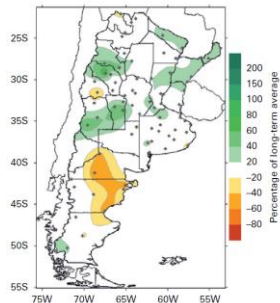


WMO CCI Expert Team on National Climate Monitoring Products

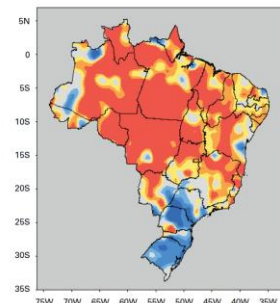
Towards consistent regional and global climate monitoring

John Kennedy¹, Lucie Vincent², Ladislaus Chang'a³, Karl Braganza⁴,
Andrea Rahmos⁵, Jessica Blunden⁶, Kenji Kamiguchi⁷

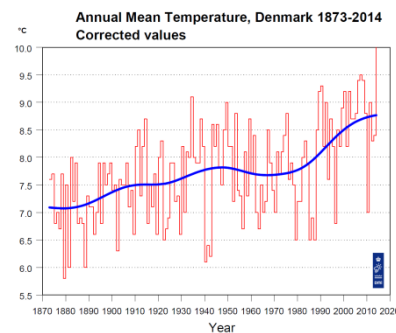
¹ UK Met Office, ² Environment Canada, ³Tanzania Meteorological Agency, ⁴ National Climate Centre Bureau of Meteorology, Australia ⁵ Instituto Nacional de Meteorologia (INMET) ⁶ NOAA National Centers for Environmental Information, ⁷ Climate Prediction Division, Global Environment and Marine Department, Japan Meteorological Agency



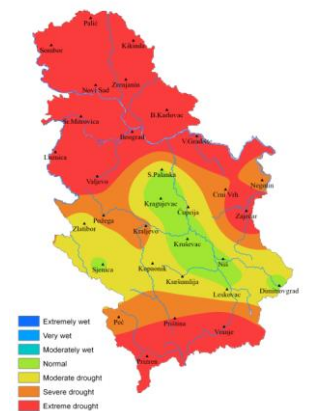
Argentina



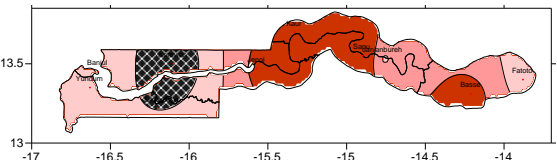
Brazil



Denmark

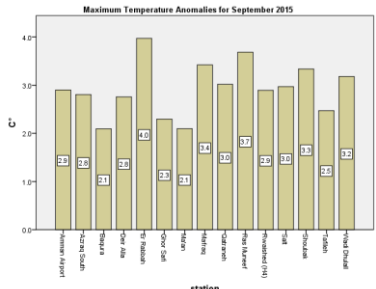


Serbia

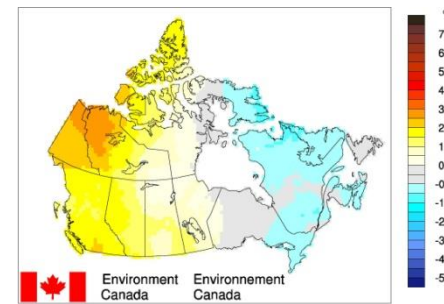


The Gambia

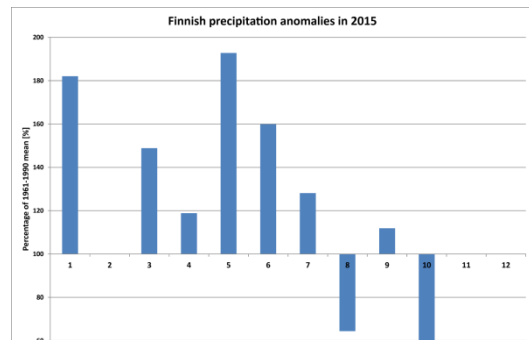
There is a huge range and variety of climate monitoring products



