New EFAS produts

Milan Kalas, Bao Trinh and Ad de Roo
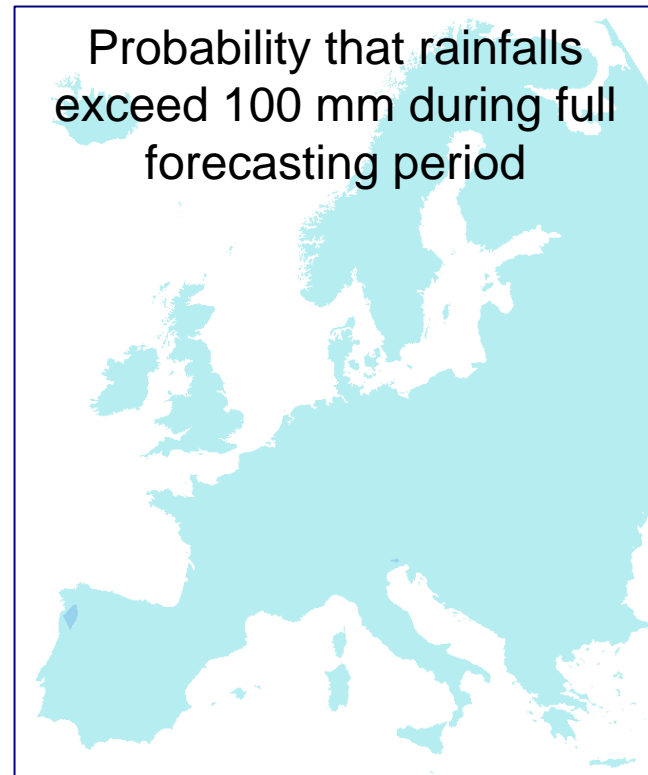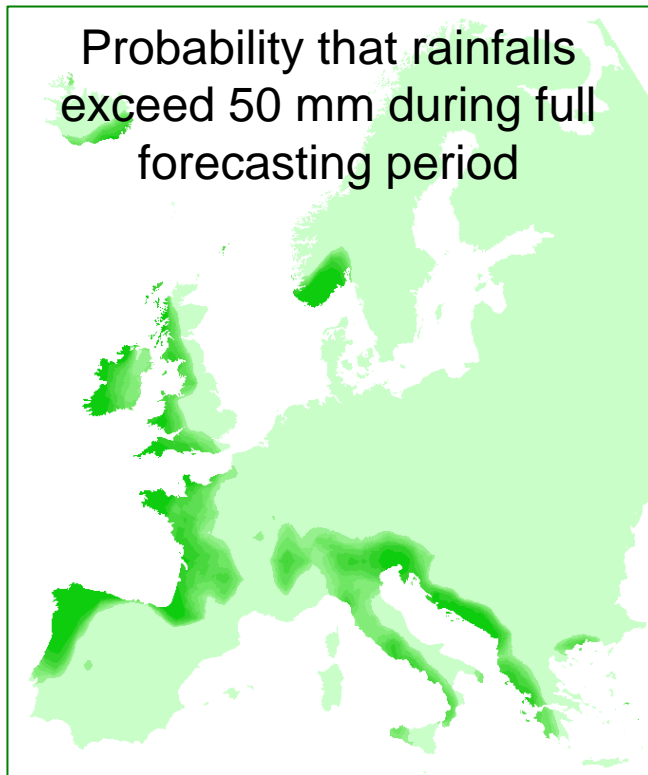
Three types of new products

