

Differences in Climate Evolution Analyses  
depending on the choice of homogenization  
method and time span

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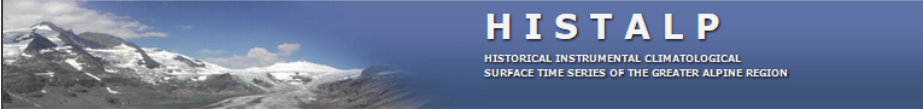
**ZAMG**  
Zentralanstalt für  
Meteorologie und  
Geodynamik

# HISTALP – a short introduction

April 2017  
Folie 2

[www.zamg.ac.ac/histalp](http://www.zamg.ac.ac/histalp)

- **monthly homogenised** station data from the Alpine Region
- Daily homogenised data for Austria
- Gridded data for temperature and precipitation in the Alpine region
- Newsletter on climate change for Austria



[Home](#)  
**Newsletter**  
**News**  
**About HISTALP**  
1997-2001  
2002-2007  
2008  
Thematic maps

- ALOCLIM Map
- HISTALP Map

Network development

- GAR
- Regionalisation
- Spatial decorrelation

**Datasets**

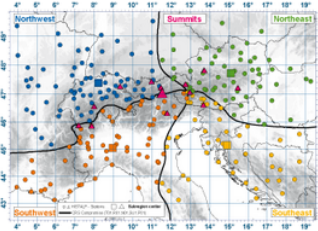
- Grid-Mode Data
  - CRSM Files
  - 1x1 degree grid
  - 5x5 minutes grid
- Station-Mode Data
  - csv export
  - station map

**FAQ**  
**References**  
**Acknowledgements**  
Correspondents  
ZAMG Team  
Data Providers  
**Links**  
**Imprint**

## Welcome to HISTALP!

HISTORICAL INSTRUMENTAL CLIMATOLOGICAL SURFACE TIME SERIES OF THE GREATER ALPINE REGION

This site is dedicated to the HISTALP project and its database, consisting of monthly homogenised temperature, pressure, precipitation, sunshine and cloudiness records for the „Greater Alpine Region“ (GAR, 4-19 deg E, 43-49 deg N, 0-3500m asl). The longest temperature and air pressure series extend back to 1760, precipitation to 1800, cloudiness to the 1840s and sunshine to the 1880s.

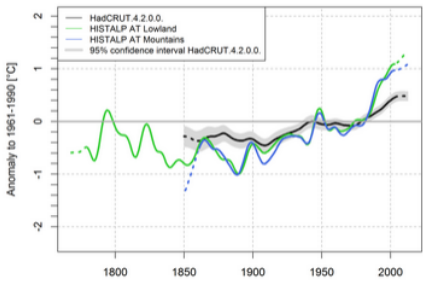


**HISTALP Station Map**  
Our target region: the Greater Alpine Area [\[D\]](#)

An introduction in German about the project can be found in the publication: EINE NEUE WEBSITE MIT INSTRUMENTELLEN QUALITÄTS-KLIMADATEN FÜR DEN GROSSRAUM ALPEN ZURÜCK BIS 1760 ([Bohm et al. 2009](#)).

Further informations can be found in the [Reference-section](#).

### Annual temperature anomalies (20 year Gaussian filter)



As stated in the [Austrian Assessment Report 2014 \(Volume 1, Chapter 3, Auer I., Foelsche U.\)](#), the regional temperature time serie of Austria shows a higher short term variability than the global time series. This is due to the different climate anomalies and climate trends that reduce each other when averaged. The negative anomaly during 1870-1900 and the strong positive anomaly during the last three decades lead to a stronger temperature increase for Austria than on the global scale.

