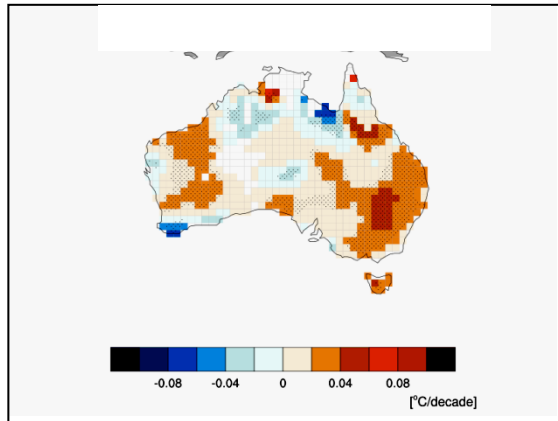# Research Problem 1

Hottest day of the year

(1° grid, fixed parameters, Trend 1951-2009)
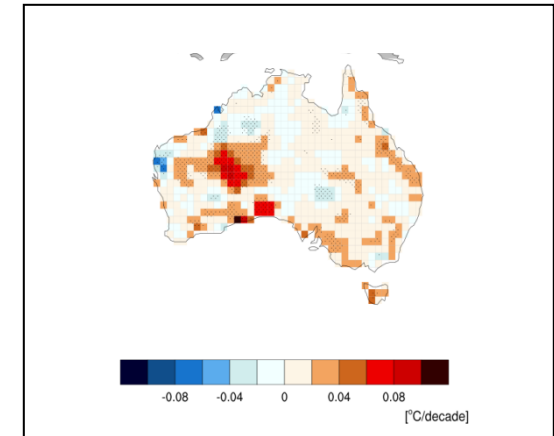
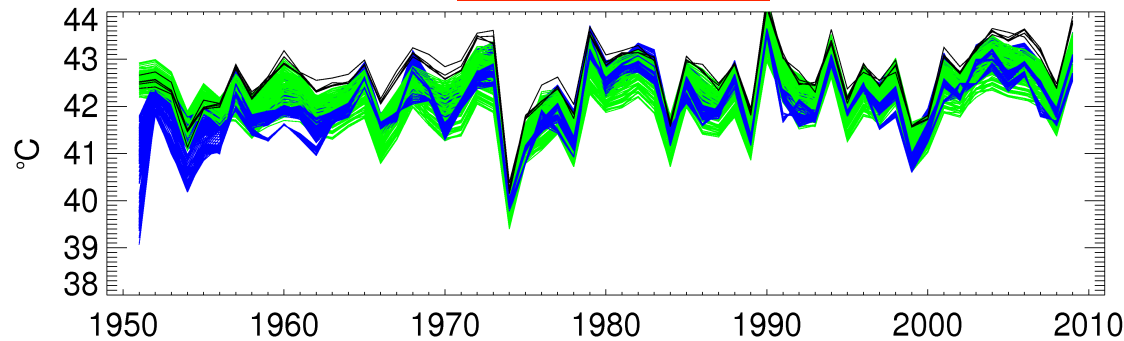| HQ stations	ALL stations	AWAP
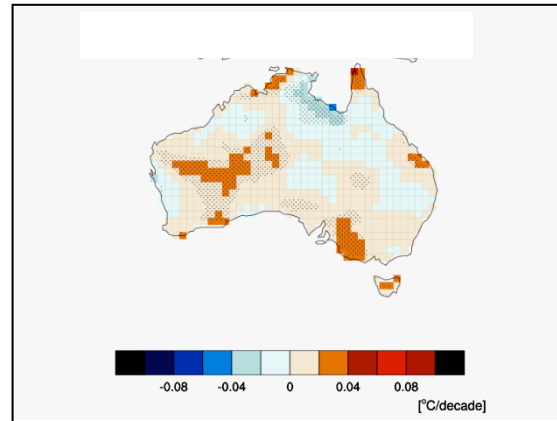
Same gridding method
Different input data

Same input data
Different gridding method

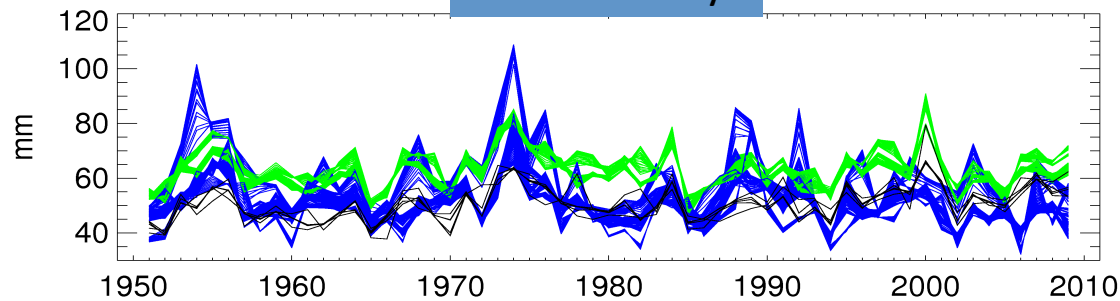# How large is this uncertainty?