- Visualisation of model input and output

- Skill scores

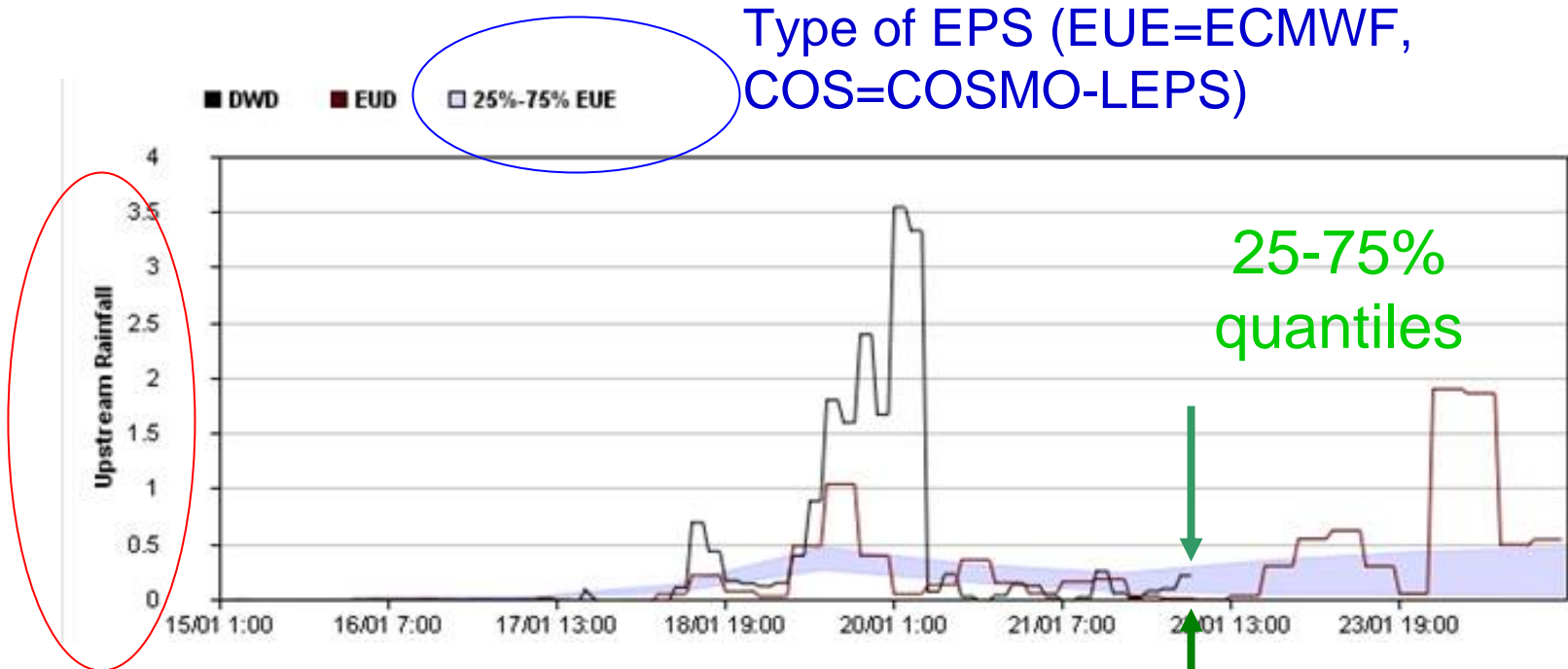- Support information for DG ENV MIC

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Visualisation of model inputs and outputs

1. Probabilistic rainfall information maps for EPS, VAREPS, COSMO-LEPS

Probability that rainfalls exceed 50 mm during full forecasting period

Probability that rainfalls exceed 100 mm during full forecasting period

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Visualisation of model inputs and outputs

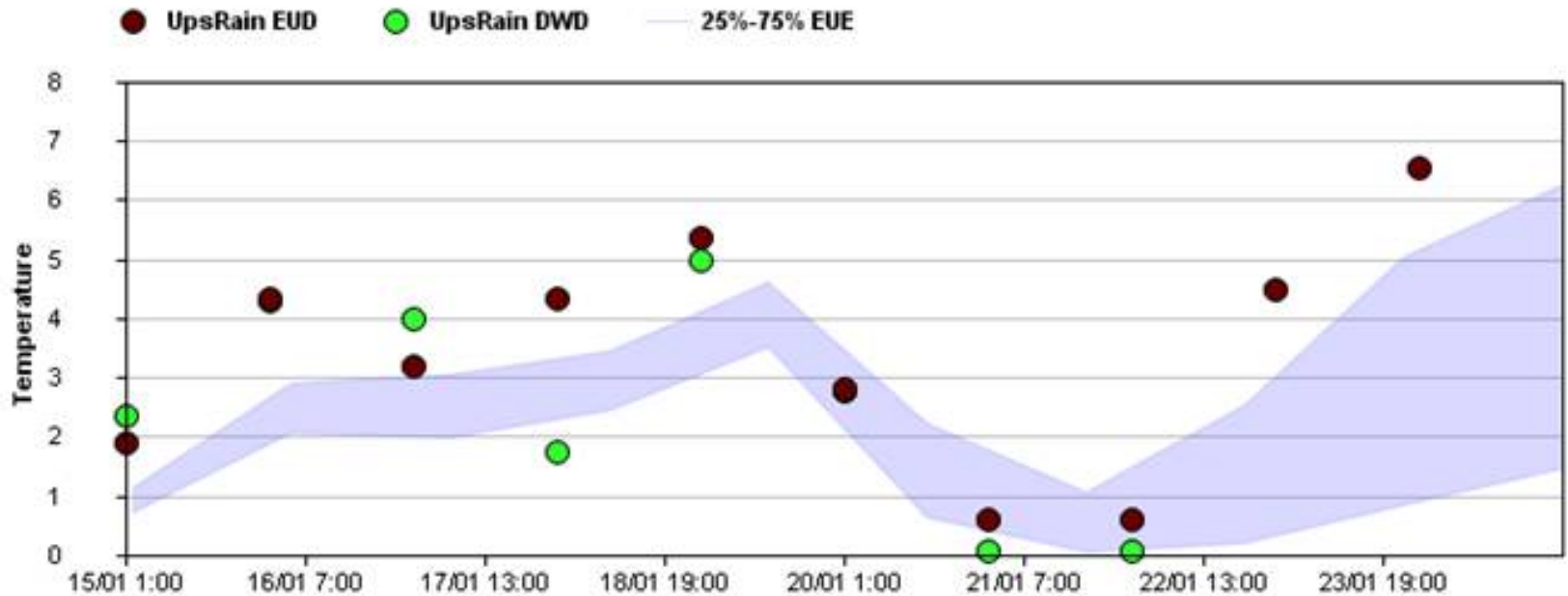2. Probabilistic rainfall information time series for EPS, VAREPS, COSMO-LEPS combined with deterministic info

