



Model error identification

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Fuzzy verification

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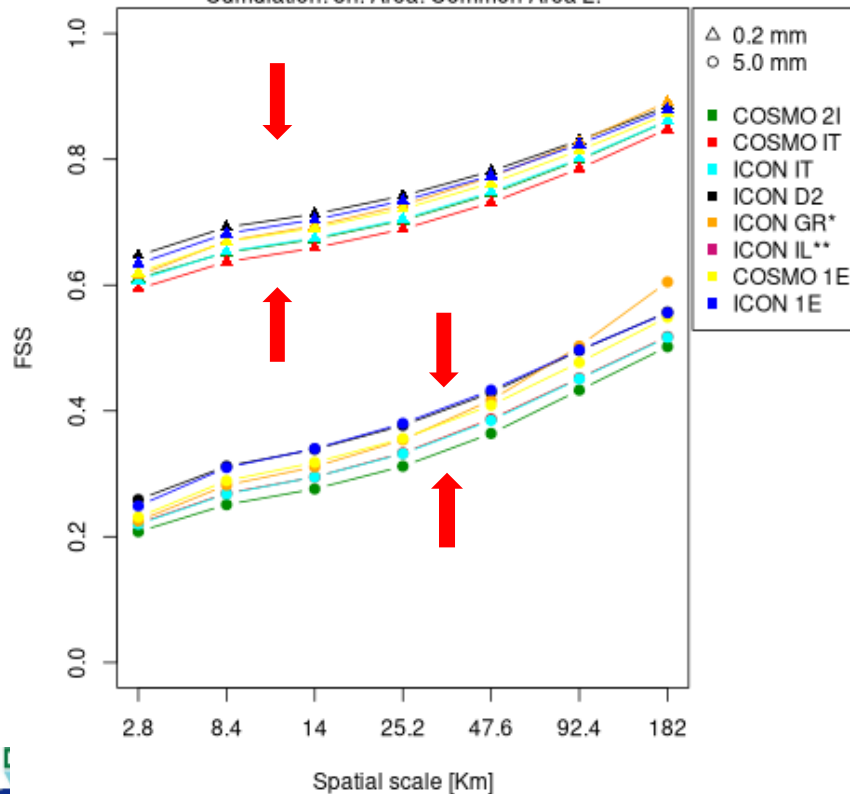
January the 24th 2024

FSS

- In SON and MAM verification all the models are closer to each other; in JJA and DJF are more spread.
This may mean that the differences come out when the precipitation is generally scarcer (same for Common Area 3).
 - Rate of increase similar for lower and higher threshold.
- Score more influenced by the increase of the spatial scale than by the intensity of precipitation.*

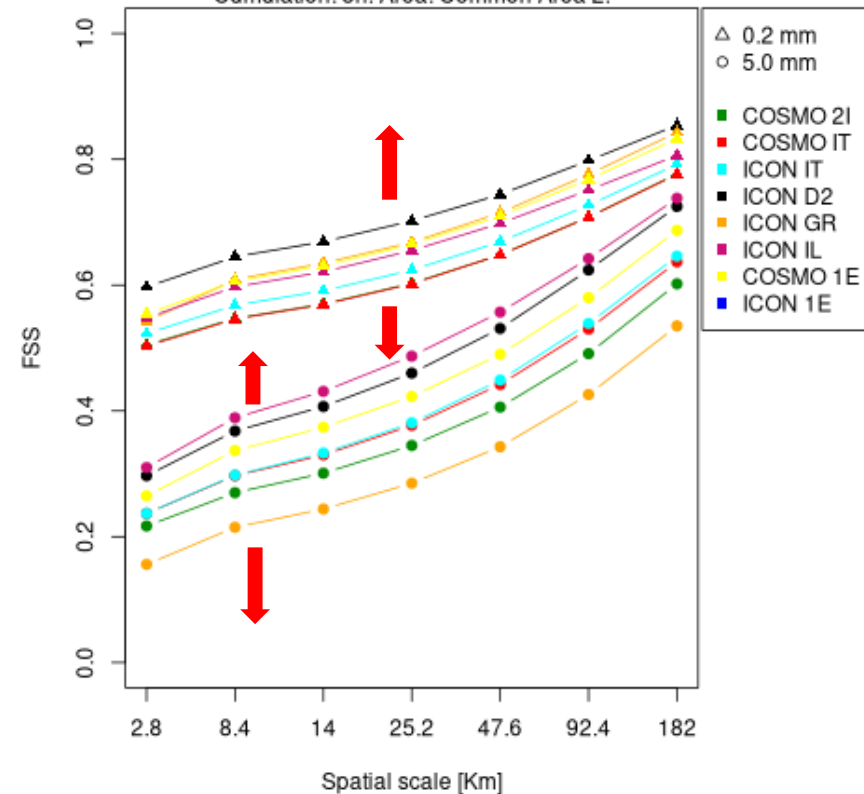
SON2022 - FSS at 0.2 and 5.0 mm - d0 - 1t

