



# CS7 Tailoring

# Transformation of Historical Time Series into Future Time Series

Alexander Bakker, Janette Bessembinder

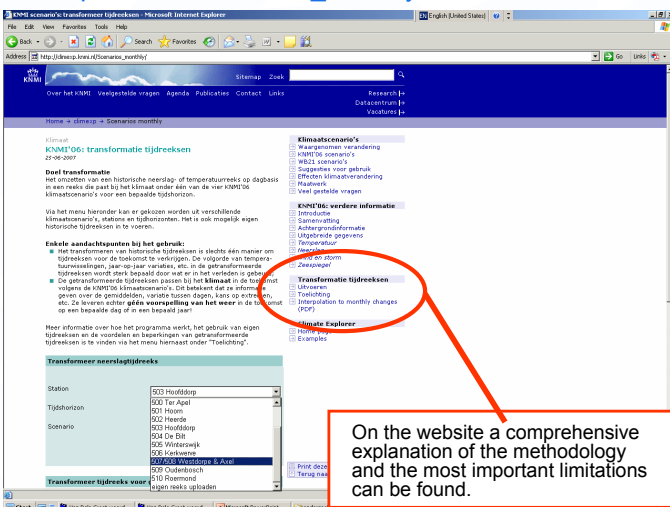
## Introduction

The KNMI'06 scenarios give an overview of the relative or absolute changes of many climate variables, such as the mean precipitation on wet days or the average coldest day of the year. The scenarios however do not provide for meteorological time series, which can be used for impact studies. One way to provide users of climate information with "future" time series is the transformation of observed time series.

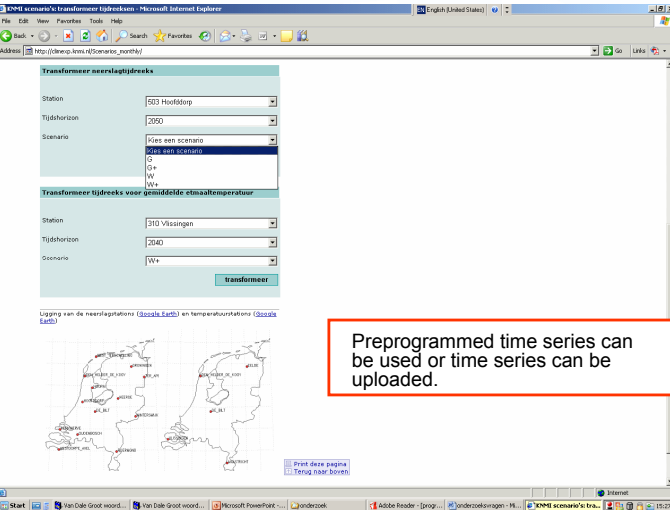
**The objective of the transformation is to obtain "future" time series, which match to the KNMI'06 scenarios and in which the natural variability is represented.**

## Transformation programme

KNMI has developed a transformation programme: [climexp.knmi.nl/Scenarios\\_monthly/](http://climexp.knmi.nl/Scenarios_monthly/)



On the website a comprehensive explanation of the methodology and the most important limitations can be found.



Preprogrammed time series can be used or time series can be uploaded.

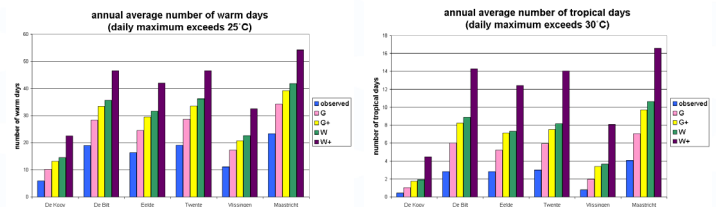
**Figure 1.** Website transformation programme: [climexp.knmi.nl/Scenarios\\_monthly/](http://climexp.knmi.nl/Scenarios_monthly/)

## Example Temperature Transformation

The transformation programme for temperature is as well valid for the daily average as for the minimum and maximum temperature.

### Average Number of tropical days

A typical application of the transformation programme is to derive climate indices, such as the average number of warm and tropical days.



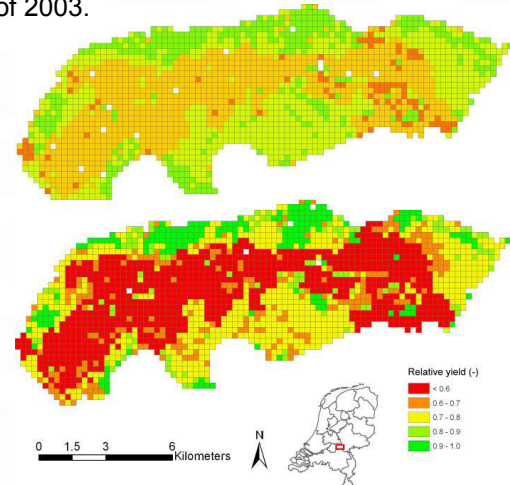
**Figure 2.** Average number of warm and tropical days according to different scenarios, derived by the transformation of observed temperature series.

## Example Rainfall Transformation

Time series transformation is an essential tool for model studies which are driven by time series.

### FutureWater

"Future Water" used transformed precipitation series to project changes in crop yields in "Rivierenland" according to the W+ scenario. Figure 3 shows the reduction with respect to the long term average for the very dry year 2003 and the transformed precipitation series of 2003.



**Figure 3.** Reduction in crop yields in Rivierenland according to the precipitation of 2003 and the W+ transformed precipitation of 2003.

## Further information

A. Bakker, [bakker@knmi.nl](mailto:bakker@knmi.nl), tel 030-2206705