EUMETSAT

Monitoring weather and climate from space

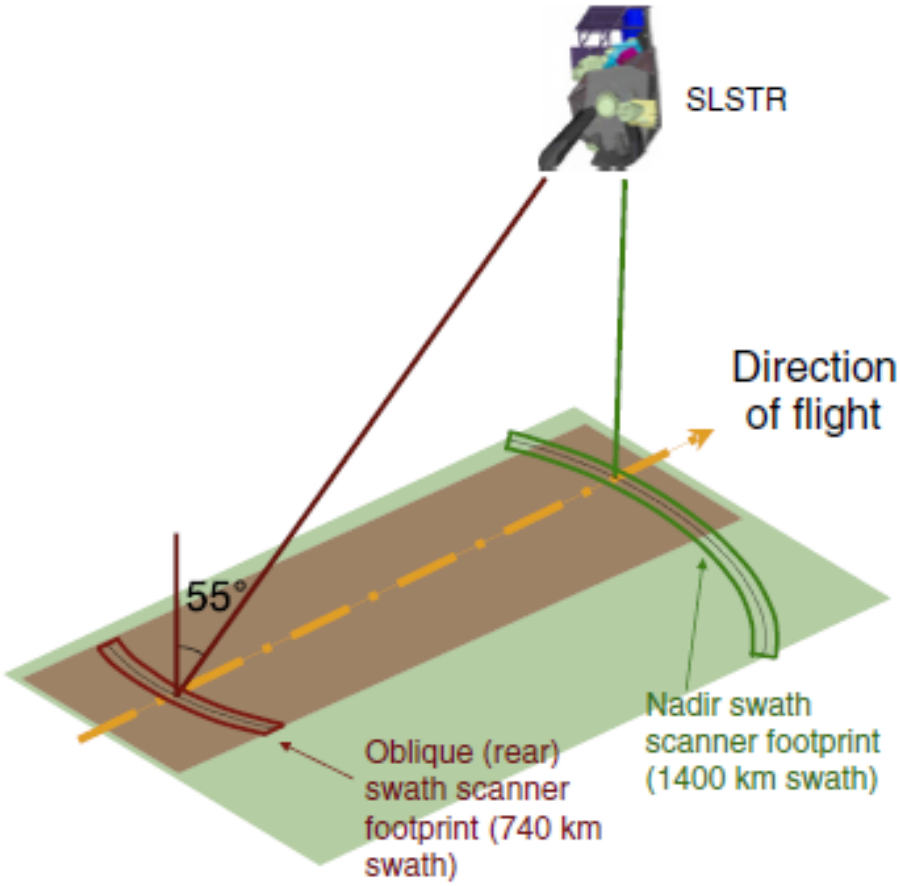
Issues related to L2P specification for dual-view sensors

EUMETSAT

Sentinel-3 Sea and Land Surface Temperature Radiometer (SLSTR)

Copernicus Sentinel-3 SLSTR:
planned for launch summer 2015

L2P contains best/choice SST based on selection according to day/night, dual/single view, stratospheric aerosol/ desert dust/no aerosol



EUMETSAT

SST selection

Complex selection of SST algorithm across scan/orbit

Normal:

D3-N3-D2-N2 (night)

D2-N2 (day)

Desert dust:

D3-D2-N3-N2 (night)

D2-N2 (day)

Stratospheric aerosol:

D3-D2-N3R (night)

D2 (day)

desert dust	aerosol	swath centre	nadir day	oblique day	algorithm
0	0	0	0	0	N3
0	0	0	0	1	N3
0	0	0	1	0	N2
0	0	0	1	1	N2
0	0	1	0	0	D3
0	0	1	0	1	N3
0	0	1	1	0	D2
0	0	1	1	1	D2
0	1	0	0	0	N3R
0	1	0	0	1	N3R
0	1	0	1	0	none
0	1	0	1	1	none
0	1	1	0	0	D3
0	1	1	0	1	N3R
0	1	1	1	0	D2
0	1	1	1	1	D2
1	0	0	0	0	N3
1	0	0	0	1	N3
1	0	0	1	0	N2
1	0	0	1	1	N2
1	0	1	0	0	D3
1	0	1	0	1	D2
1	0	1	1	0	D2
1	0	1	1	1	D2
1	1	0	0	0	none
1	1	0	0	1	none
1	1	0	1	0	none
1	1	0	1	1	none
1	1	1	0	0	D3
1	1	1	0	1	D2
1	1	1	1	0	D2
1	1	1	1	1	D2

Table 4.8 The dependence of the choice of SST algorithm on the presence of desert dust or stratospheric aerosol, the across-track swath position and the solar geometry in the two instrument views.

Overview of Sentinel-3 SLSTR products (1)

- GHRSST L2P
  - Contains "best" or "choice" SST. Retrieval will vary across scan/orbit.
  - Other GHRSST fields including: SSES, quality levels, wind-speed, aerosol, sea-ice etc.
  - Also contains optional/experimental field:
    - Satellite zenith angle
    - Brightness temperatures from nadir view only
    - Nedt
    - SST theoretical uncertainty

Overview of Sentinel-3 SLSTR products (2)

- Single algorithm SSTs
- netcdf4, but *not* GHRSST format
- Internal products
- Under current plans will only available to Cal/Val users (including S3VT)

  - Dual-view 2-channel (11, 12micron): D2
  - Dual-view 3-channel (3.7, 11, 12 micron): D3
  - Nadir 2-channel (11, 12micron): N2
  - Nadir 3-channel (3.7, 11, 12micron): N3
  - Nadir 3-channel stratospheric aerosol robust: N3R

How should the multiple algorithms be stored?

- Extension on current 32 bit experimental data to 64 bit to allow all SST algorithms + uncertainties to be stored?
  - Could just store 'other' view e.g. Best (dual or nadir) *plus* dual or nadir SST in experimental field section
  - Not possible to store all 5 configurations for every pixel, so considerations on efficiency

- Keep L2P 'light', only keep 'best' SST, and no experimental data
  - Preferred option from MyOcean2 and DAS-TAG (feedback December 2013)
  - Single algorithm products currently only planned to be available to Cal/Val users (not in GHRSST format)

Current configuration

- GHRSST L2P for SLSTR will be the only product released to users operationally
- The L2P will be kept 'light' following user feedback: "best SST"
- Single algorithm products available to Cal/Val users but not in GHRSST format

Future:

- To identify mechanisms for supplying single algorithm SST products to users e.g. Multiple L2P's for each retrieval type?

- Any feedback?