

seNorge_2018 observational gridded datasets over Norway

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Background

- Observation-only gridded datasets
- Delivered since 2002
- Used in climatology, meteorology and hydrology

seNorge.no

Om seNorge: Dette er en åpen portal på Internett, som viser daglig oppdaterte kart over snø-, vær- og vannforhold og klima for Norge - og mye mer. (mer...)

seNorge er et samarbeid mellom NVE, met.no og Kartverket



SNØ



VANN



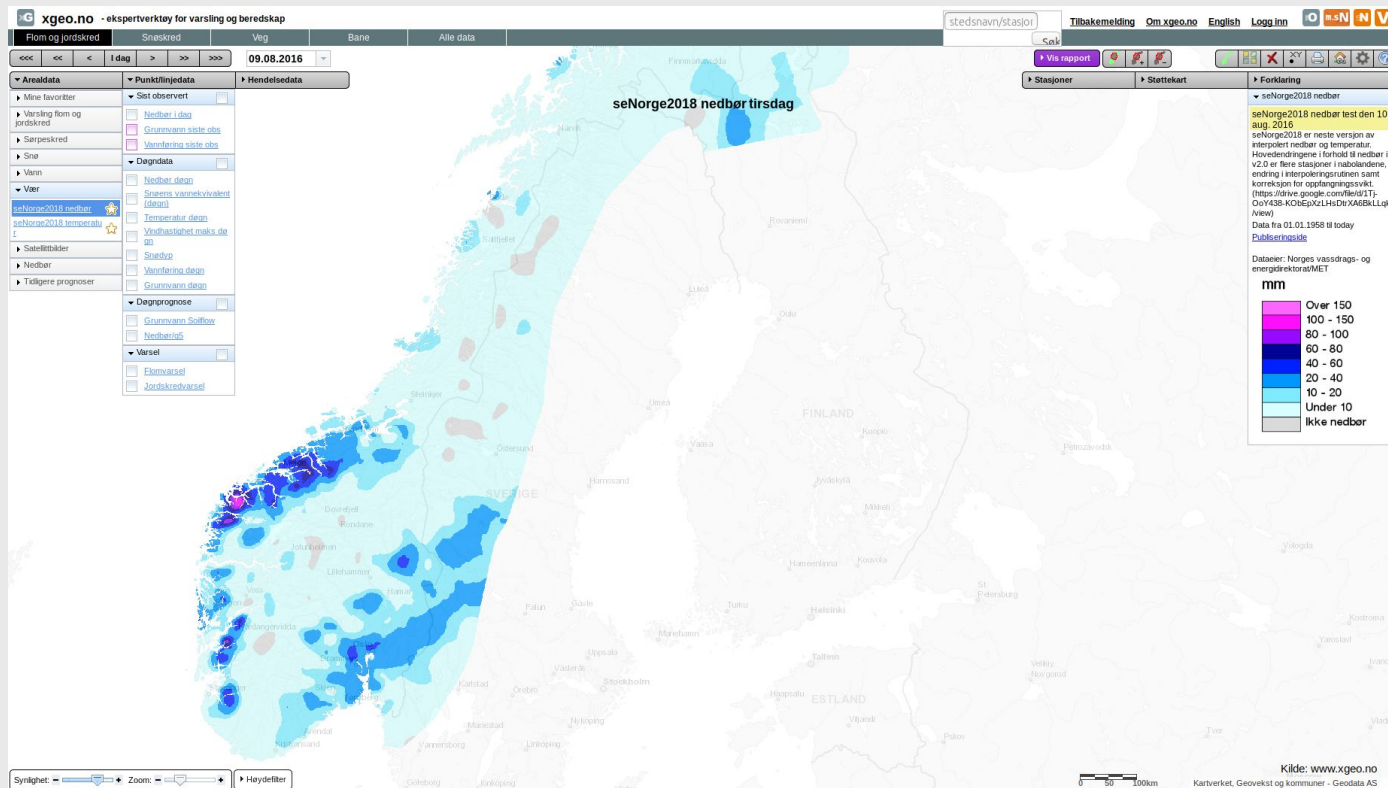
VÆR



KLIMA

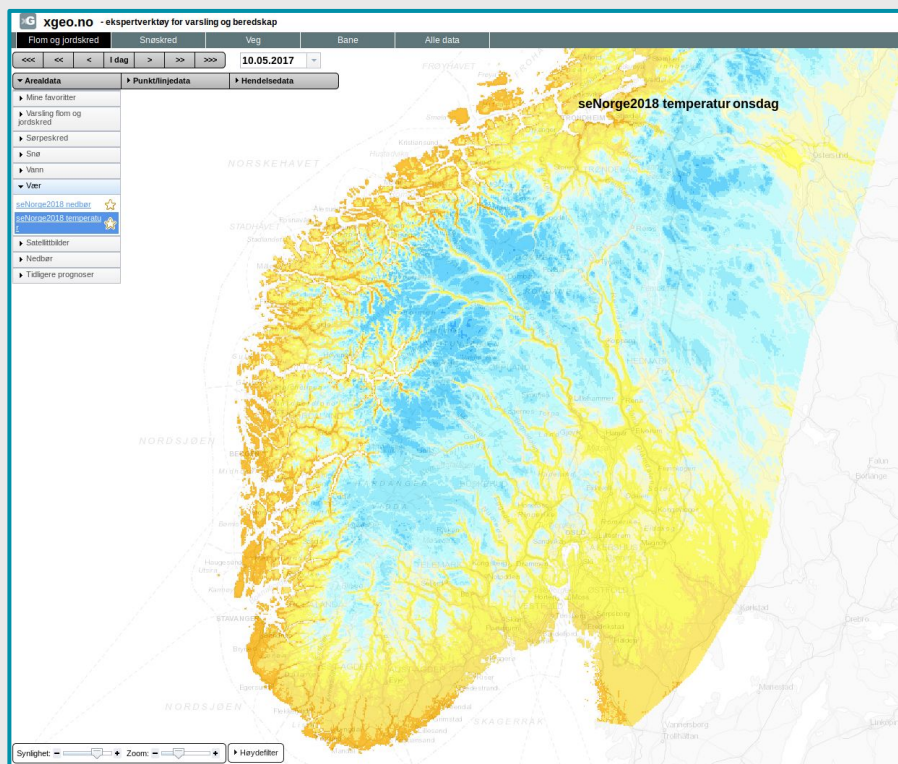
Nyheter
This API is no longer available.

