



Current results of verification for precipitation forecasts of global models using the station network over Germany

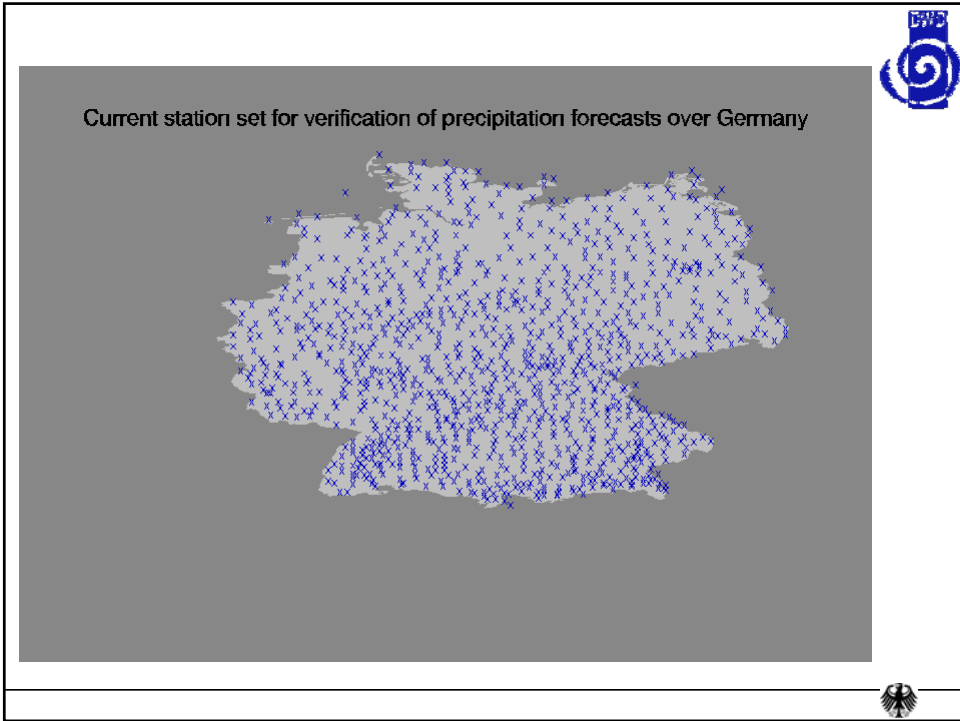
U. Damrath, Deutscher Wetterdienst

Remarks concerning the current state of QPF-verification using German stations



- Due to a large delay while controlling all available data from around 3000 stations the data set for verification was reduced to around 1000 stations from which controlled data are available around 10 days after measurement.
- Verification was now restarted beginning with December 2007 because of major changes at JMA (precipitation forecasts with a higher resolution than before) in order to have a homogeneous data set with the same resolution.
- While decoding data from NCEP sometimes nonrealistic data were obtained with extremely high precipitation values over the Alps. Therefore, verification of NCEP forecasts is not shown here.
- Verification has been carried out using three different assignments of forecasts to observations:
 - ▶ nearest gridpoint
 - ▶ bilinear interpolation
 - ▶ area mean over $1^{\circ} \times 1^{\circ}$





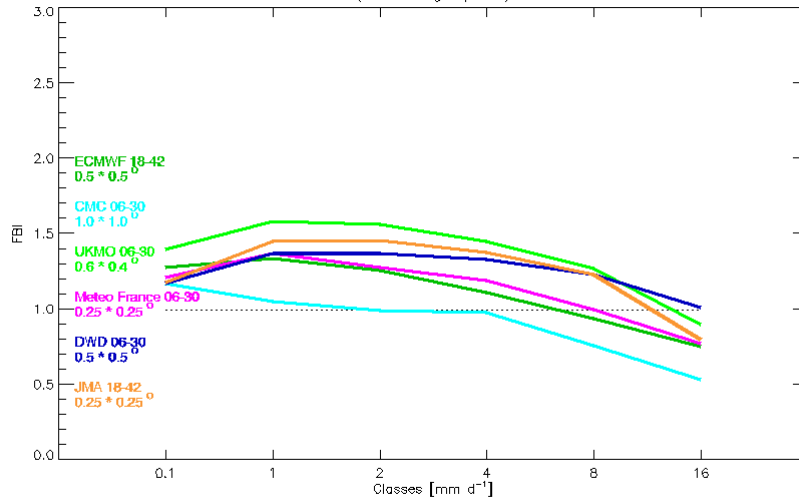
Frequency distribution of observations
in different classes for area means over $1^\circ \times 1^\circ$