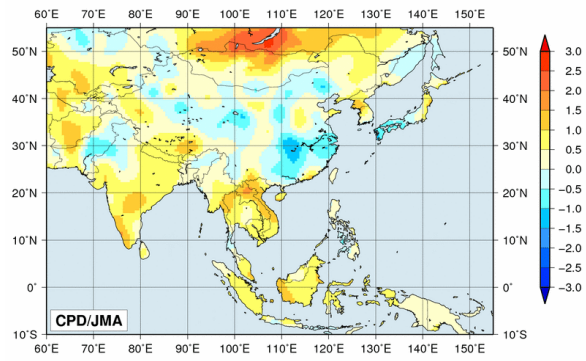
Jordan



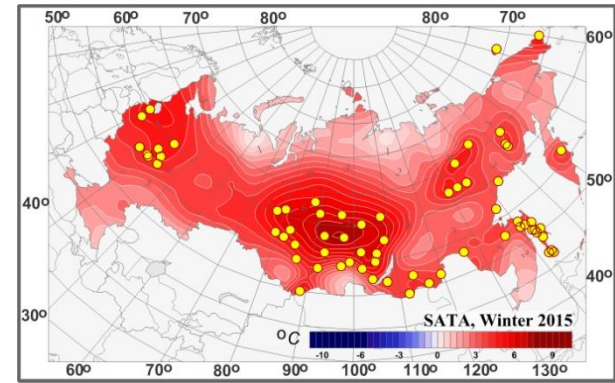
Canada



Finland



JMA



Russian Federation

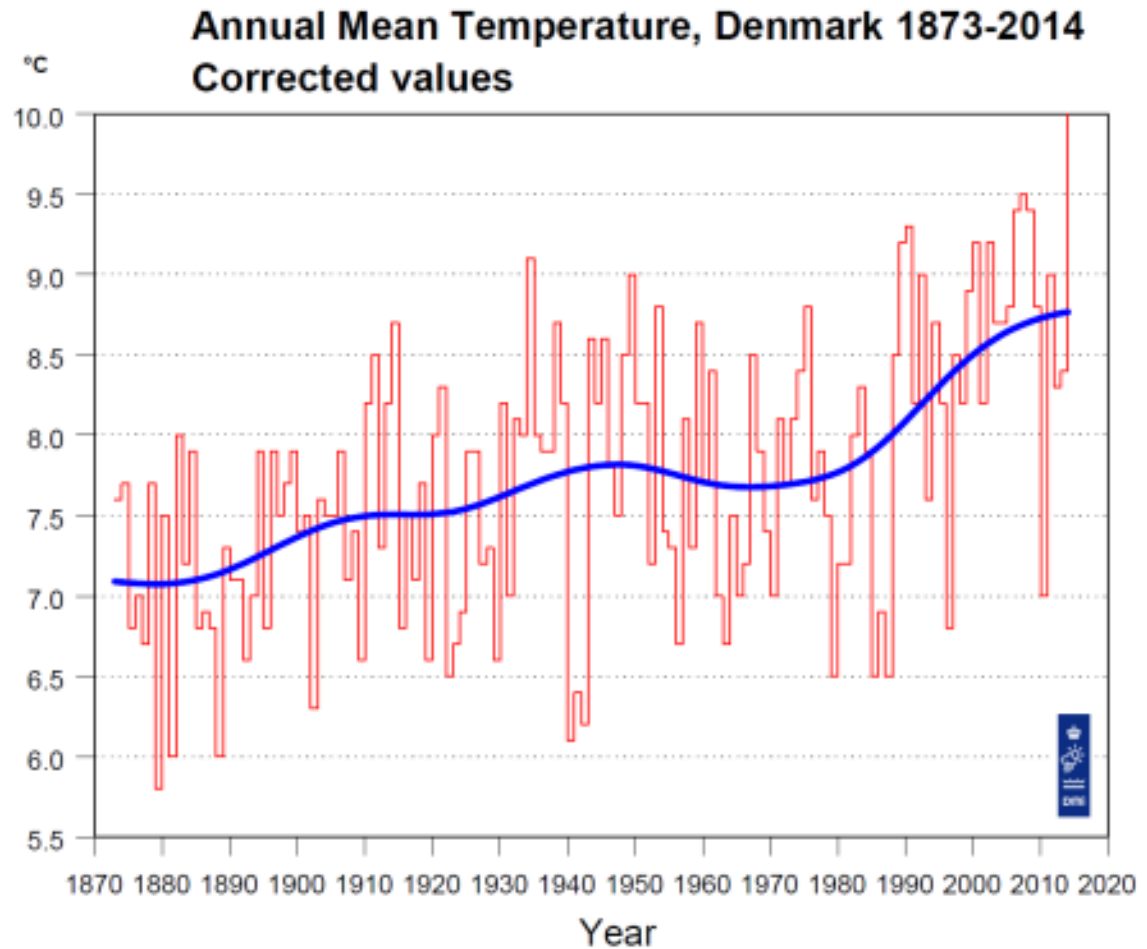
One aim of the ET-NCMP is to define a short list of standardised National Climate Monitoring Products.

