COSMO-IT-EPS: status and plans

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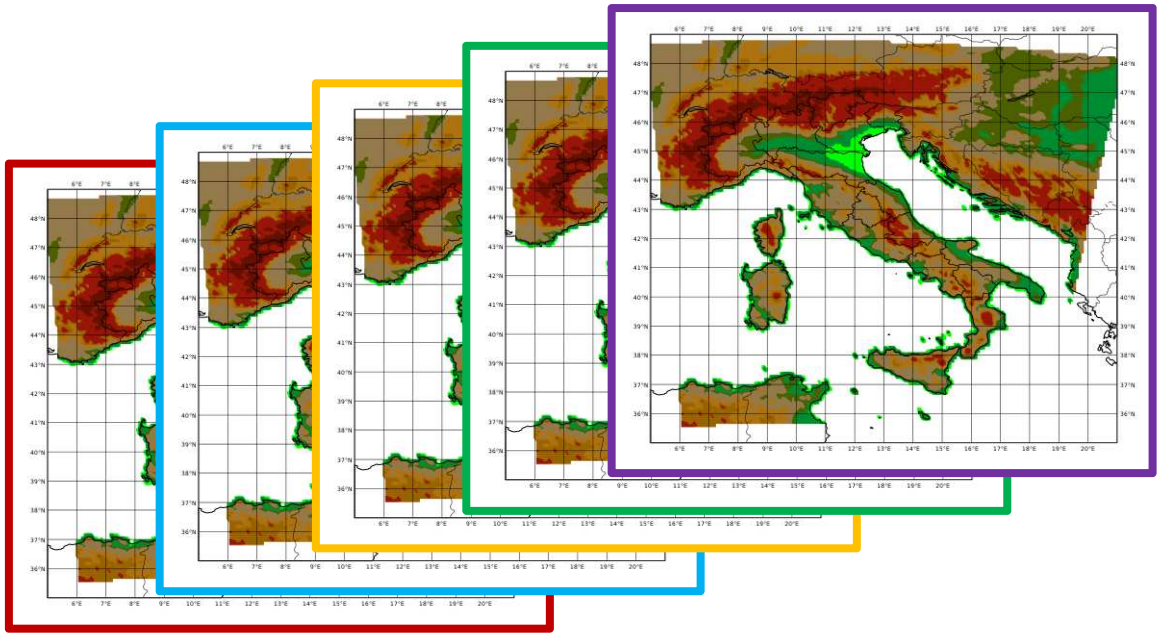
COSMO-IT-EPS: operational set-up

- COSMO 2.2 km, 65 levels
- 20 members
- BCs from the first 20 members of COSMO-ME-EPS
- ICs from KENDA (with soil moisture perturbation)
- Parameter Perturbation
- 1 run per day, 00 UTC, +48 h



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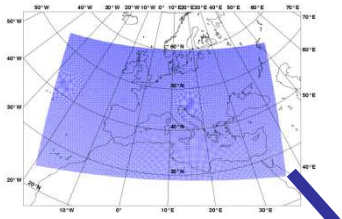
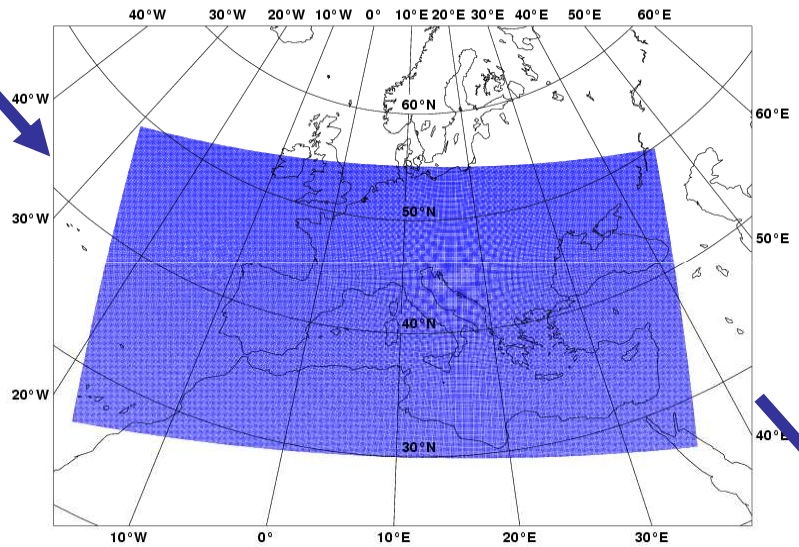
COSMO-IT-EPS: operational set-up

LETKF (COMET)



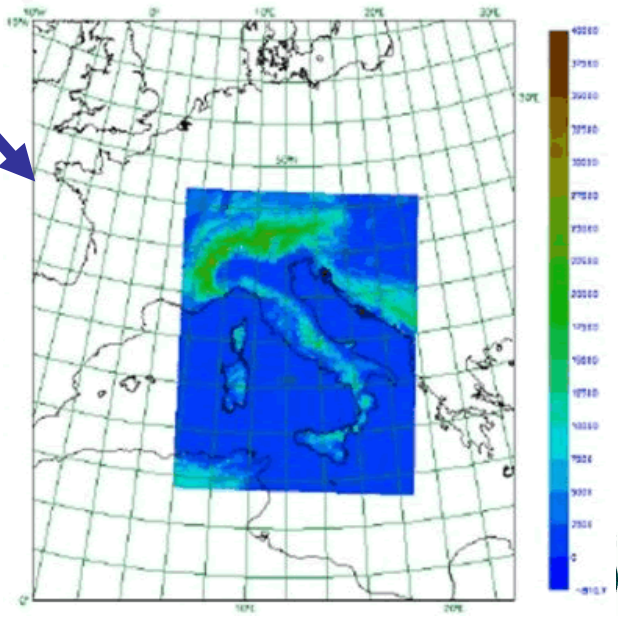
10 km
going to 7
soon KENDA

COSMO-ME-EPS (COMET)



10 km (going to 7)

2.2 km
explicit convection
COSMO-IT-EPS (Arpae)



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COSMO-IT-EPS with KENDA ICs: experiments

- autumn 2015: 13-15/09/2015 and 1-31/10/2015
  - 10/10/2015 and 28/10/2015
- thunderstorm period: 19/06/2016 – 07/07/2016
  - 20/06/2016

Autumn period

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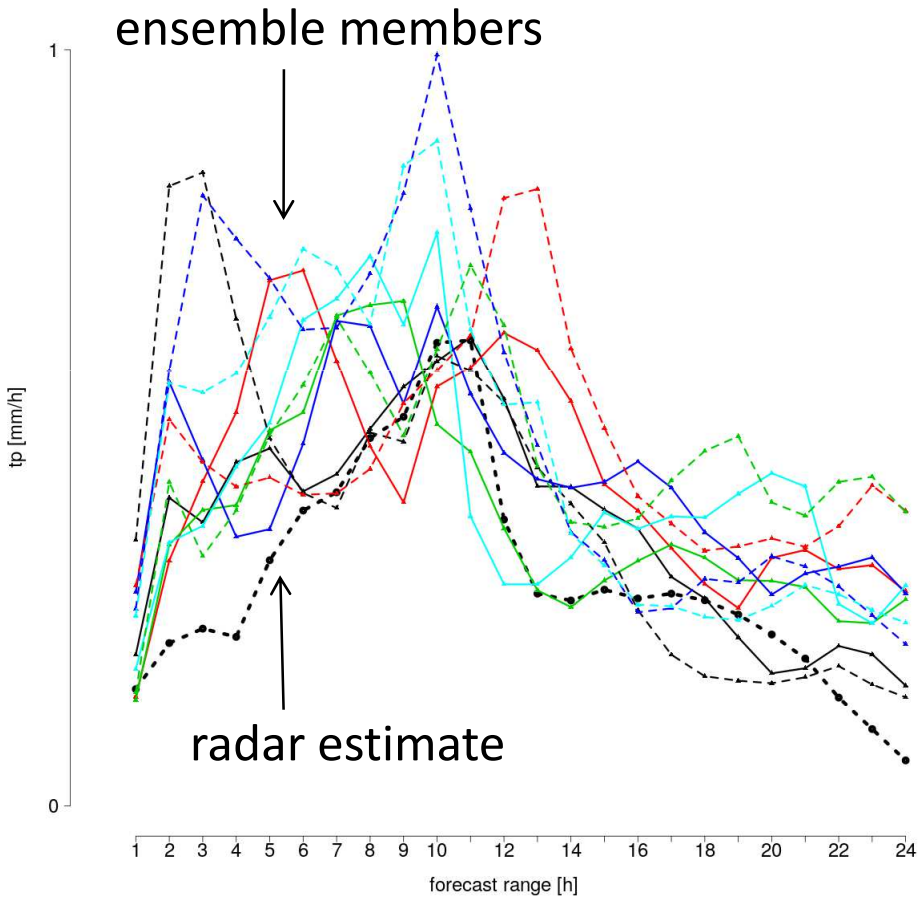
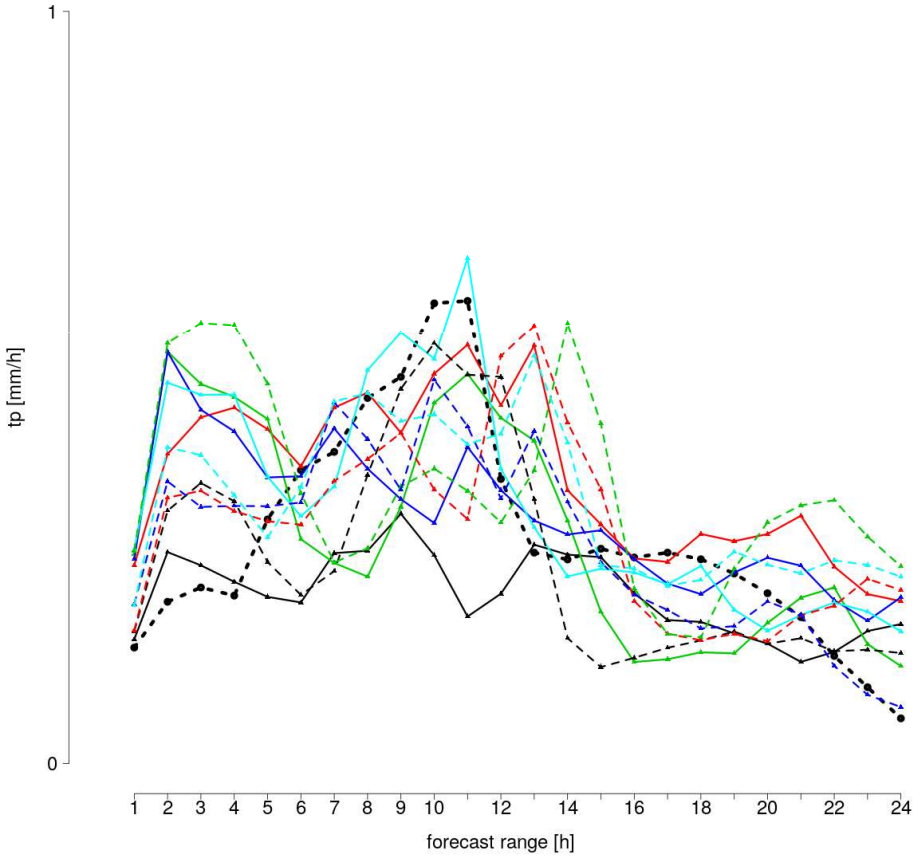
CASE STUDY: 10/10/2015