Class limits (mm/24h)	0.1	1.0	2.0	4.0	8.0	16.0	
Winter 2007/2008	48.62	23.71	6.59	7.68	8.12	3.68	1.62
Spring 2008	35.30	24.97	9.64	10.54	11.23	5.99	2.32
Summer 2008	38.75	36.25	7.36	7.50	6.08	3.72	0.34

FBI day 1 Winter 2007/2008 (nearest gridpoint)



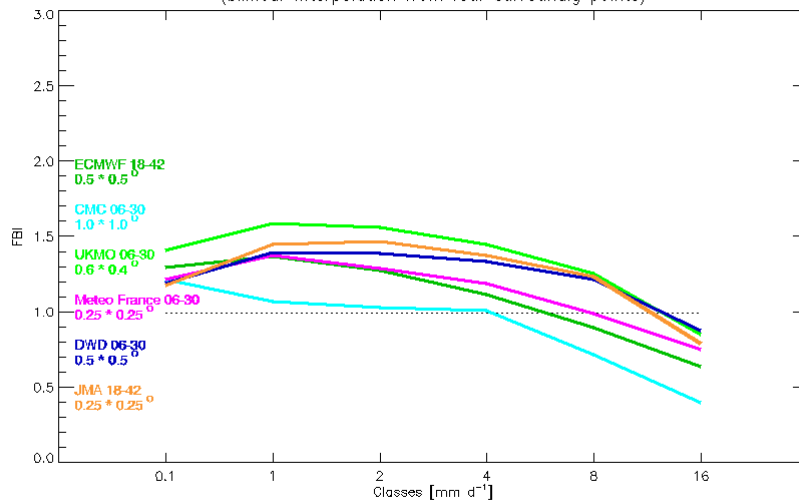
Period: 01.December 2007 till 28.February 2008
(nearest gridpoint)



FBI day 1 Winter 2007/2008 (bilinear interpolation)



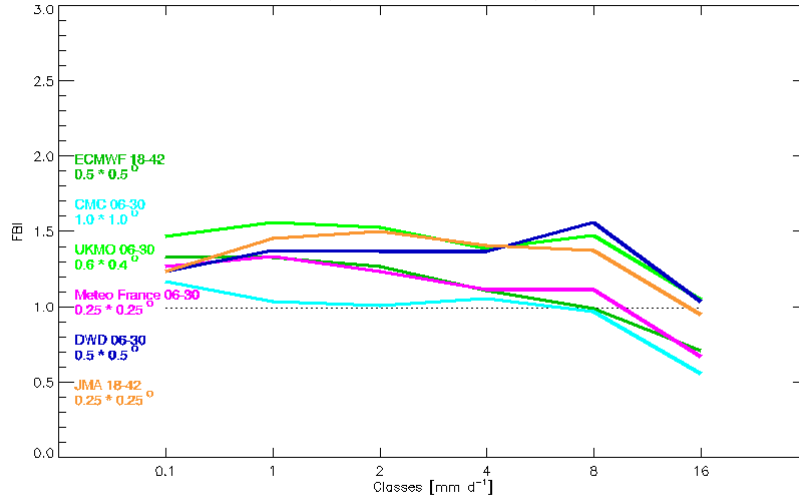
Period: 01.December 2007 till 28.February 2008
(bilinear interpolation from four surrounding points)



FBI day 1 Winter 2007/2008 (area mean over 1° * 1°)



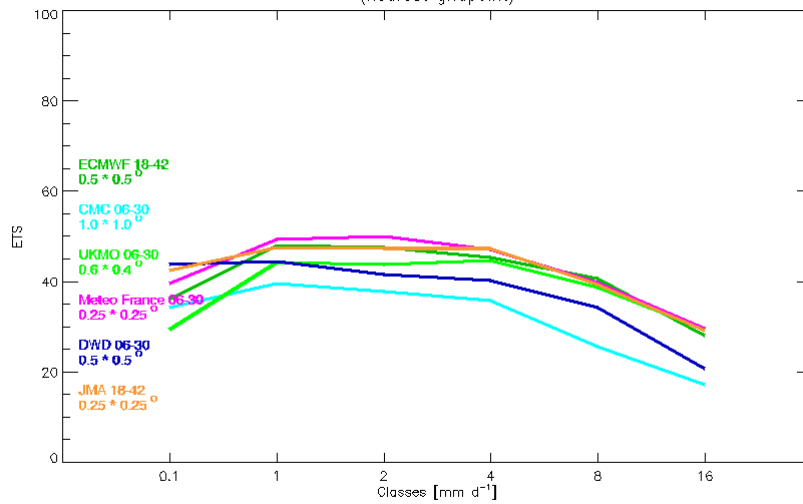
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



ETS day 1 Winter 2007/2008 (nearest gridpoint)