Type of EPS (EUE=ECMWF, COS=COSMO-LEPS)

25-75% quantiles

Upstream rainfall at this point averaged over catchment area in mm

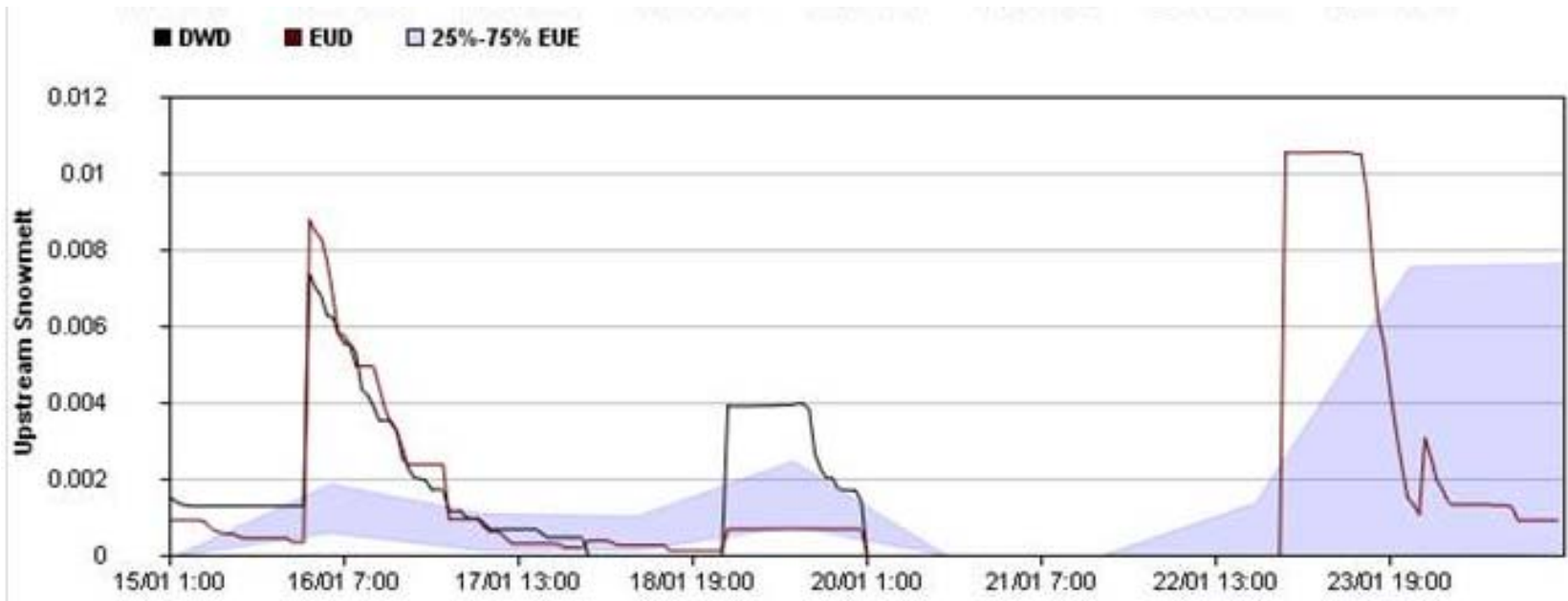# Visualisation of model inputs and outputs
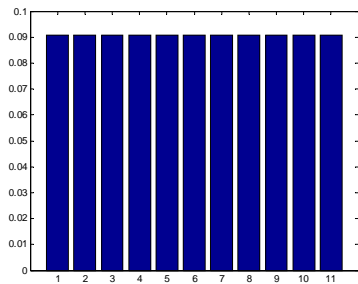
3. Probabilistic temperature information

