Copernicus Emergency Management Service

EMO-5 (and EMO-1arc)

17th EFAS Annual Meeting

Presented by Vera Thiemig (on behalf of all the ones that were involved in the creation of the EMO data set)

26.09.2022

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What is EMO-5?

EMO is a high-resolution multi-variable gridded meteorological dataset for Europe covering multiple decades.

KISTERS

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DWD

JRC
EUROPEAN COMMISSION

Copernicus

free and open to everyone

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https://emergency.copernicus.eu/

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What is EMO-5?

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EMO is a high-resolution multi-variable gridded meteorological dataset for Europe covering multiple decades.

Spatial resolution:
- EMO-5 = 5x5km
- EMO-1arc = 1x1arcmin (1.8km)

Variables at daily resolution:
- total precipitation,
- temperatures (minimum and maximum),
- wind speed,
- solar radiation, and
- water vapour pressure

Temporal resolution:
- Daily (for all variables)
- 6-hourly (few variables)

Variables at 6-hourly resolution:
- precipitation
- mean temperature

Time period:
- v1 (EMO-5): 1990-2019 – *batch production*
- v2 (EMO-1arcmin): 1990 till 2022 – *real time release*

What is EMO-5?

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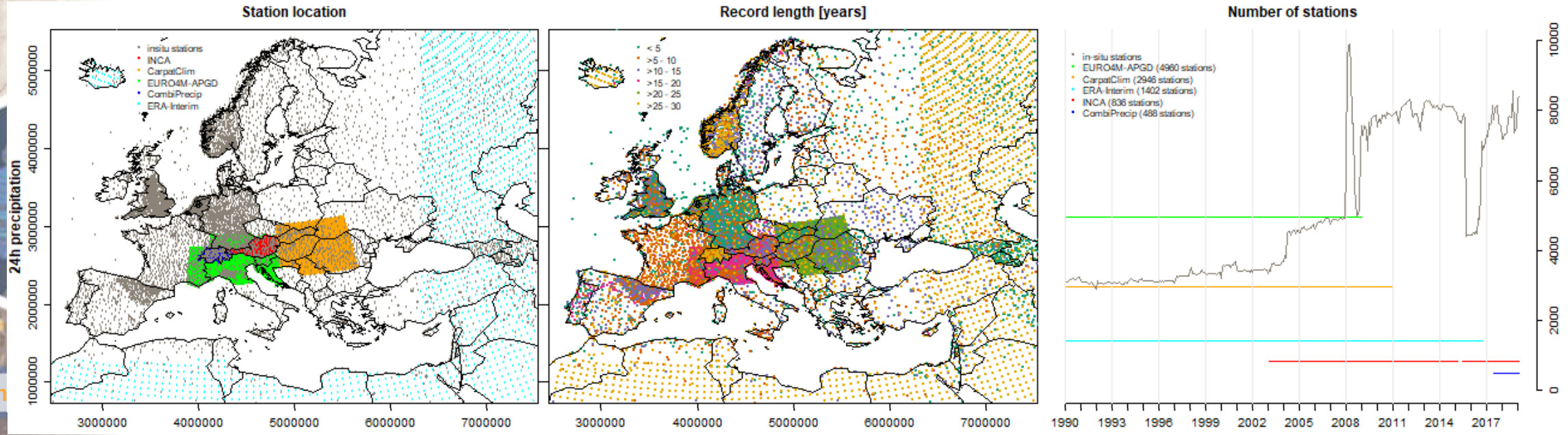
EMO is a high-resolution multi-variable gridded meteorological dataset for Europe covering multiple decades.

Input data:

- built on historical and real-time observations of
  - 18 964 ground weather stations
  - four high-resolution regional observational grids (i.e. CombiPrecip, ZAMG – INCA, EURO4M-APGD, and CarpatClim), and
  - One global reanalysis (ERA-Interim/Land).

An additional
10 632 virtual stations



How was EMO-5 created

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- In a batch release
- Quality control on the input data:
    1. **Availability**: check if value is present and timestamp correct.
    2. **Monthly statistics**: check each value against statistical monthly data.
    3. **Cross validation**: check each value against values from other parameters.
    4. **Minimum/maximum validation**: check each value against minimum/maximum thresholds.
    5. **Rate of change validation**: check the rate of change between two values against maximum thresholds.
- Chose an interpolation method (modified SPHEREMAP)
- Grid creation
    - Selection of station (data coverage requirement; removal of duplicate records; removal of ERA-Interim/Land if real station in “vicinity”)

Evaluation (precipitation & temperature only)