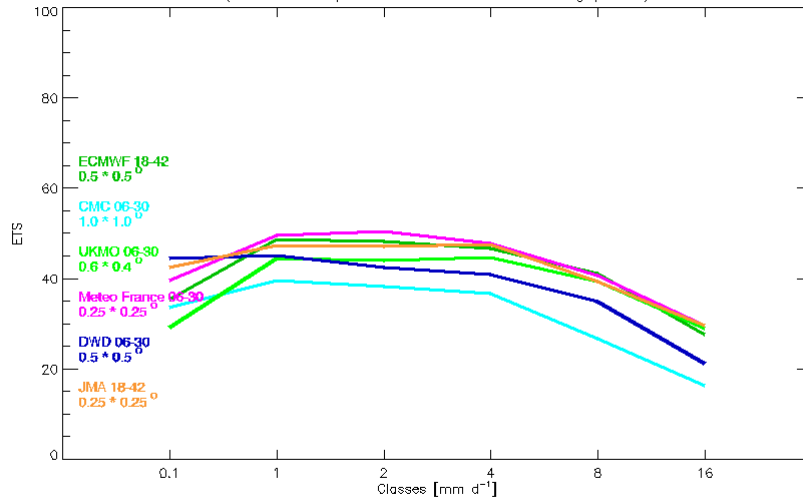
Period: 01.December 2007 till 28.February 2008
(nearest gridpoint)



ETS day 1 Winter 2007/2008 (bilinear interpolation)



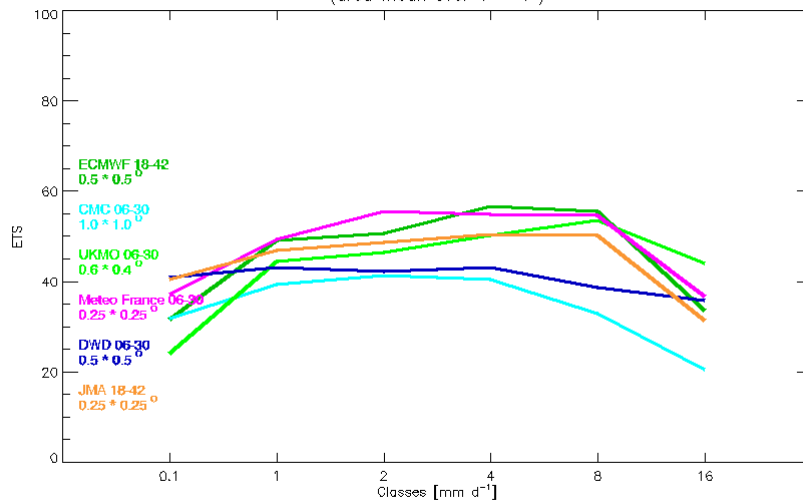
Period: 01.December 2007 till 28.February 2008
(bilinear interpolation from four surroundig points)



ETS day 1 Winter 2007/2008 (area mean over 1° * 1°)



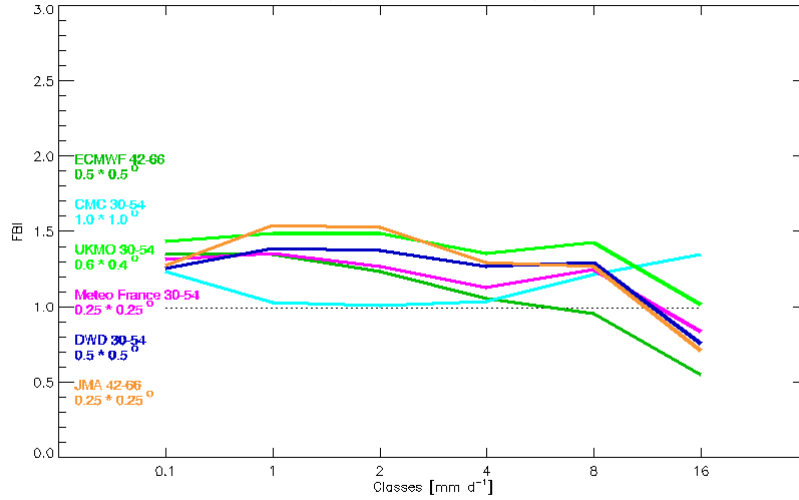
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



FBI day 2 Winter 2007/2008 (area mean over 1° * 1°)