Driftsmeldinger
This API is no longer available.



Characteristics

- Daily Temperature mean, **min, max**
- Daily total precipitation
- 1 km covering Norwegian mainland (bits of Sweden, Finland, Russia)
- 1957 - 2017 + updated daily





Observational Dataset

- MET Norway's Climate Database
- SMHI, FMI data through ECA&D
- Observation density varies in time and space

OPEN DATA



WHAT IS FROST HOW TO USE FROST API REFERENCE CHANGELOG

What is Frost?

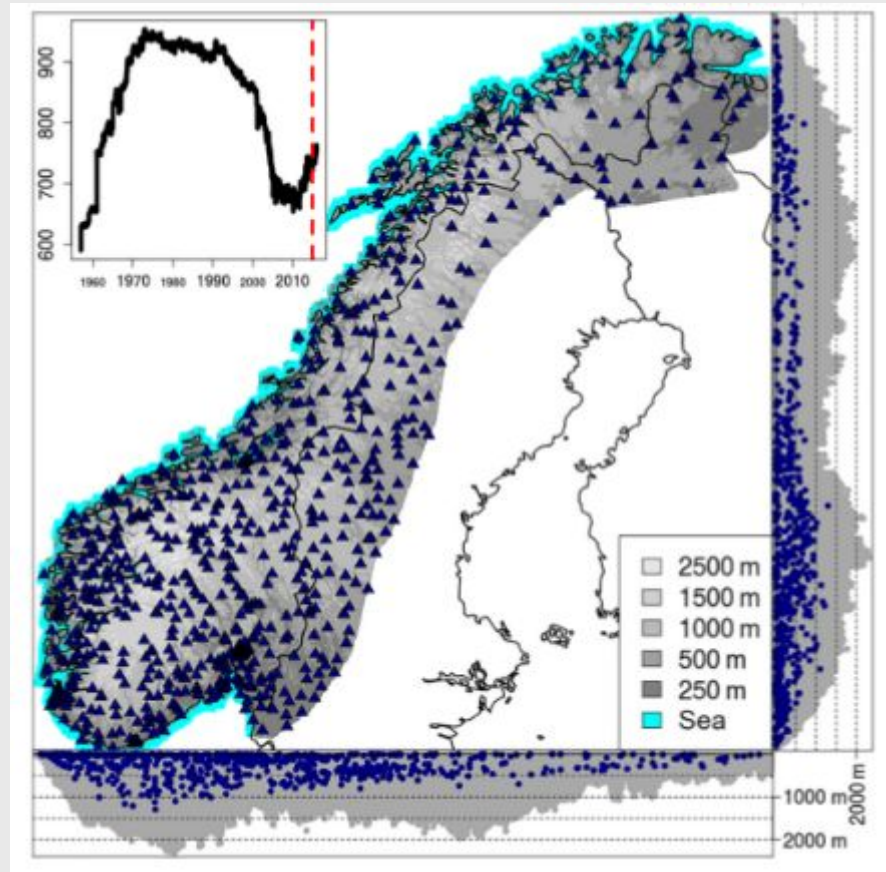
The Frost API provides [free access](#) to [MET Norway's](#) archive of historical weather and climate data.