CTRL



CTRL + IC from LETKF



Hourly precipitation, area average (land only)

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CASE STUDY: 28/10/2015

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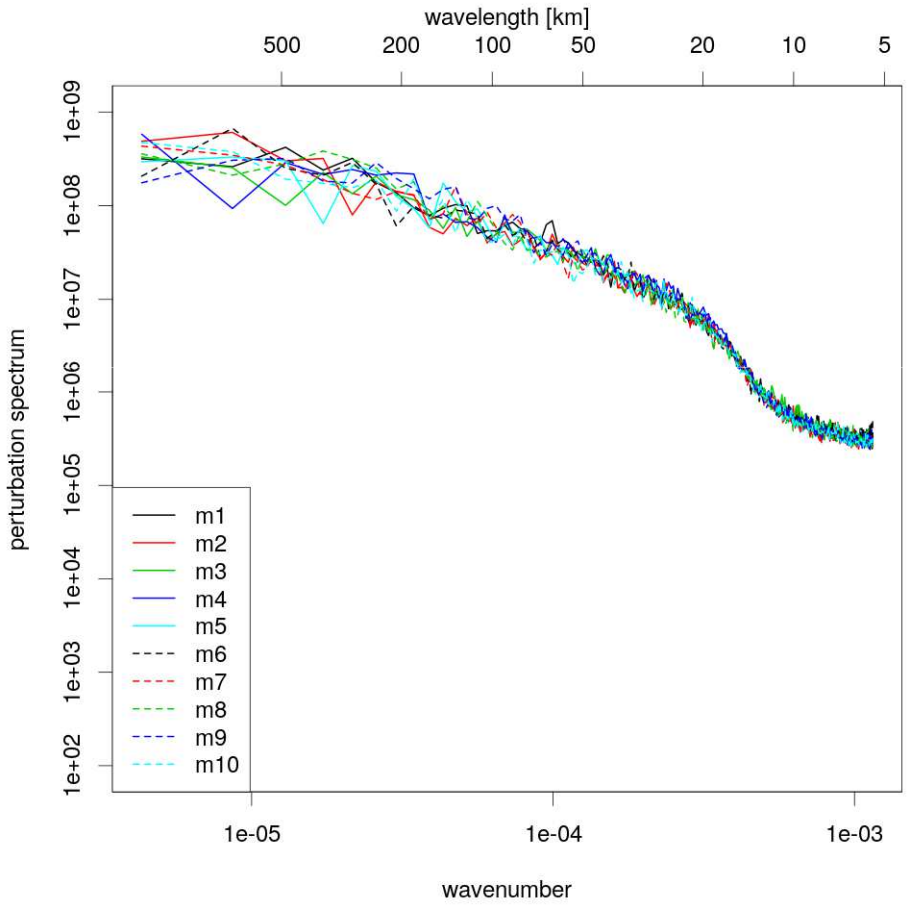
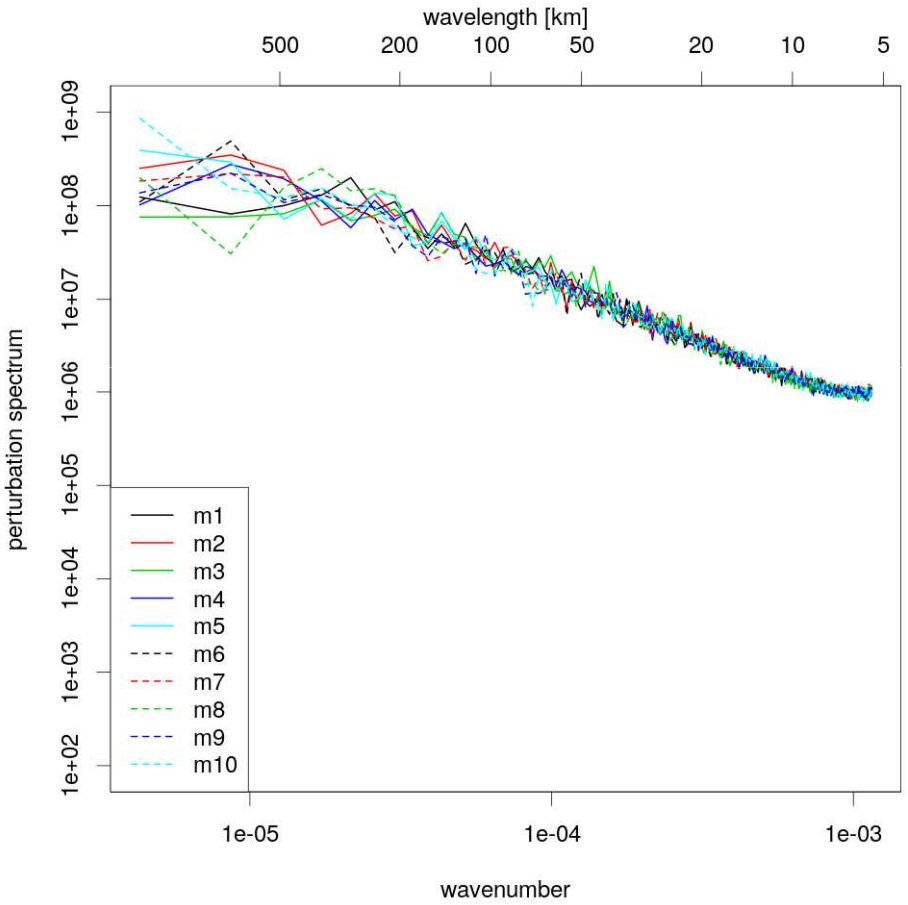


CTRL + IC from LETKF



Spectra of the perturbations (T)

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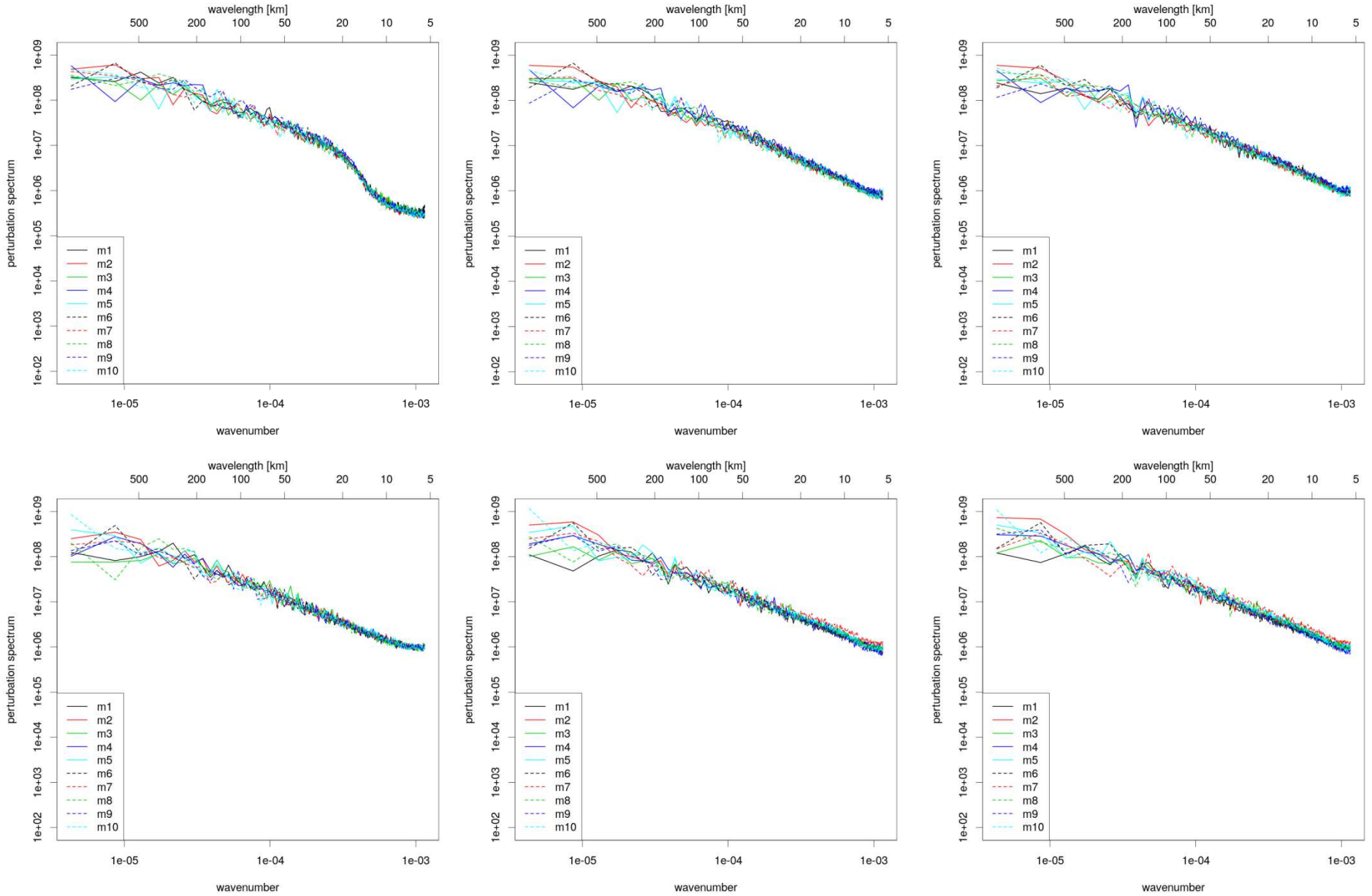
Spectra of the perturbations (T)

analysis **fc +1h** **fc +2h**



Summer period (thunderstorms)

