

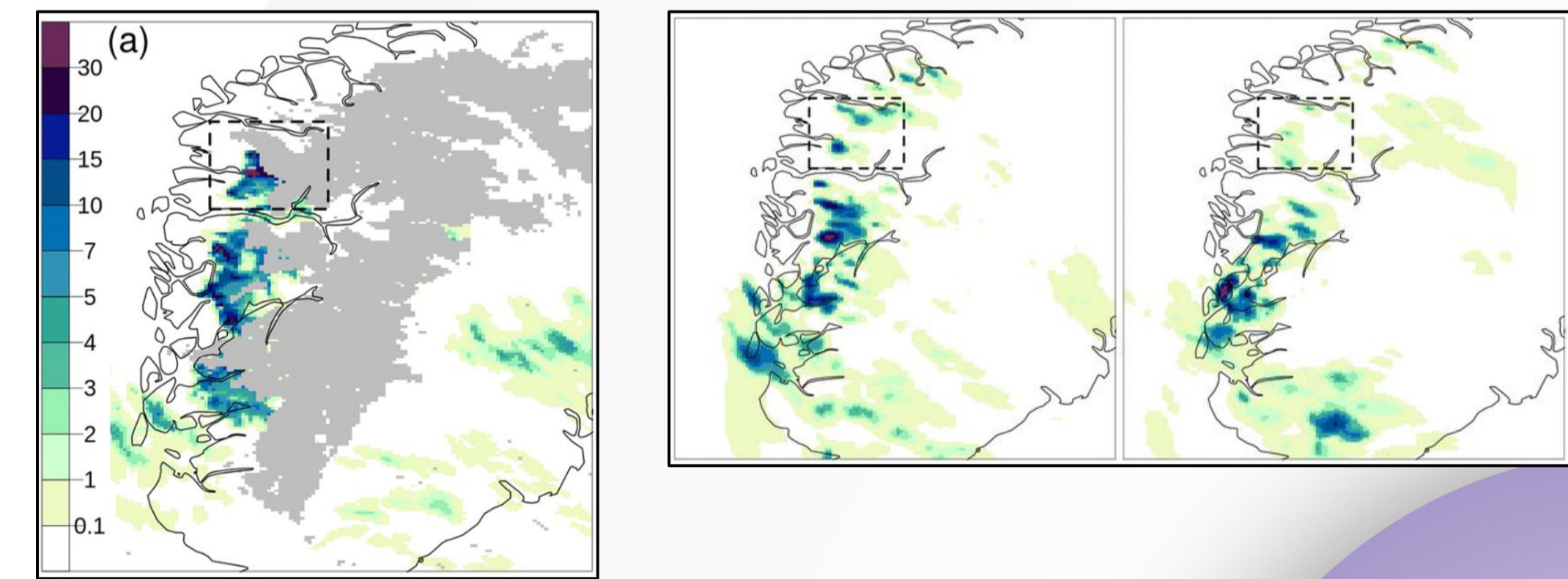
Statistical approaches to stochastic downscaling of numerical model precipitation predictions

