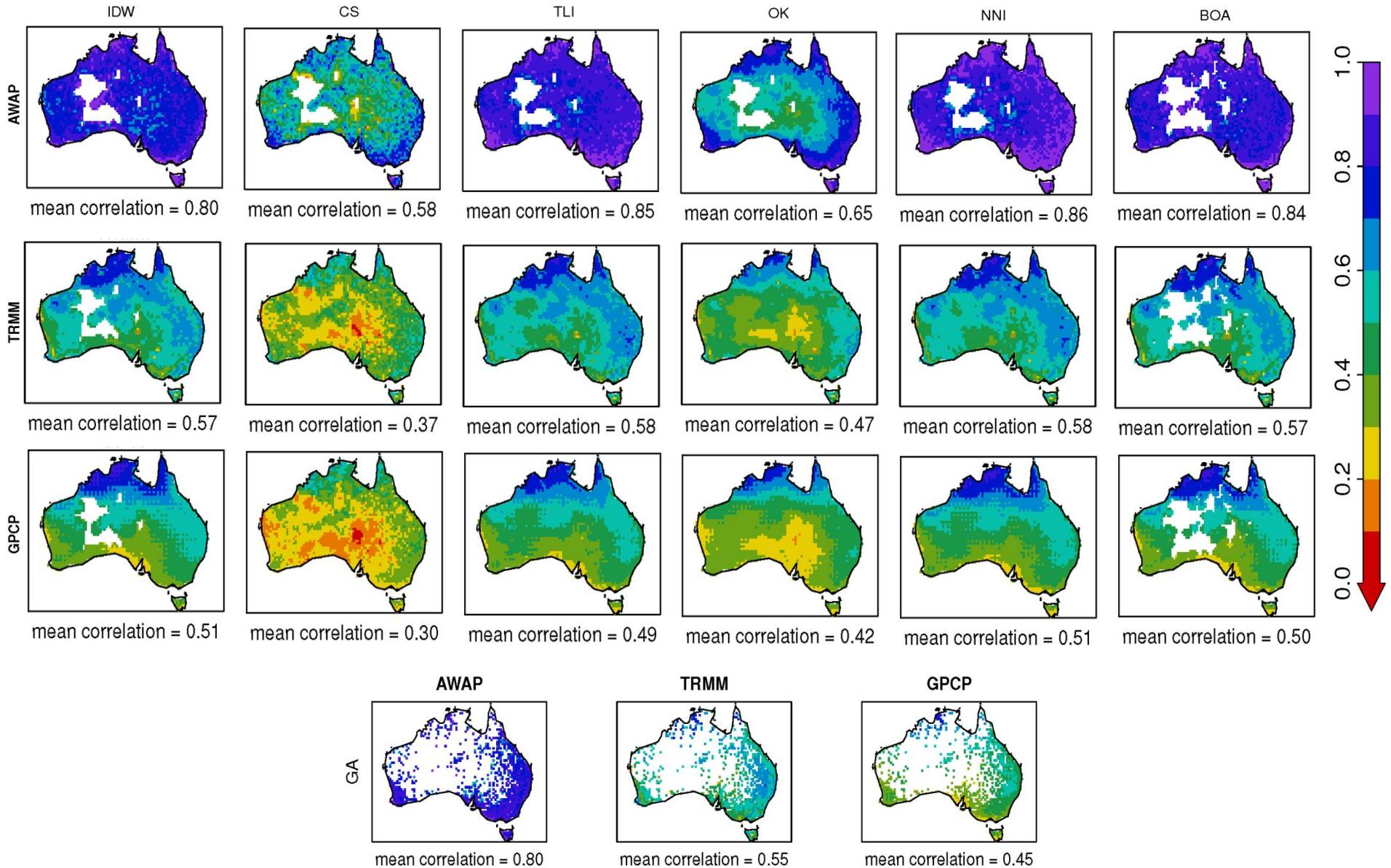
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TRMM vs GPCP