Example for Australia

Hottest day

Wettest day

Several hundred realizations by varying:

• Grid size
• Parameters
• Network density
• Interpolation method
• Prior painstaking work on quality control and homogenisation of data

HQ
GHCND
AWAP

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CLIMATE SYSTEM SCIENCE

Source: Vogel, 2012

UNSW
Climate Change
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Scaling issues in gridded datasets of extremes

Different computation of annual extremes in gridded observational data and climate models / reanalyses:
interpolation of station extremes vs. extremes from daily grids

e.g. annual hottest day (TXx)
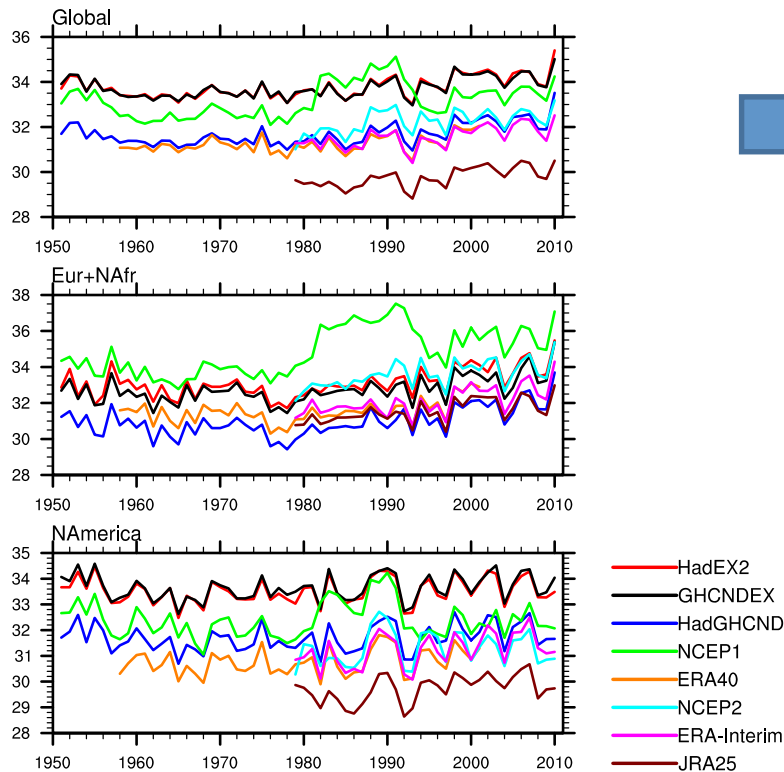
Obvious effect on actual values
- But also e.g. on trends?

RP1: systematic investigation of scaling effects related to temperature and precipitation extremes

- Regional study for area with high station density (SE Australia)

(source: Donat et al. 2014, *JClim.*)

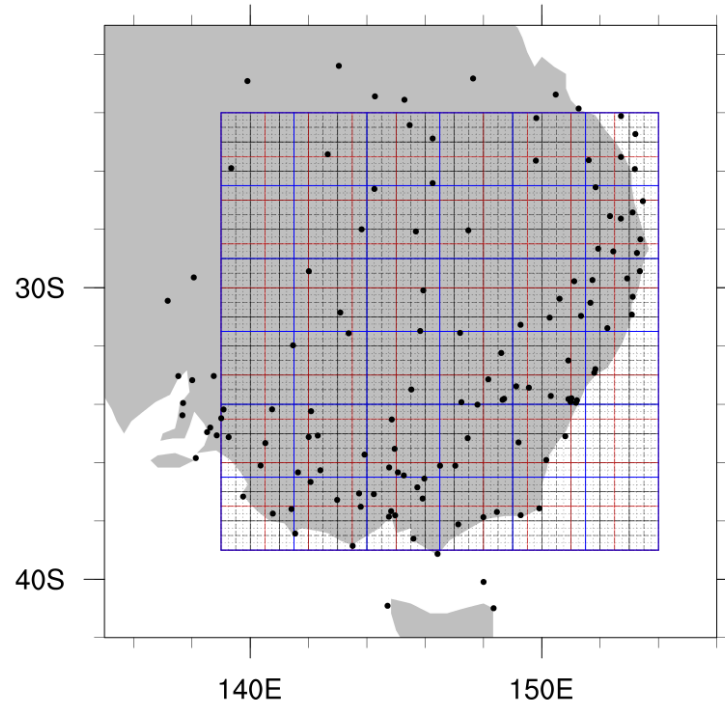# Scaling issues in gridded datasets of extremes

Systematic investigation of scaling effects related to temperature and precipitation extremes:

For a region with high station density calculate a range of different grids of annual extremes using
- different order of operation
- different gridding methods
- different resolutions (0.25 to 2.5°)

Investigate for differences in regional time series, trends, etc.