What is a National Climate Monitoring Product?

It summarises the weather and climate across the country

Ideally, provides some context for current conditions

Example here is annual mean temperature for Denmark. 2014 was the warmest year on record



Why National Climate Monitoring Products?

- A consistent set of widely-used and useful products
- Easily incorporated into regional and international climate assessments e.g. WMO annual statement on global climate, BAMS State of the Climate Report.
- Allows countries with fewer resources to focus on a key set of useful products.
- A strong capacity-building element with:
 - Open-source software to calculate NCMPs
 - Software produces other useful outputs for climate monitoring
 - Workshops being planned

The 6 NCMPs defined by the team

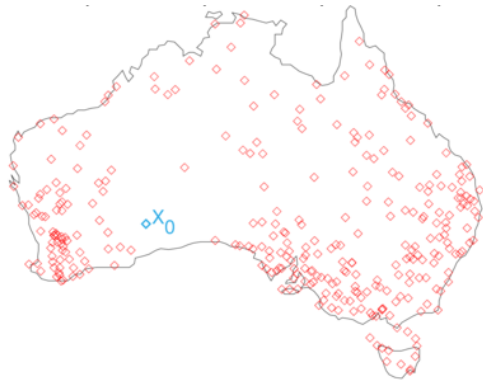
1. Mean temperature anomaly averaged over the country
2. Total precipitation anomaly averaged across the country
3. Standardised precipitation index, averaged across the country
4. Percentage of days in the month when Tmax exceeded the 90th percentile, averaged across the country
5. Percentage of days in the month when Tmin was below the 10th percentile, averaged across the country
6. Count of stations which broke maximum and minimum temperature records and daily precipitation records

Baseline used for calculations 1981-2010

Method

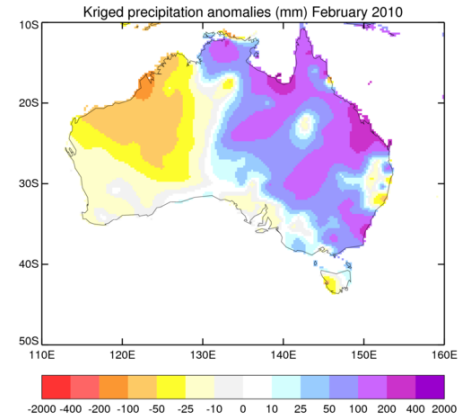
Example shown for NCMP2 – Precipitation anomalies