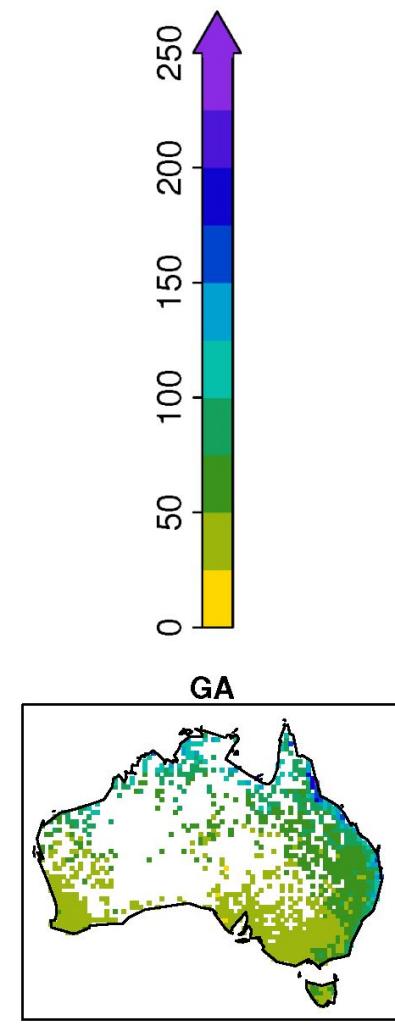
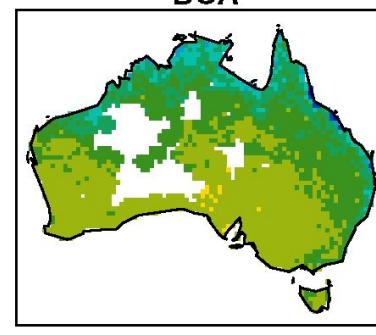
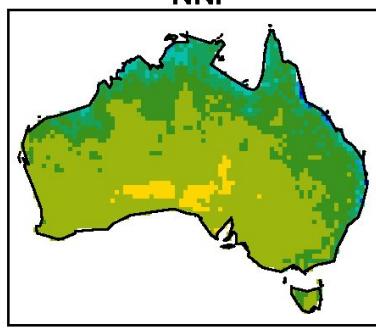
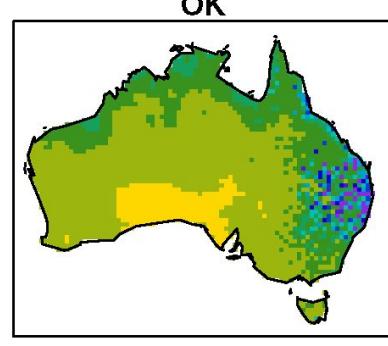
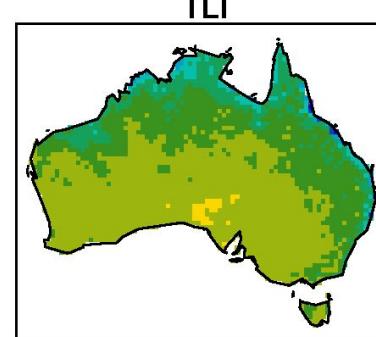
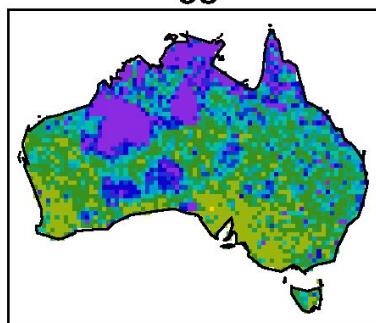
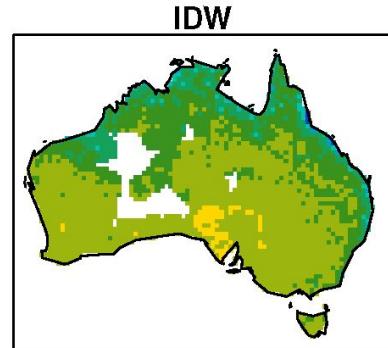
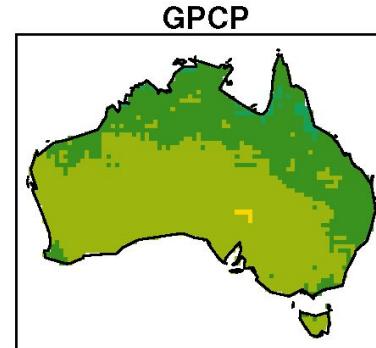
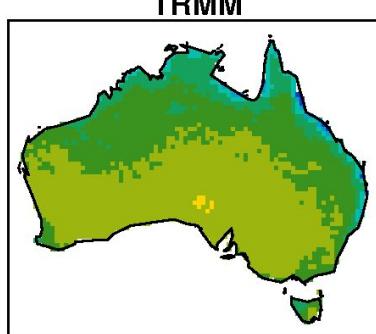
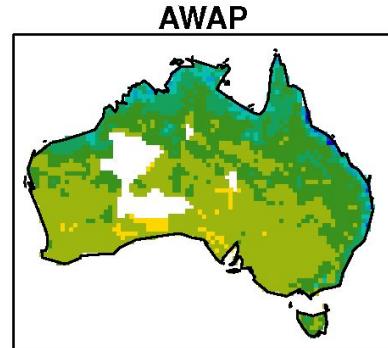


