OSI SAF MSG/SEVIRI activities

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Outline

- Operational OSI SAF processing
  - Products
  - Methods
  - Validation
- MSG/SEVIRI reprocessing activity
- Future work
Operational OSI SAF MSG/SEVIRI processing

Products:

- **METEOSAT10**
  - L3 (0.05° resolution)
  - 60S-60N and 60W-60E
  - Hourly

- **GOES13-East**
  - L3 (0.05° resolution)
  - 60S-60N and 135W-15E
  - Hourly
Operational OSI SAF MSG/SEVIRI processing

Methods:

- Classical NL algorithm:
  \[ SST = (a + bS_\Theta)T_{11} + (c + dS_\Theta + eT_g)(T_{11} - T_{12}) + f + gS_\Theta \]
- Algorithm correction (Le Borgne et al. 2011): Remove regional and seasonal biases.
- Quality level and SSES

Diagram:

- \( T_b \) observed
- \( T_b \) simulated and adjusted
- Split-window algo
- \( SST_{\text{raw}} \)
- \( SST_{\text{corrected}} = SST_{\text{raw}} - \text{simulated error} \)
- \( SST_{\text{guess}} \) (OSTIA) + ECMWF \((T, q)\)
- Simulated error = \( SST_{\text{sim}} - SST_{\text{guess}} \)
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Validation:

Matchup dataset: Drifting buoys SST available through the GTS (with a 5-day delay)

- $\Delta t < 3$ hours
- Buoy located in the centre of a 5x5 pixel box
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Importance of the bias correction:

Night-time SST difference with respect to drifting buoys over 3 years (2011-2013) JFM

Before algorithm correction

After algorithm correction

Marsouin et al., 2015
MSG/SEVIRI reprocessing activity

- Period of the reprocessing: 2004-2012
- Input data:
  - Level 1.5 MSG/SEVIRI data reprocessed by EUMETSAT
  - Simulation of brightness temperature for each pixel. RTTOV:
    - ECMWF ERA-interim temperature and water vapour profiles
    - OSTIA SST
  - Climate SAF reprocessed cloud mask
  - ERA CLIM in situ dataset for validation purpose
- Workfiles: simulations, SDI, NLSST, ...
- Final product (OSI-250):
  hourly, -60 to +60°N and E, regular lat/lon grid 0.05°
MSG/SEVIRI reprocessing activity

OE vs algorithm correction: Preliminary study
- Co-location dataset of operational Meteosat09 product
- One year of comparison (2012)

Algorithm correction (QL5)  Optimal estimation (QL5)
Reprocessed Saharan dust index:

- Night-time computation following (Merchant et al., 2006)
- Day-time interpolation
- Smoothing radiometric noise

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Future work

- MSG reprocessing:
  - Implement bias correction
  - Implement OE
  - Perform a detailed validation
  - Delivery scheduled early 2017 at the latest

- Operational chain
  - Implement lessons learnt from the reprocessing (e.g., SDI, OE?)
  - New instruments: GOES-R(?), MTG, Metop-SG,...
  - Process Meteosat-8 data over Indian Ocean?
Thank you