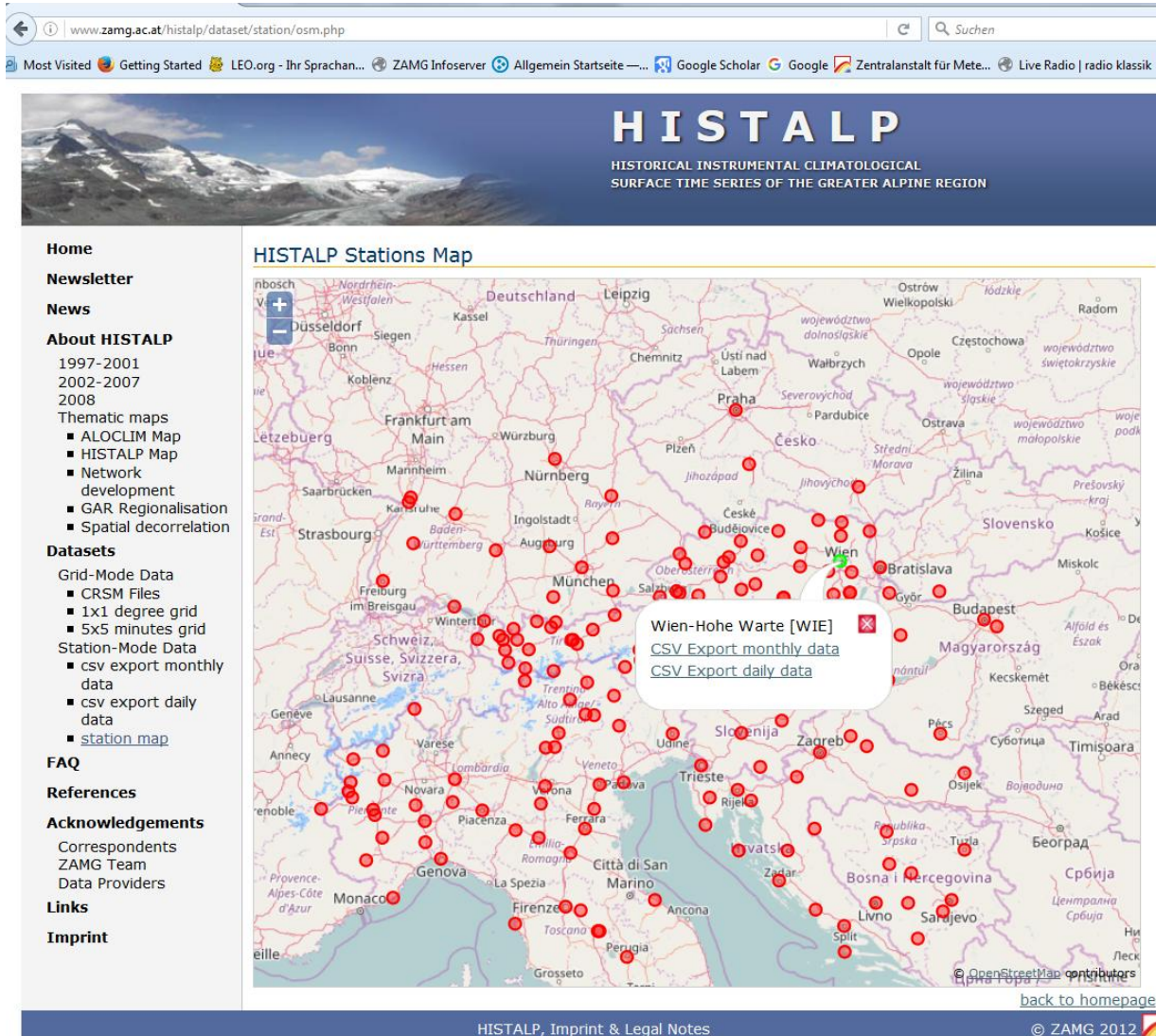
Comparison of the global temperature anomalies ([Met Center Hadley Center and Climate Research Unit](#)) and the temperatur anomalies of Austria to the climate mean 1961-1990.

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# HISTALP – a short introduction

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www.zamg.ac.at/histalp/dataset/station/osm.php

Suchen

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## HISTALP

HISTORICAL INSTRUMENTAL CLIMATOLOGICAL  
SURFACE TIME SERIES OF THE GREATER ALPINE REGION

### HISTALP Stations Map

Wien-Hohe Warte [WIE]  
[CSV Export monthly data](#)  
[CSV Export daily data](#)

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# HISTALP – a short introduction

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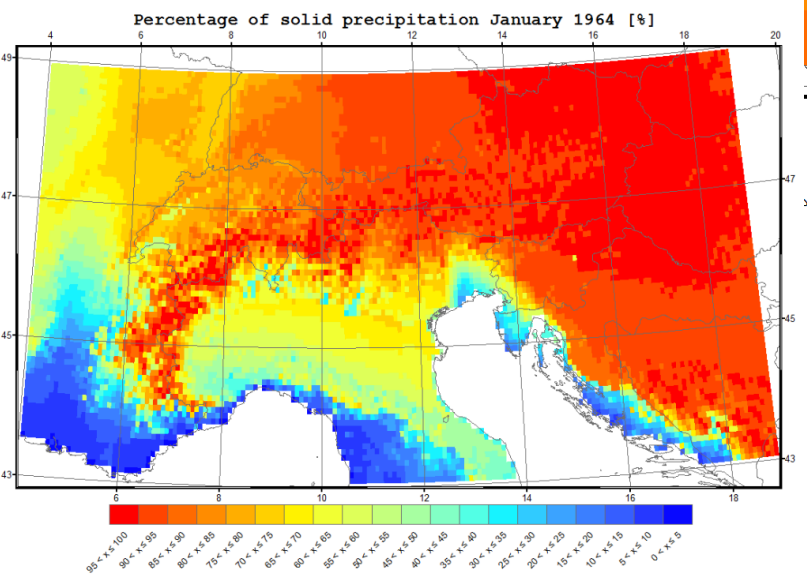
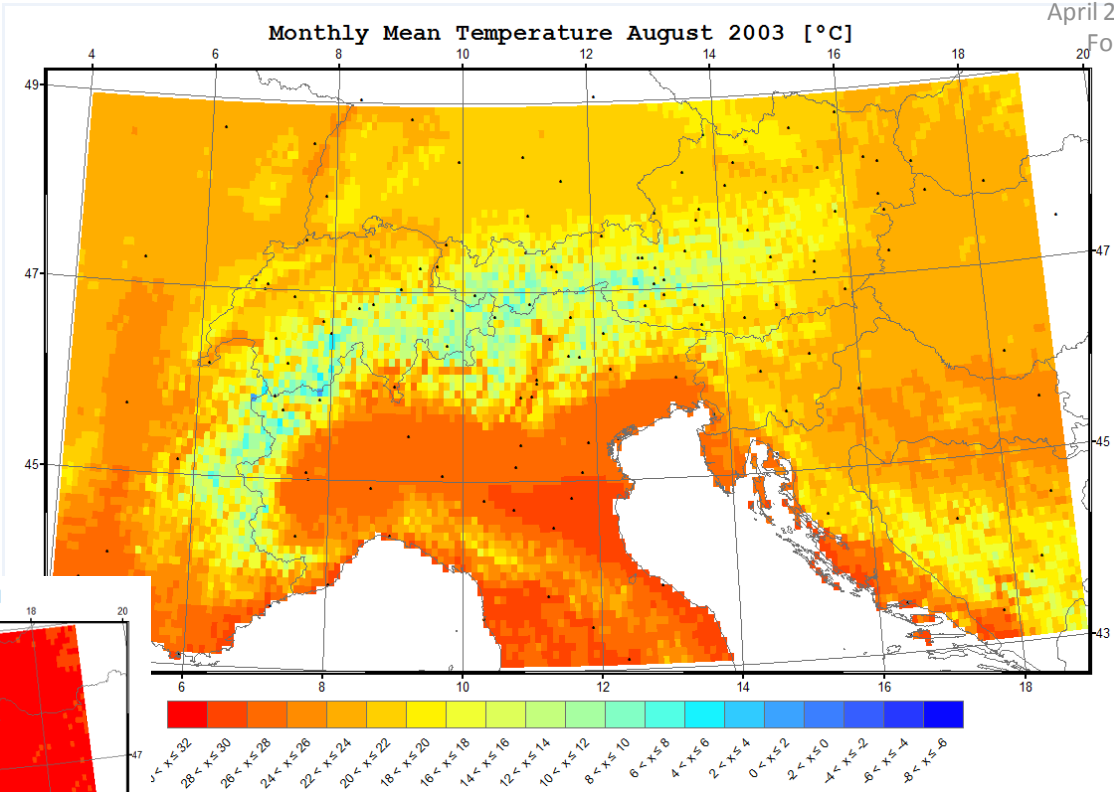
The screenshot displays the HISTALP website interface. At the top, the title 'HISTALP' is prominently displayed, followed by the subtitle 'HISTORICAL INSTRUMENTAL CLIMATOLOGICAL SURFACE TIME SERIES OF THE GREATER ALPINE REGION'. Below this, the main content area is titled 'HISTALP homogenised series CSV Export'. The form includes dropdown menus for 'Country' (Austria [AT]), 'Station' (Wien-Hohe Warte [WIE]), and 'Parameter' (Mean temperature [T01]). A 'selected Year range' of 1760-2020 is shown, with a note that data is available for the year range 1775-2016. A 'generate XY-Plot' button is circled in red. Below the form, a plot titled 'Wien-Hohe Warte T01 Summer' shows 'mean temperature [°C]' on the y-axis (ranging from 15 to 23) and years on the x-axis (ranging from 1760 to 2010). The plot features two data series: 'single years' (green dots connected by thin lines) and a '20 yrs low-pass filter' (red line). The plot shows a clear upward trend in temperature over the period shown.