mean correlation = 0.61

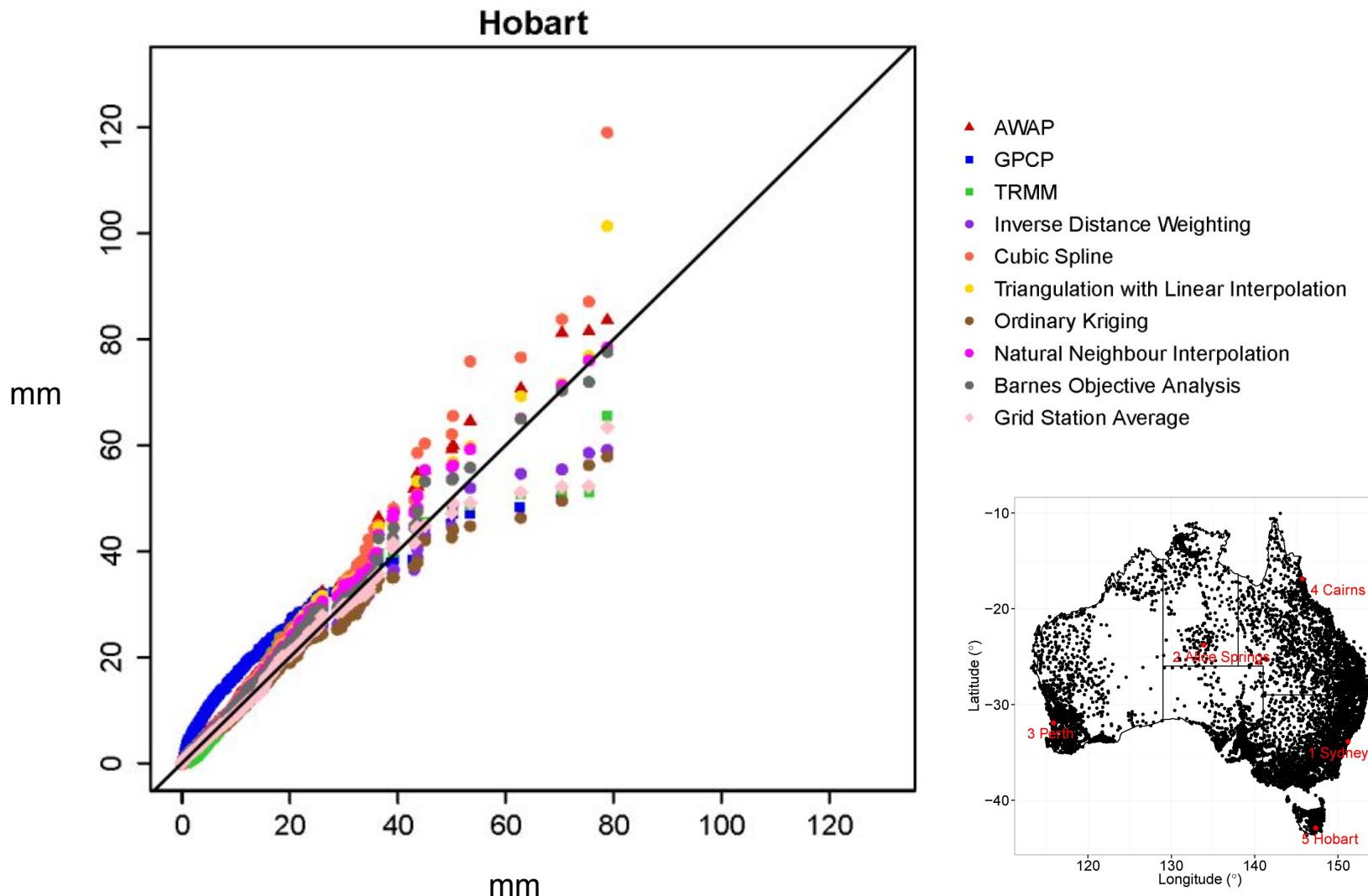




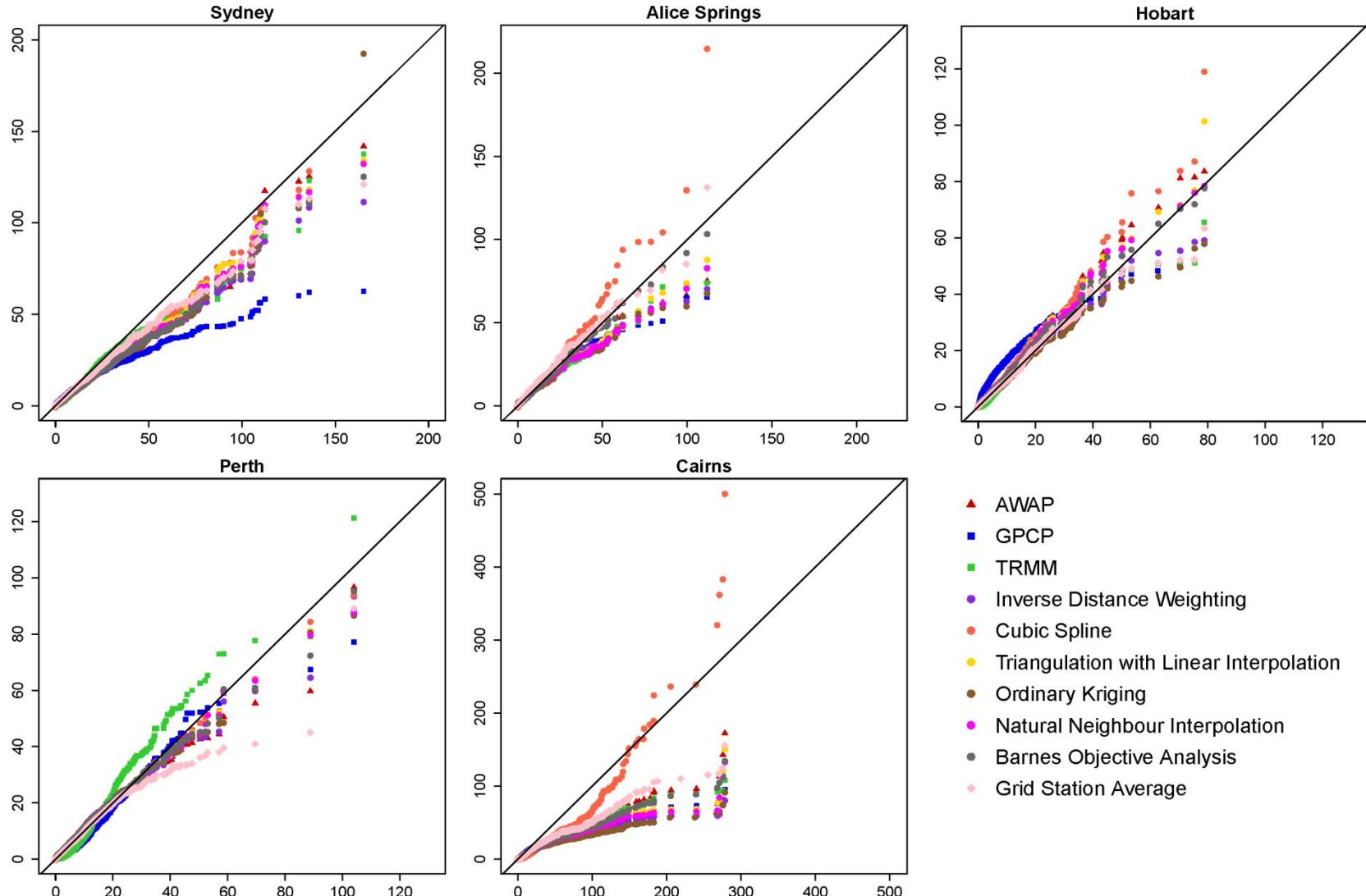