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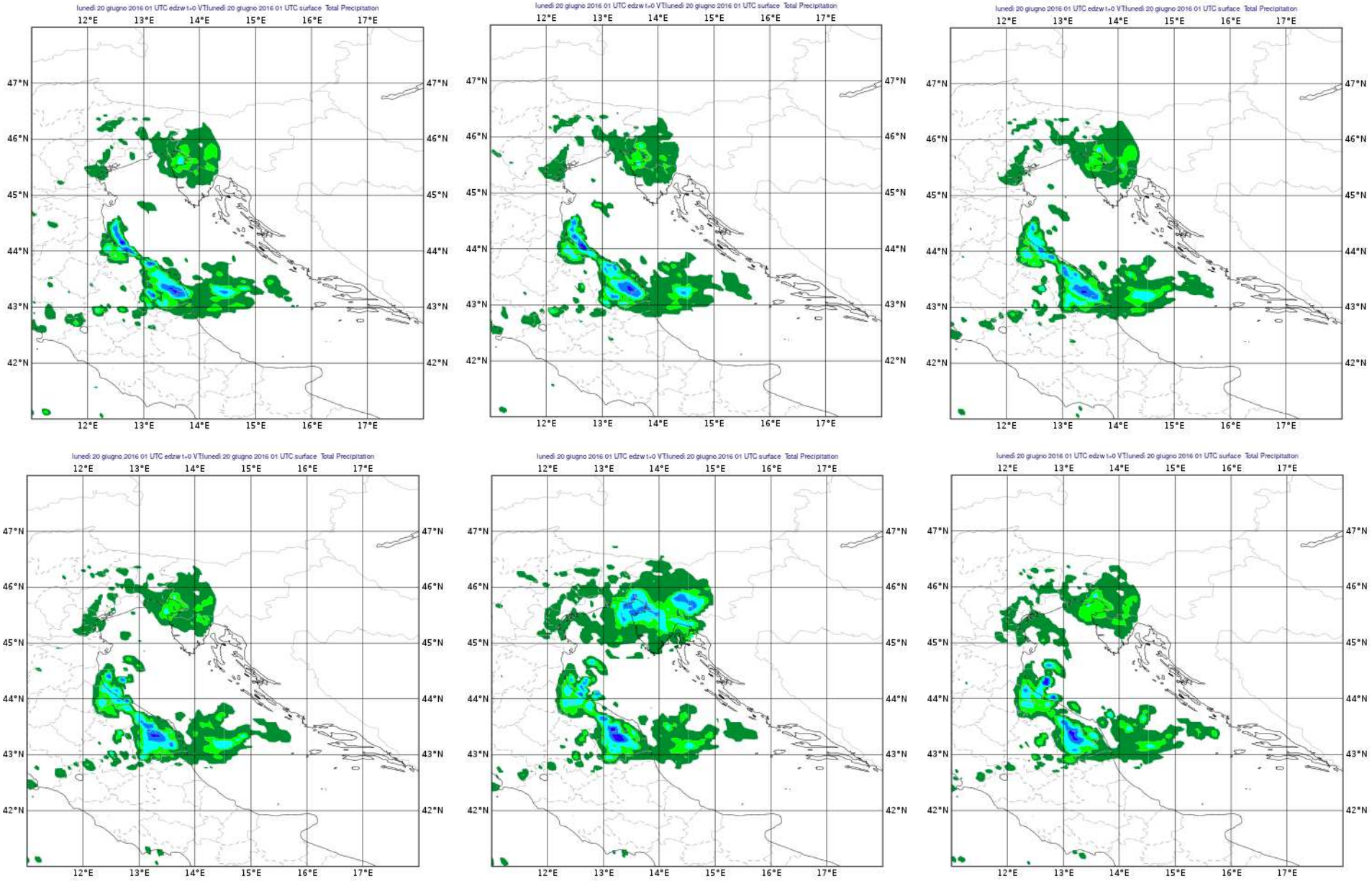
20/06/2016 01 - radar



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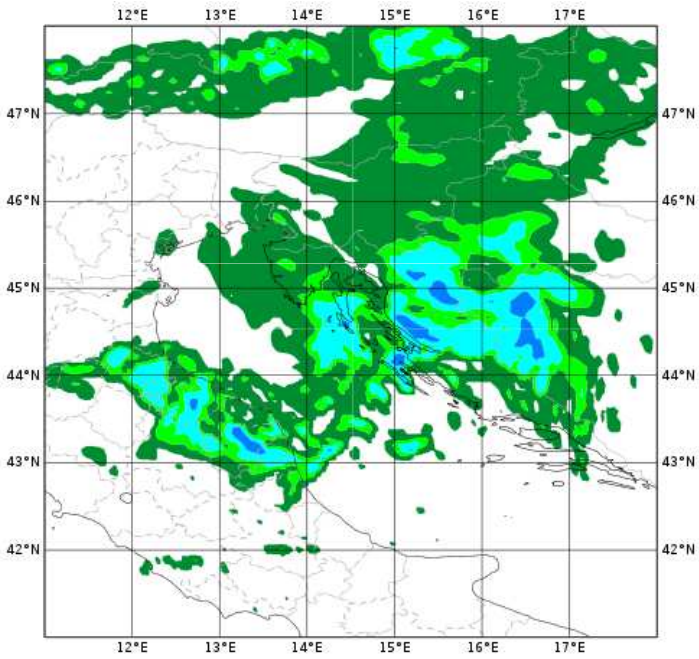
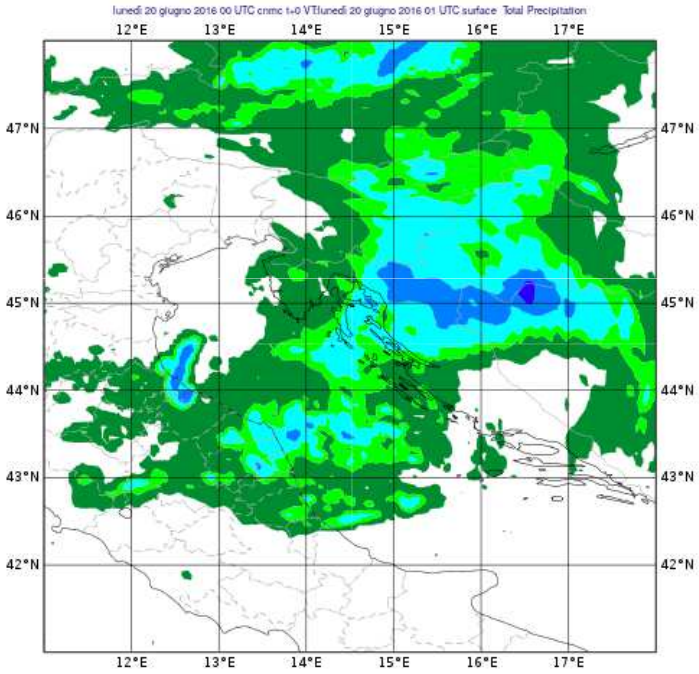
CONSORTIUM FOR SMALL SCALE MODELING COSMO