Selection of plotted time series

Selection annual or seasonal time series

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# HISTALP – a short introduction



Temperature  
Precipitation  
%-solid precipitation  
1780/1801-2014

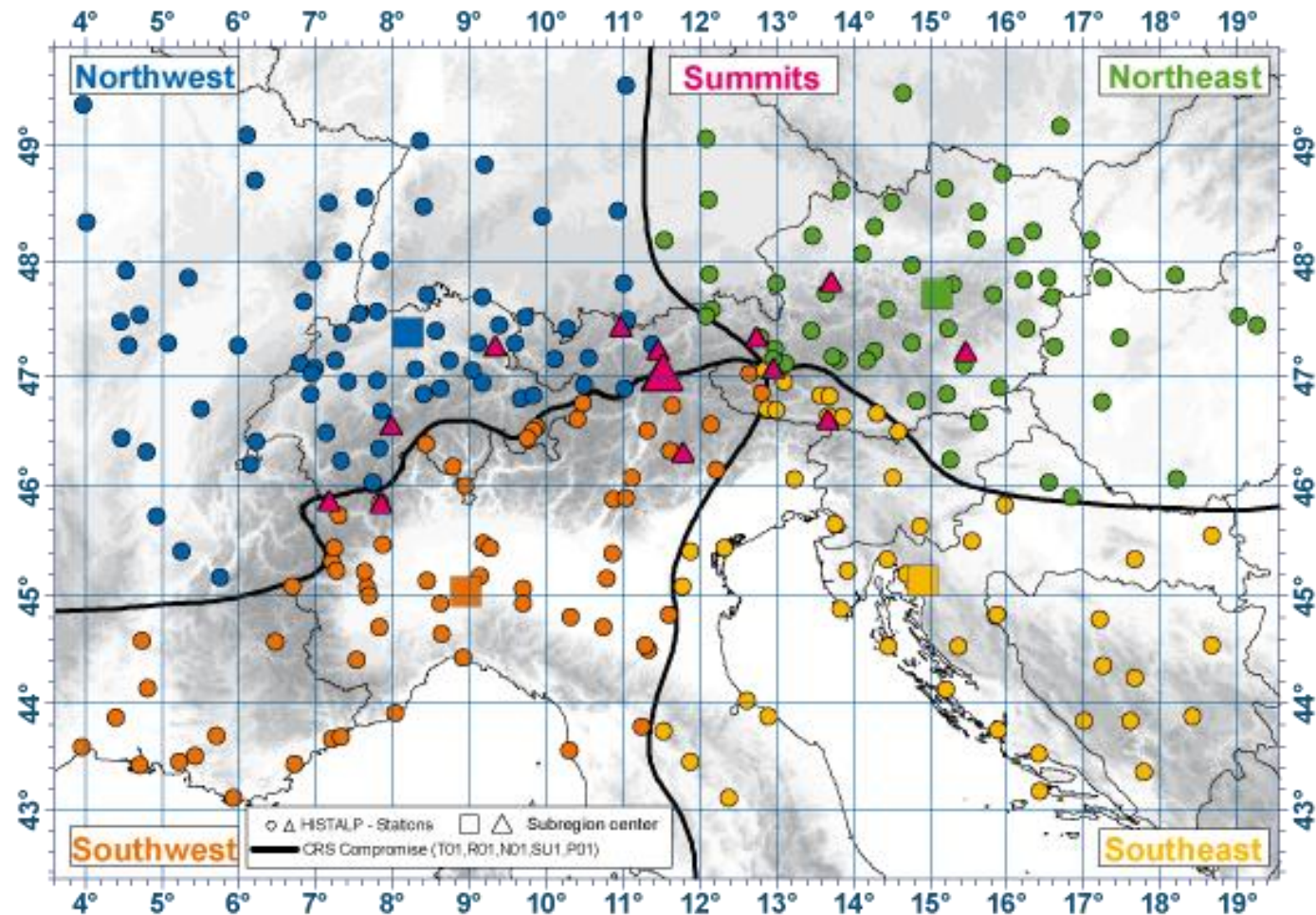
# Homogenisation

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Folie 6

	Old version	New version
name	HOCLIS	HOMER
language	Fortran, Excel for graphics	R
break detection	Craddock	log-likelihood method
Nr. of reference series	Up to 10	Whole climate region
Temperature	additive	additive
Precipitation	multiplicative	multiplicative
Data until	~2003	~2015

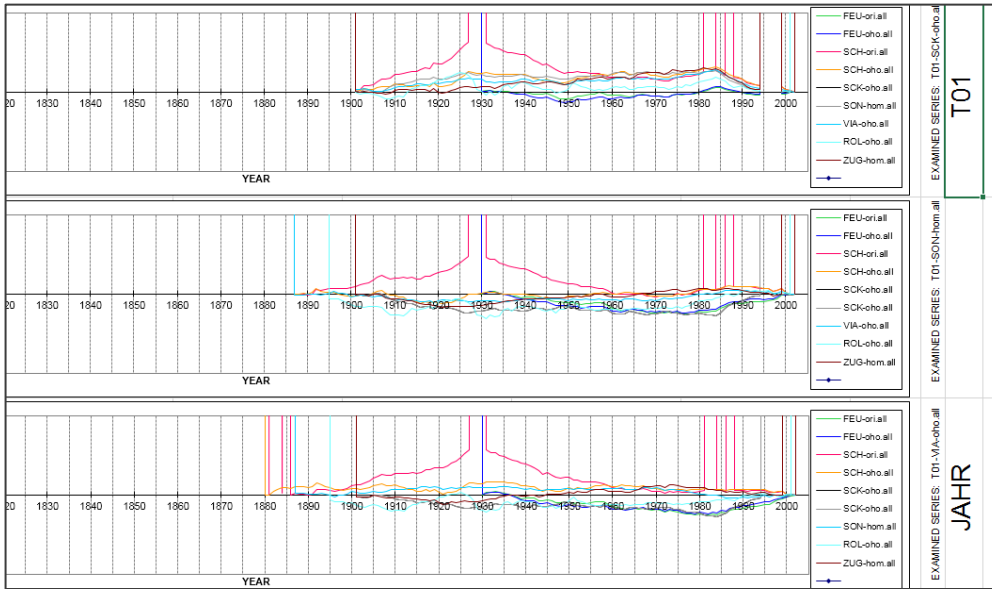
# Climatic regions

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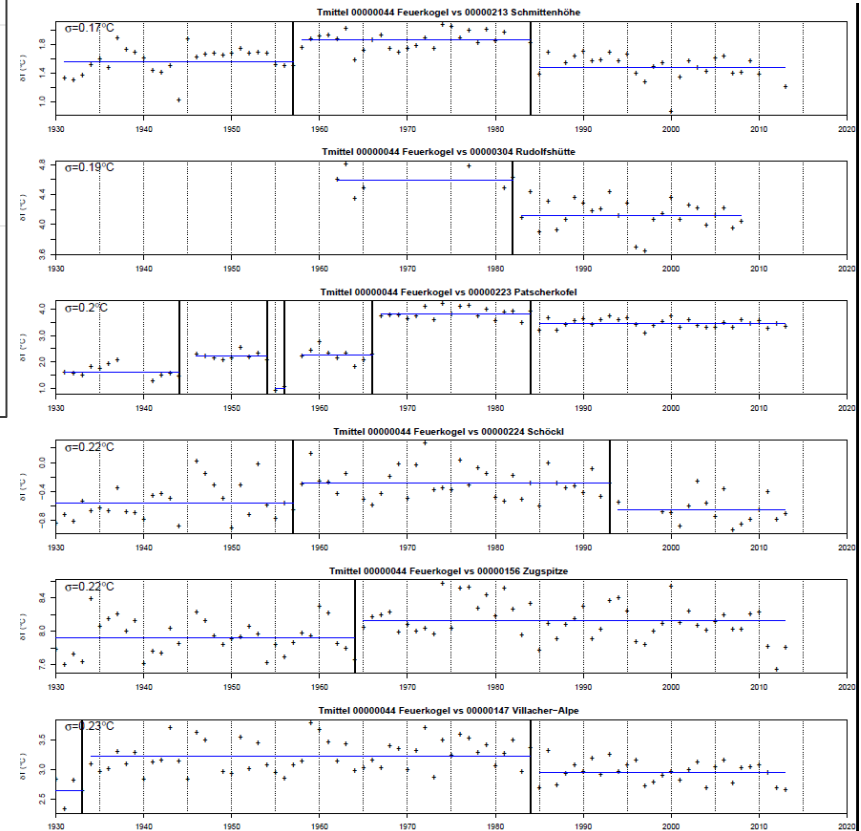


