





Koninklijk Nederlands Meteorologisch
 Instituut *Ministerie van Verkeer en Waterstaat*

Climate scenarios and time series

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Climate scenarios

example construction:

```

    graph LR
      A[socio-economic scenario] --> B[GCM simulation]
      B --> C[dynamical downscaling]
      C --> D[Impact model]
  
```

Construction
 of matching
 time series



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Objective

Compare the spread in assessed impacts due to subjective choices to the spread due to different climate scenarios

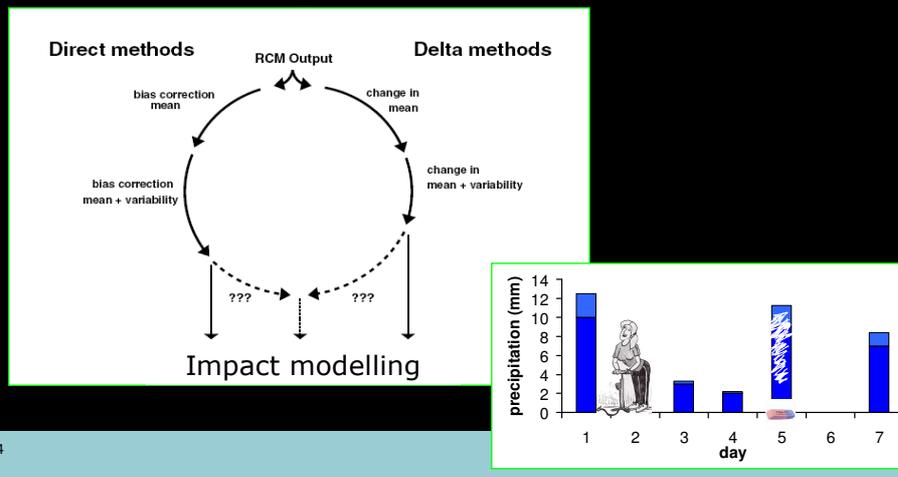
3



Future time series

Bias correction of RCM output

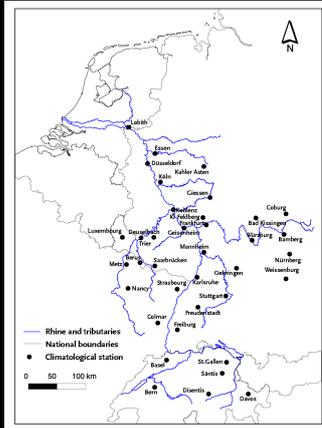
Perturbing observed time series



4



Case study: 10-day large scale in the Rhine basin



5



10 RCM SIMULATIONS (SRES A1B)

REMO-ECHAM
HadRM-HadCM-Q16
HadRM-HadCM-Q3
HadRM-HadCM-Q0
RACMO-ECHAM
RACMO-MIROC
HIRHAM-ARPEGE
RCA-ECHAM
RCA-HadCM-Q16
CLM-HadCM-Q0



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6 time series construction methods

Delta method:

tr1 & tr2 (number of wet days and distribution wet day amounts separately adjusted)

tr3 (quantile adjustment)

Direct method:

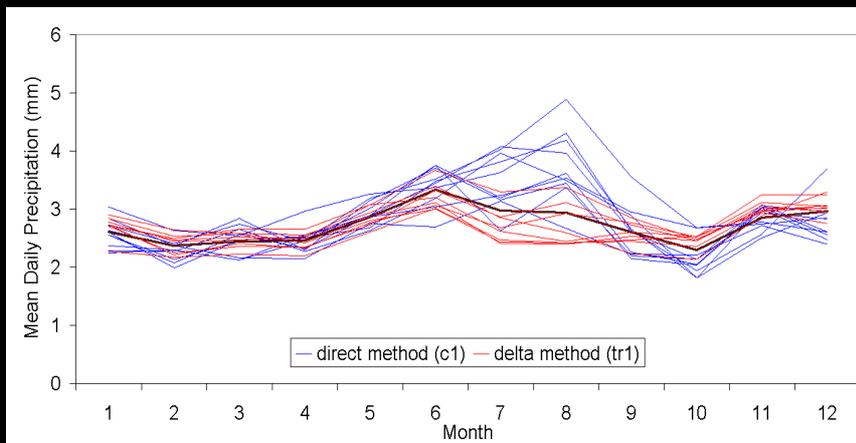
c1 & c2 (number of wet days and distribution wet day amounts separately adjusted)

c3 (quantile adjustment)

7



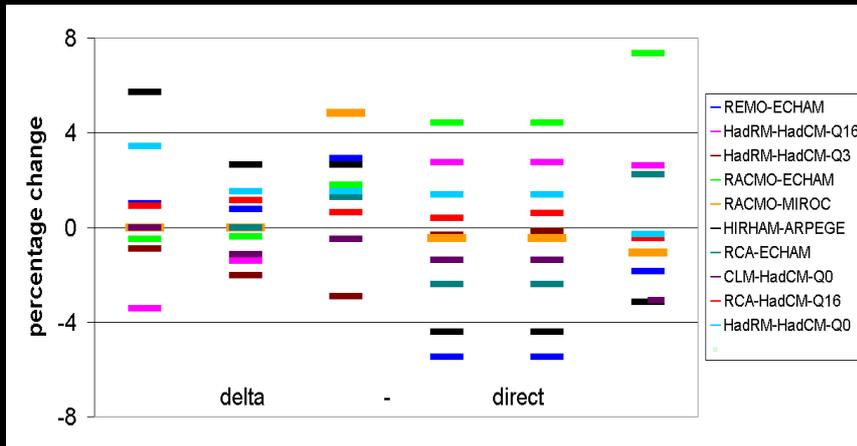
Mean precipitation



8



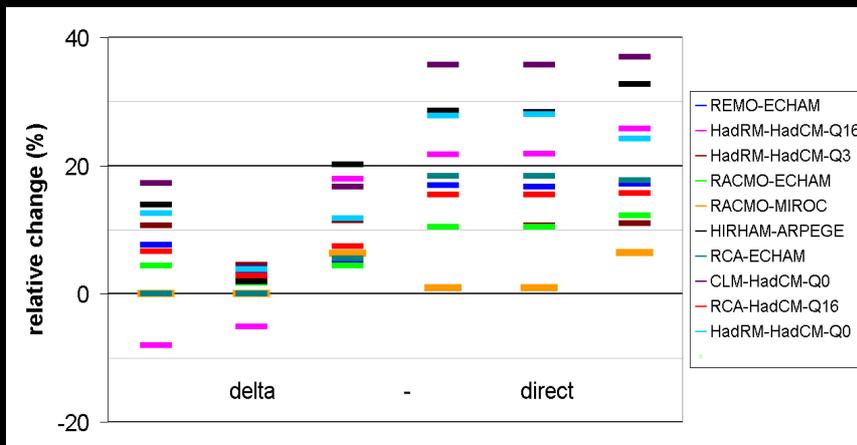
Coefficient of Variation 10-day winterprecipitation



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Coefficient of Variation 10-day summerprecipitation



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Conclusions

Different ways of constructing time series cause comparable variation in assessed results as climate models itself

How to discriminate on different methods and does a best method exist?