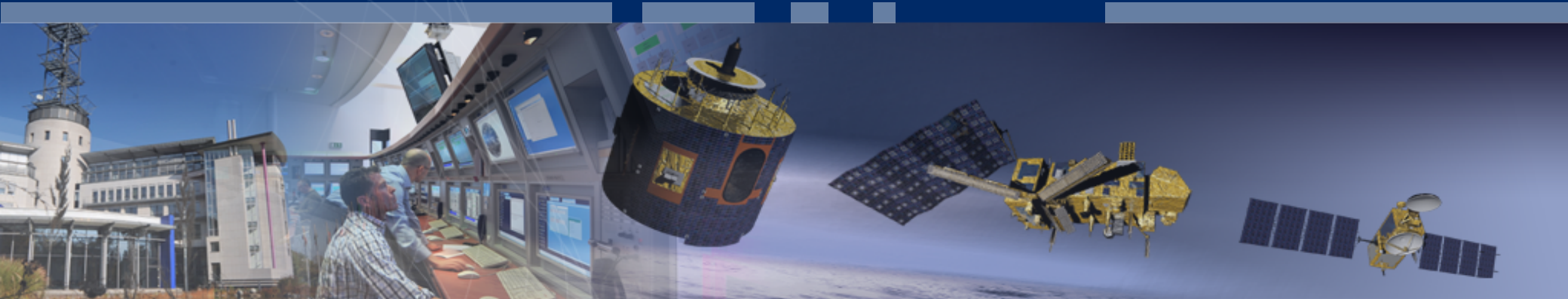




EUMETSAT

Monitoring weather and climate from space



Sensor Specific Error Statistics for Metop/IASI



Sensor Specific Error Statistic for Metop/IASI

- SSES scheme for IASI L2 (version 5)
 - Primarily based on TCWV from IASI L2 sounding products
 - www.eumetsat.int > browse documents
 - “Single Sensor Error Statistic scheme for IASI L2P SST”, *EUM/MET/DOC/11/0142 – version 1b*
 - Scheme slightly updated with v5.2.3 (March 2013)
- New SSES scheme for IASI L2 (version 6) currently under validation
 - Based on observational uncertainty estimations from the new 1D-VAR SST retrieval



V5: Use of IASI water vapour

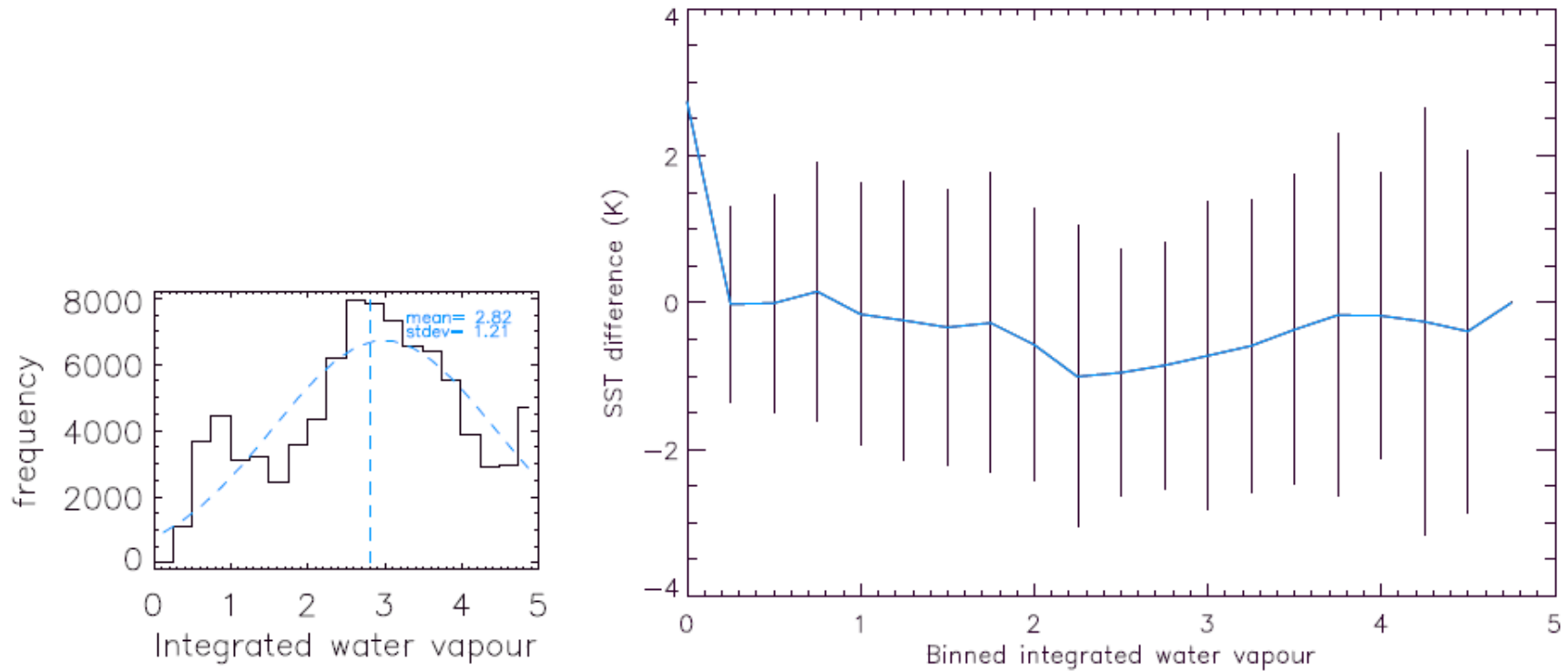


Figure 2: a) (left) Histogram of integrated water vapour; b) (right) IASI minus climatology versus integrated water vapour; both for 1 November 2008