# Break detection plot

## HOMER



Hoclis  
Reg\_H  
G-0-1

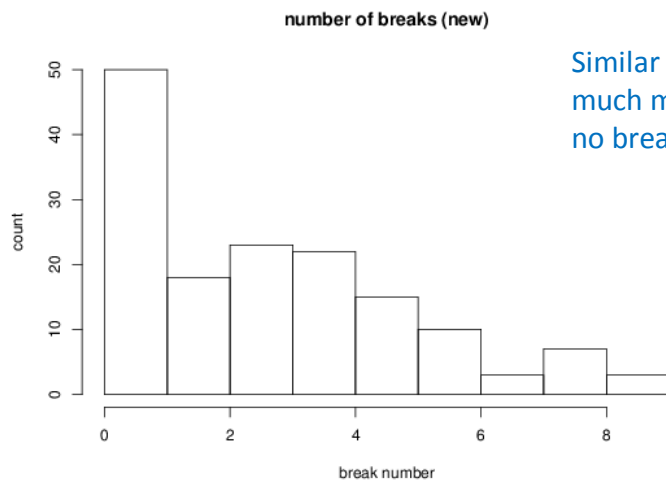
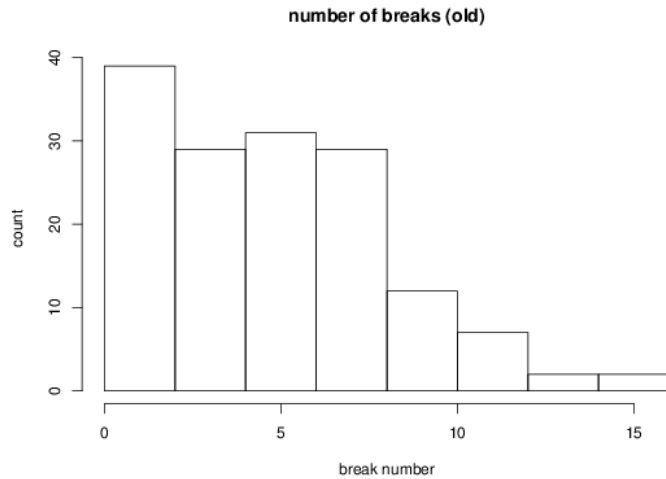




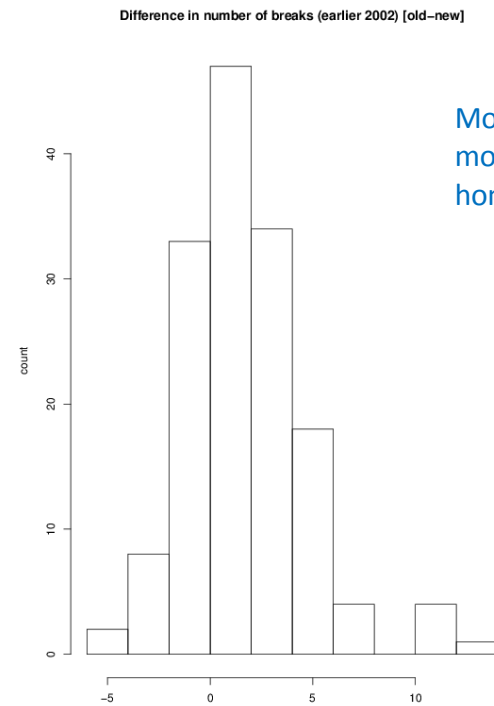
# Detected Breaks



Time series starting at different point  
Only breaks before 2002 taken into account



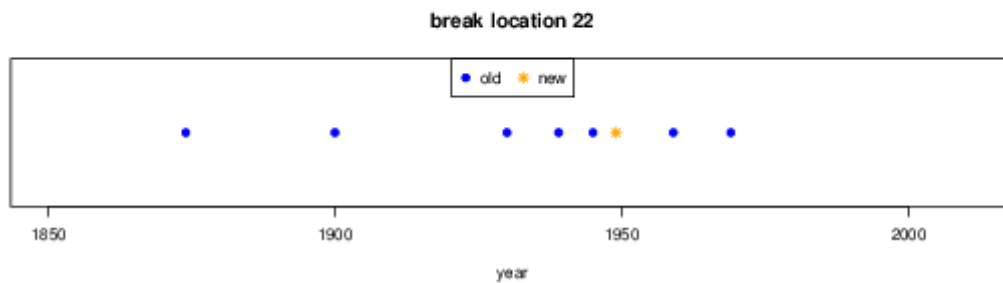
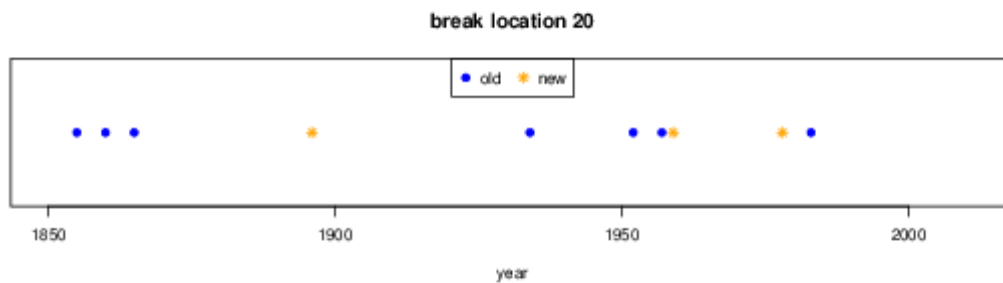
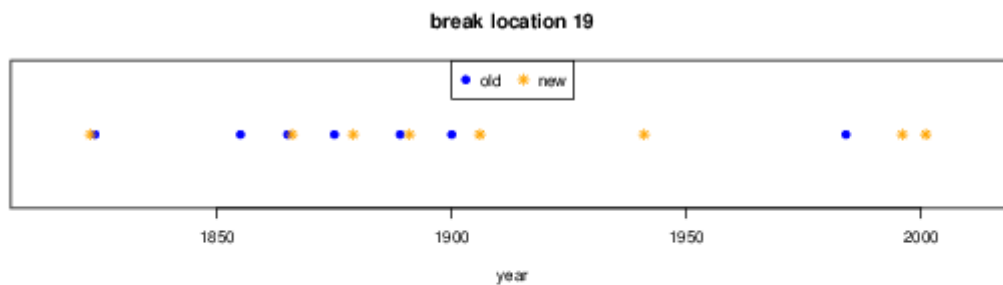
Similar distribution, but  
much more stations with  
no breaks