# RX1DAY



# Quantile-Quantile Plot



# Quantile-Quantile Plots



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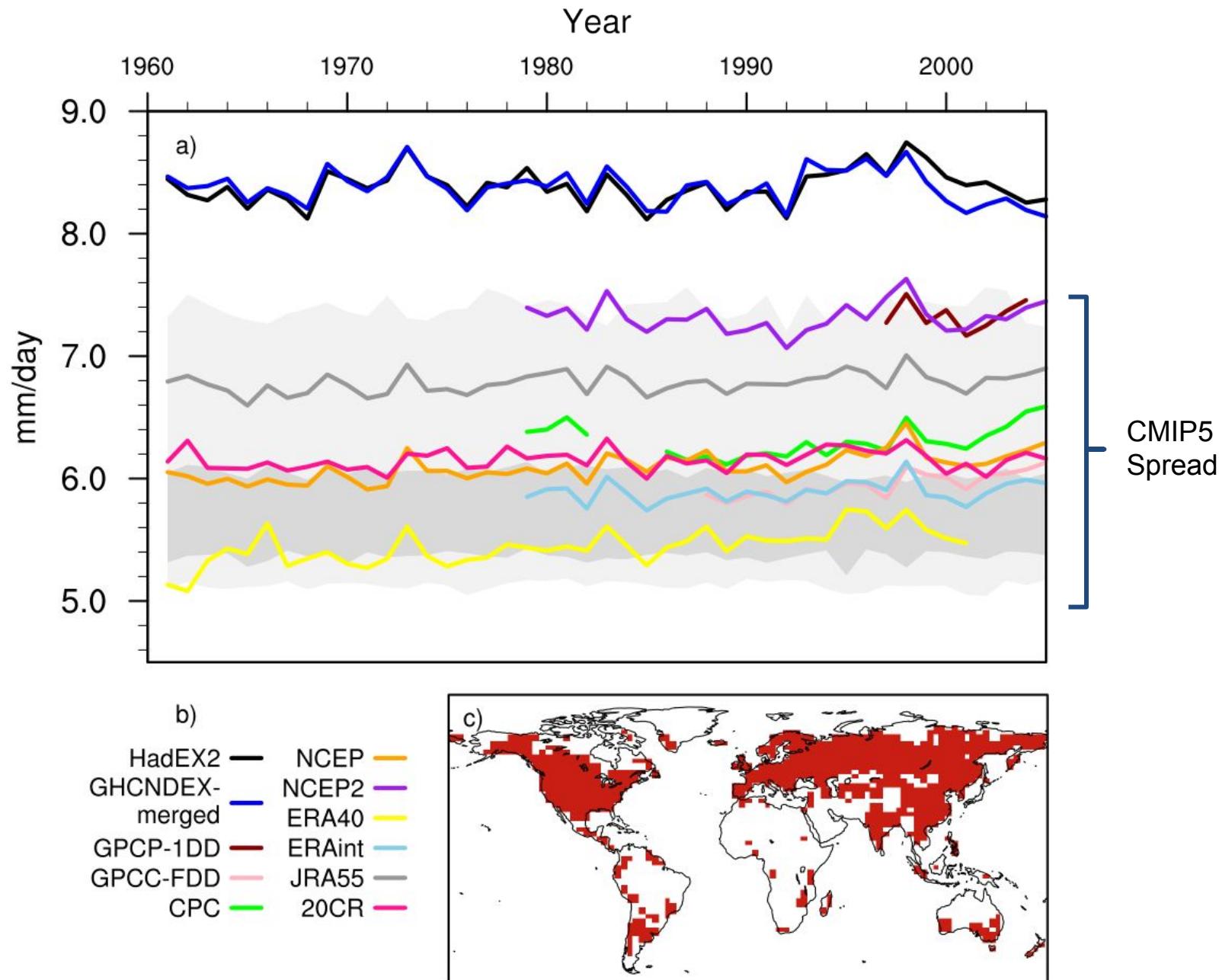
# Conclusions