V5: Quality levels definition

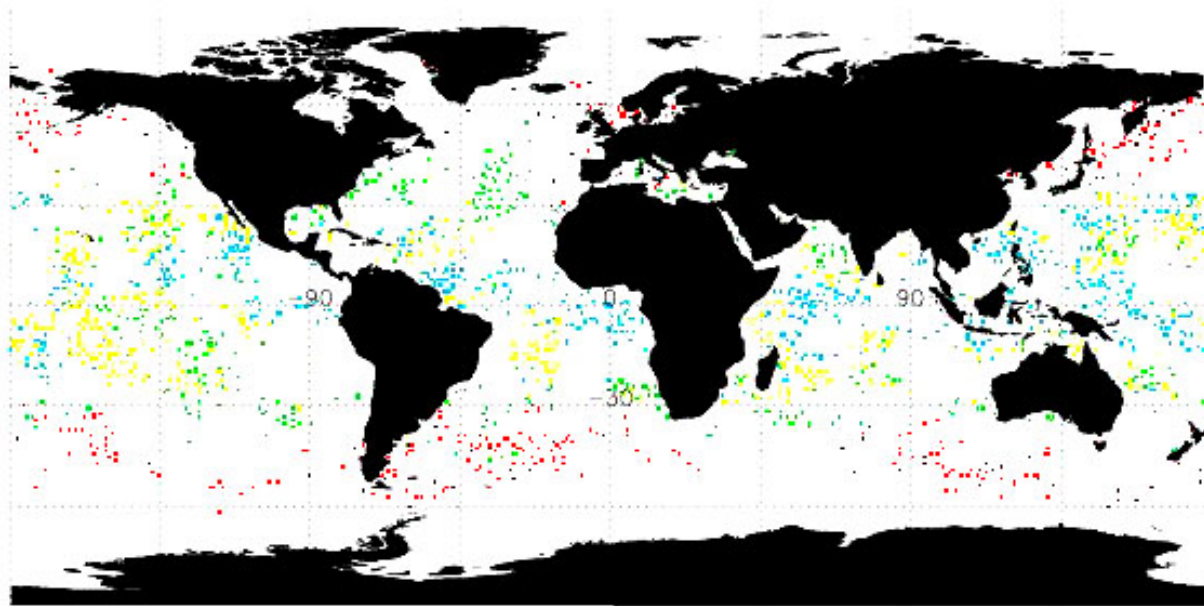
Quality level	Data quality	Comment
0	No data	No data or land
1	Bad	Sea and cloudy
2	First useable quality	Sea
3	Fair	Sea
4	Good	Sea
5	Best quality	Sea

Quality level is assigned for each observation according to TCWV values



V5: SSES quality levels for 1st November 2008

SSES Quality Level 20081101



red=5, yellow=4, green=3, blue=2

Quality level 2 (worst quality) in blue are shown mainly towards the tropical regions with higher water vapour levels.



V5: First SSES LUT for IASI

Quality level	SSES bias (K)	SSES standard deviation (K)
2	-0.24 (-0.30)	0.42 (0.67)
3	-0.46 (-0.52)	0.35 (0.58)
4	-0.39 (-0.45)	0.36 (0.47)
5	-0.34 (-0.36)	0.41 (0.43)



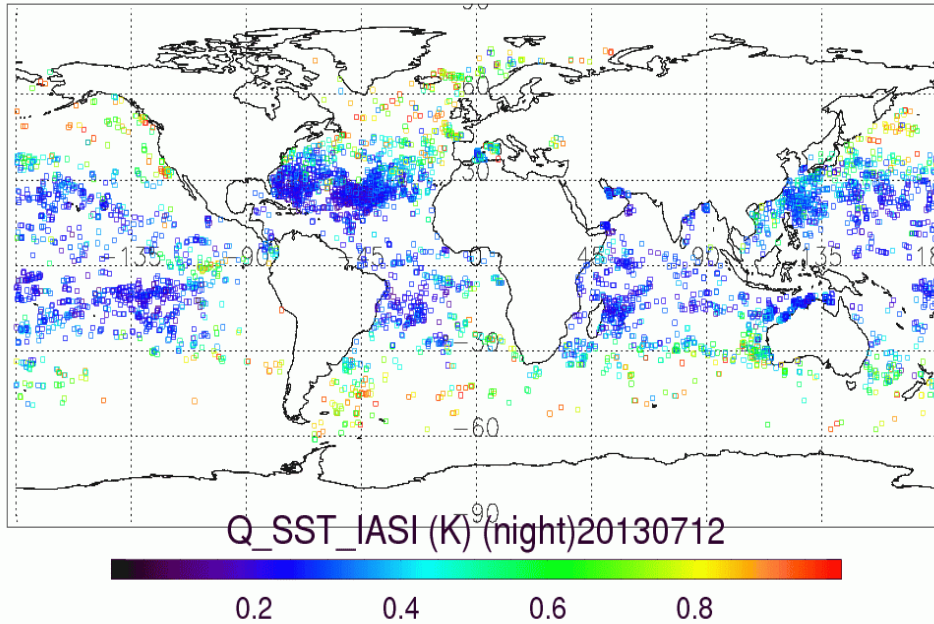
V5.2.3 (March 2013)

