Status of satellite data assimilation at ECMWF

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ECMWF

Highlights of enhanced data usage in 2008-10

New instruments

- Metop GRAS
- NOAA-19 HIRS/AMSU-A/MHS (→ 7.20)
- DMSP SSMIS / Coriolis Windsat (→ 7.47)
- FY-3A MWTS, MWHS, IRAS, MWRI
- Envisat MERIS

Better exploitation of data

- IASI water vapour and ozone channels, cloud affected radiances (→ 2.8, 7.19, 7.39, 7.50)
- Consistent cloud detection across all IR sounders
- AMSU-A/MHS derived land surface emissivity
- Variational bias correction for ozone, total column water vapour
- RTTOV-9

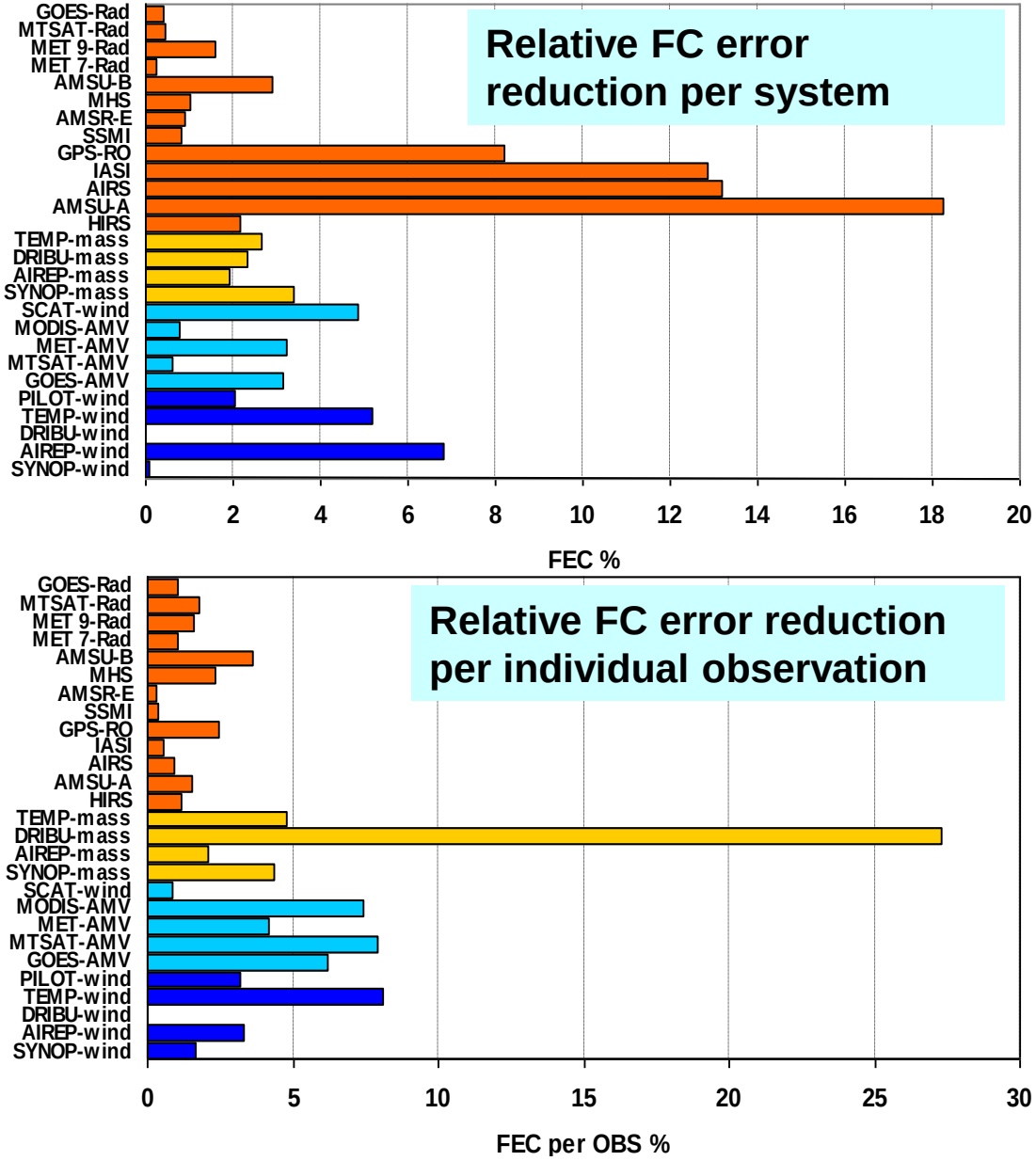
New techniques

- All-sky microwave radiance assimilation (→ 7.33)
- Principle component radiative transfer (RTTOV), assimilation (→ 7.28)
- Spatial error covariances for IR/MW sounder radiances (→ 7.45)