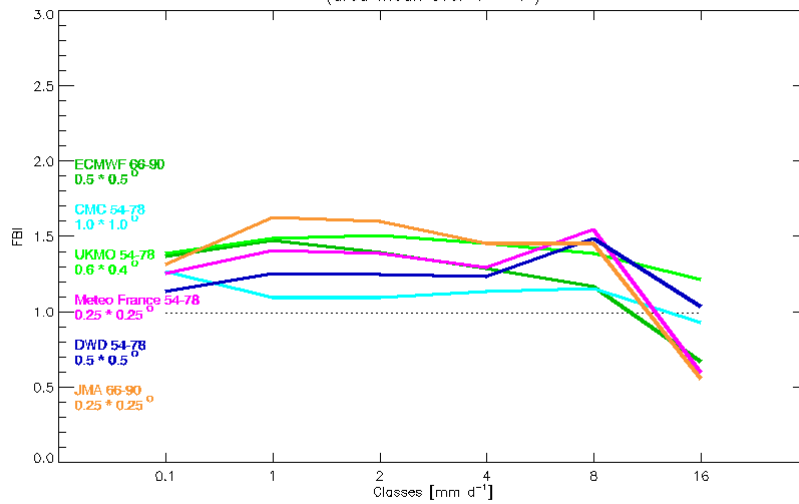
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



FBI day 3 Winter 2007/2008 (area mean over 1° * 1°)



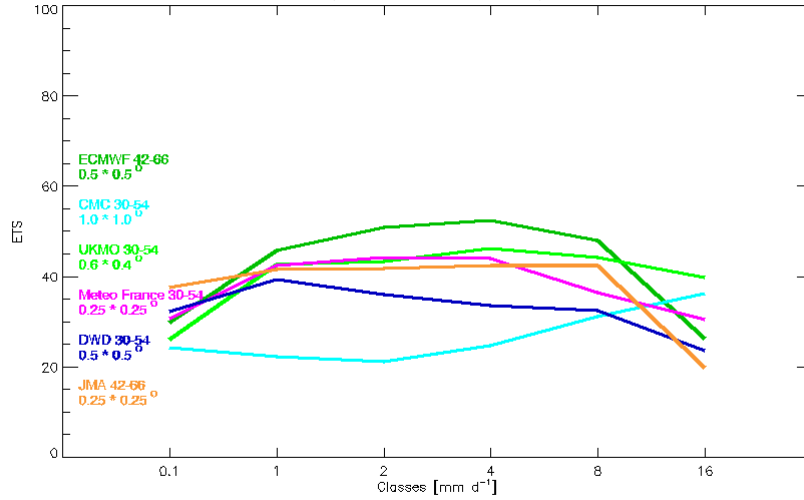
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



ETS day 2 Winter 2007/2008 (area mean over 1° * 1°)



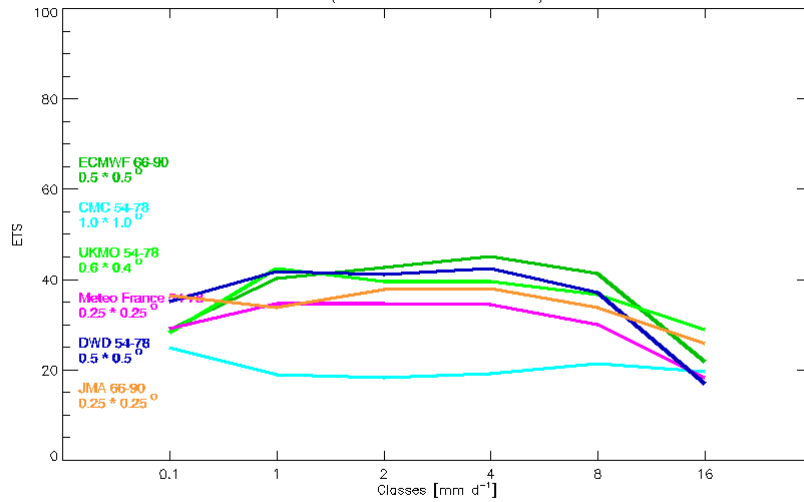
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



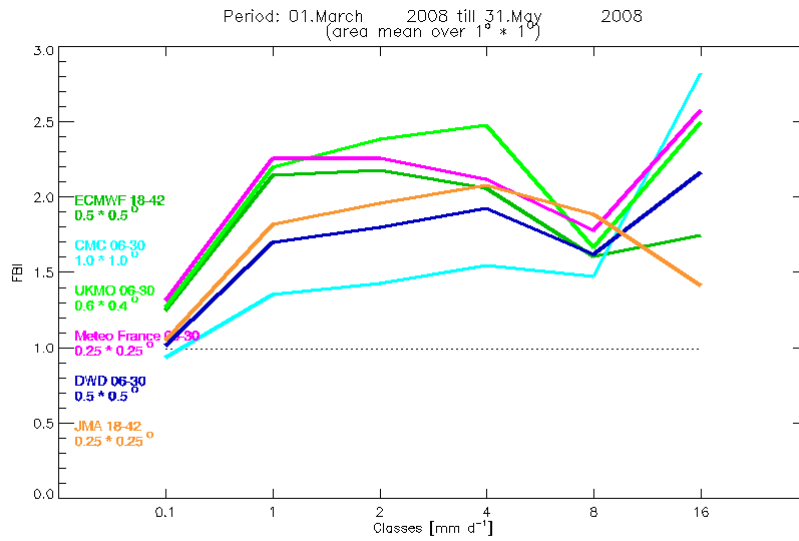
ETS day 3 Winter 2007/2008 (area mean over 1° * 1°)