Similar APIs are made available by SMHI and FMI



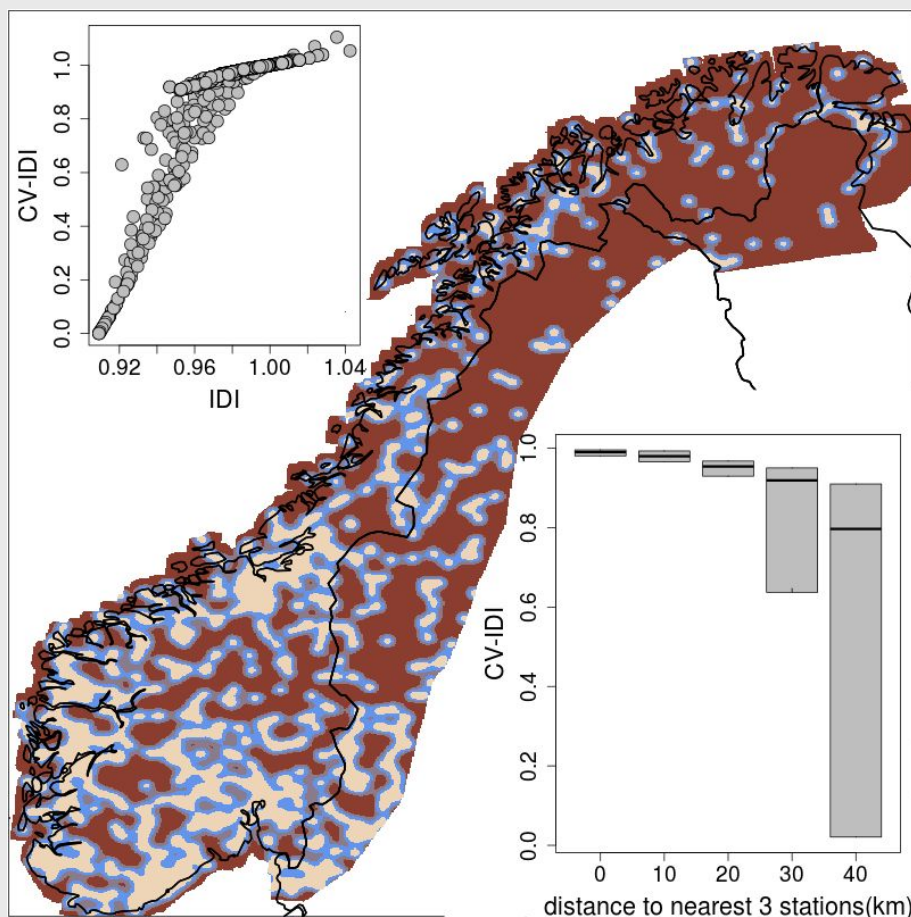
ECA&D

European Climate Assessment & Dataset



Station Density

- Integral Data Influence (IDI) represents the observation influence on the analysis given a predefined metric



Interpolation Method, 3 steps

- Relative anomalies, data-sparse region
- Data transformation, normality
- Successive corrections / OI

Observations

QC
Adjustment(*)

1. Relative
anomalies

2. Data
Transformation

3. Successive
Corrections / OI

Gridded precipitation

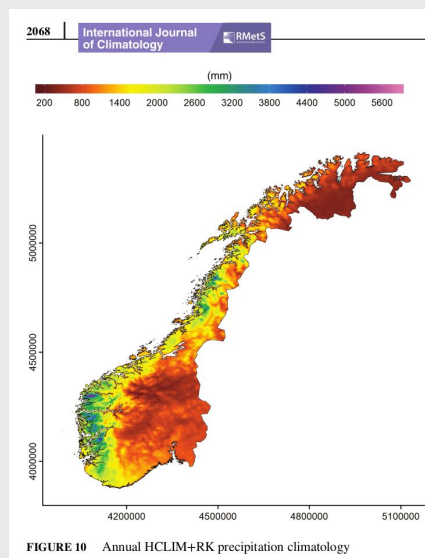
1. daily precip from
anomalies

2. Data Inverse
Transformation

(*) Wolff et al. 2015, HESS

Method 1/3 Reference field

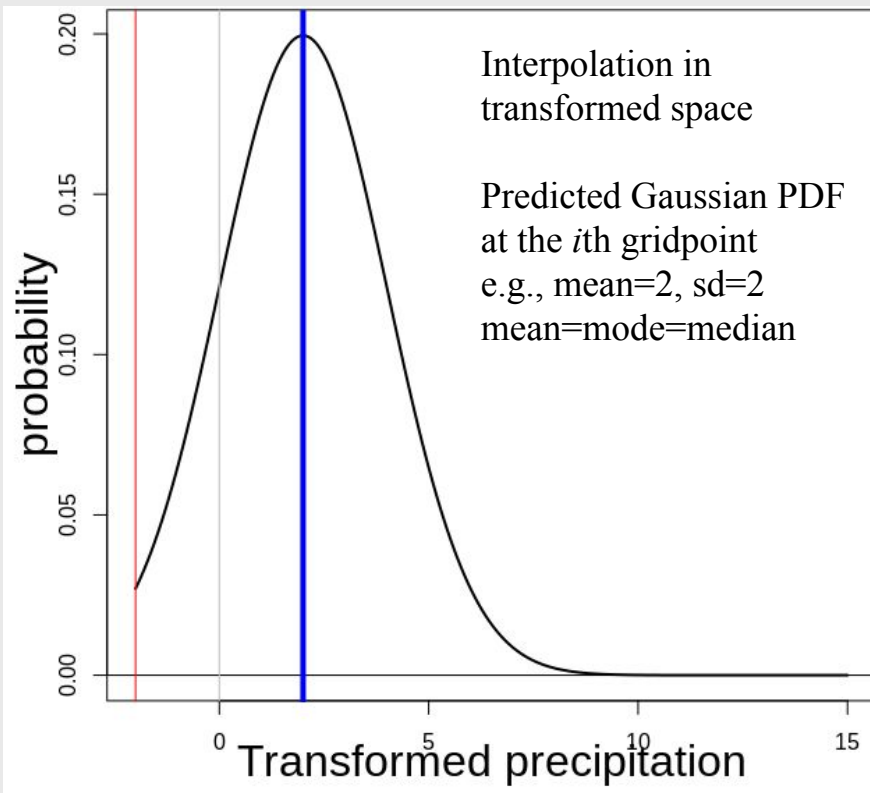
- Combination of model output and observations proved successful in reconstructing monthly precipitation climatologies over Norway (Crespi et al., 2019, IJoC)