Projects

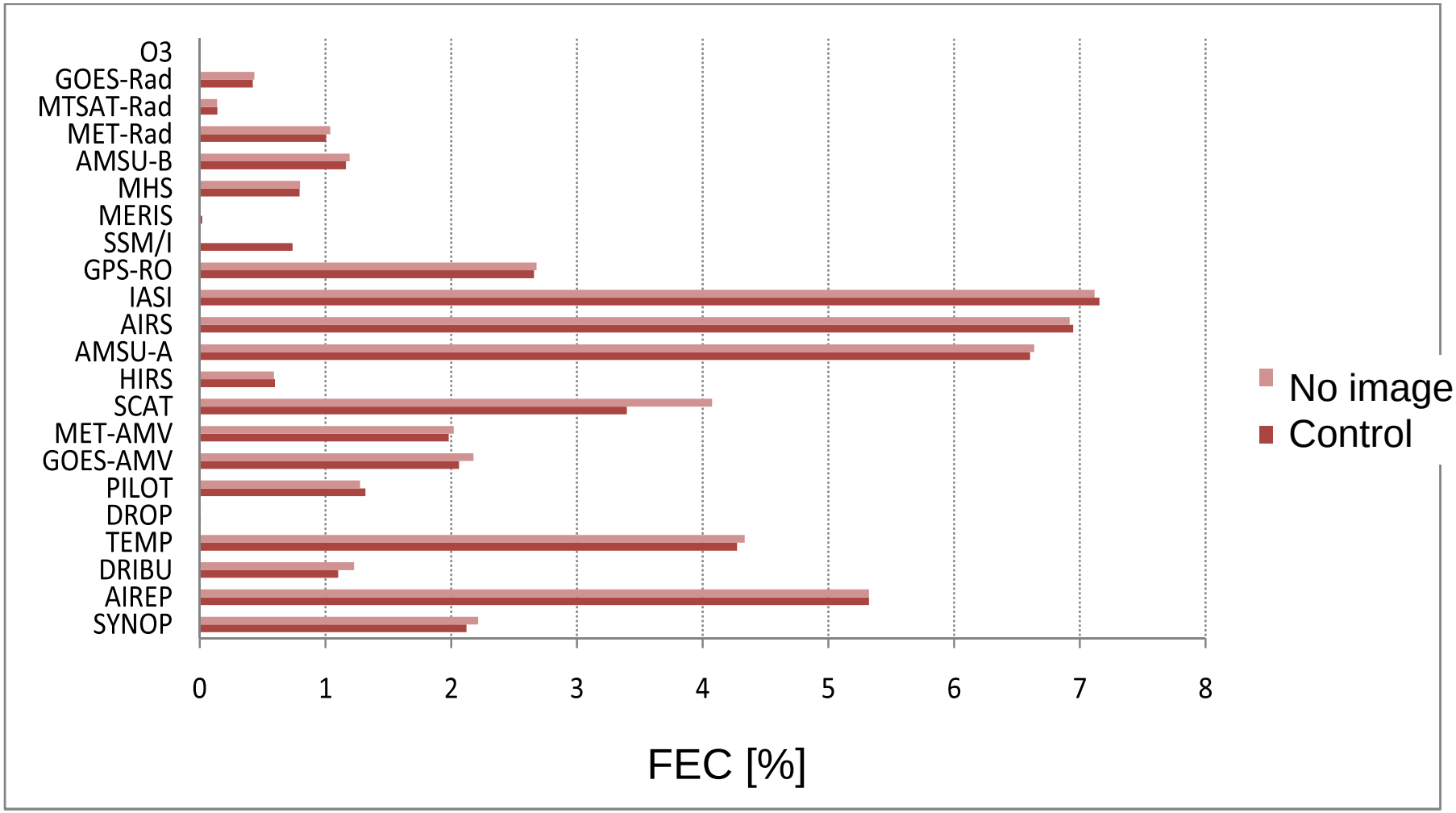
- MACC, ADM, SMOS, EarthCARE, Post-EPS (→ 9.2)

Impact assessment with Forecast Sensitivity to Observations (FSO)



Relative contribution of observing systems (top) as well as individual observations (bottom) to 24-hour forecast error reduction averaged over September-December 2008.

FSO with changing observing system - Imagers



Impact of removing all-sky microwave imager assimilation (SSM/I, AMSR-E). Note little impact on sounders and conventional observations but big impact on scatterometers.

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