- Similar broad scale patterns in climatologies, albeit regional differences exist
- Generally high agreement in temporal correlations between various datasets, albeit there are larger differences between grids interpolated by CS and OK
- Temporal correlations also point to structural uncertainties between satellite-derived and gauge-interpolated datasets
- Large uncertainties when it comes to precipitation extremes

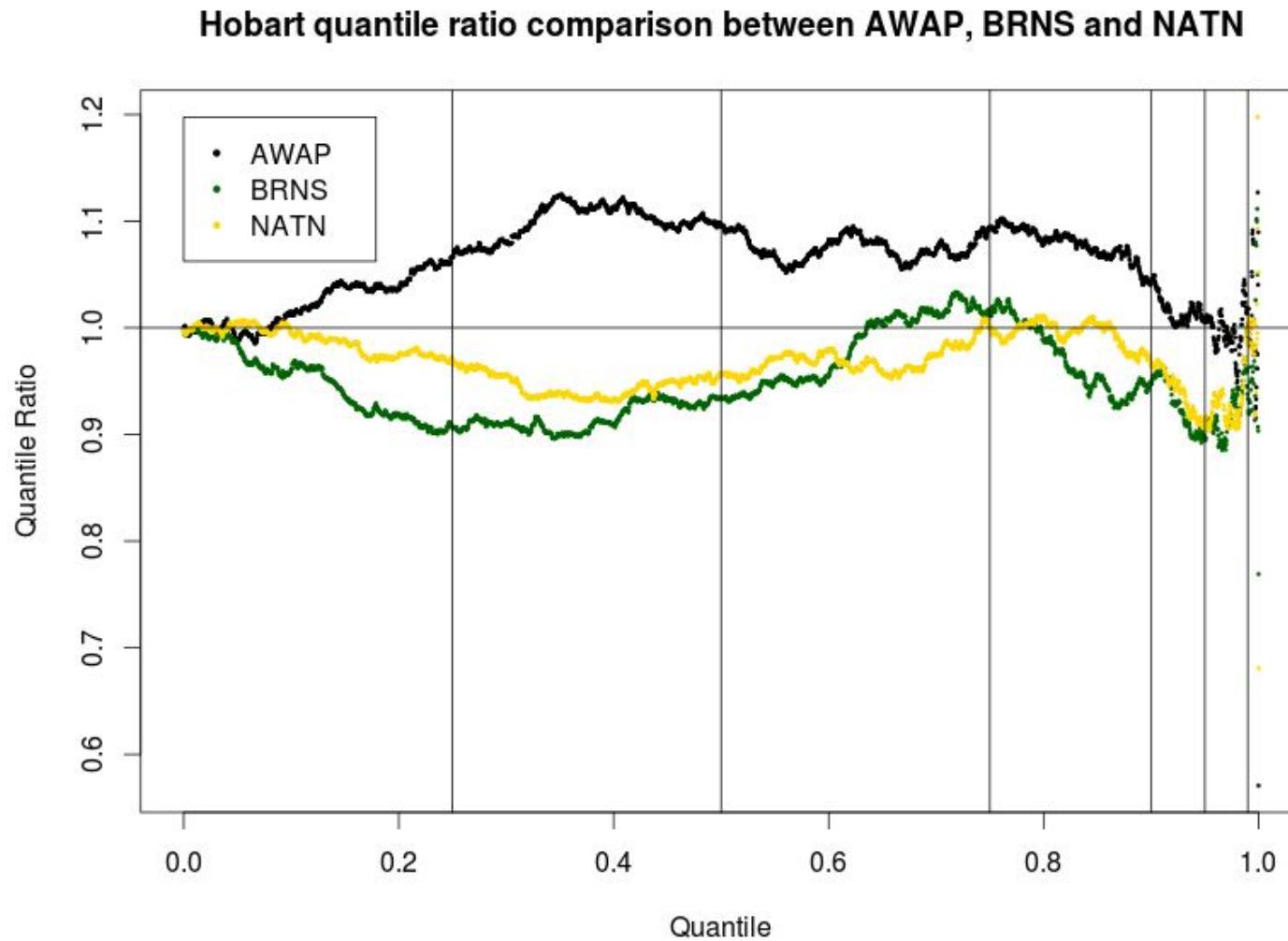


# Thank You



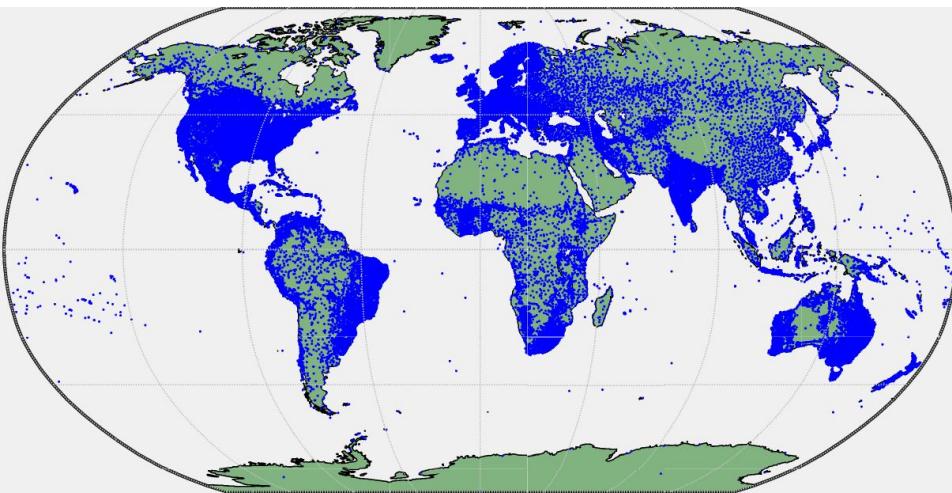


# Changes are sensitive to station network

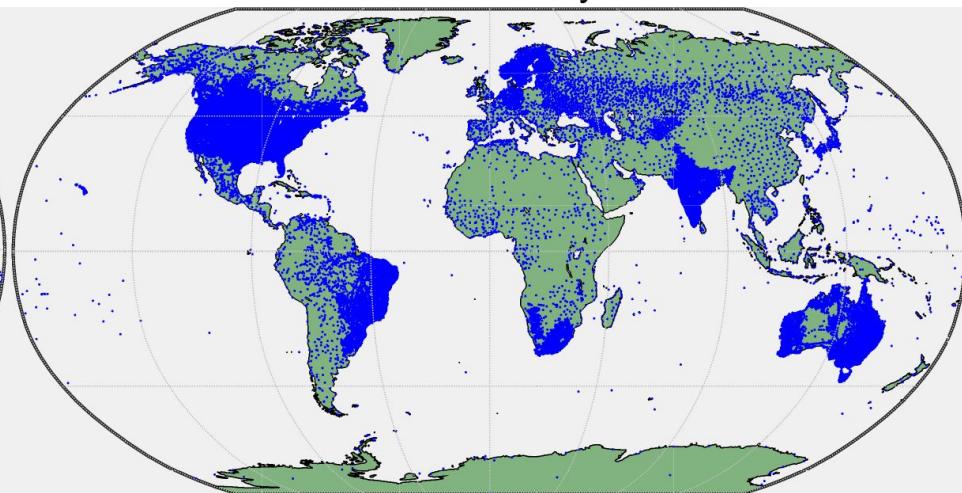