Cumulation: 3h. Area: Common Area 2.



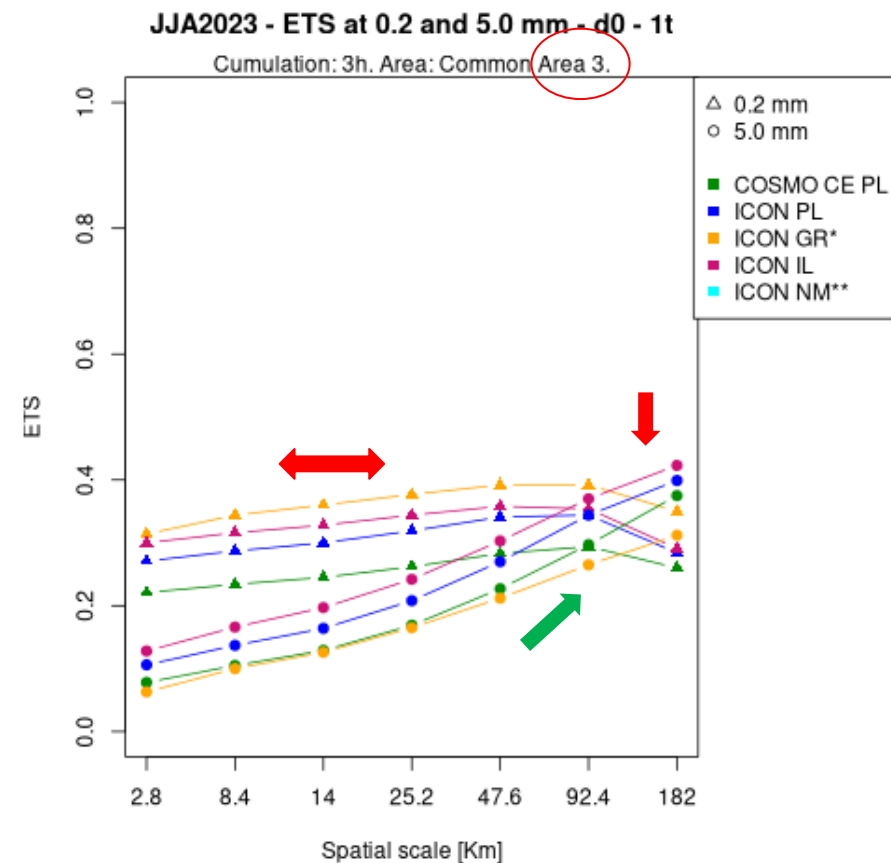
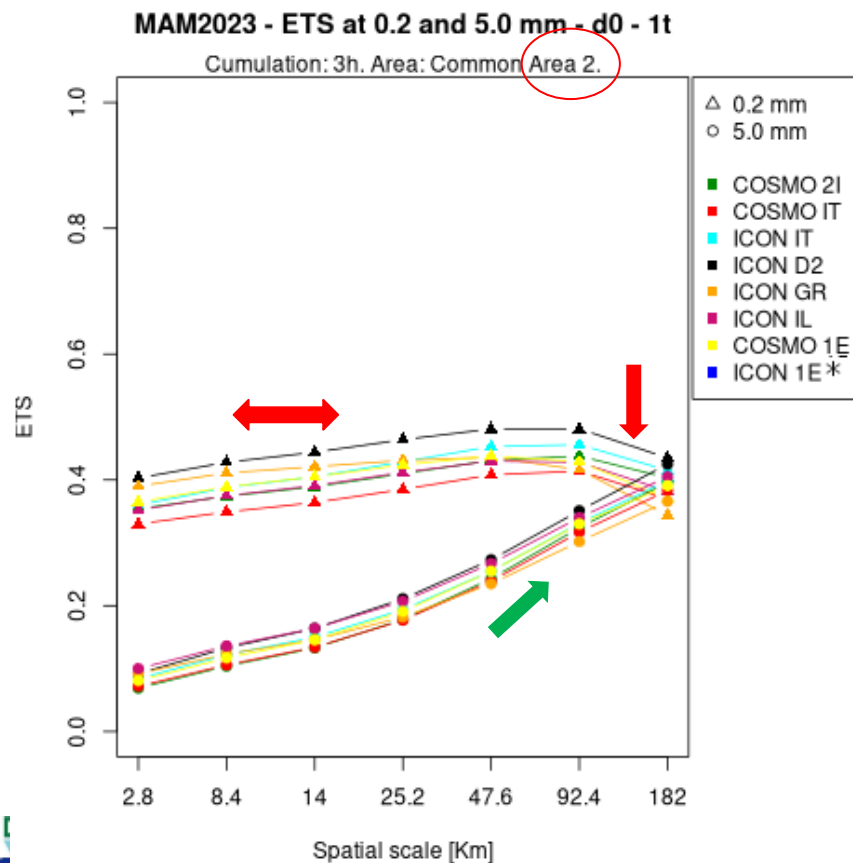
JJA2023 - FSS at 0.2 and 5.0 mm - d0 - 1t