- Spatial Interpolation consider relative anomalies
- (daily observation) / (3-month model average centered over that month)

Method 2/3 Data Transformation

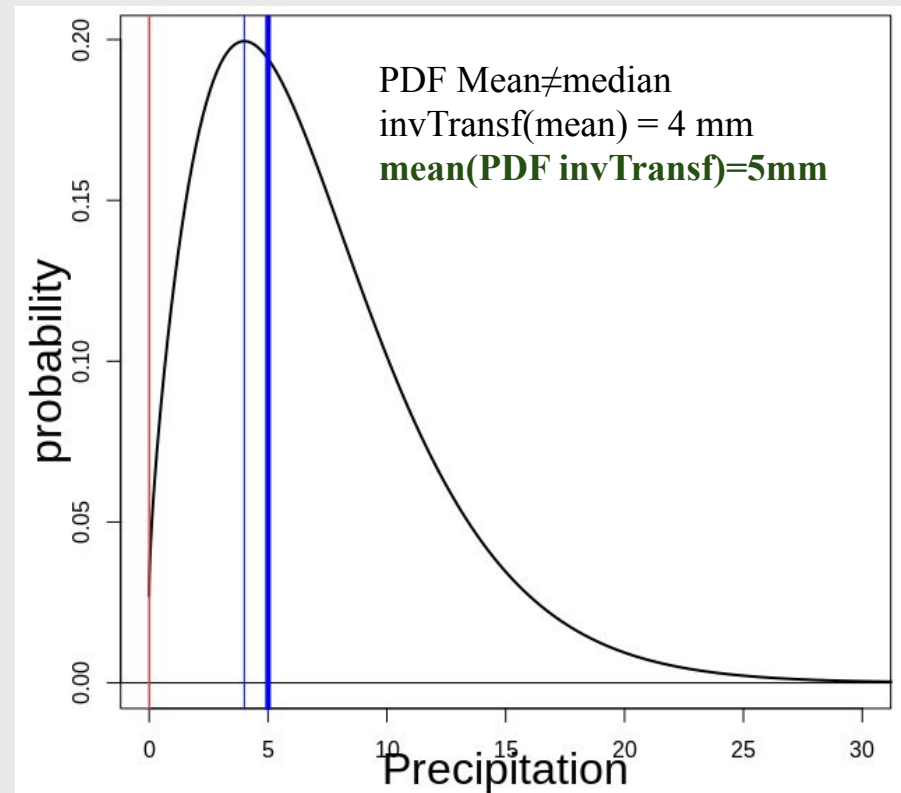
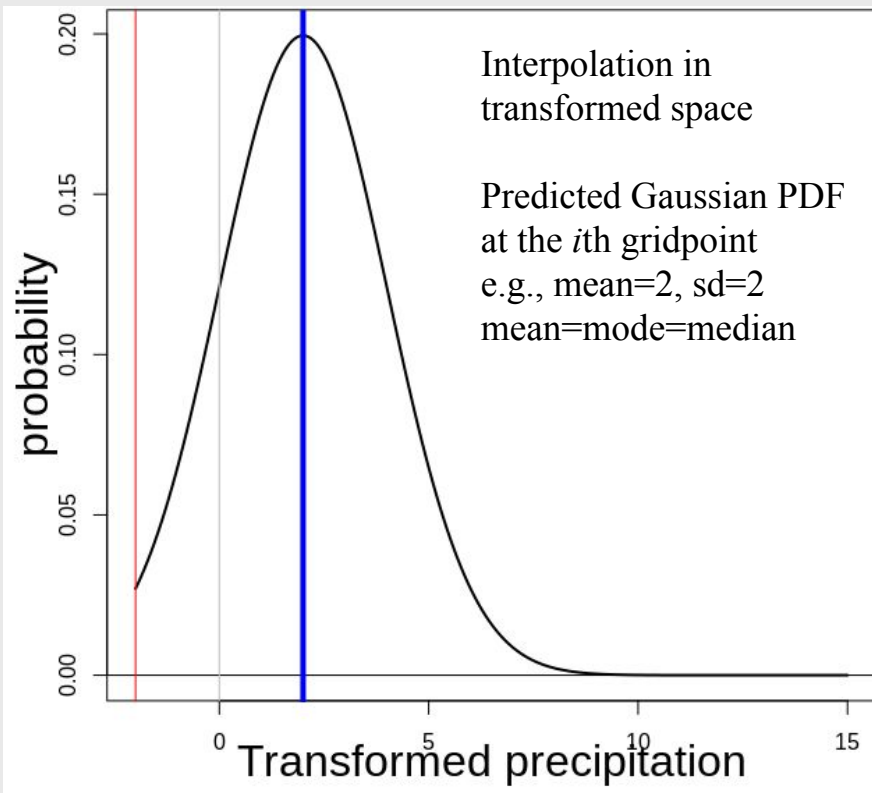
- Square-root transformation (Box-Cox with $\lambda=0.5$)
- Get the data into a normal shape
- Be careful with the inverse transformation of the PDF
- Our estimate is the mean of the precipitation PDF