# Available stations in some data archives

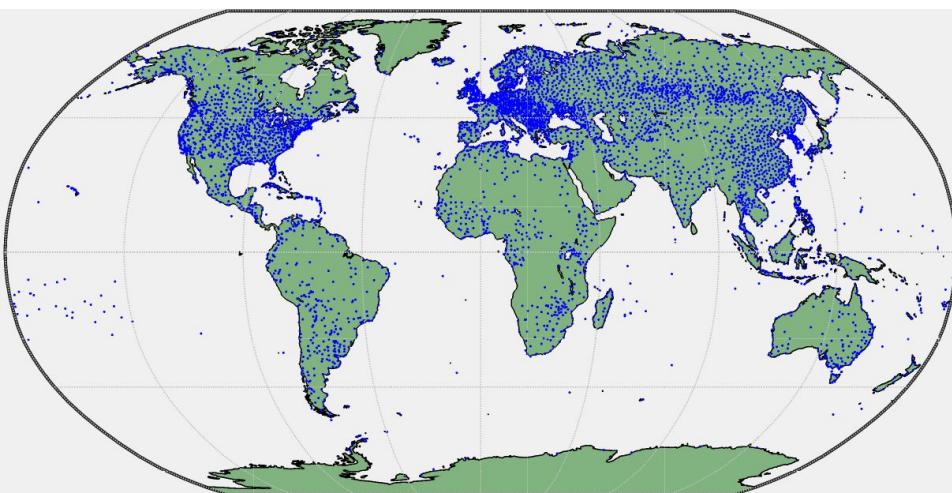
GPCC



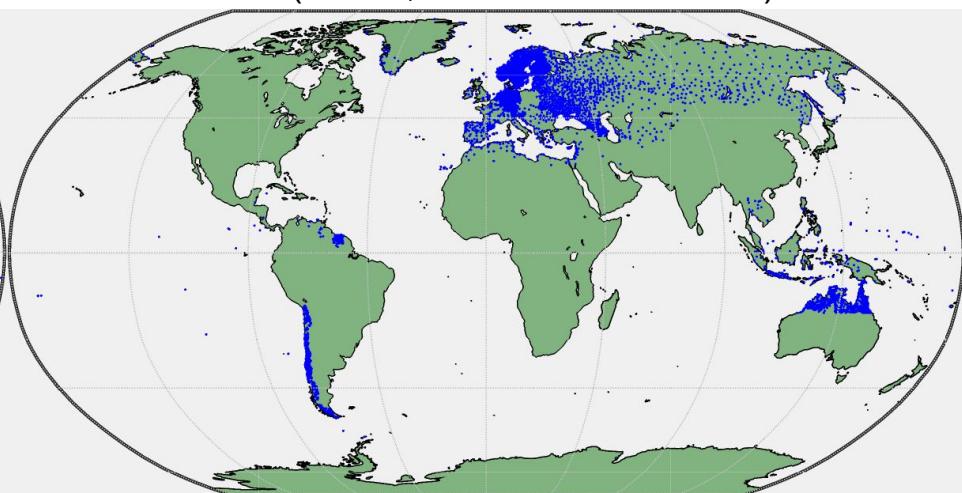
GHCN Daily



HADISD



ICAD (ECAD, LACAD and SACAD)



Figures thanks to Zak Baillie



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