

# IASI Radiance Monitoring Assistant

## Operational Monitoring of IASI radiances at EUMETSAT

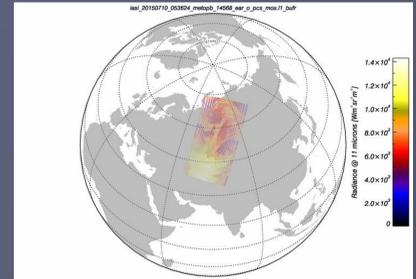
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Monitoring of the products from the Infrared Atmospheric Sounding Interferometer (IASI) instruments currently flying on both Metop platforms is performed routinely at EUMETSAT using a variety of methods.

The tool presented in this poster allows to rapidly visualize the quality of the products and to perform inter-comparisons. It currently generates plots showing times series of on-board and on-ground processing quality flags, the radiances monitoring, inter-comparisons with different instruments like AVHRR, CrIS and the second IASI. Additional checks has been added to follow the IASI Level 0 products quality giving information on the instrument and on the on-board processing. The IASI L1 Regional products coming from HRPT station measurements are also checked.

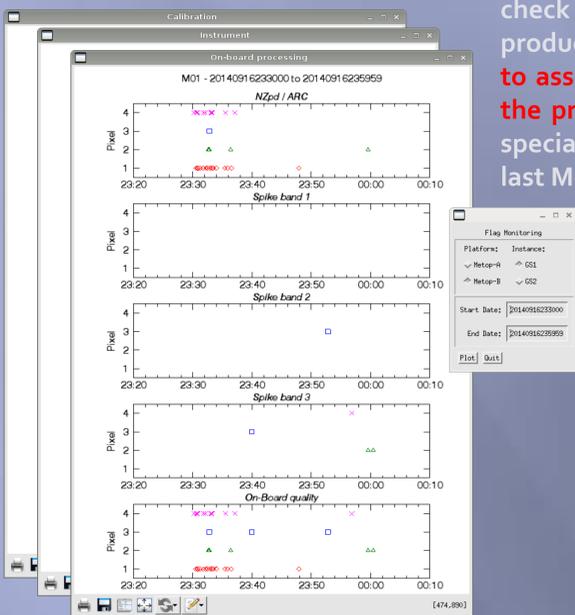
### Regional Level 1 products Check

IRMA contains some additional tools to check more than the operational IASI products produced in the ground segment at EUMETSAT. The figure on the left shows an example of one IASI channel showing the surface/clouds, measured at the regional HRPT station close to Moscow.



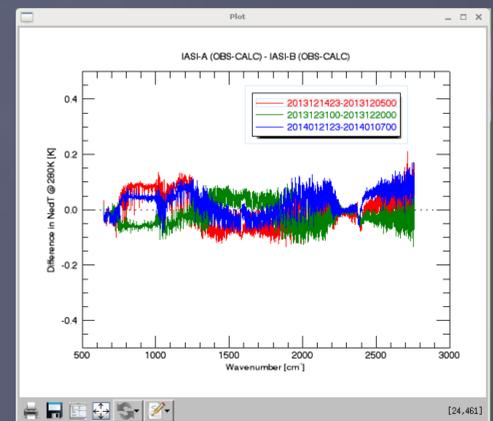
### Level 1 - Quality Check

The IASI monitoring tool allows a quick check of 14 quality flags of the level 1 products over a given period. This is used to assess in few minutes at the quality of the products in case of problems or after special operations, like recently for the last Metop-A/IASI ice decontamination.



### Inter-Comp - IASI-A/IASI-B (OBS-CALC)

The operational monitoring of IASI allows performing inter-comparisons between the two instruments currently flying. Because there are no direct collocations (both Metop are flying on the same orbits, separated by ~50 minutes), this is done using double differences. Initially developed during IASI-B commissioning, this comparison is now part of the routine monitoring. It is in particular systematically done when on-board or on-ground configuration updates of the level 0/1 processor are taking place. Only spectra taken by night, over sea, when the scene is clear and between -60 and 60 degrees latitude are used.