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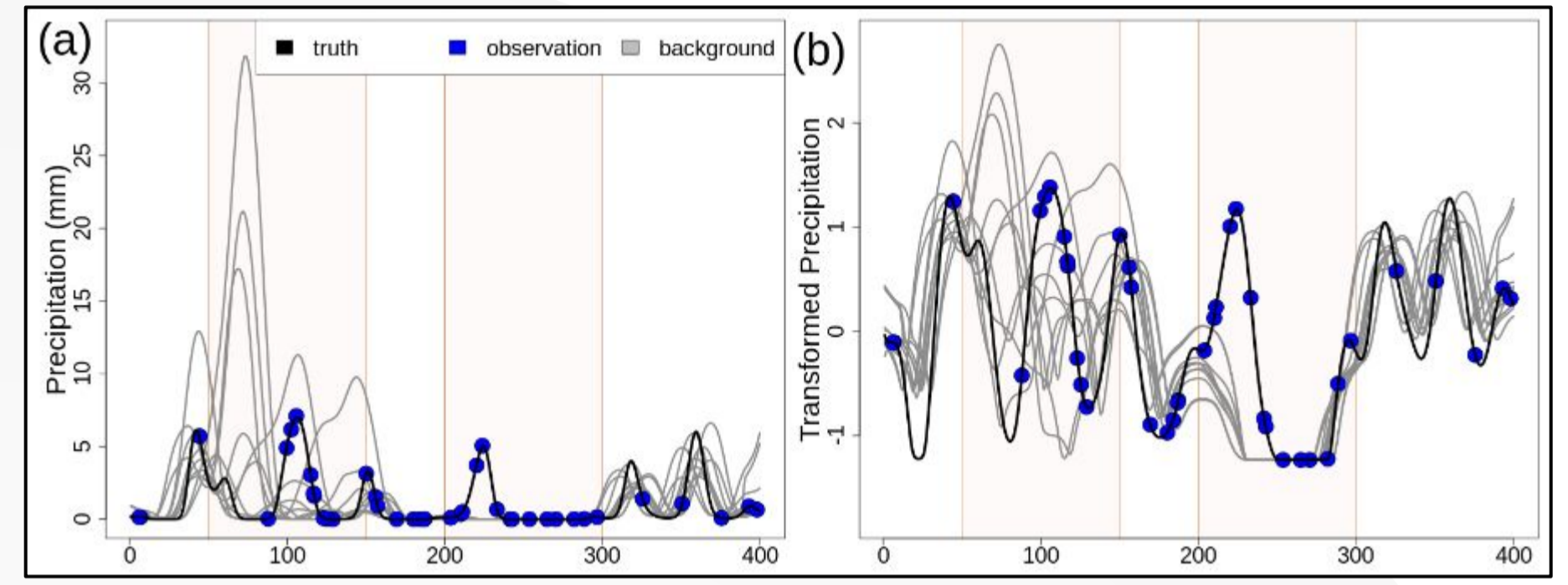
DATA SOURCES

MEPS	Ensemble NWP 30 members, 2.5 km
Radar	Composite of Norwegian weather radars
In-situ observations	All available rain-gauges <i>traditional and personal weather stations</i>



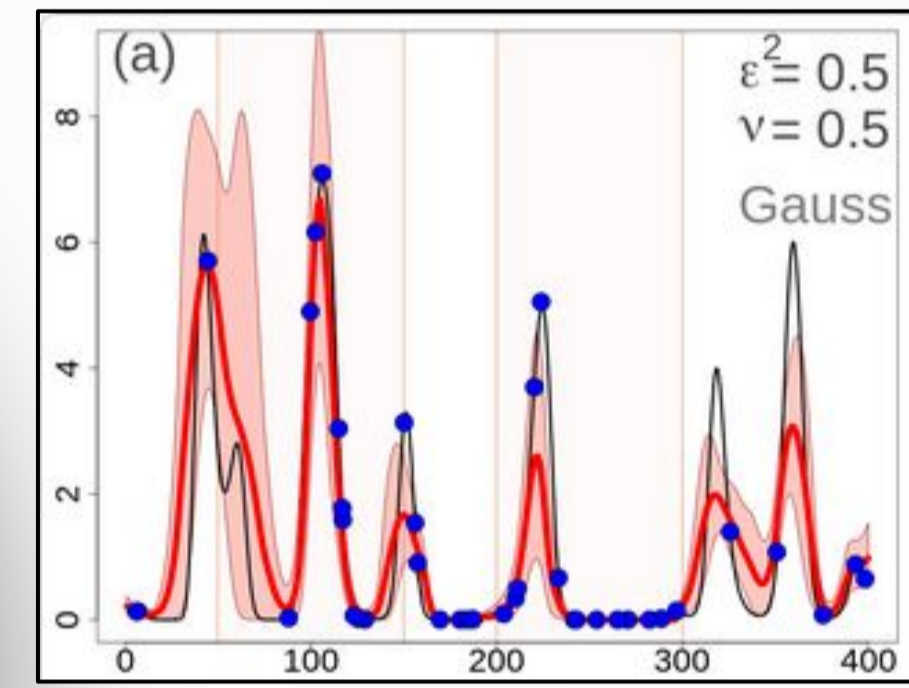
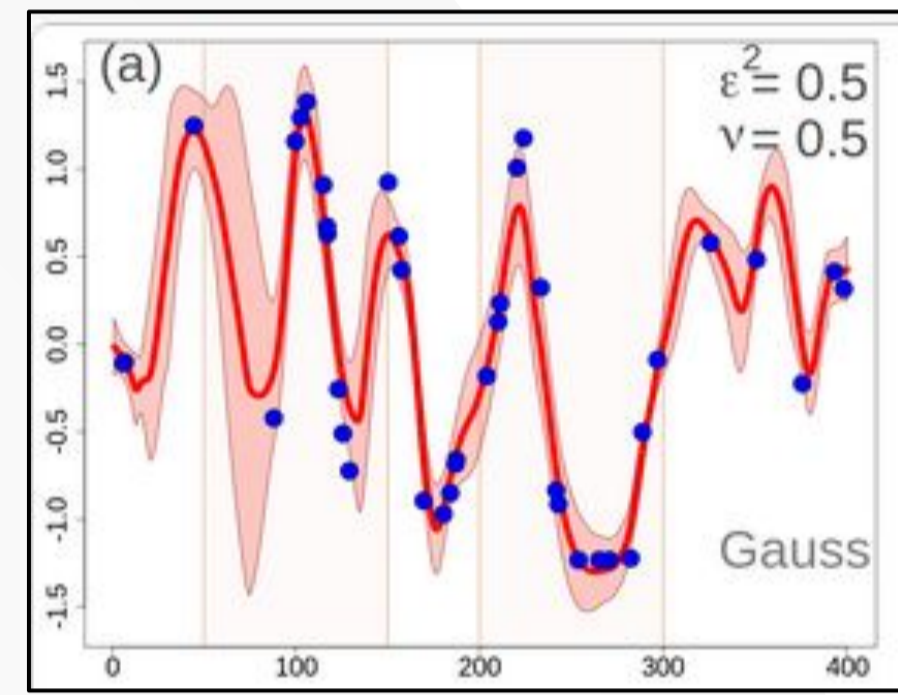
30 July 209 15:00 UTC, precipitation over South Norway
Left panel: radar&in-situ
Right panel: 2 MEPS members