inverse
transformation

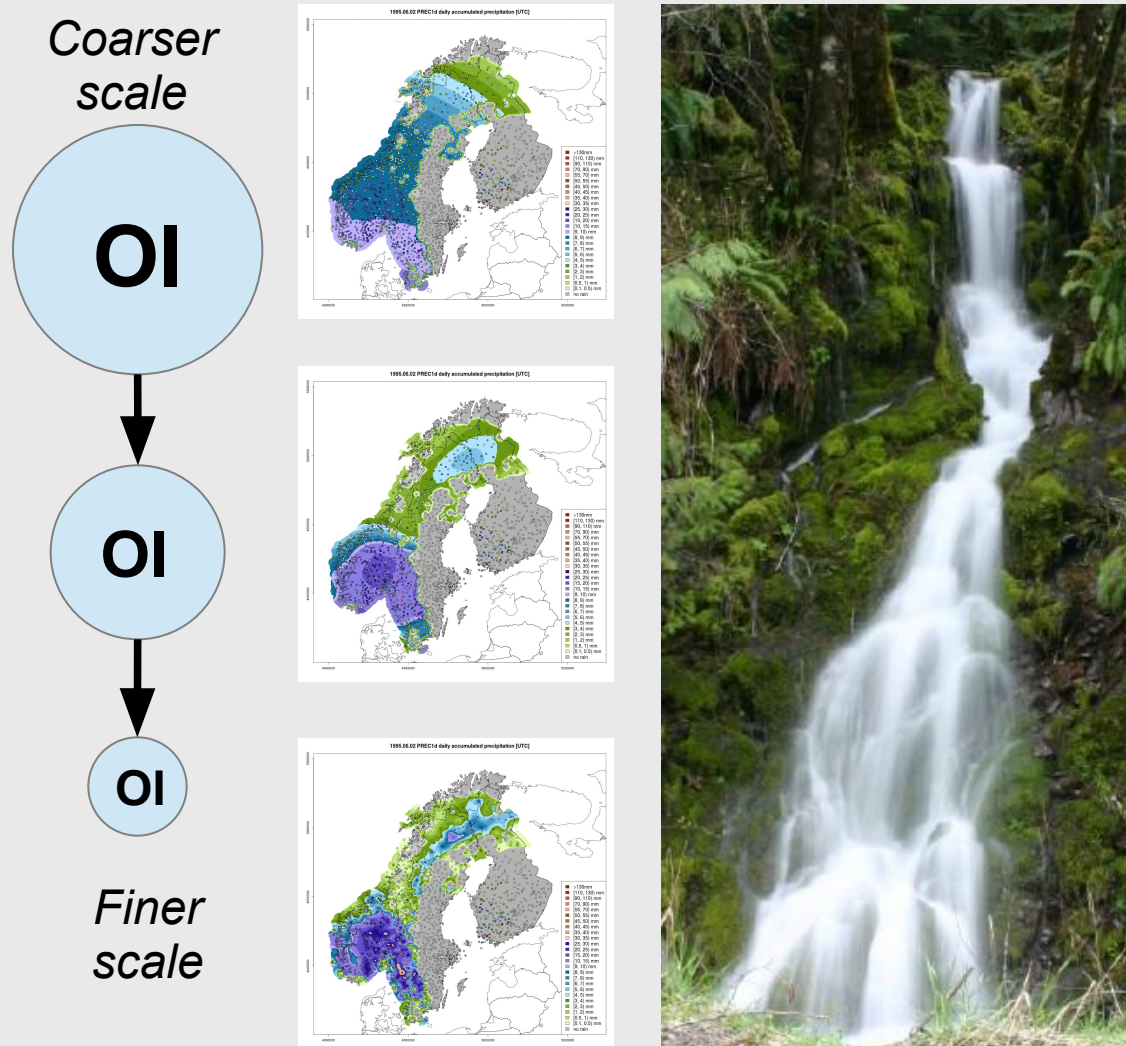
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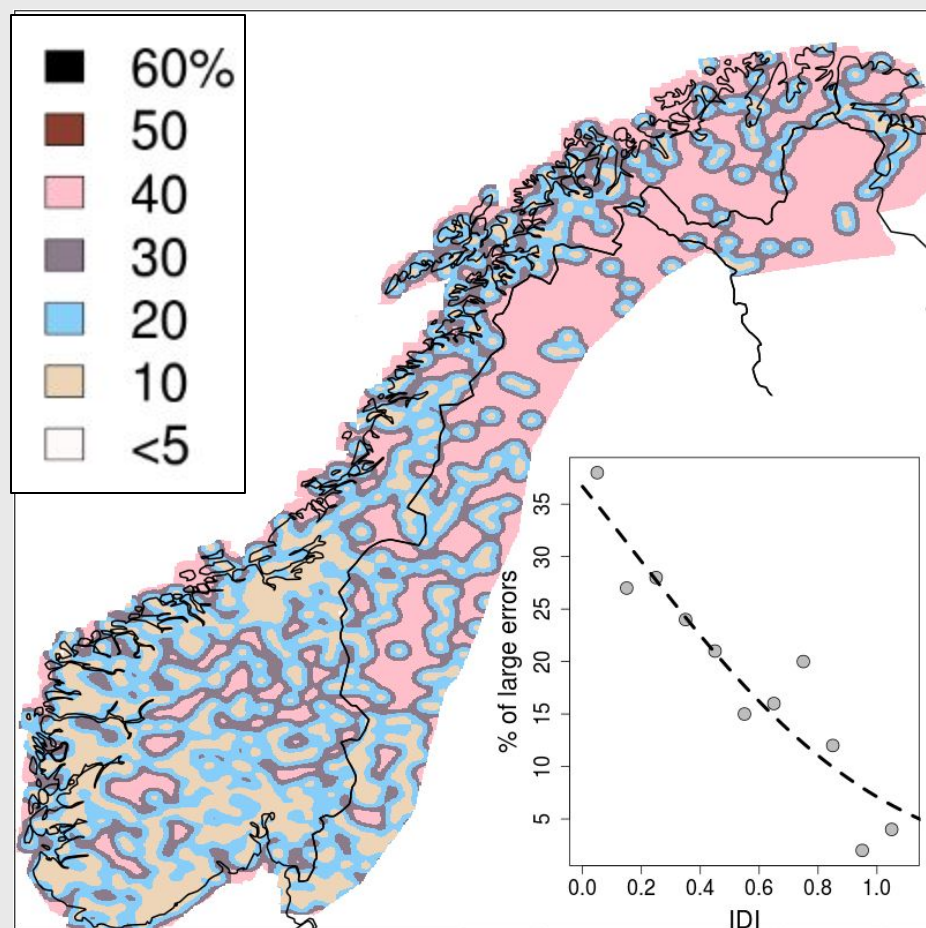
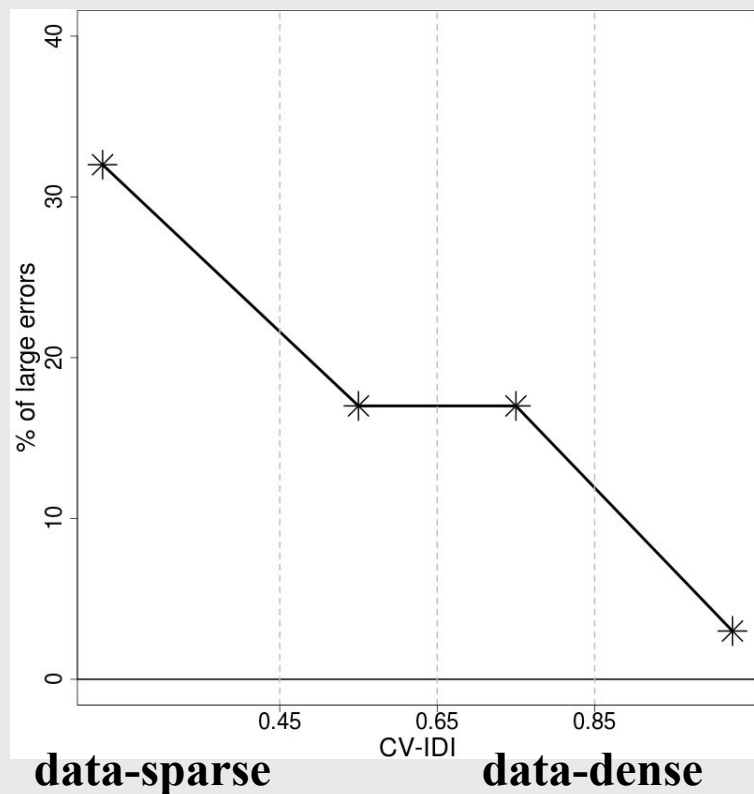
Method 3/3 Successive Corrections