20/06/2016 01
ensemble mean

downscaling ICs



KENDA ICs



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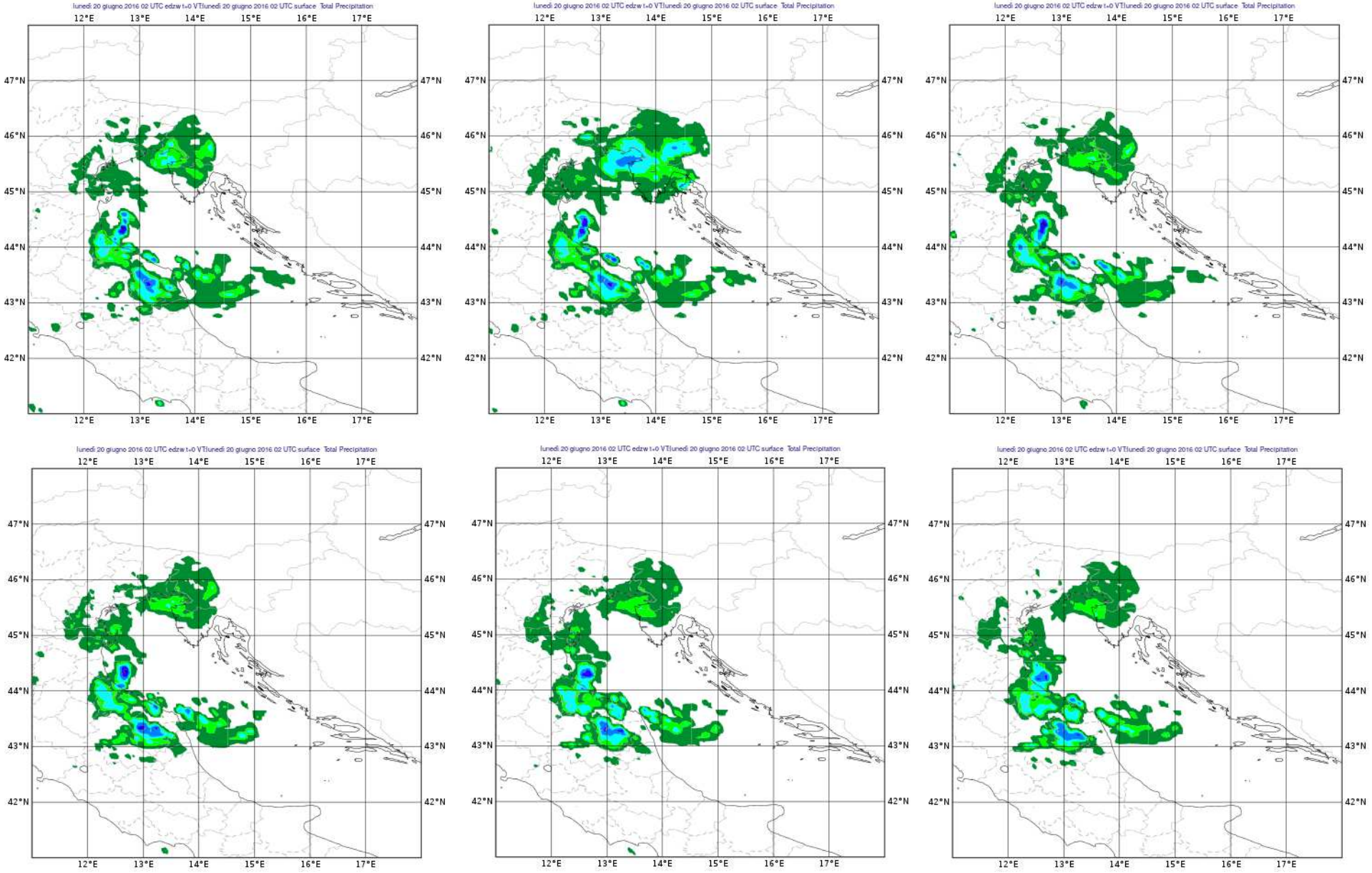
20/06/2016 02 – radar



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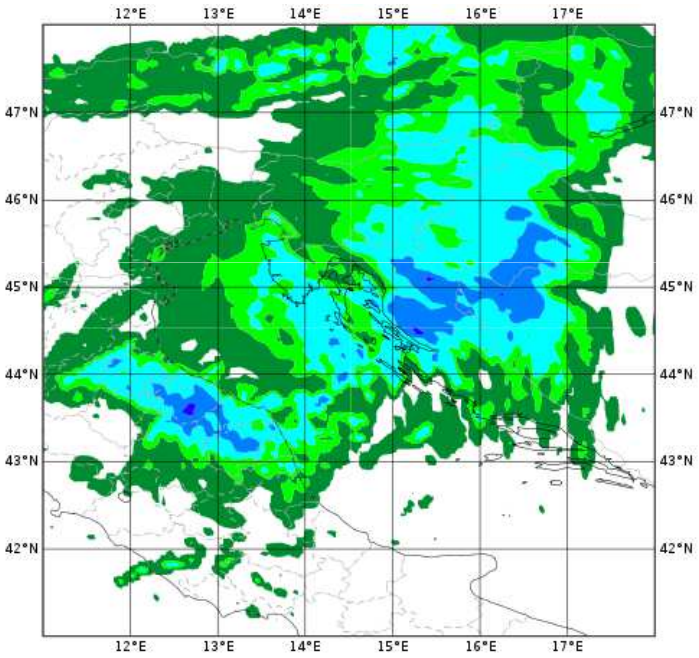
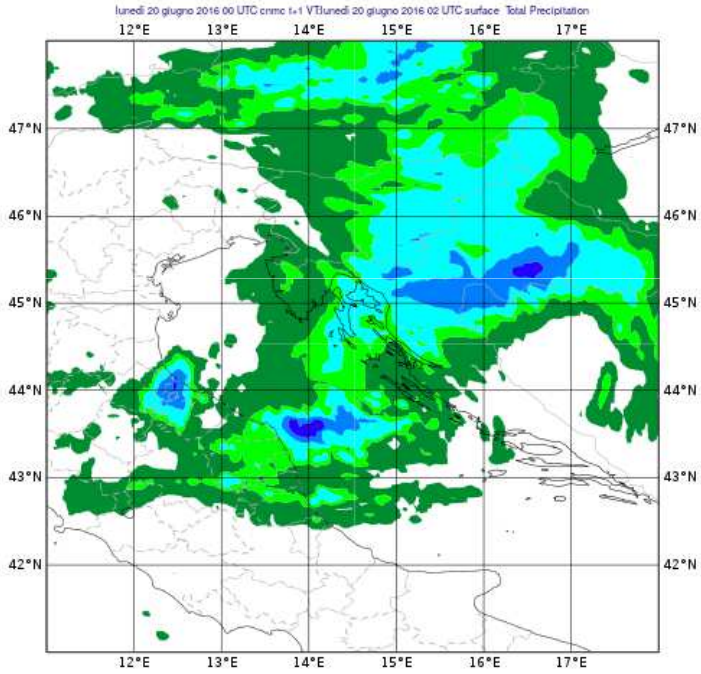
CONSORTIUM FOR SMALL SCALE MODELING COSMO

20/06/2016 02
ensemble mean

downscaling ICs



KENDA ICs



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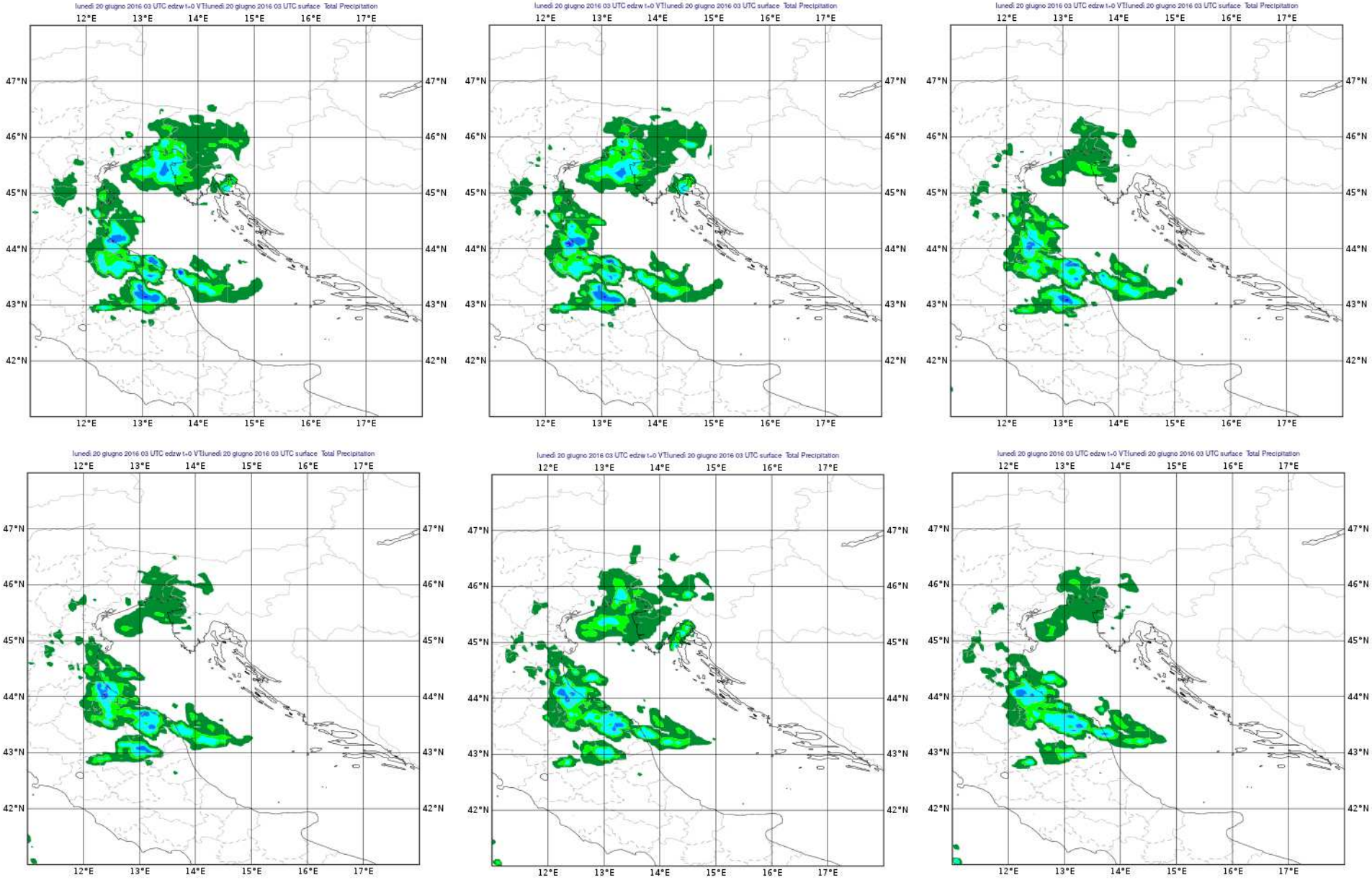
20/06/2016 03 - radar