More time series with  
more breaks in the old  
homogenisation method

# Detected breaks

April 2017  
Folie 10

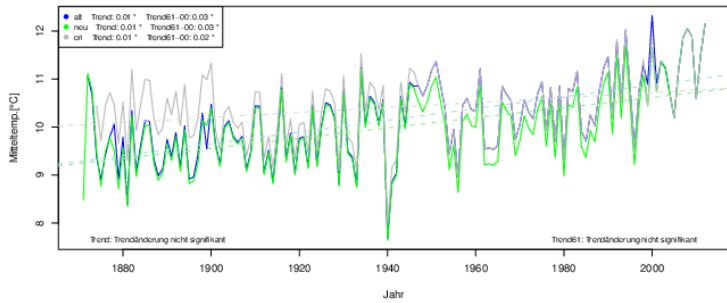


# Time series



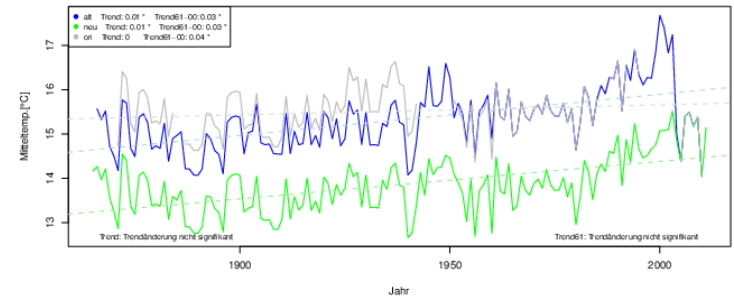
April 2007

Jahr 1871–2012

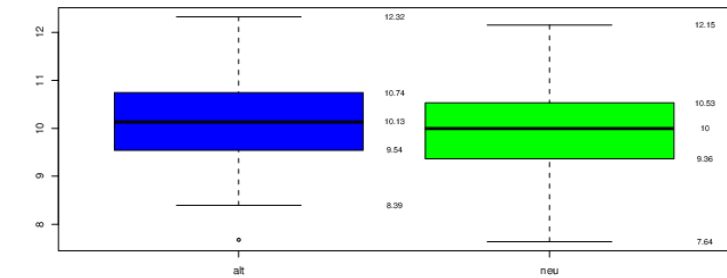


Comparison of time series

Jahr 1865–2011

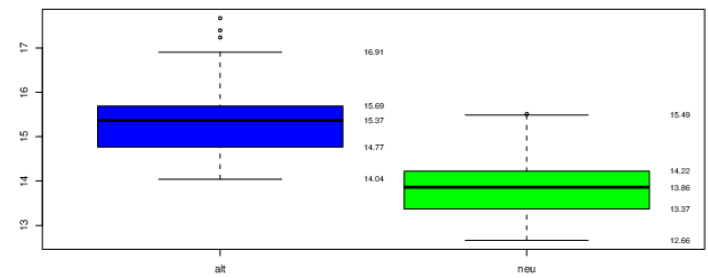


Jahr 1871–2012

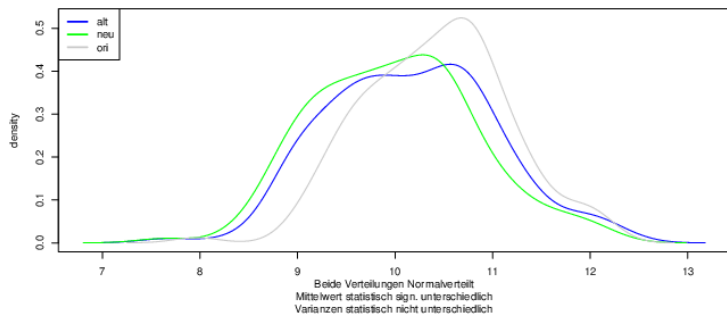


Comparison of value distribution

Jahr 1865–2011

