

Geometric performances of IASI

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Sounder geolocation principle

- In order to geolocate the sounder measurements, IASI features an infrared imager (IIS) that covers a spectral band similar to AVHRR channels 4 and 5.
 - Sounder ↔ IIS ↔ AVHRR
- The position of each pixel of the sounder within the IIS raster is stable and can be determined very precisely (offline, at the IASI TEC). Correlation between IASI pseudo-channel (covering the same spectral band as IIS) and IIS (downsampled to the same resolution as the sounder)
- . The position of each IIS raster within the AVHRR raster is computed (L1). Projection of IIS image into AVHRR raster based on a prior model Correlation between the resampled IIS image and AVHRR channel 4 An offset guess is used in low contrast zones (when the correlation fails). AVHRR products are geolocated by AVHRR L1B processing.

Position of sounder pixels within IIS raster

Preliminary assessment of sounder geolocation





IASI sounder geolocation within 1-2 km of the reference coastline (requirement: 5 km)

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Position of IIS raster within AVHRR raster

ed for the sounder-IIS 062 IIS in





Fine correlation of IIS and AVHRR





Average column offsets across-track (left) and along-track (right)



Benefit of offset guess (activated in July 2007)







ed with a 7×7 wi



ts (µ1.5=-0.02, @1.5=0.15 [AVHRR pixels])

Line shifts (Hau= 0.05, Cu= 0.20 [AVHRR pixels])

eviations of about 0.2 AVHRR pixels (mainly measur eem random. Near the edges of the swath, there is a sy ons between the HS images. Due to the symmetric natu eges, so the impact on the geolocation of the sounder pi ge column and line shift elation window). The var up to \pm 0.5 AVHRR pis are zero, with s ations in the colu along-track junct ddle of these IIS in

Summary

• The positions of the sounder pixels within the IIS raster are precisely determined and very stable along the orbit and over time (variations < 0.1 mrad)

. The IIS raster is very accurately localised w.r.t. to the AVHRR raster (average offset < 0.1 AVHRR pixels across- and along-track)

• Overall offset between the IASI sounder and AVHRR well inside specification (i.e. < 0.3 AVHRR pixels)