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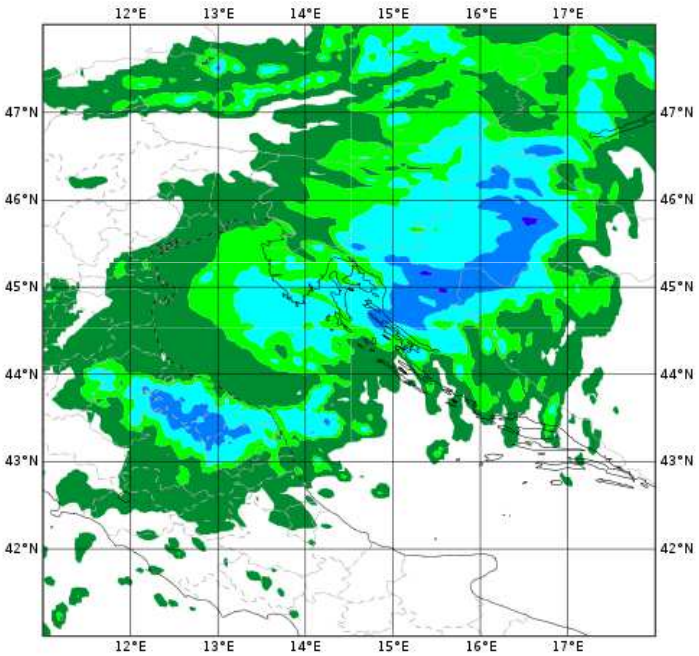
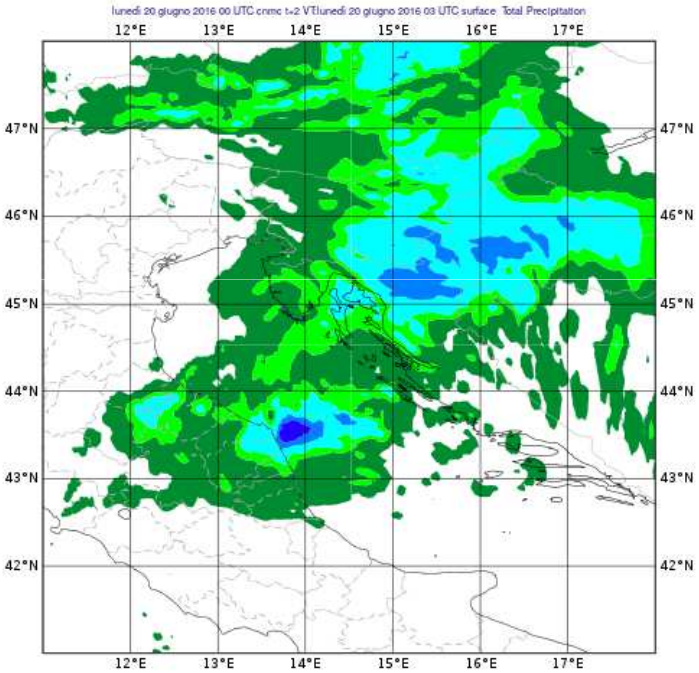
CONSORTIUM FOR SMALL SCALE MODELING COSMO

20/06/2016 03
ensemble mean

downscaling ICs



KENDA ICs



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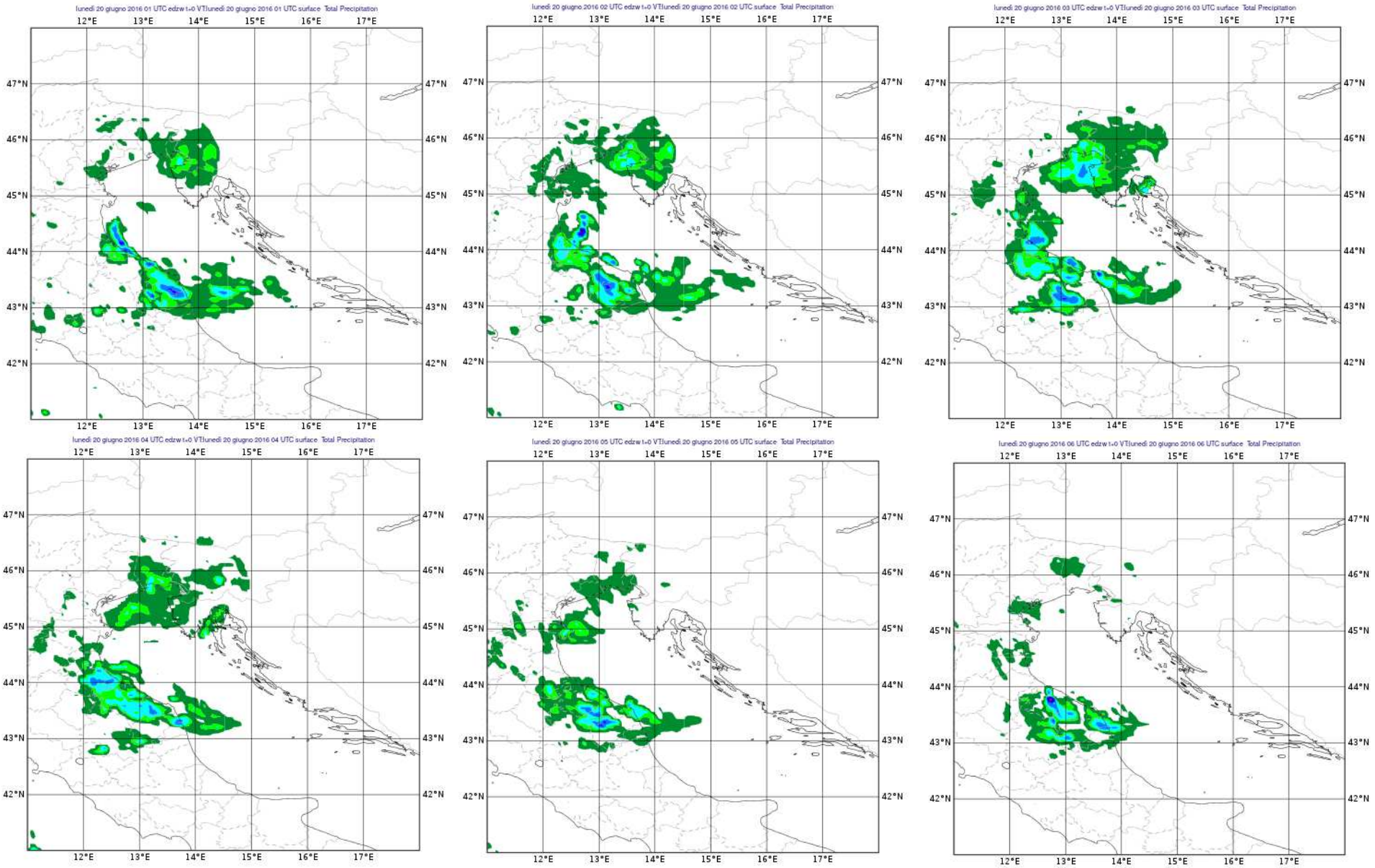
20/06/2016 01-06



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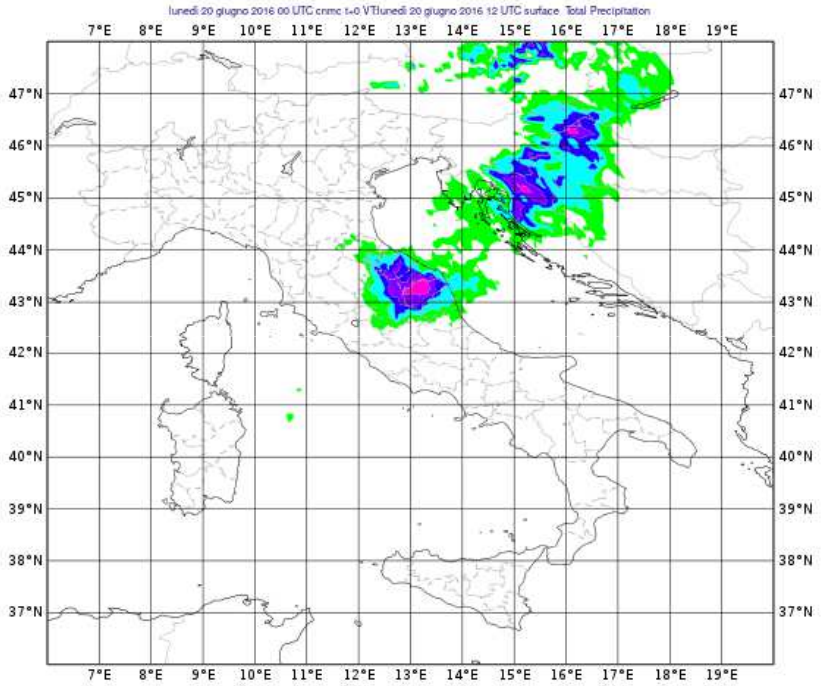
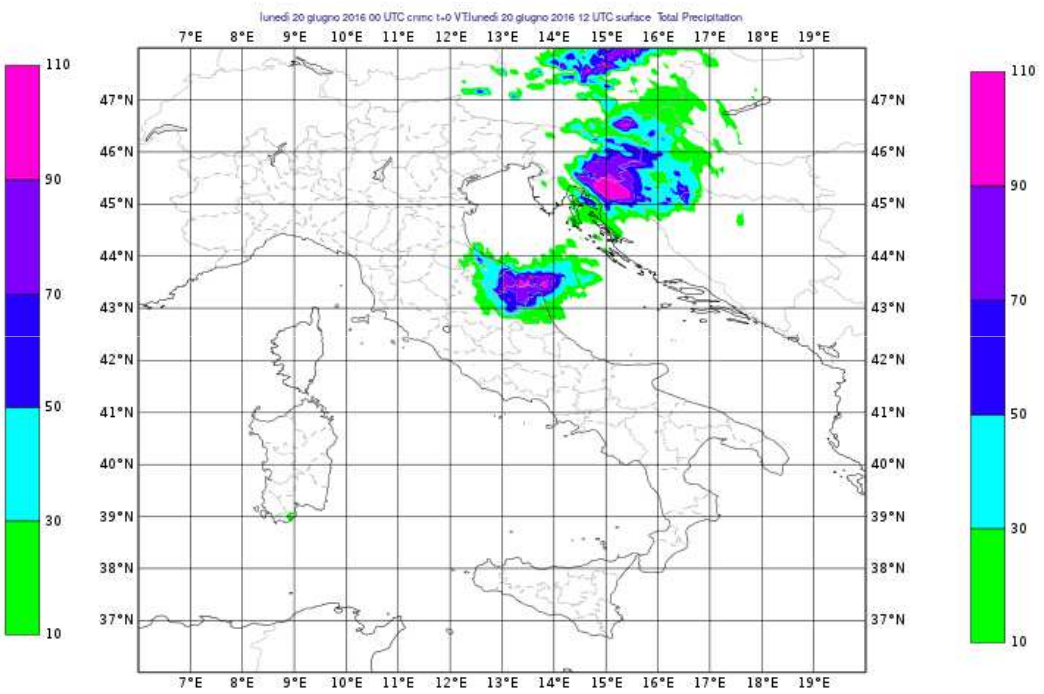
20/06/2016 0-12
probability maps tp > 20 mm

downscaling ICs



KENDA ICs



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COSMO-IT-EPS: verification against radar data