ENSI-GAP METHOD: 1D-EXAMPLE



Step 1. Data Transformation
Gaussian Anamorphosis

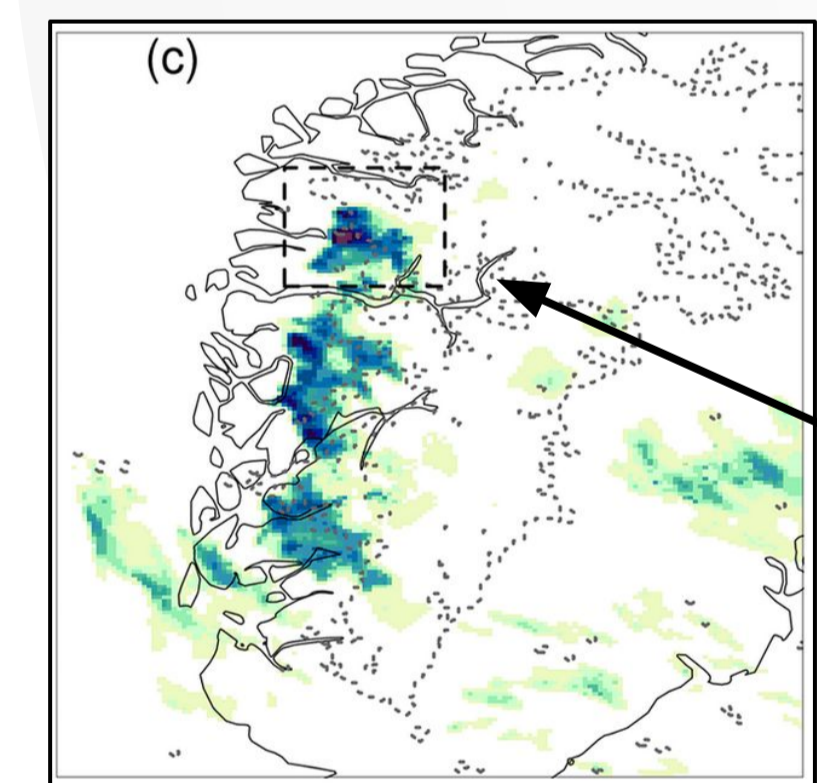
Step 2. Spatial analysis
Ensemble-based statistical interpolation (EnSI)