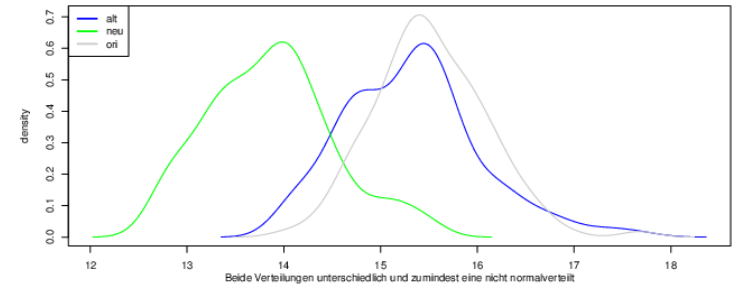


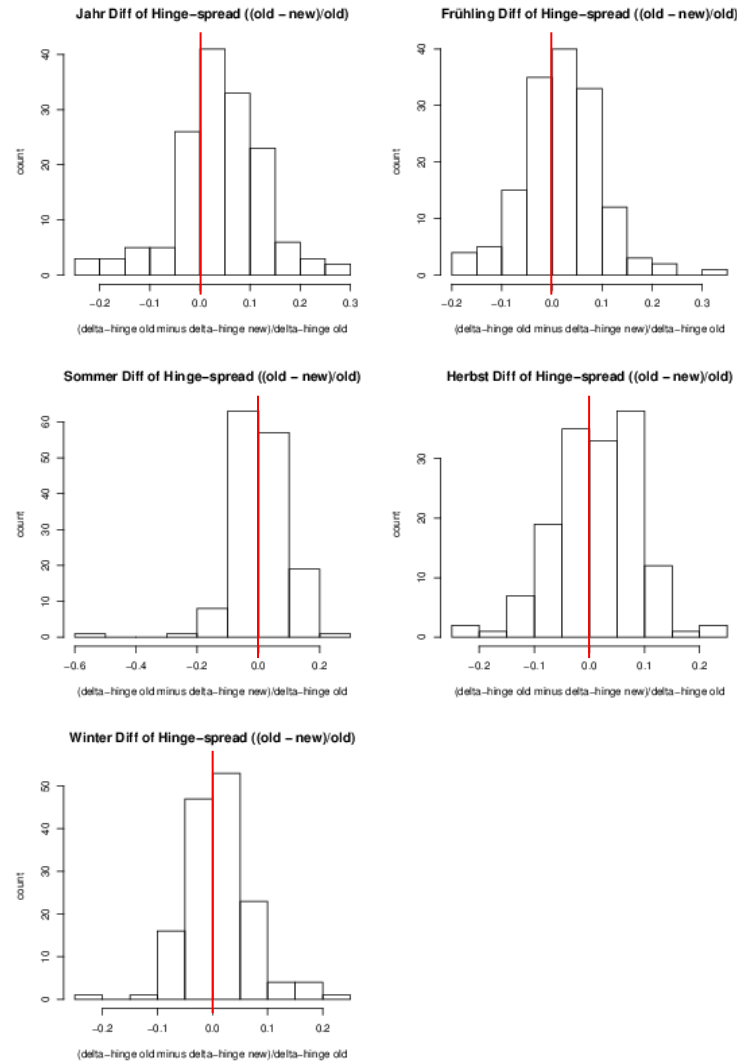
Jahr 1871–2012



Comparison of value distribution

Jahr 1865–2011





Interquartile  
range

# Time series

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year

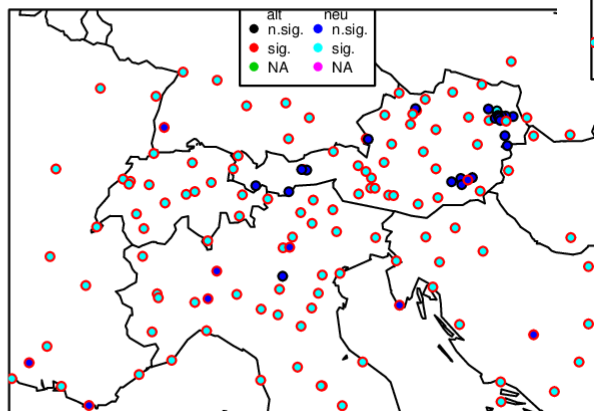
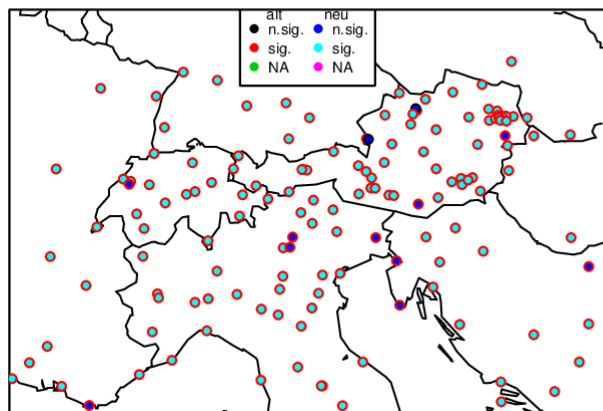
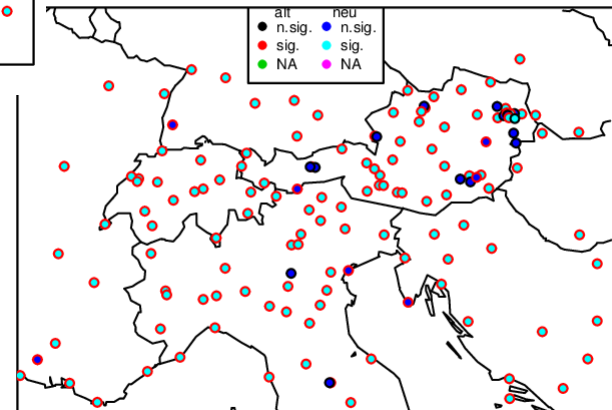
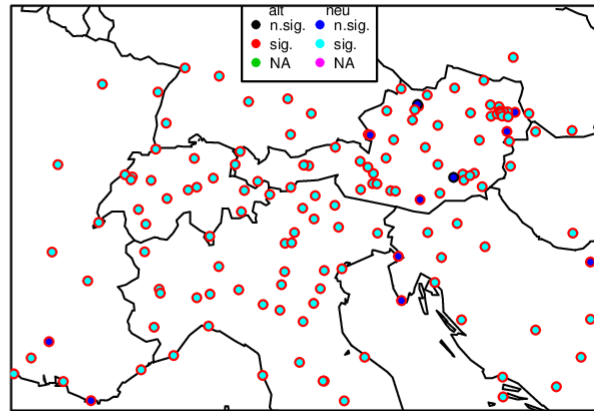
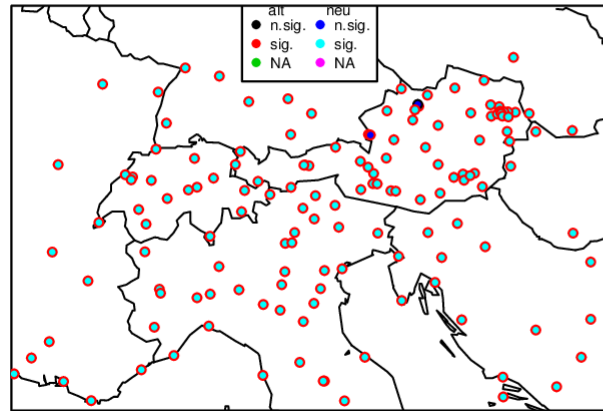
spring

