Comparison of MetOp IASI Cloud Products for cloudy radiances assimilation

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IASI data are assimilated in clear conditions at many operational meteorological centres, providing good impact on forecast skill.

However, more than 80% on the whole globe, are covered by clouds. All the centres began to handle these data.

The first step is to detect and characterize the clouds in the footprint of the sounder.

We perform an intercomparison of the cloud products of 10 different processing schemes for the same observations a 12 hour global acquisition on 18 November 2009.

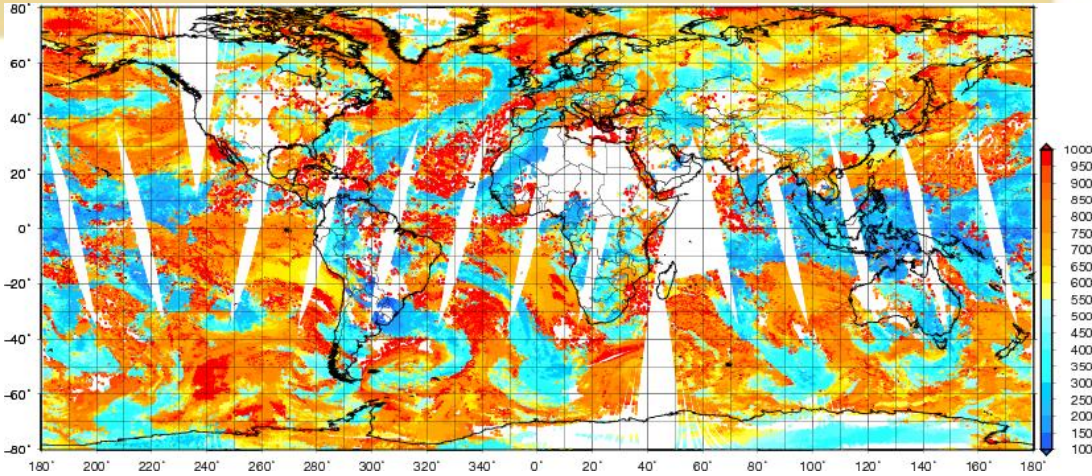
Thanks to all participants!

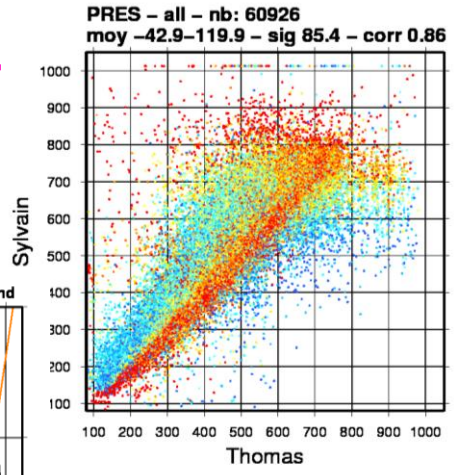
Poster # 33

Comparison of MetOp IASI Cloud Products

Cloud products comparison:

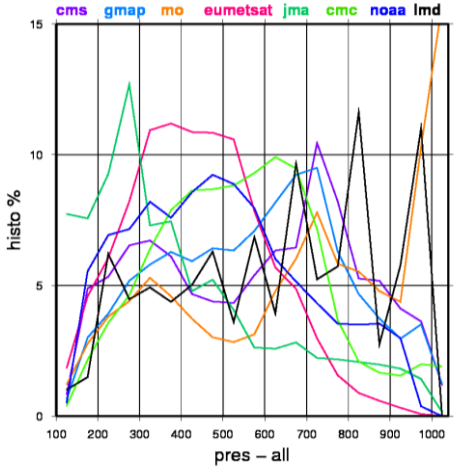
- Cloud Pressure maps and scatter plots
- Effective amount differences
- Distribution of cloud layers
- …

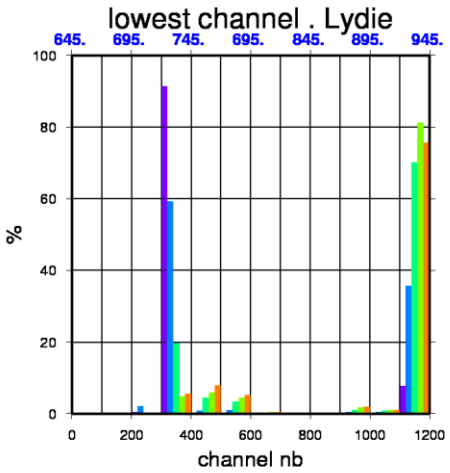


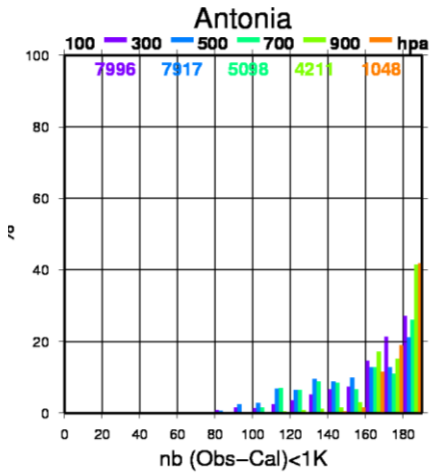


Impact on use of cloudy channels:

- Nb of channels with (Btcal – Btobs) <1K
- Lowest assimilated channels







Comparison of MetOp IASI Cloud Products.

Main conclusions:

The main meteorological structures are well retrieved by all the schemes but the cloud heights can be very different.

Cloud detection ability is coherent for all the schemes.

In spite of different retrieval methods, Met Office, LMD and CMS outputs are close. GMAP and CMC exhibit similar behaviors, linked to similar retrieval methods.

The occurrence of complex situations with multi-cloud layers is about 30% in this study. The difference between the 2 layers in the spot is often large. The agreement between the schemes depends on the complexity of the situation.

The NOAA scheme is able to detect and characterize very high thin clouds above lower clouds. These cases are detected by CMS but not characterized.

To take into account several cloud layers allows to better simulate the observation with a forward radiative transfer model

Most forward models do not calculate cloud microphysical properties and the poor simulation of the observation for high level cloud layers have a large impact in the capacity of assimilating these situations.