**Geometric performances of IASI**

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**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).

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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.
- The position of each pixel of the sounder within the IIS raster is very stable w.r.t. AVHRR (long term evolution < 0.1 AVHRR pixel).
- The position of each IIS raster within the AVHRR raster is computed (L1).
- The position of each pixel of the sounder within the IIS raster is precisely determined and very stable along the orbit and over time (variations < 0.1 mrad).
- AVHRR products are geolocated by AVHRR L1B processing.

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**Preliminary assessment of sounder geolocation**

- Sounder geolocation is within 1-2 km of the reference coastline (requirement: 5 km).
- The correlation coefficients remain very high (generally > 0.999).
- There is no significant temporal evolution of the offsets.
- No significant orbital evolution has been observed.

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**Position of sounder pixels within IIS raster**

- IIS images containing bits of fractional pixels were selected for the sounder-IIS correlation.
- The IIS pixel positions within the AVHRR image are determined below (with mean pixels in the sub-pixel mode).

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**Position of IIS raster within AVHRR raster**

- Average column offsets across-track (left) and along-track (right).
- Average line offsets across-track (left) and along-track (right).
- IASI IIS very stable w.r.t. AVHRR (long term evolution < 0.1 AVHRR pixel).

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**Fine correlation of IIS and AVHRR**

- Fine correlation of IIS and AVHRR.
- Peak-to-peak variations < 0.1 mrad.
- No significant temporal evolution of the offsets.
- No significant orbital evolution has been observed.

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**Benefit of offset guess (activated in July 2007)**

- Geolocation of the IASI sounder pixels
  - without use of offset guess
  - with offset guess set to zero when the correlation fails
  - with estimated offset guesses used as offset guess
- It should be noted that the consequence of inaccurate offsets in low contrast areas are negligible.

*Geolocation of the IASI sounder pixels*

*Summary*