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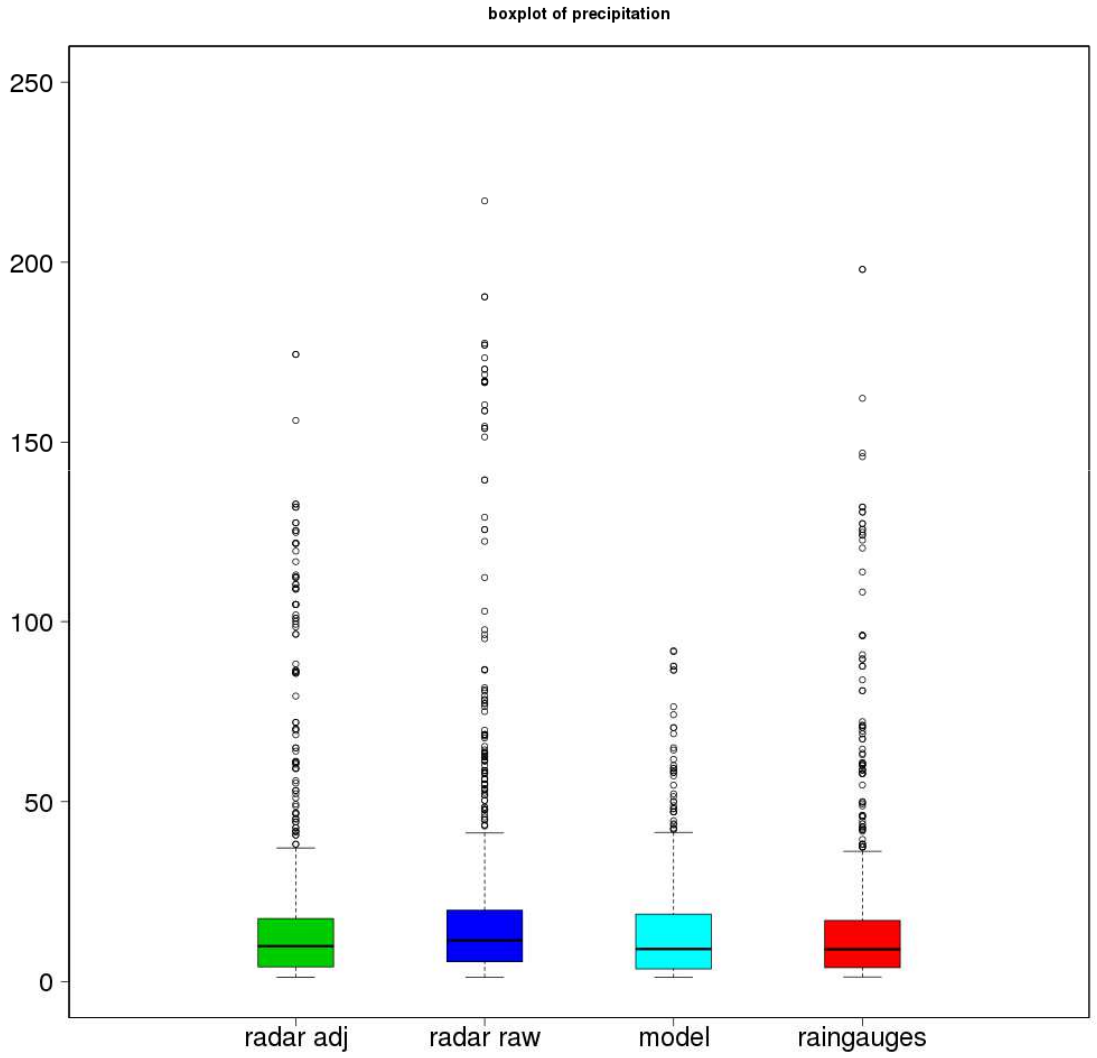
Italian radar composite adjusted with raingauges



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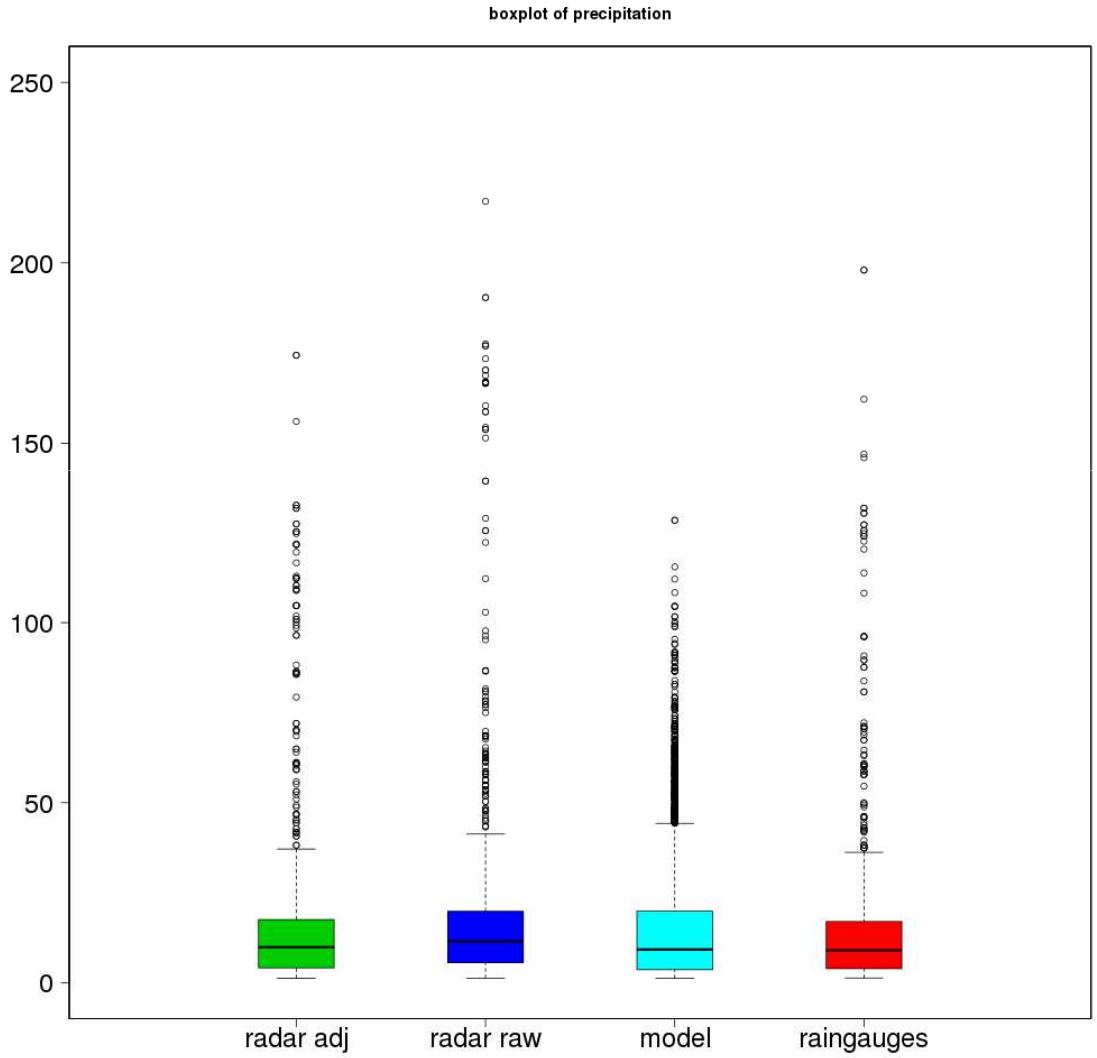
Italian radar composite adjusted with raingauges