Visualisation of model inputs and outputs

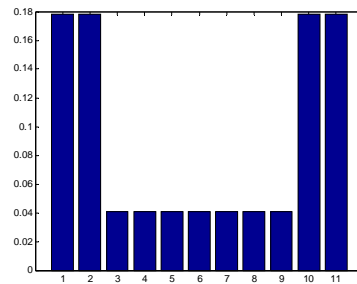4. Probabilistic snowmelt information

Skill indicator to be implemented in EFAS
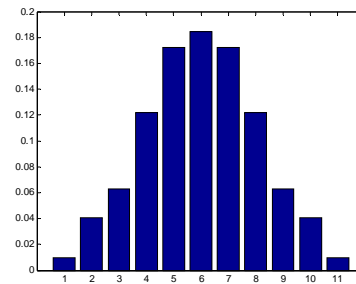
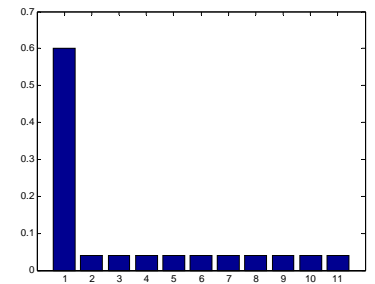Talagrand diagram – indication if spread of EPS gives a good measure of objective uncertainty

Flat   U-shaped   Dome-Shaped   Asymmetric

Flat: ensemble spread about right to represent forecast uncertainty.

Skill indicator to be implemented in EFAS

Talagrand diagram – indication if spread of EPS gives a good measure of objective uncertainty

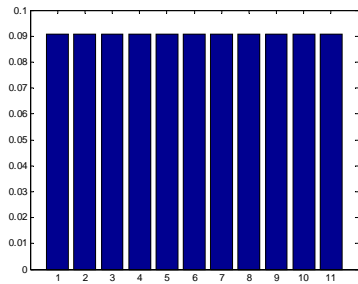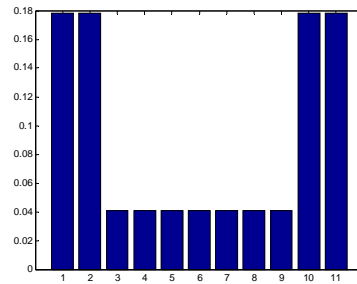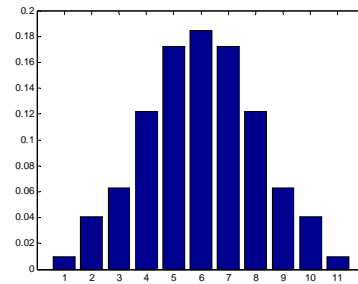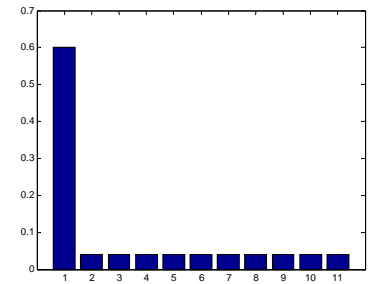Flat   U-shaped   Dome-Shaped   Asymmetric

U-Shaped: ensemble spread too small, many observations falling outside the extremes of the ensemble.

Skill indicator to be implemented in EFAS

Talagrand diagram – indication if spread of EPS gives a good measure of objective uncertainty

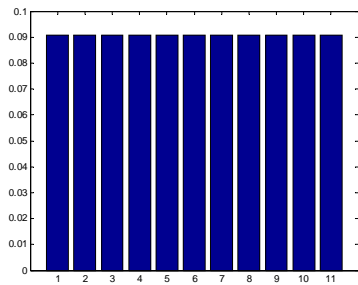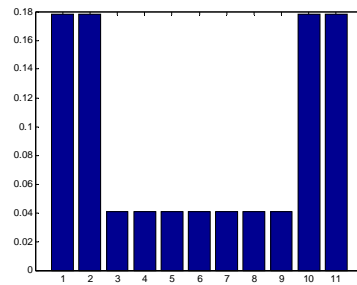
Flat   U-shaped   Dome-Shaped   Asymmetric

Dome-shaped - ensemble spread too large, most observations falling near the center of the ensemble.