- the spatial interpolation is based on an *iterative* procedure



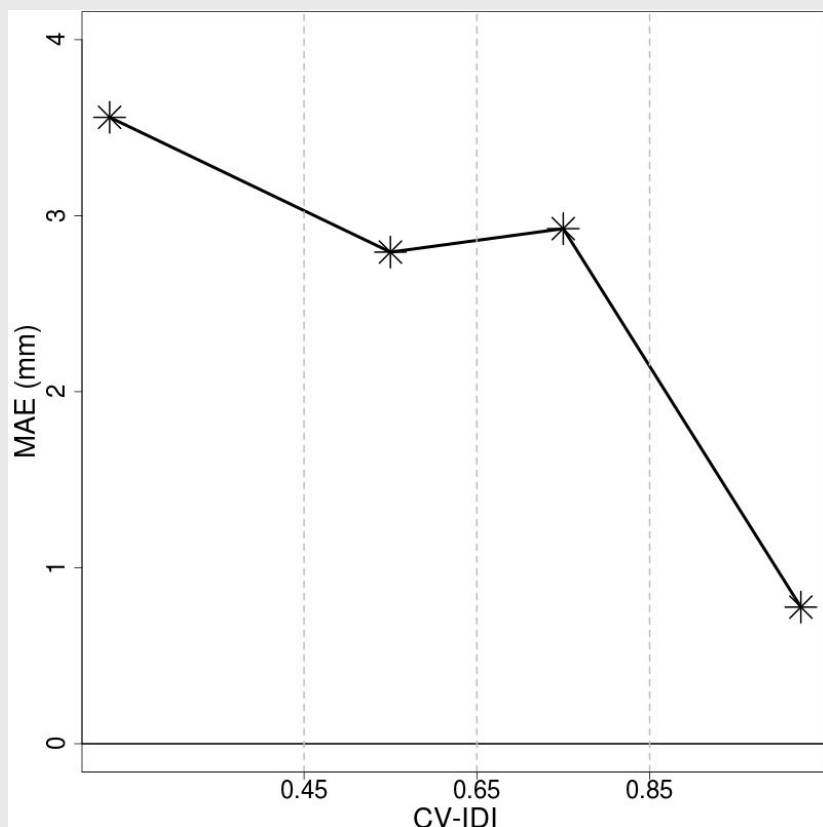
Evaluation 1/3 Scores

- Cross-validation (10% observations)
- Large Errors for intense precipitation, $\text{obs} > 10\text{mm}$ & $|\text{pred} - \text{ref}| > \text{ref}/2$