Cumulation: 3h. Area: Common Area 2.



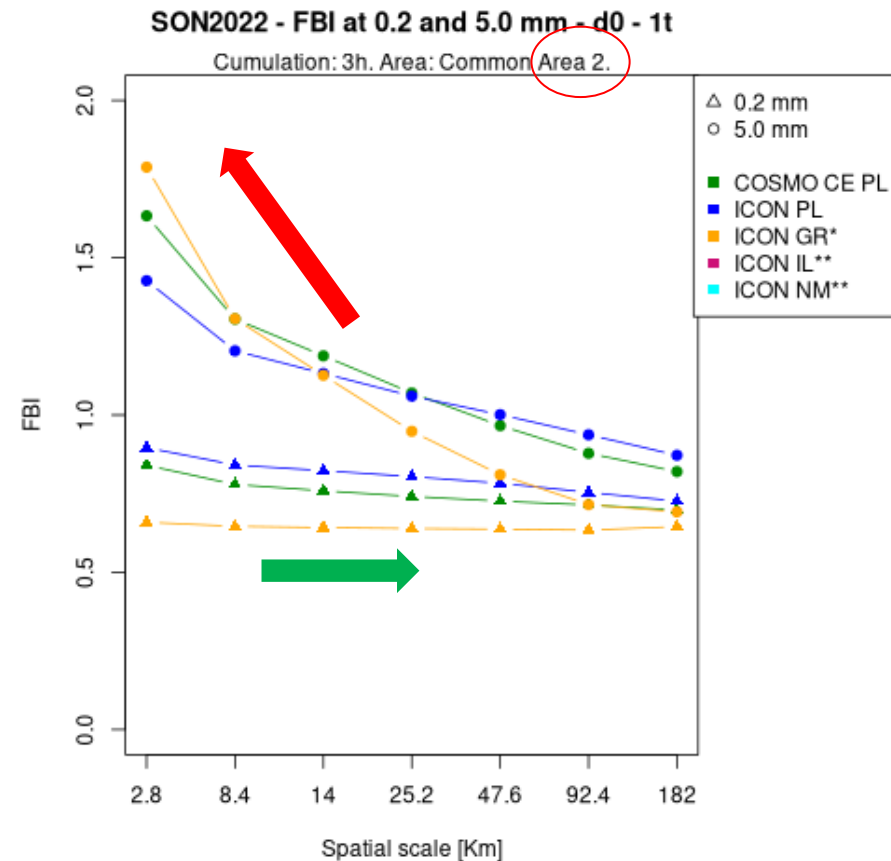
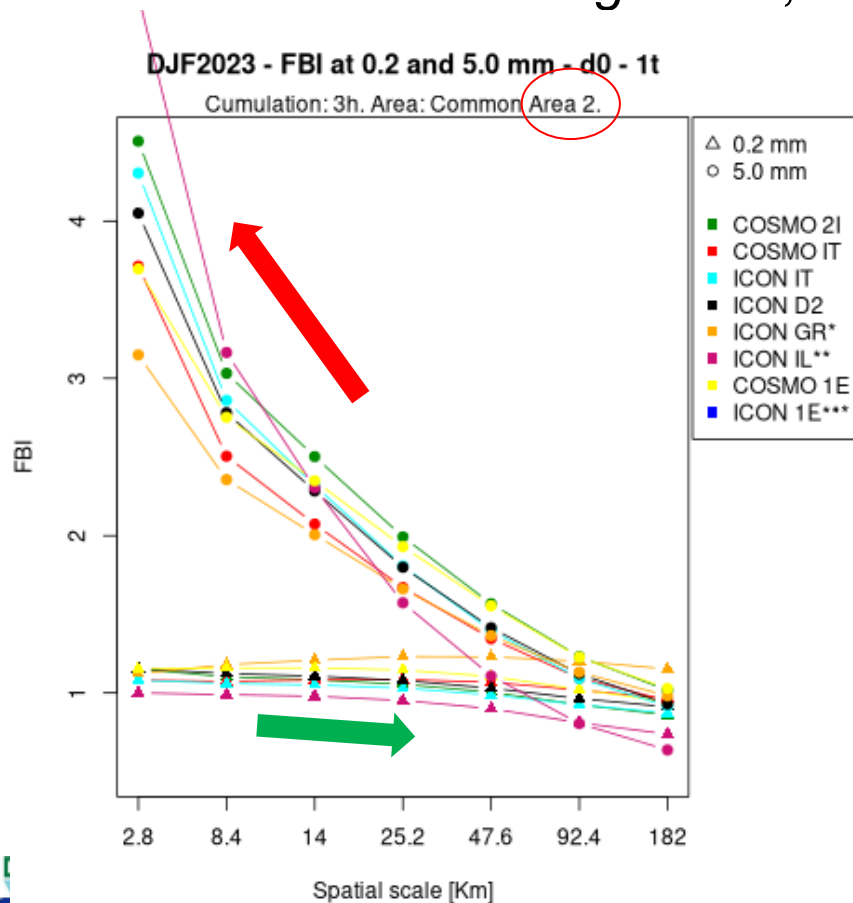
ETS

- Lower threshold: no improvement with the increase of spatial scale (or worsening)
More widespread and less peaked, so less problems with narrow boxes
- Higher threshold: improvement with the increase of spatial scale
Increasing the scale reduces the double penalty problem



FBI

- FBI close to 1 for lower threshold (Common Area 3 little underestimation)
- Very high bias for higher threshold at small scales (less for Common Area 3, but present)
May be due to the production of patterns that are too wide and for this reason fall in the surrounding boxes, because it disappears at larger scales





FAR

- Greater improvement for higher threshold when increasing the spatial scale

Due to the fact that the double error problem affects the peaked precipitation patterns more.

POD

- Same as FAR, but less pronounced.
- Often the decrease in the POD values with the increasing of the precipitation intensity is not monotone. Better values for middle intensities.
The models seem to underestimate the areas covered by very light precipitation.

COSMO VS ICON

- ICON D2 has the best overall results
- ICON models better than COSMO, except COSMO 1E (for all scores except FBI for higher threshold and FAR)
- The same model in two different areas has different results, so they are more linked to the area and to the pluviometric regime than to the model itself.