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Skill indicator to be implemented in EFAS
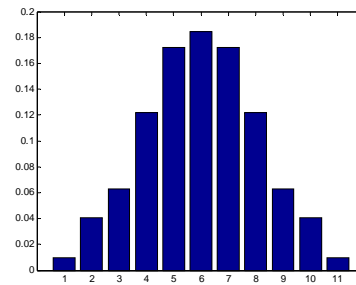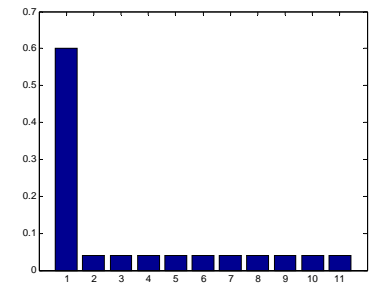
Talagrand diagram – indication if spread of EPS gives a good measure of objective uncertainty

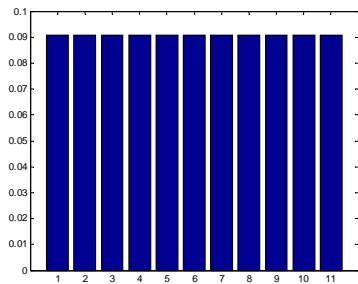Flat   U-shaped   Dome-Shaped   Asymmetric
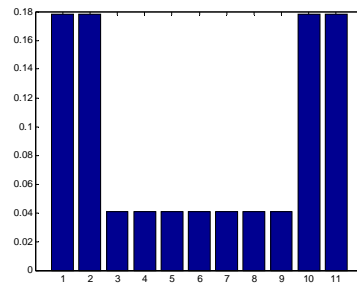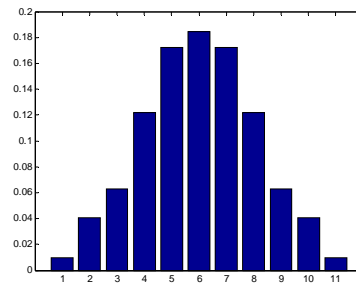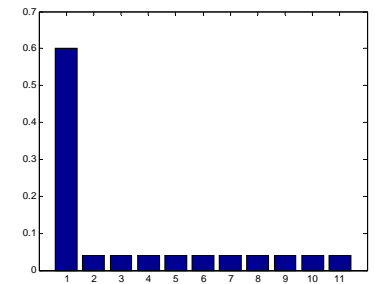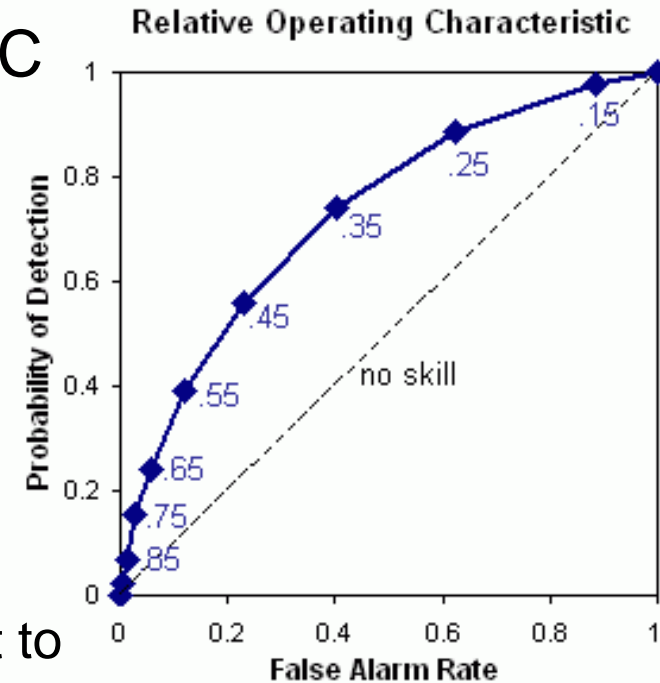
Asymmetric - ensemble contains bias. L-sharp bias on the inferior bound.

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Skill indicator to be implemented in EFAS

Relative Operating Characteristic ROC

Plot hit rate vs false alarm rate, using increasing probability thresholds (for example, 0.05, 0.15, 0.25, etc.) to make the yes/no decision. The area under the ROC curve is frequently used as a score.

Relative Operating Characteristic

ROC: **Perfect:** Curve travels from bottom left to top left of diagram, then across to top right of diagram. **No skill**: Diagonal line

ROC area: **Range:** 0 to 1, 0.5 indicates no skill. **Perfect score:** 1.

Skill indicator to be implemented in EFAS

Other possibilities

- Spread-Skill forecast

- Continuous Ranked Probability Score : CRPS

- …

- …