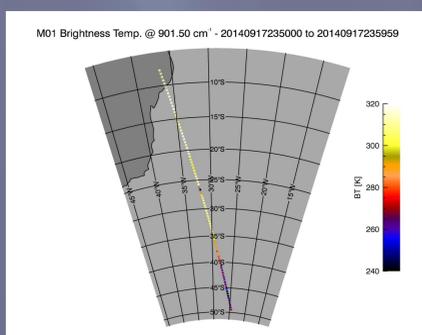
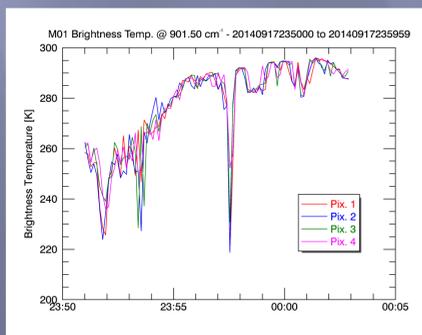
The difference in NedT at 280K, presented below, remains between  $\pm 0.1$  K (which is the specification), which shows a good radiometric consistency between the two IASI instruments.

### Level 0 - Quality Check

The monitoring has been extended in 2015 to the level 0 quality check to be able to track quality at instrument level and to have information on the on-board processing. This is the case for example of the Corner Cube speed check.

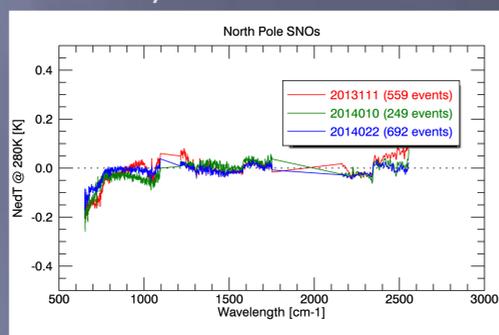
### Level 1 - Radiances Monitoring

The radiance measured by IASI can be plotted as time series and/or maps, per pixel and/or per line of sight and for a pre-defined series of channels. This permits a quick detection of unexpected measurements and to assess the inter-pixel radiance consistency.



### Inter-Comp - IASI/CrIS

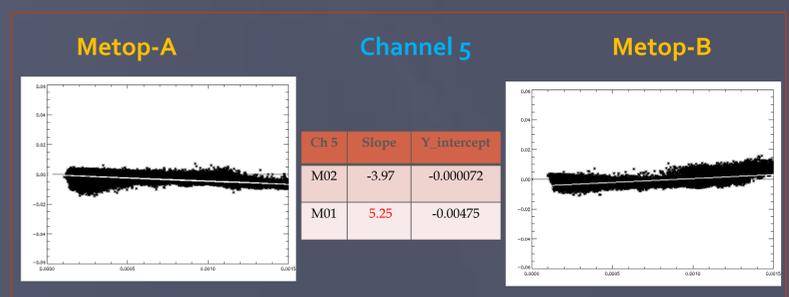
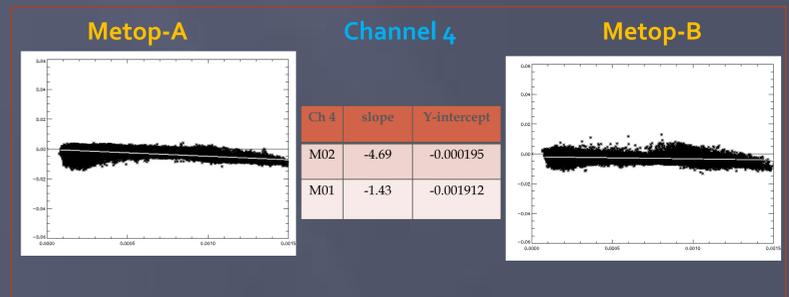
The IASI monitoring tool is used to perform inter-comparisons between IASI and onther instruments products like Suomi/NPP CrIS. Indeed, the spectral characteristics of CrIS and IASI are comparable and we have taken advantage of this property to set up a monitoring of the quality of the CrIS products disseminated by EUMETSAT.



Direct comparisons over Simultaneous Nadir Observations (SNOs) as well as indirect comparisons using the double differences technique provide us with an assessment of the relative consistency of both instruments. The analysis of the IASI and CrIS SNO differences in the North Pole, over three past months is presented, showing that both instruments are radiometrically consistent within less than 0.1 K (reaching 0.2K at the beginning of the spectrum).

### Inter-Comp - IASI/AVHRR

The IASI monitoring tool can also be used to plot systematic comparisons between pseudo AVHRR channels and IASI. This is shown below for example for two channels and both Metops, during three days, from 1<sup>st</sup> to the 3<sup>rd</sup> of September 2014. This particular example emphasizes the difference of channel 5 on Metop-B compared to the 3 others. This information is currently in the process of being disseminated to the users community to allow a possible radiance correction.



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