

COST-ES0601 Expert meeting in Oslo 25-26 November 2009

Homogeneity testing of early instrumental series

Methods of testing long-term series from northern Europe in particular

Background:

Early instrumental series are the main source for climate information in the 18th and the first part of the 19th century. Combining those series with modern observations are often problematic due to the lack of proper calibration of the instrument, confusion about the units used, generally incomplete metadata, urban heat island effect, changing exposure of the instruments and numerous relocations. Particularly in northern Europe the long sun duration during summer might also create specific problems.

The aim of the meeting should be to discuss robust methods for homogenisation of early instrumental series in northern Europe in particular.

Agenda and short remarks

Wednesday 25 November:

09.00: Opening of the meeting, Inger Hanssen-Bauer

09.10: Session 1: Chair Øyvind Nordli:

Long-term time series in northern and central Europe (strength and weakness of the series concerning homogeneity):

09.10 Øyvind Nordli: The Oslo series.

The recent work on the Oslo series was introduced. The series has only once been homogenised, that was 80 years ago! It is now digitised so it was due time for revisiting the homogeneity of the series. This work has just started so it could only preliminary be concluded that the series seems to be homogenous, but with an urban heat island effect, in particular visible during winter.

Nordli_2009_11_25_Oslo_series.ppt

The temperature series from Uppsala/Stockholm, Tallinn, Helsinki, Brussels/Uccle, Vienna, Prague and Brno was also presented and results from their homogenisation revisited. The presentations were available in Power Points- or pdf-formats, see below

09.40 Anders Moberg: The Uppsala and Stockholm series

Moberg_oslo-cost-25nov09.pdf

10.00 Heikki Tuomenvirta: The Helsinki series

Tuomenvirta_Climate_of_Helsinki25112009.ppt

10.20 Andres Tarand: The Tallinn series

Variations of the distance from the sea were extremely important for the homogeneity of the Tallinn series.

11.00 Gaston Demaree: The Brussels Uccle series

11.20 Ingeborg Auer: The Vienna series
Auer_2009_11_25_The_Vienna_series.ppt

11.40 Petr Štěpánek: The Praha Clementinum and Brno series
Stepanek_Brno_Brazdil_et_al_all.pdf

12.00 Discussion

14:00: Session 2: Chair Ingeborg Auer:
Caveats and challenges in the process of homogenisation, introductions to discussions from some of the participants:

Ingeborg Auer: Sunshine on the wall cages
Effects of sunshine on wall cages, problems and solutions for the historical series of the greater alpine region. She concluded that the sunshine on the wall cages has been a problem and the high temperature in the late 18th century should be somewhat reduced.
Auer_2009_11_25_sunshine_on_wall_cages.ppt

Heikki Tuomenvirta: Urban heat island effects
Early results from a project in Helsinki for assessing the urban heat island effect
Tuomenvirta_Drebs_03092009_Helsinki_heat_island.pdf

Petr Štěpánek: Time of observation, uncertainties, poor metadata
Stepanek_Hom_examples.ppt

Øyvind Nordli: Screen changes
Screen changes could effect the measurements during summer in the Nordic countries, also when the single louvered screens were replaced by double louvers.
Nordli_2009_11_25_Screen_changes.ppt

17.00 Finish day one

Thursday 26 November:

09:00: Session 3: Chair. Anders Moberg:
Methods of homogeneity testing of early instrumental series, presentations and discussions

Anders Moberg: The multi element approach (temperature, cloud cover, circulation)
An multi element approach can be important for detection of inhomogeneities in the early series, and also proxy series can be used for this purpose.
Moberg_oslo-cost-26nov09.pdf

Petr Štěpánek: The use of AnClim/ProClim software package for homogeneity testing of early instrumental series
Stepanek_Prezentation_SW_2009.pdf

Anders Grimvall: Motion charts and other tools for visual detection of change points
A free software for visualisation of data series can be useful also for detection of inhomogeneities in the data series.

He also made an introduction to a discussion of possible overestimation of adjustments for single shifts in a data series

Grimvall_visualization.pptx

Discussions

14:00: Session 4: Chair. Gaston Demarée:

Final discussions

Key issues on homogeneity detection and adjustment

Relating proxy series to instrumental series

15.50 Closing remarks

16.00 The Oslo expert meeting is finished

The meeting ended with a discussion on the key issues on homogeneity testing and adjustments. Much of the time for the discussion was devoted to adjusting for the urban heat island effect.

One very important issue is keeping of the original values also after the adjustments of the series. Examples were put forward showing that this has not always been properly done in the past. All participants agreed upon that this is important issue.

Participants:

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There were several other participants from The Norwegian Meteorological Institute attending the meeting for shorter periods.