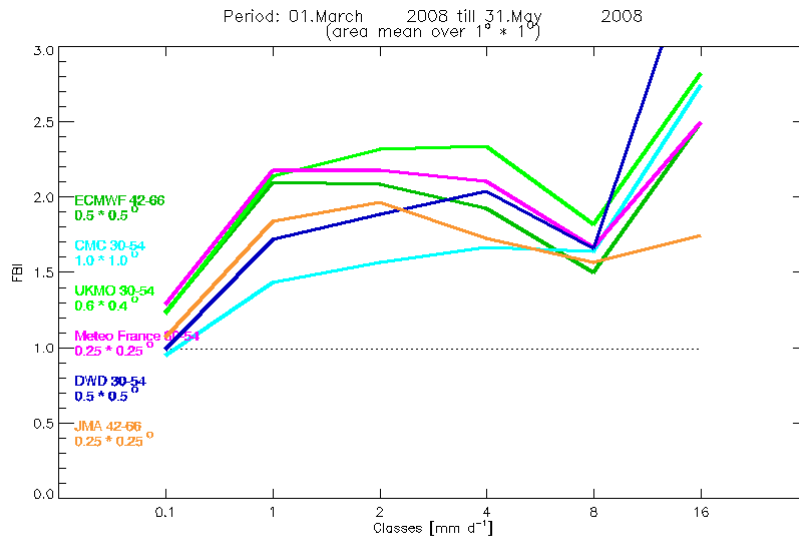
Period: 01.December 2007 till 28.February 2008
(area mean over 1° * 1°)



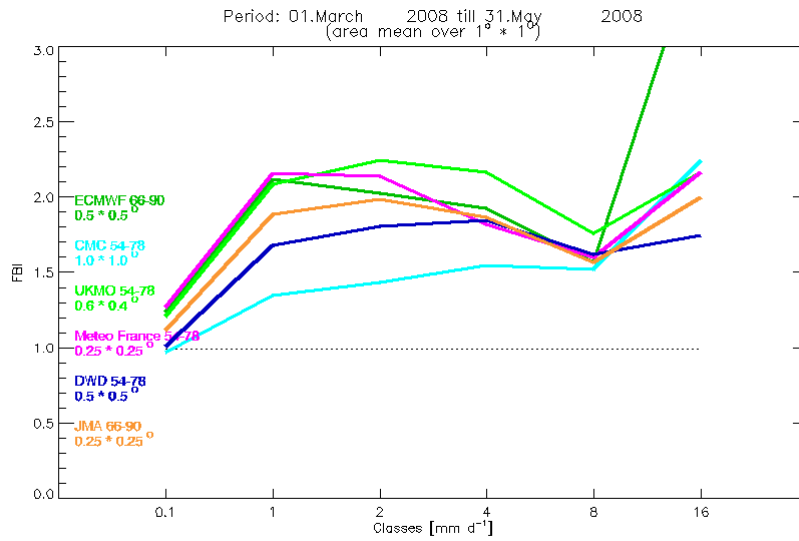
FBI day 1 Spring 2008 (area mean over 1° * 1°)



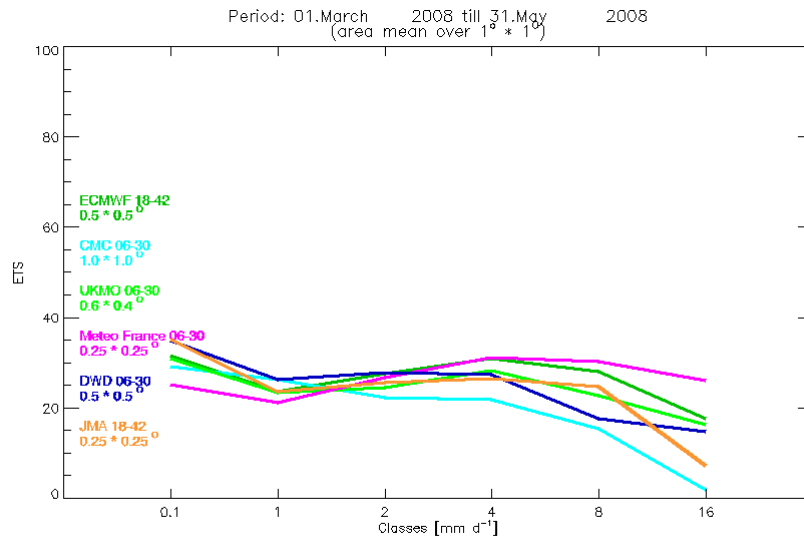
FBI day 2 Spring 2008 (area mean over 1° * 1°)