- SSES redefined to be in line with OSI-SAF quality level definitions
- Quality levels 2 to 5 aligned with OSI-SAF where quality level 2 is now defined as cloudy or bad.
- Application of new TCWV (Total Column Water-Vapour) thresholds.

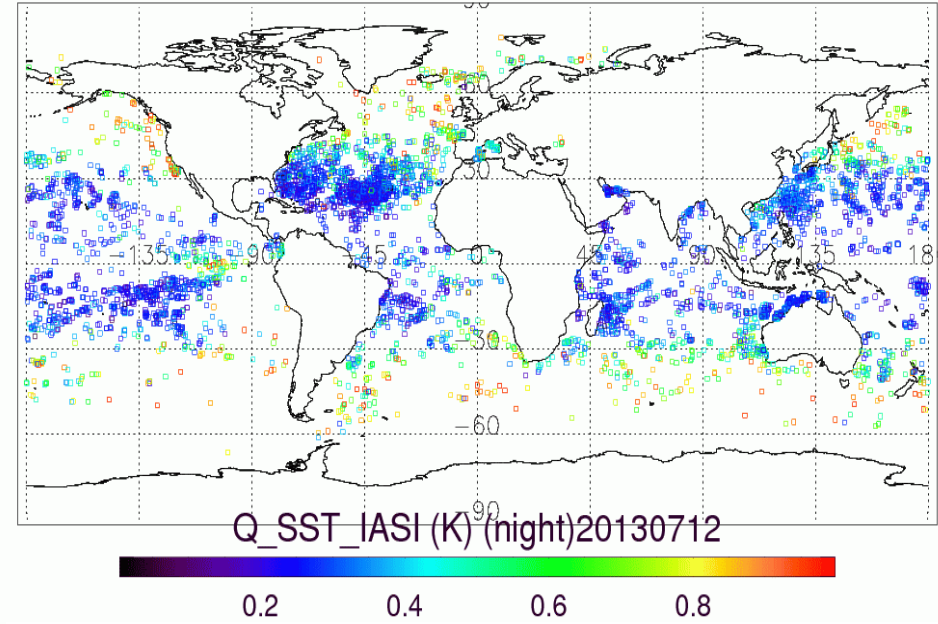


V6: SST uncertainty (Q_SST_IASI) for night-time data

Metop-B:



Metop-A:



Surface temperature uncertainty (Q_SST_IASI) derived from 1D-VAR



V6: Assigning quality levels (**insert histogram**)

A new Sensor Specific Error Estimate (SSES) scheme has been derived, using the information contained in Q_SST_IASI. The GHRSSST Quality Levels are defined as followed:

Quality Level 2: Q_SST_IASI greater than 0.7K

Quality Level 3: Q_SST_IASI between 0.5 to 0.7K

Quality Level 4: Q_SST_IASI between 0.3 to 0.5K

Quality Level 5: Q_SST_IASI less than 0.3K



V6: Preliminary SSES LUT

- SSES LUT for version 6 (test version available using 1D-VAR data from March to April 2014)
- The standard deviations follow broadly in line with the values for the Q_SST_IASI. Slightly different biases are observed across the quality levels (lowest for QL5)



	Metop-A			Metop-B		
	Mean (K)	St. Dev. (K)	N	Mean	St. Dev. (K)	N
QL2	-0.24	0.53	187	-0.27	0.44	126
QL3	-0.28	0.45	154	-0.24	0.58	110
QL4	-0.16	0.45	532	-0.18	0.45	322
QL5	-0.09	0.33	529	-0.08	0.37	271

Table 3. IASI – buoy SST global mean differences for each quality level (Sensor Specific Error Statistics), over the period 18th March to 30th April. These are calculated using the criteria equivalent to where both IASI and AVHRR QL >= 3 above.



Future options

- Include Q_SST_IASI in IASI L2P specification as an experimental field
- Further work on SST retrieval
- Flagging of aerosol conditions
- Summary of time-scales:
 - V5: IASI L2Pcore available from March 2011
 - V5.2.3: 6th March 2013
 - V6: Planned for ~July 2014