EUMETSAT SLSTR sea surface temperature multi-mission matchup database

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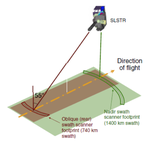
Requirement on SLSTR SST product performance: absolute accuracy should be better than 0.3 K and its temporal stability better than 0.1 K/decade. Comparison against in situ reference measurements using SST multi-mission matchup database (MMDB) is performed to confirm this requirement. We are providing here status and information about generated SLSTR SST MDB used to perform this activity.



Satellite SST

SLSTR-A/B SST + **SLSTR L1** (EUMETSAT)

AVHRR-B SST (OSI-SAF)

IASI-B SST (OSI-SAF)

VIIRS SST (PODAAC OSPO)

In situ SST

Copernicus in situ service
Drifting buoys, Argo, moored

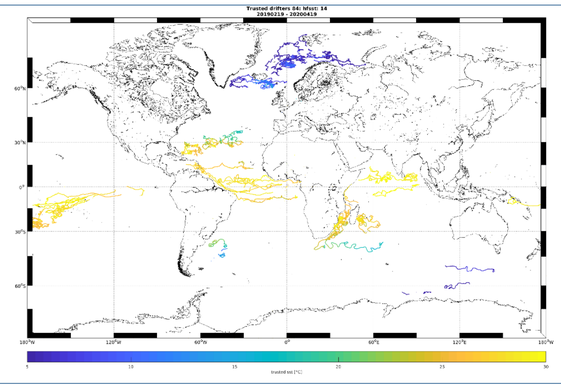
Radiometers FRM
Ship4sst (ISAR, M-AERI, SISTeR)

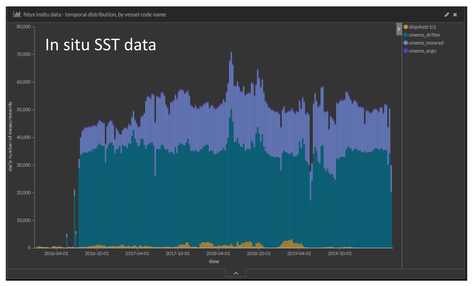
TRUSTED

Saildrone (to be included**)**

TRUSTED

- Full access to all trusted variables:
  - Digital/analog SST
  - High-frequency measurements
  - Additional variables from raw data
- Check HRSST talk #011 from Gary
- Soon available to S3VT users as additional AUX file:
  e.g. s3a_sl_2_wst____o_nr_cmems_drifter_aux_trusted_20200330000000_20200330060000.nc

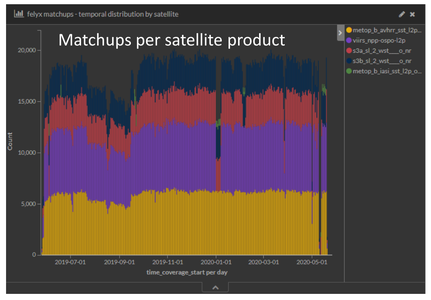




SST MMDB (felyx)

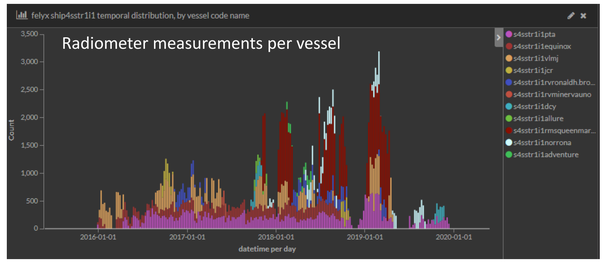
SLSTR-A/B MDB

IASI-B MDB
AVHRR-B MDB
VIIRS MDB (exp)



STATUS

- Migrated (07/2019) to internal EUM infrastructure
- Running (daily – with 1 week delay)
- Revised radiometer dataset (ship4sstr1i1)
  - Added new variables
- Processed
  - S3A Repro MDB: 2016/08-2018/04
  - S3A NRT MDB: 2018/04-2018/12
  - S3A/B NRT MDB: 2019 - today
- Consolidated NRT MDB format
- Fixed issues
  - Matchup generation for orbits (NTC)



Next

Short term (>>1 month)

- Radiometers (ship4sstr1i1): reprocess 01/2019 – today
  - Currently only ISAR available from 04/2019-
  - Include saildrone for the same period
- MDB format specification (TEN) + product notice

- MDB in S3A early commissioning (05-07/2016)
- S3A/S3B tandem phase (for S3B) – all in situ types
- RTM (RTTOV) and FKC (SST adjustments)
- On line analysis

Long term (> 1 y)

Reliability, robustness, performance, installation, monitoring, analysis, …

SLSTR MDB format

- split in core MDB + 4 aux MDBs (netcdf files):
- WST + WCT, MET, RBT-i, RBT-a
- Per in situ type
  - Drifters (in NRT) every 6 h
  - Argo, moored, radiometers: 1 per day
- Variables:
  - <parent><variable>
    (e.g. "s3a_sl_2_wst____o_nr__lat")
  - All L2p variables and selected L1
- Extracts
  - 21x21 or 401x401 (ship4sstr1i1) pixels in i-grid (1 km)
  - a-grid (500 m) is twice the size
  - MET data: only TCWV is full extract, others are center pixel only
- In situ history around matchup

SLSTR MDB naming convention

Path

/mdb/*<mdb_name>*/*<YYYY>*/*<DDD>*/

<mdb_name>:
operational:
mdb_eum_slstr-sst_nrt_ope
mdb_eum_slstr-sst_nrt_ope_aux
reprocessed:
s3a_slstr_eum_rep_l2wst_mdb
s3a_slstr_eum_rep_l2wst_mdb_aux

Filename

CORE:
<prod_name>_<insitu_type>_<start_date>_<stop_date>.nc
AUX:
<prod_name>_<insitu_type>_aux_<aux_name>_<start_date>_<stop_date>.nc
<prod_name>: *s3a_sl_2_wst____o_nr,*
s3b_sl_2_wst____o_nr
<insitu_type>: *cmems_drifter, cmems_argo,*
cmems_moored, ship4sstr1i1
<aux_name>: *met (meteorological parameters)*
rbt-a (500 m VIS/NIR channels)
rbt-i (1 km IR channels)
wct (SST algorithms: N2, N3, D2, D3)

Examples:
s3a_sl_2_wst____o_nr_cmems_argo_20200519000000_20200520000000.nc
<prod_name>_cmems_argo_aux_met_20200519000000_20200520000000.nc

SLSTR MDB Access

Access available to all Sentinel-3 Validation Team (S3VT) members.

To become S3VT member please submit proposal (s3vt.org) and request access to SLSTR MDB. For more information send email to Anne (Anne.Ocarroll@eumetsat.int).

Further information https://slstr.eumetsat.int
Sentinel-3 SLSTR Marine User Handbook