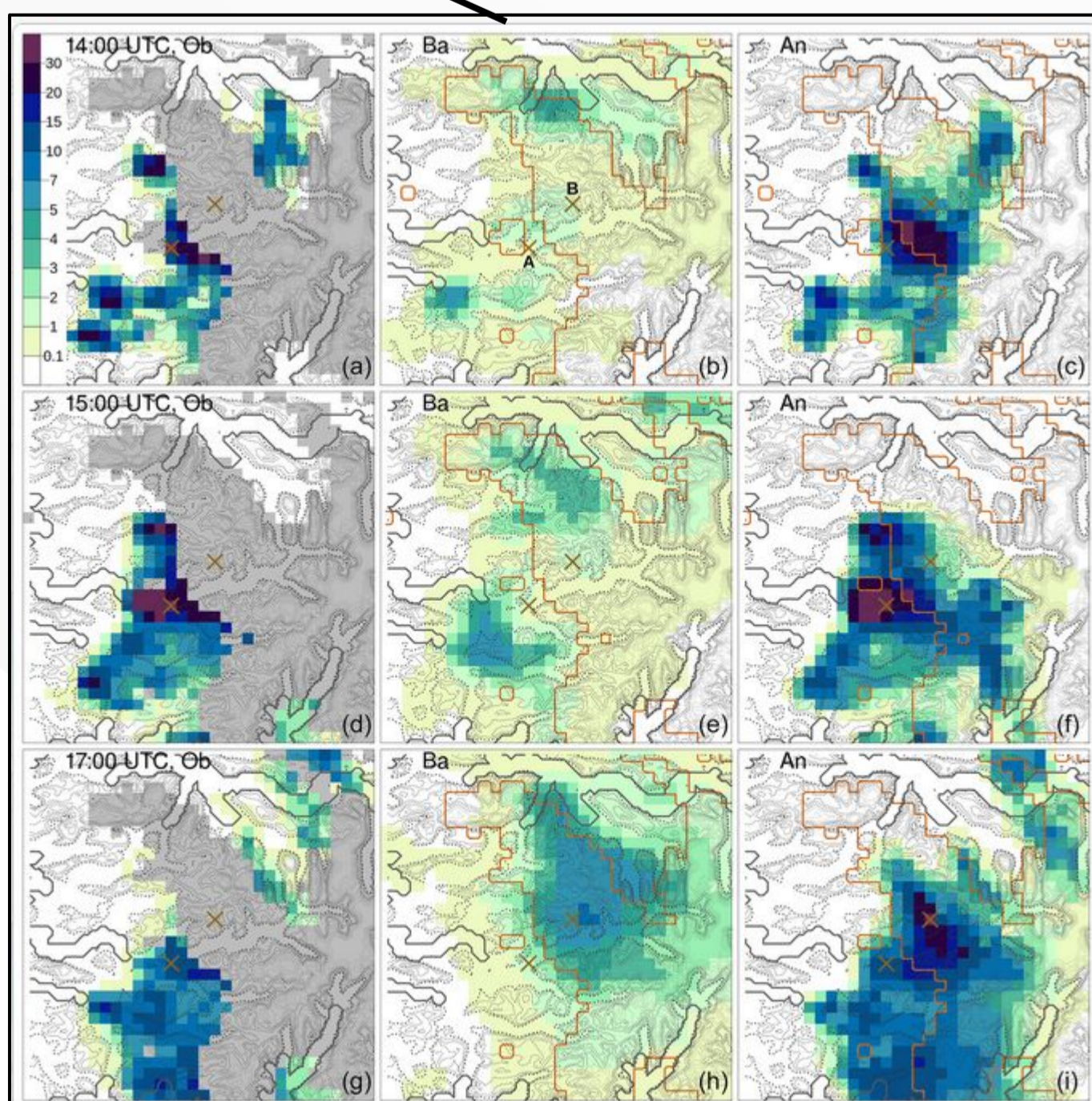
Step 3. Inverse Transformation

PRECIPITATION IS REPRESENTED AS A GAMMA DISTRIBUTION THAT VARIES IN SPACE

RESULTS



30 July 209 15:00 UTC
Analysis (expected value)

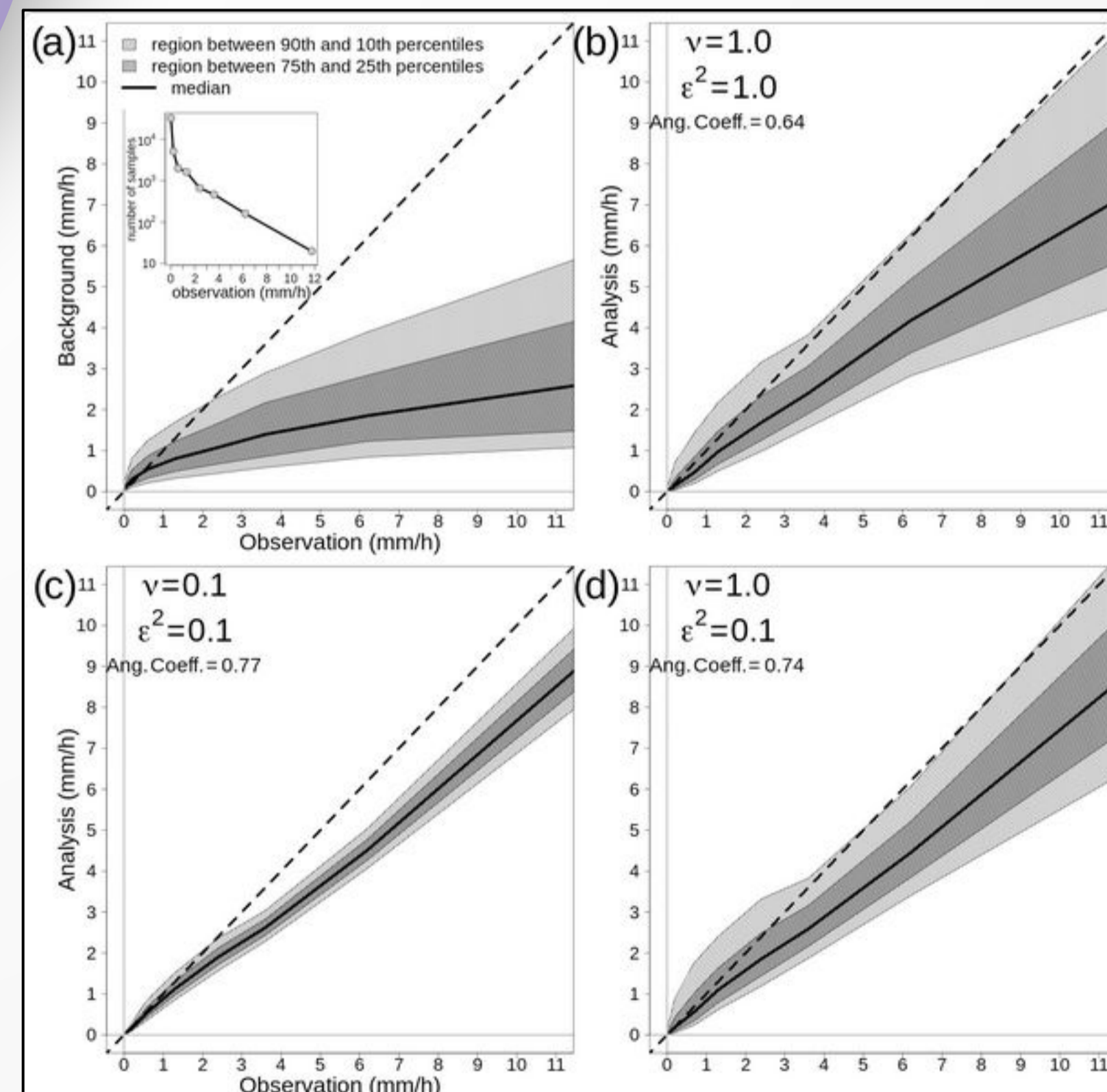


30 July 209
14:00 UTC

15:00 UTC
Ob=observations
Ba=MEPS
An=Analysis

16:00 UTC

RESULTS



Summer 2019 hourly precipitation cross-validation statistics.

(a) MEPS versus observations
(b)-(d) Analysis versus observations for different EnSI-GAP configurations.