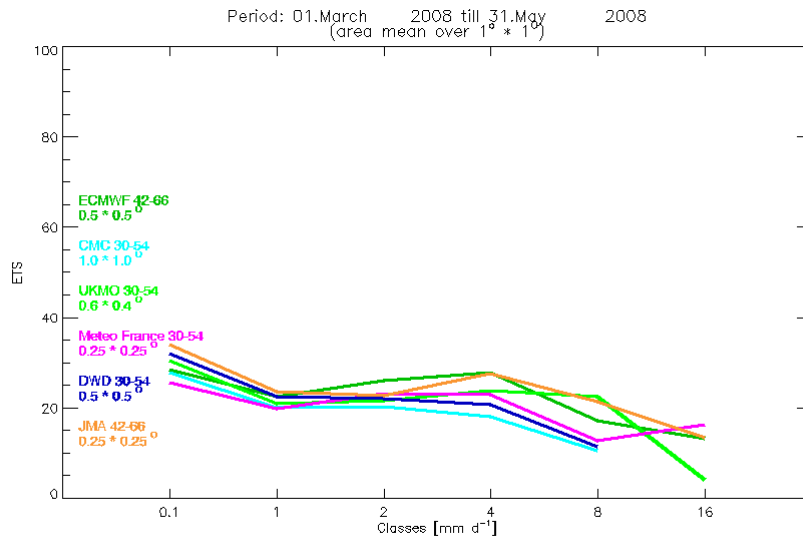
FBI day 3 Spring 2008 (area mean over 1° * 1°)



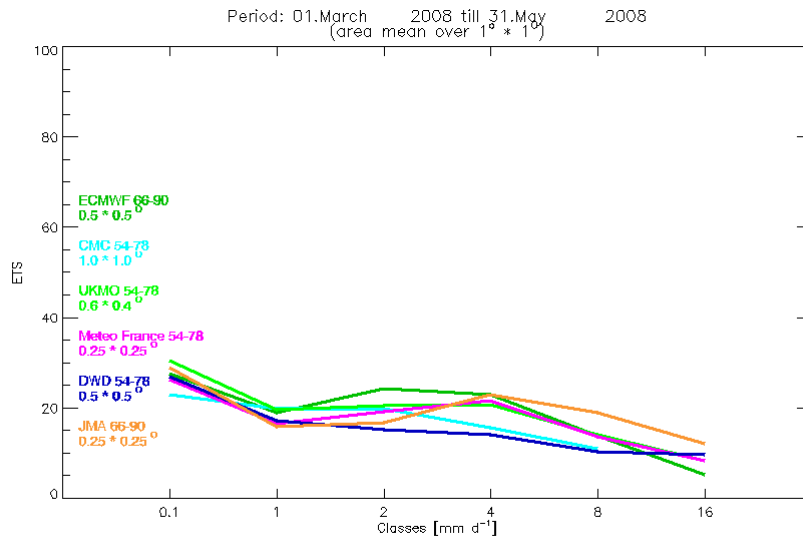
ETS day 1 Spring 2008 (area mean over 1° * 1°)



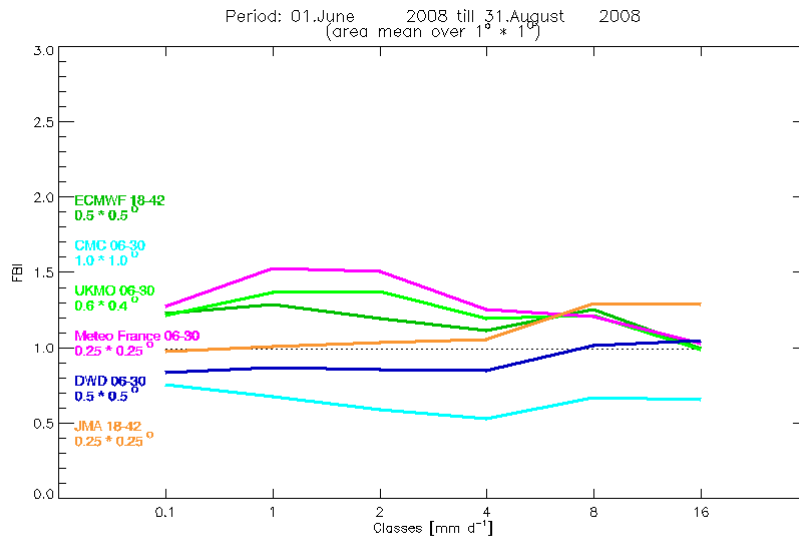
ETS day 2 Spring 2008 (area mean over 1° * 1°)