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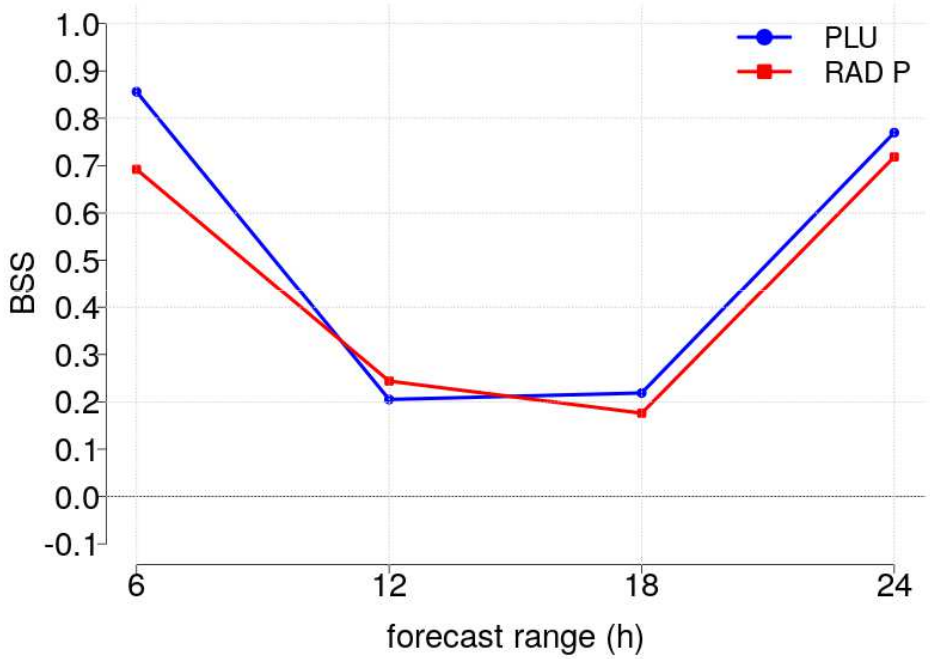
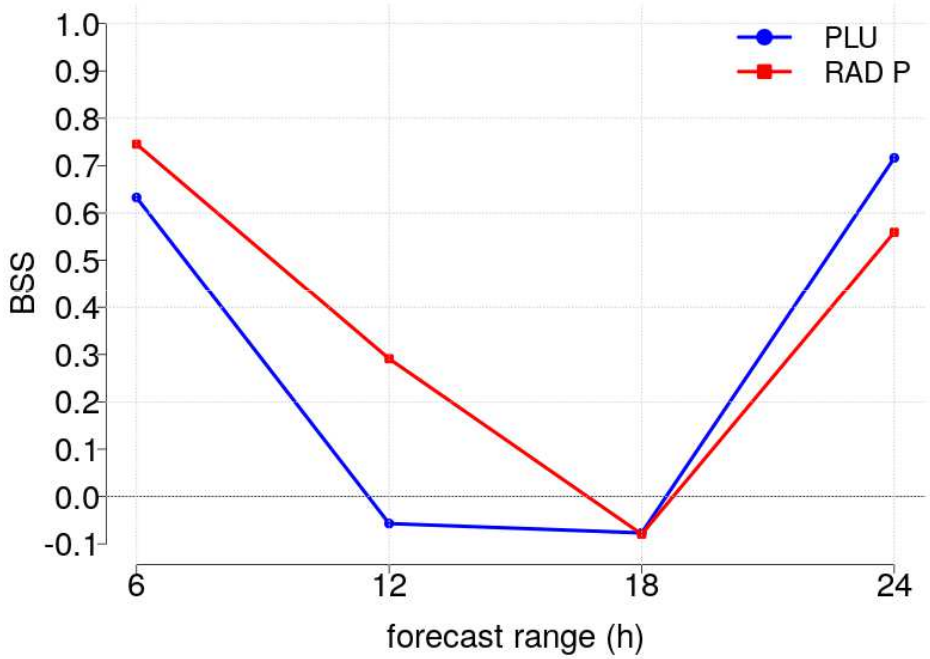
Verification of COSMO-IT-EPS against radar data



1mm



5mm

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Concluding remarks

- Problem of KENDA assimilation with radar data, seems to decrease the precipitation amount
- COSMO-IT-EPS with PP perturbation only (no SPPT)

  + SM perturbation through KENDA
- new products for thunderstorms and fog

  => verification?
- Verification of precipitation against radar estimate

  => problem of the estimate

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Impact of model physics perturbation

Model perturbations:

- Exp1: no model perturbation (CTRL)
- Exp2: SPPT
- Exp3: SPPT + Parameter Perturbation

October 2015

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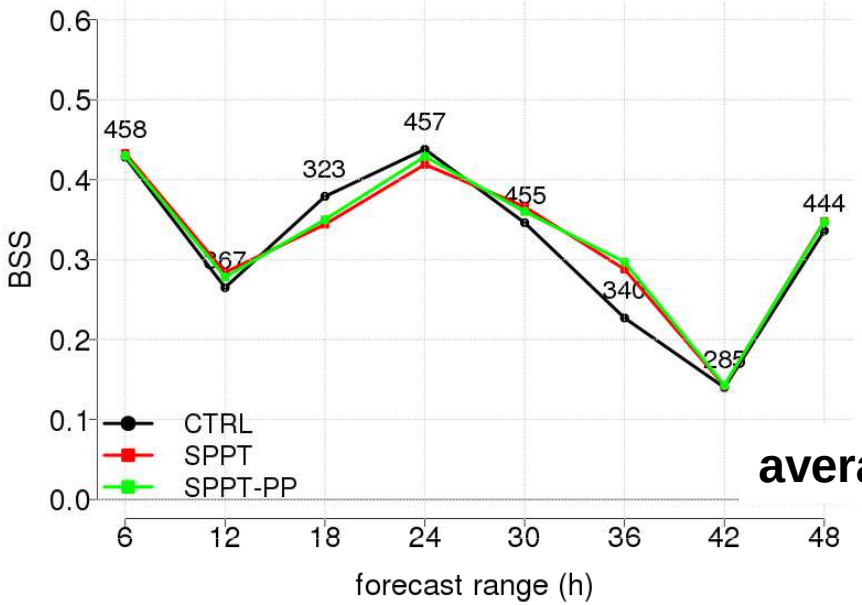
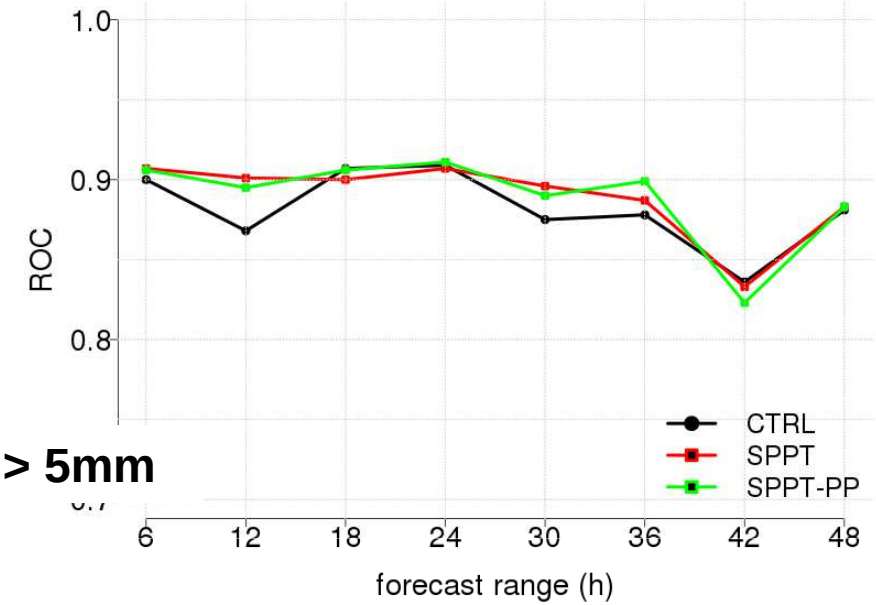
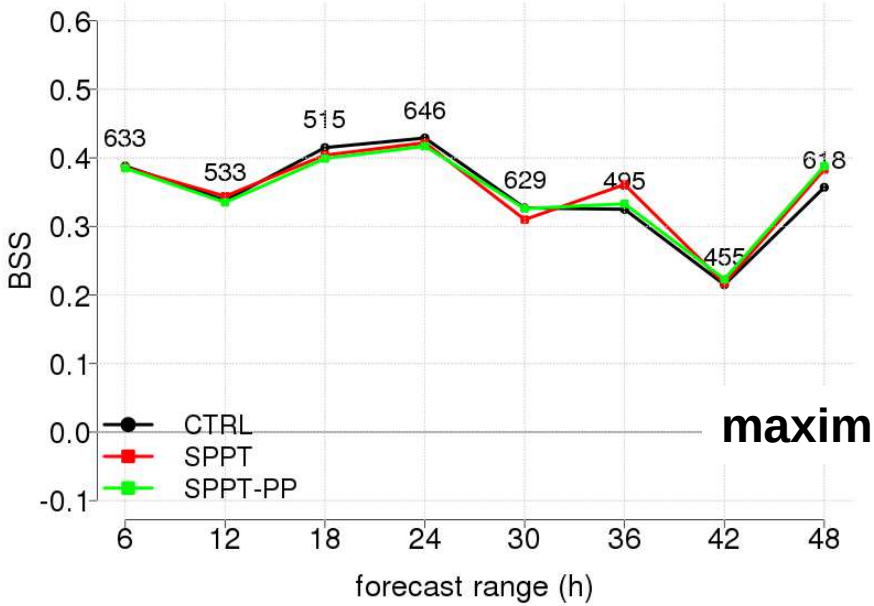
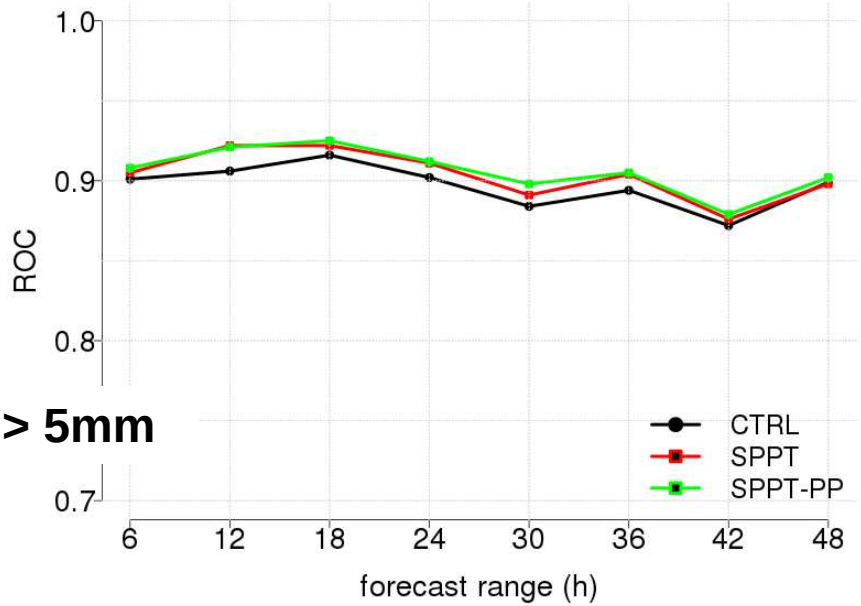
6h precipitation - verification over boxes of 0.2 x 0.2 deg