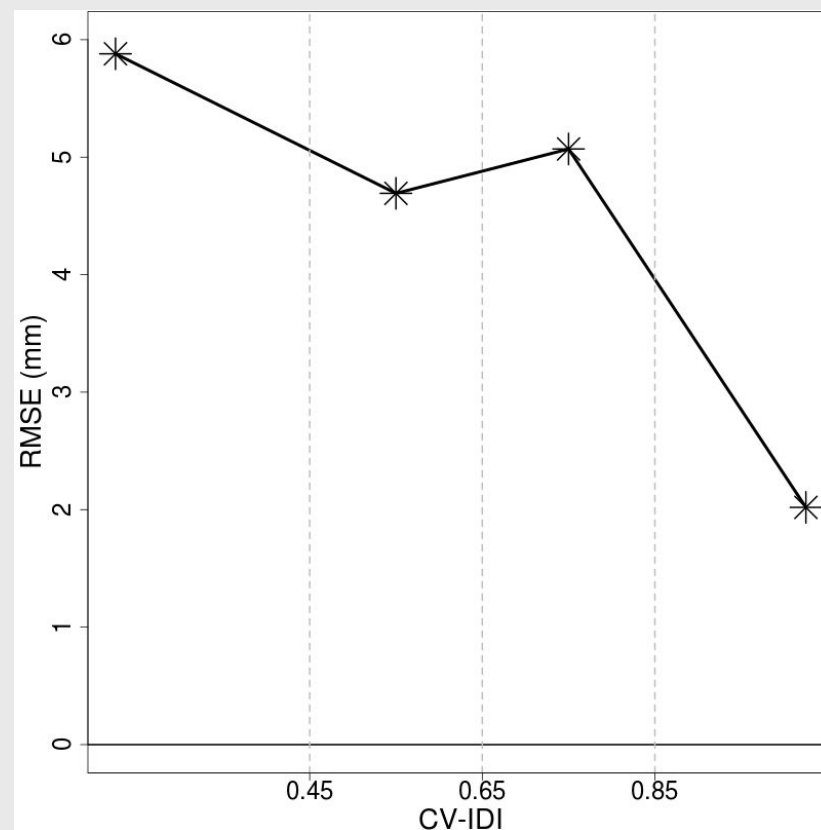
Evaluation 2/3 Scores

- Mean Absolute Error & root mean square error



data-sparse

data-dense

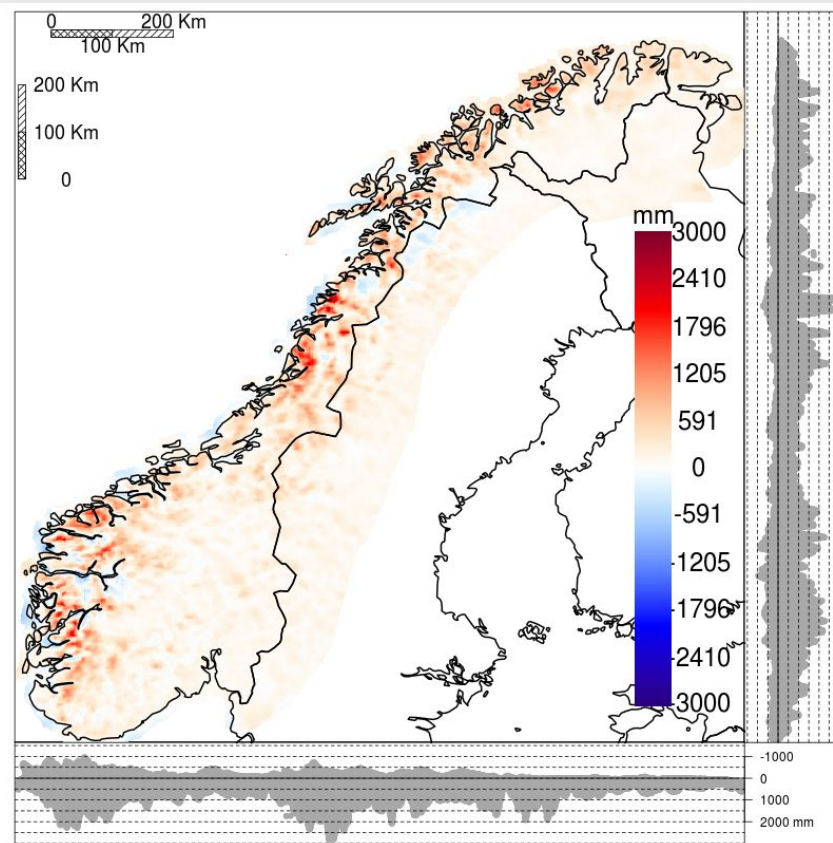
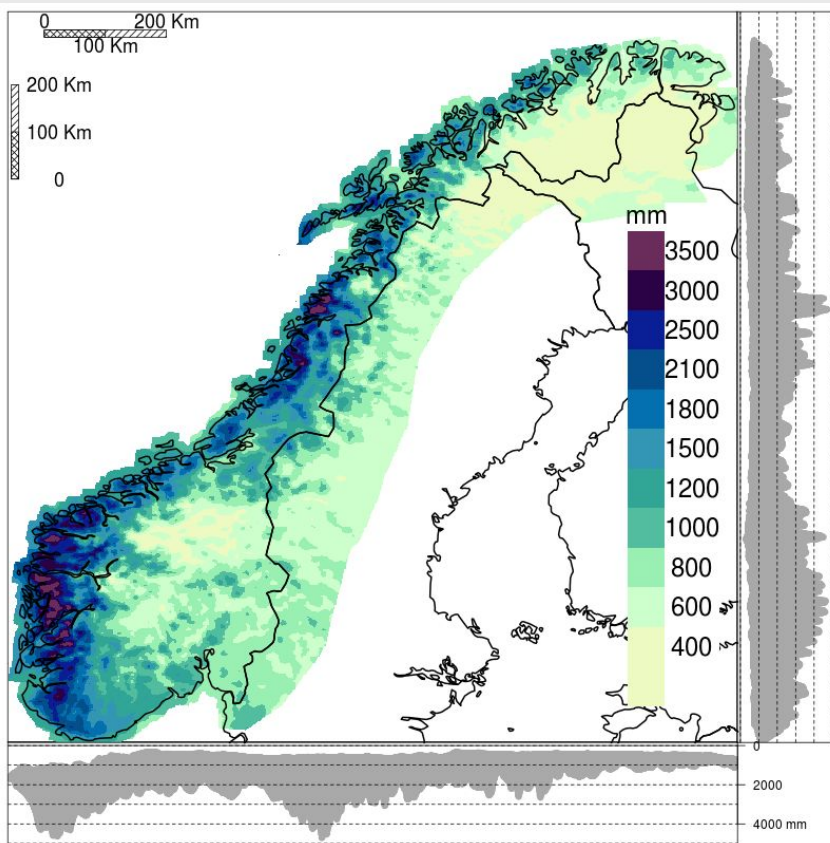