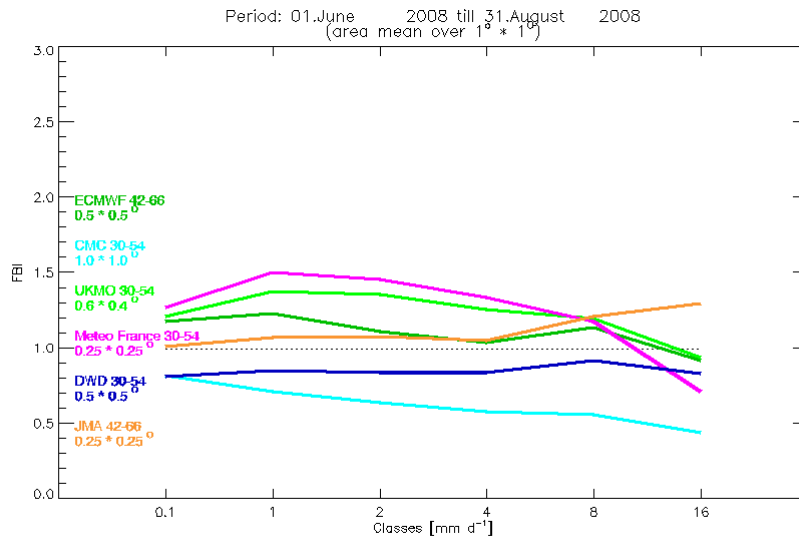
ETS day 3 Spring 2008 (area mean over 1° * 1°)



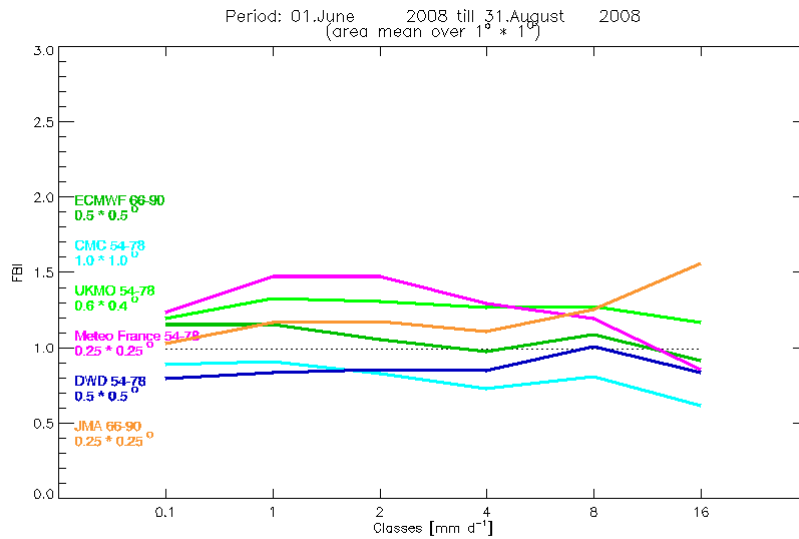
FBI day 1 Summer 2008 (area mean over 1° * 1°)



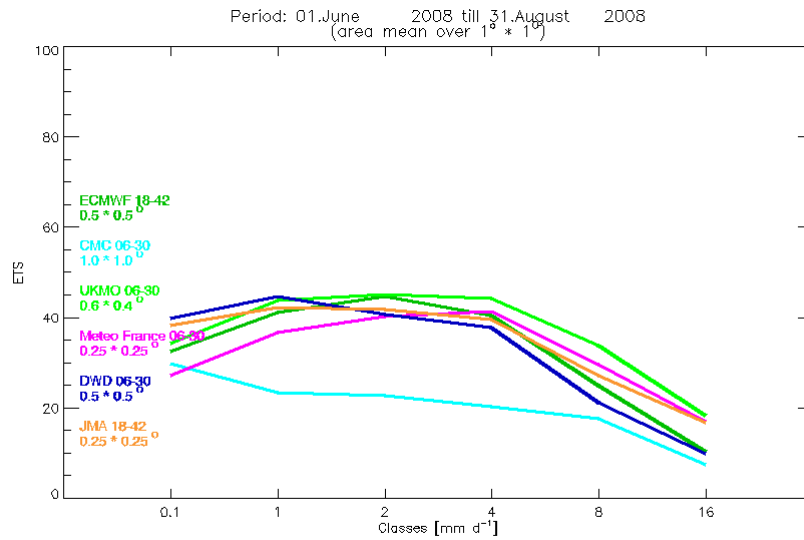
FBI day 2 Summer 2008 (area mean over 1° * 1°)