average > 5mm

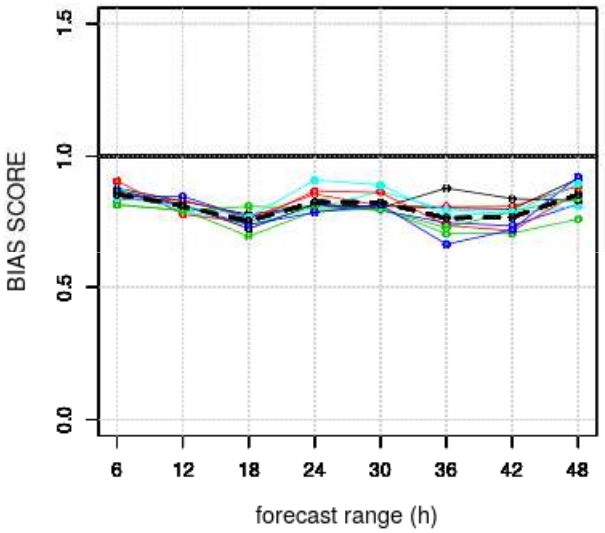




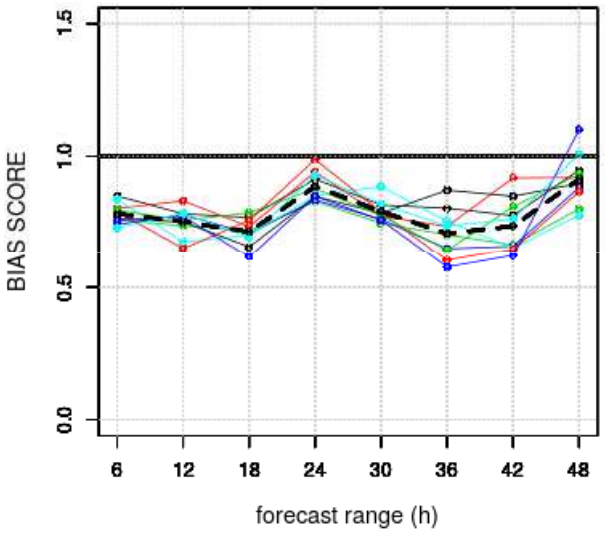
maximum > 5mm

Average precipitation over boxes 0.2 x 0.2 deg

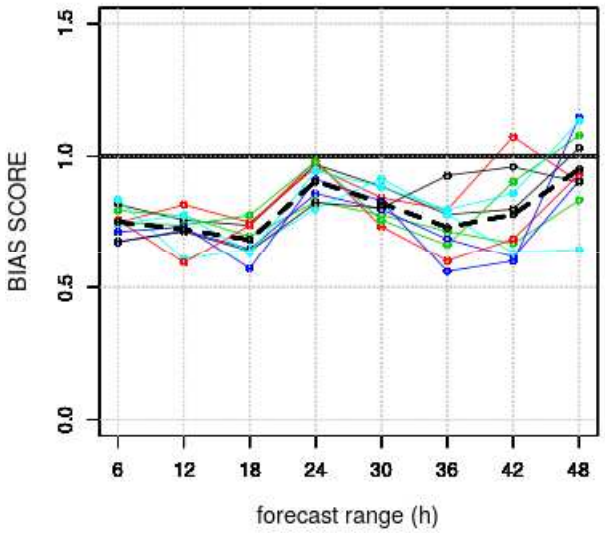
CTRL



thr: 1 mm



thr: 5 mm



thr: 10 mm

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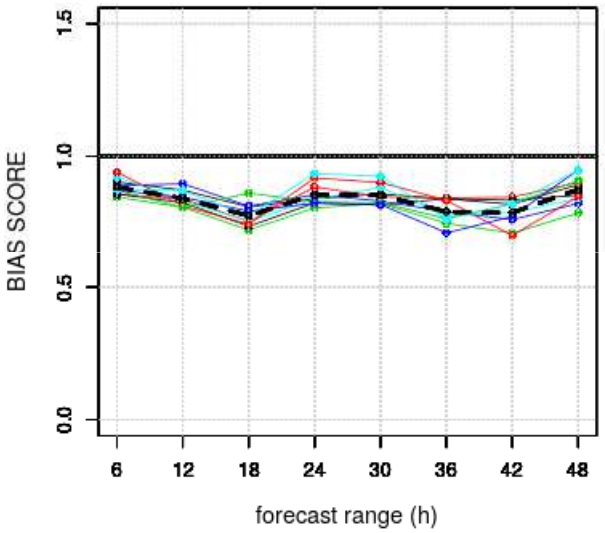
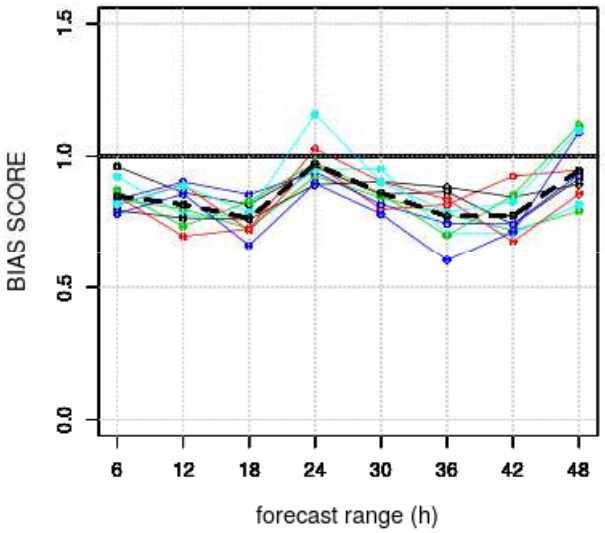
Average precipitation over boxes 0.2 x 0.2 deg

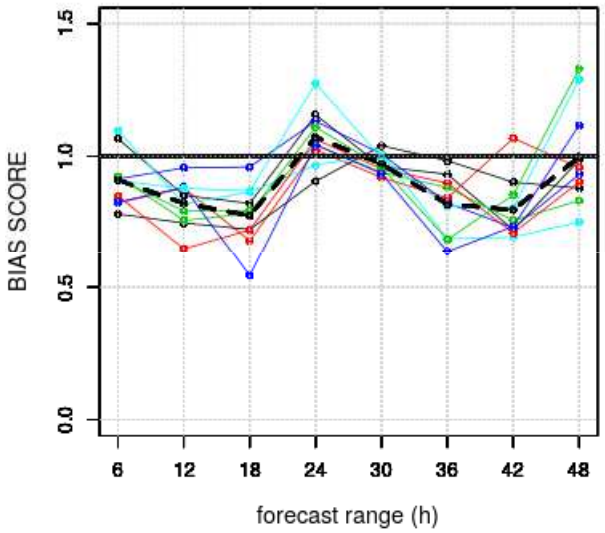
SPPT



thr: 1 mm



thr: 5 mm



thr: 10 mm

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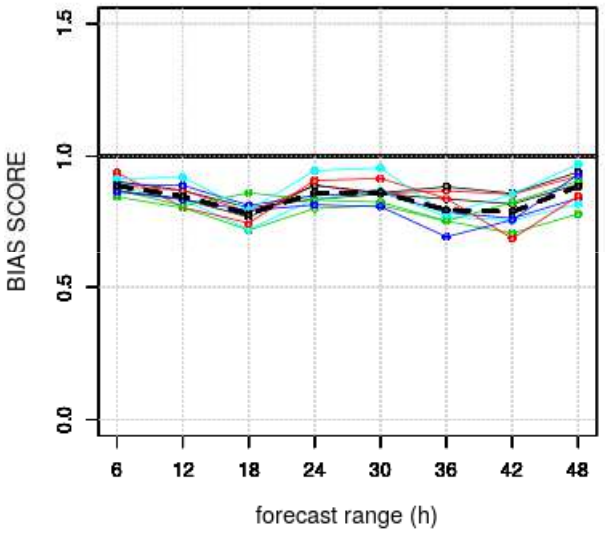
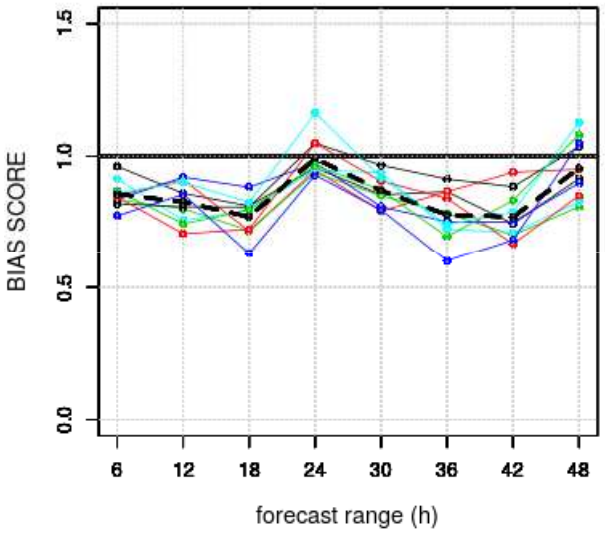
Average precipitation over boxes 0.2 x 0.2 deg

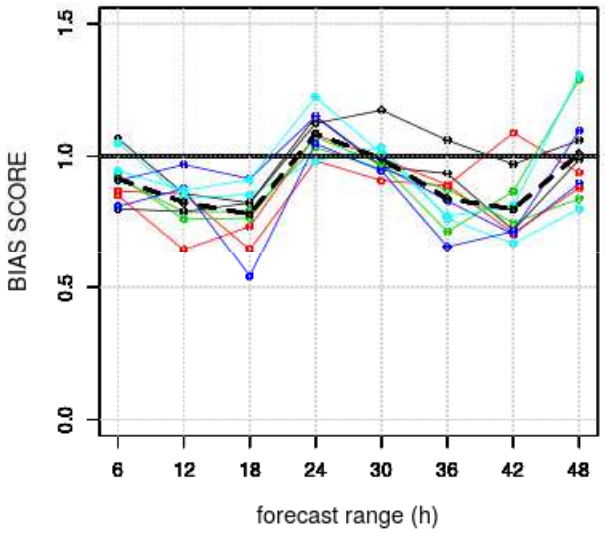
SPPT+PP



thr: 1 mm



thr: 5 mm



thr: 10 mm

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