data-sparse

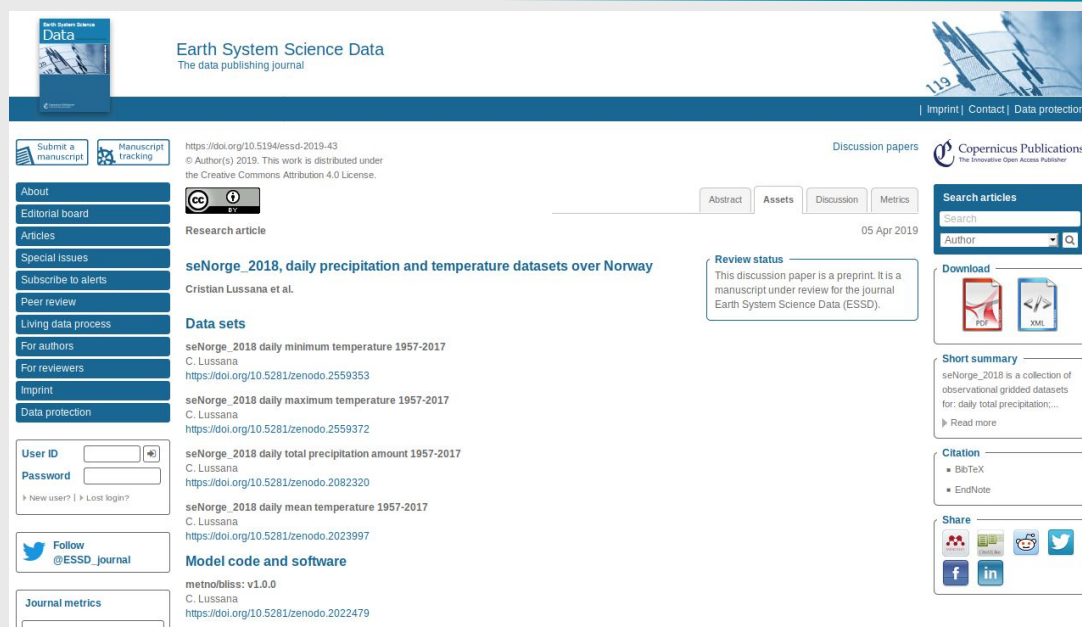
data-dense

Evaluation 3/3 Comparison

- Comparison against previous version
- Previous version underestimates precipitation



- Spatial Interpolation method provides fields with the highest effective resolution given the local station density
- Information in data-sparse regions integrated with long-term averages from numerical model output



The screenshot shows the Earth System Science Data journal website. The article title is "seNorge_2018, daily precipitation and temperature datasets over Norway" by Cristian Lussana et al. The article is a research article published on 05 Apr 2019. It is available for public review and discussion. The website includes a search bar, a sidebar with navigation links (About, Editorial board, Articles, Special issues, etc.), and a footer with social media links and journal metrics.

manuscript available for public review and discussion
Earth System Science Data



Evaluation 2/4 Scores

- Distinguish between prec / no-prec
- Equitable Threat Score (1mm)