1. Prepare data

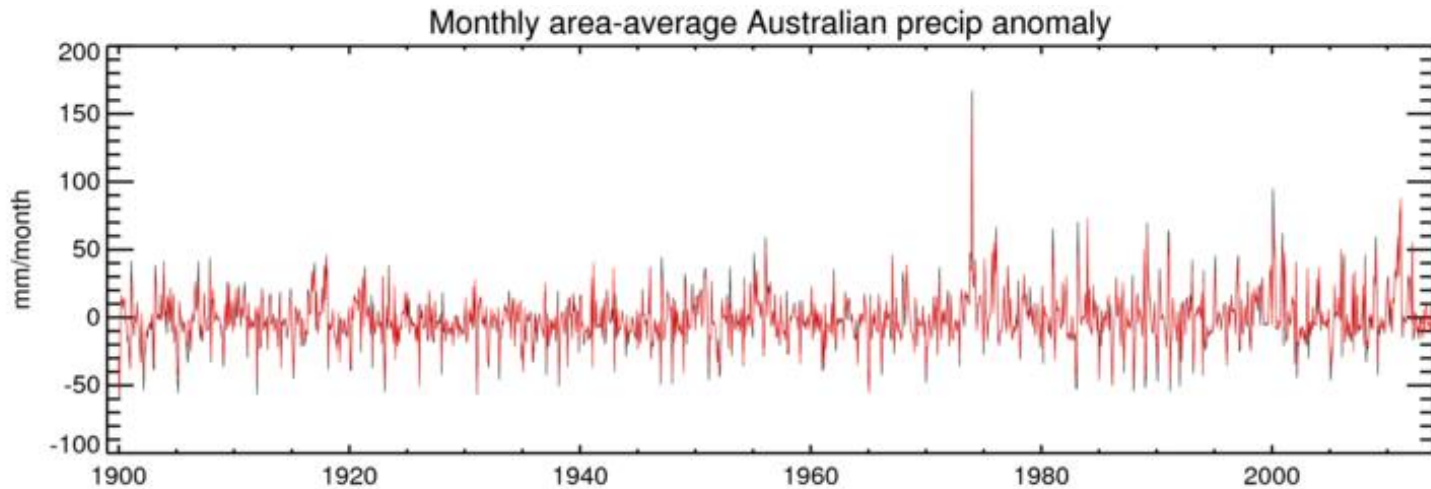


2. Calculate indices for each station

3. Interpolate indices



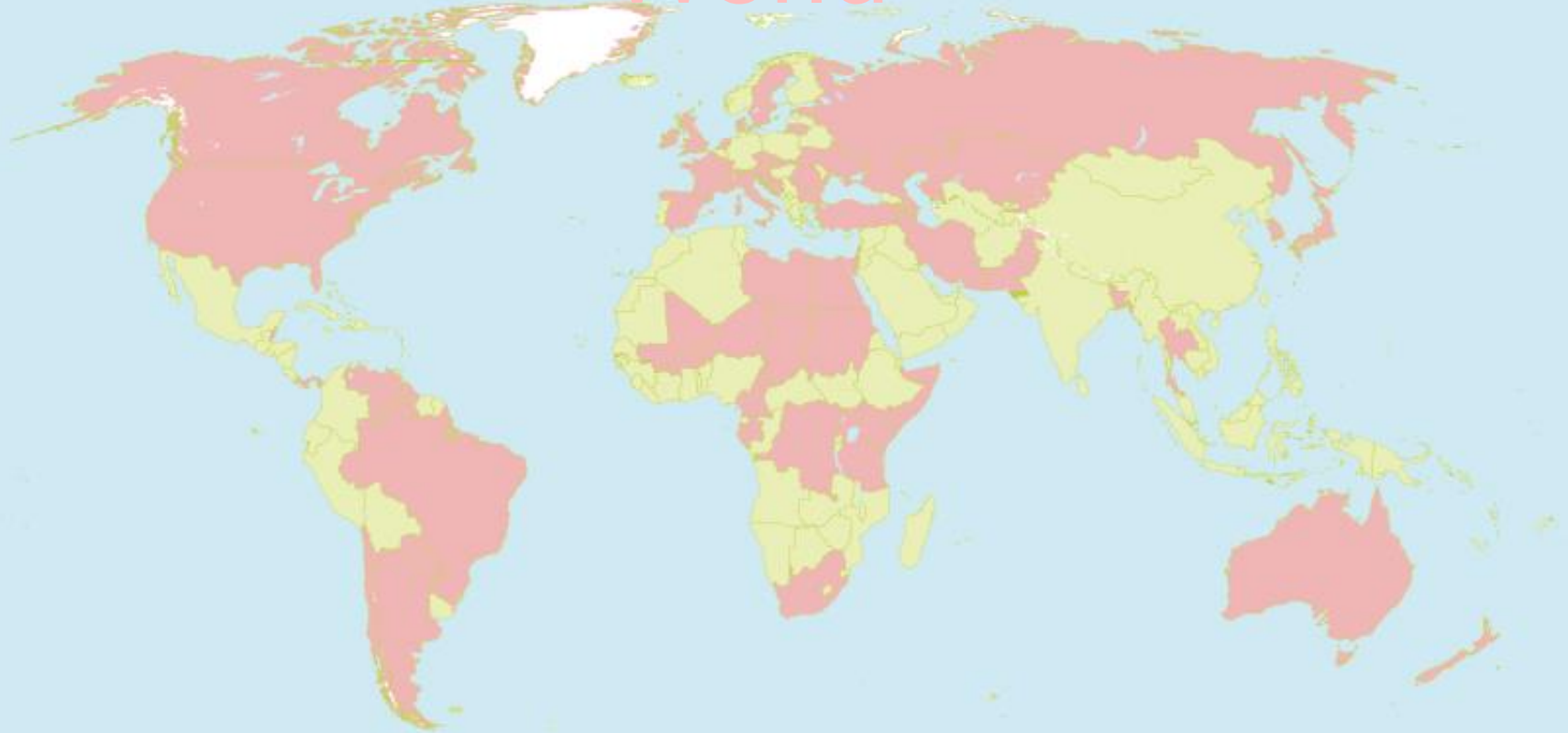
4. Calculate area-average = NCMP



Software and Guidance

- Environment Canada have produced prototype software and manuals
 - Software does quality control and calculates NCMPs
 - Open-source software in open-source language R
 - Based on ETCCDI software
 - Currently being tested for release in February 2017
-
- Also have written guidance on interpretation and reasoning behind NCMPs

NCMP Focal Points of the World



64 NHMSs have nominated focal points for producing National Climate Monitoring Products

Many countries are yet to nominate a focal point

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