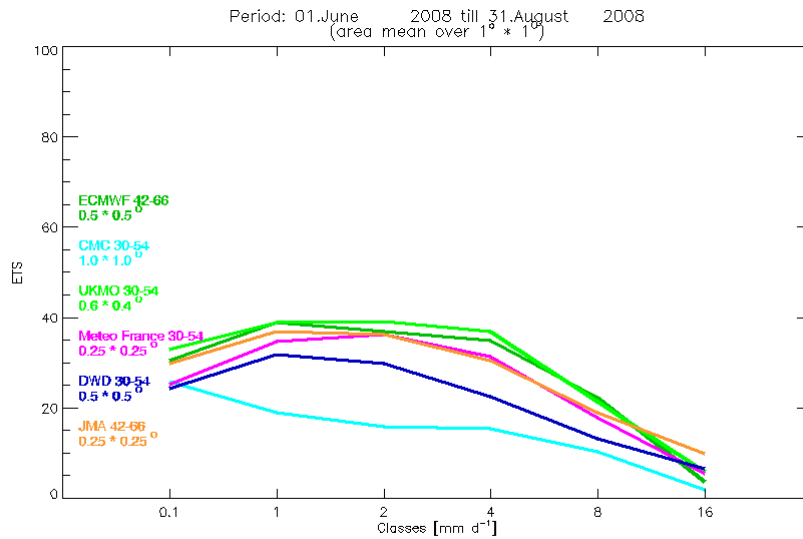
FBI day 3 Summer 2008 (area mean over 1° * 1°)



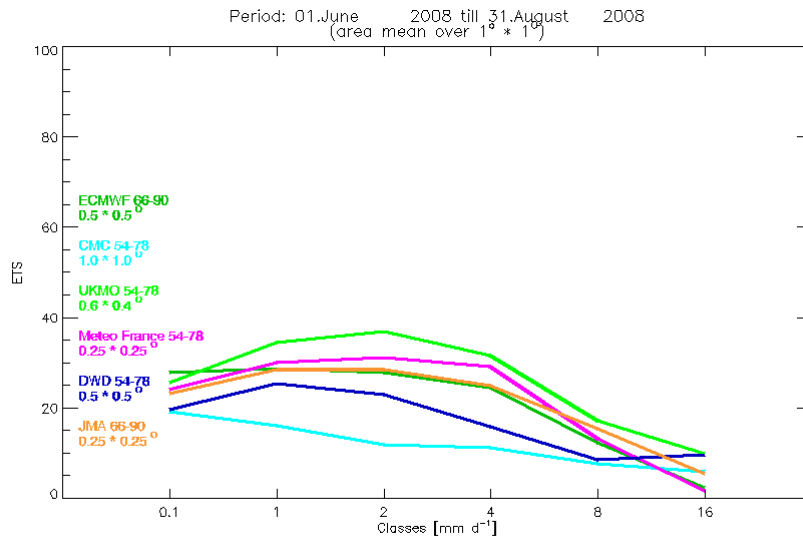
ETS day 1 Summer 2008 (area mean over 1° * 1°)



ETS day 2 Summer 2008 (area mean over 1° * 1°)



ETS day 3 Summer 2008 (area mean over 1° * 1°)



Conclusions 1



- Frequency biases are generally greater than 1 for low and medium precipitation amounts during winter time. High precipitation amounts are in generally underestimated.
 - ▶ For verification using nearest GP and bilinear interpolation FBI's show a maximum for values of 1mm/day.
 - ▶ For verification using area means the dependency of FBI on precipitation amounts is not so strong although high precipitation amounts are also underestimated.
- ETS's for verification using nearest GP and interpolated forecasts show best results for models with the highest resolutions.



Conclusions 2



- Best models for the short range forecasts during winter time (when looking at ETS) are (in alphabetical order)
 - ▶ ECMWF
 - ▶ JMA
 - ▶ Météo France
 - ▶ UK MetOffice
 - ▶ For day 3 DWD is among the best models.
- For summer time (when looking at ETS and day 1) most models show similar results with
 - ▶ advantages for DWD and JMA for low precipitation amounts
 - ▶ advantages for ECMWF and UK MetOffice for medium precipitation amounts
 - ▶ advantages for ECMWF, Météo France and JMA for high precipitation amounts
 - ▶ For day 2 ECMWF and UK MetOffice, for day 3 ECMWF are the favourites.