winter

Trends significance

summer

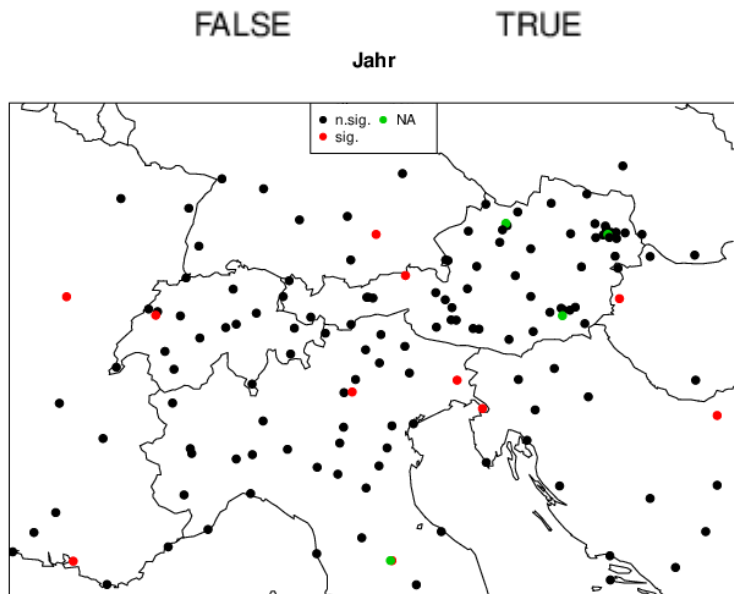
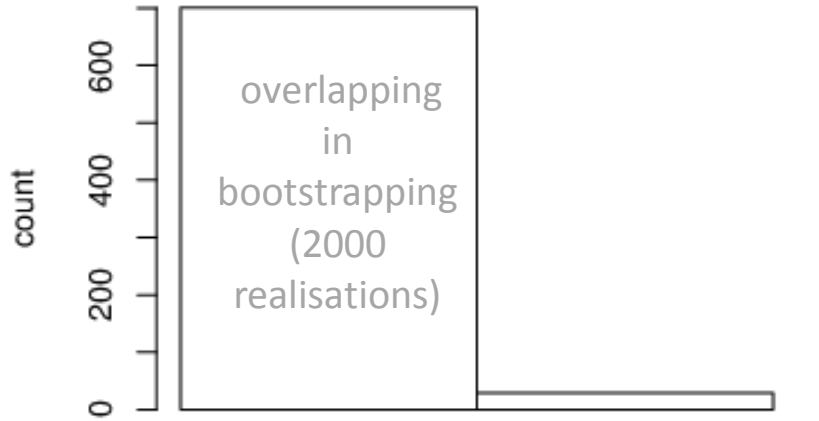
autumn



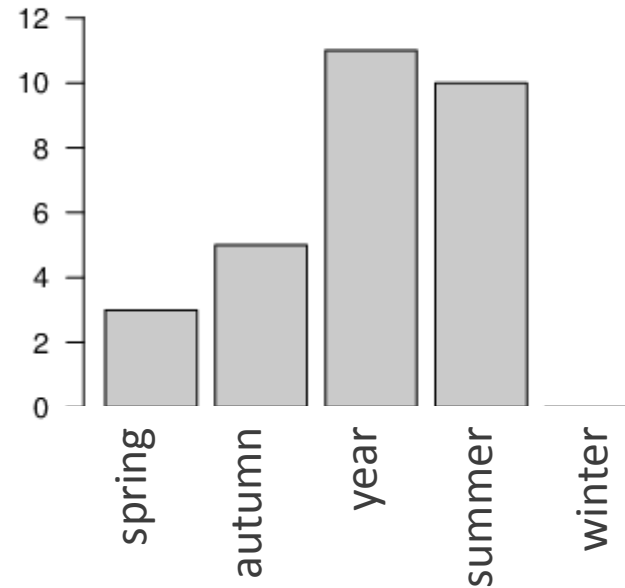


## Significance of Trendchange (whole period)

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Folie 14



## Sig. Trendchange (whole period)



- Improvement of original time series (including results of current Quality Controls in the national data series)
- Rehomogenisation
- Comparison to national homogenised datasets and publication of results
- [Comparison between HOMER Version starting „2003“ and „now“]
- Publication of data on the project webpage