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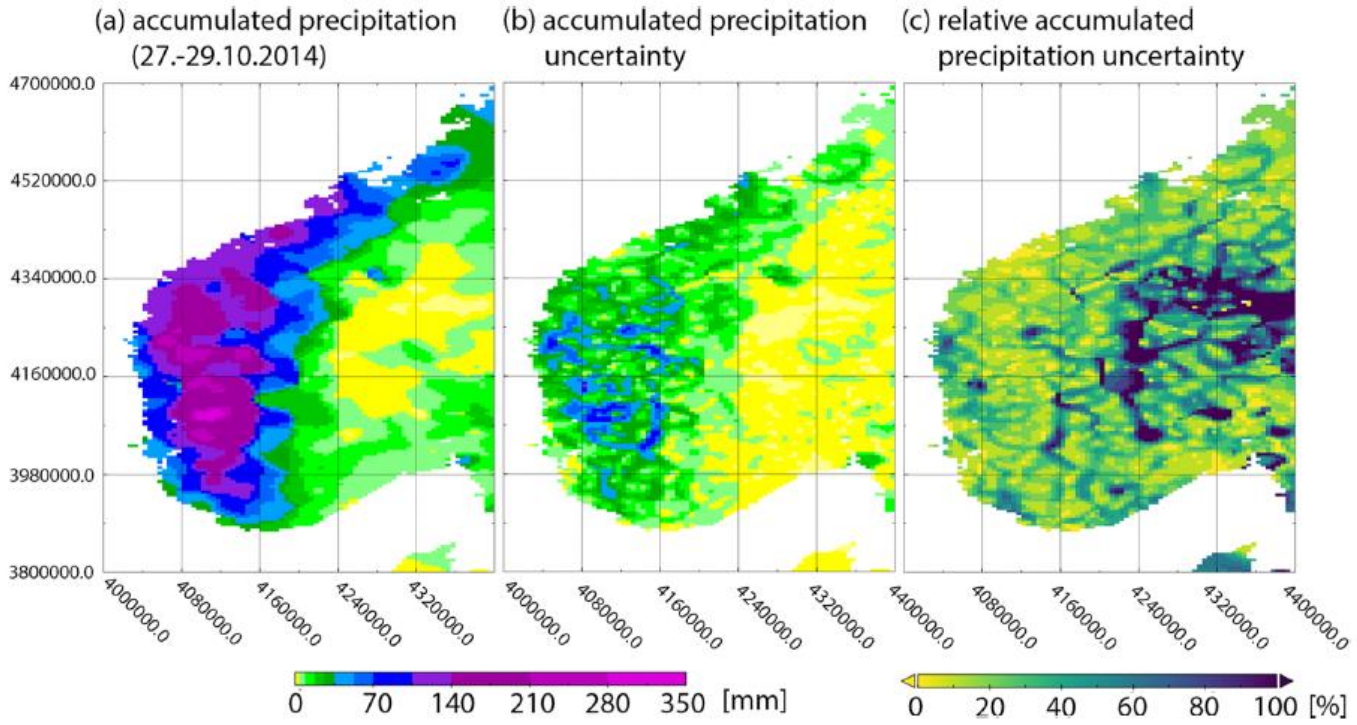
For precipitation:

1. examination of the interpolation uncertainty,



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Evaluation (precipitation & temperature only)

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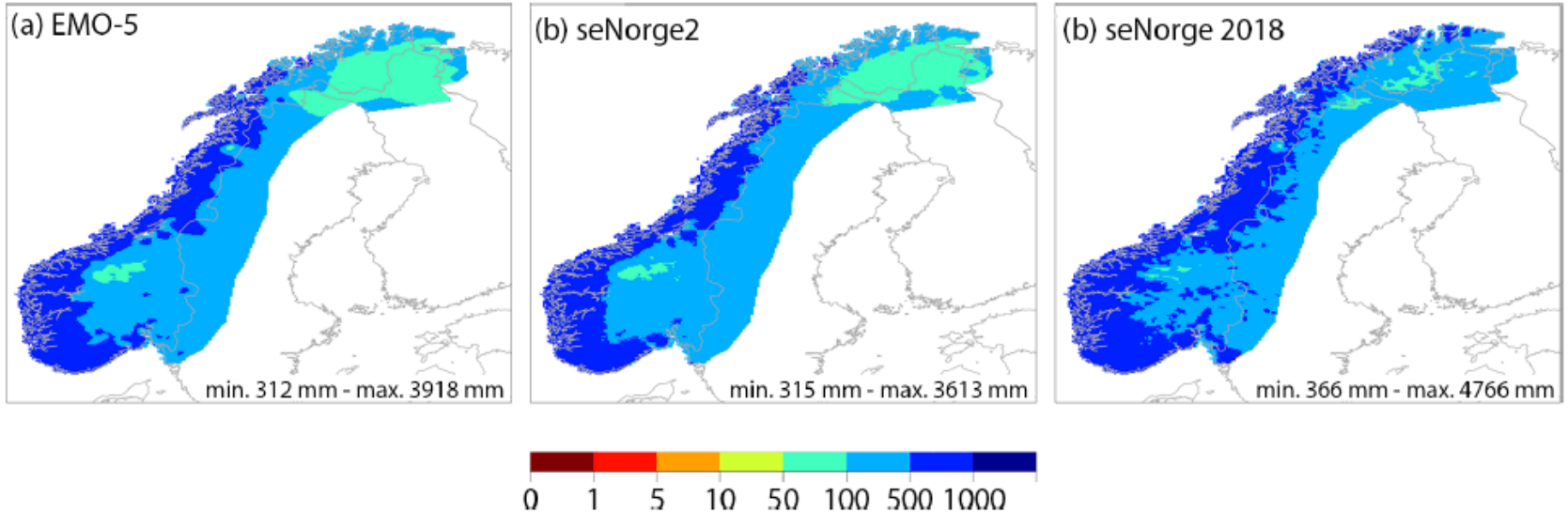
For precipitation:

1. examination of the interpolation uncertainty,
2. comparison with two regional high-resolution datasets (i.e. seNorge2 and seNorge2018), and



Also looked at:

- Seasonal comparison
- Extreme value indices

Evaluation (precipitation & temperature only)

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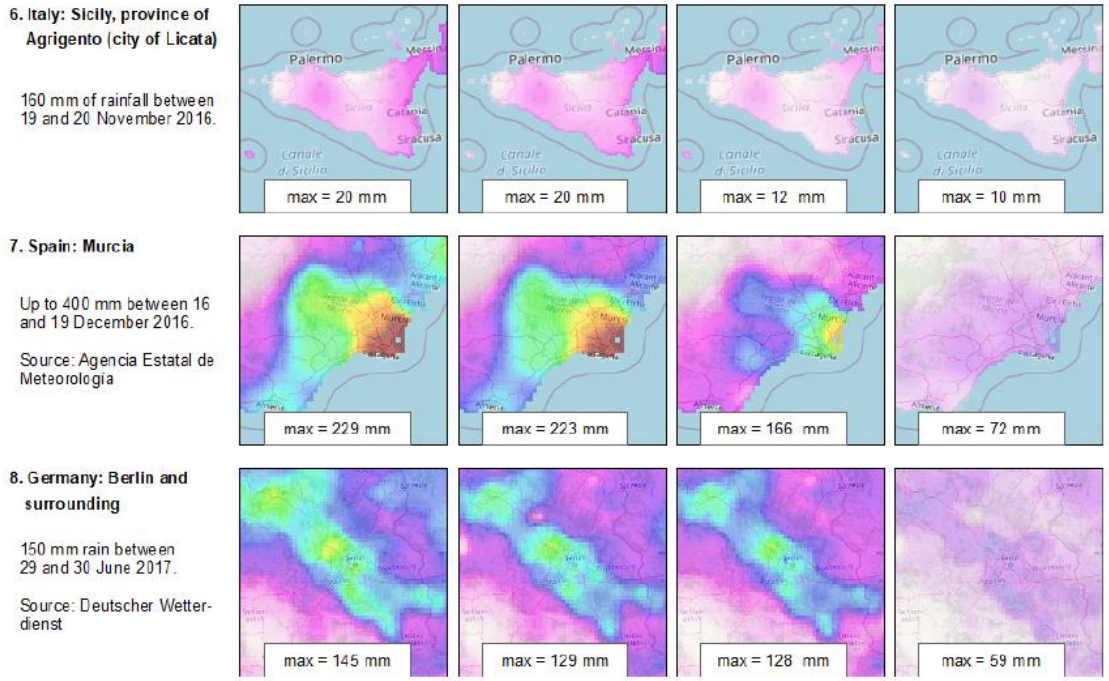
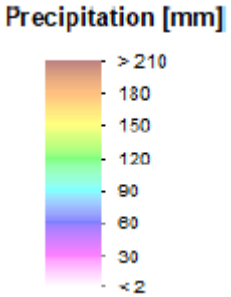
For precipitation:

1. examination of the interpolation uncertainty,
2. comparison with two regional high-resolution datasets (i.e. seNorge2 and seNorge2018), and
3. analysis of 15 heavy precipitation events.





- In 13 out of the 15 events EMO-5 shows greater precipitation amounts
- One event (no. 6) was not captured (cloud burst)

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Where to access it?

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Freely downloadable from the ***JRC Data Catalogue***:

https://data.jrc.ec.europa.eu/dataset/0bd84be4-cec8-4180-97a6-8b3adaac4d26

Or directly from FTP server:

https://jeodpp.jrc.ec.europa.eu/ftp/jrc-opendata/CEMS-EFAS/

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