Report from JMA for GHRSST-XX

Japan Meteorological Agency

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Introduction (1)

product sst 20180521

- ## Global SST Product (MGDSST)
  - Global, 0.25° resolution, Daily (L4 SST)
  - Input data:
    - AMSR2 and Windsat from JAXA
    - AVHRR GAC/NOAA-18, 19, MetOp-A from NOAA/NESDIS
    - AVHRR LAC/NOAA-18, 19, MetOp-A from JMA/MSC
    - In-situ (buoys and ships) from GTS
  - Included in the GMPE system
  - Prompt/Delyed analysis and Reanalysis
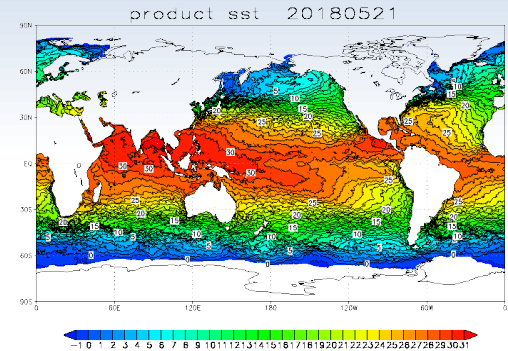
- ## Regional SST Product (HIMSST; HIgh resolution Merged satellite and in-situ data Sea Surface Temperature)

Daily SSTs 21 May 2018.

  - Daily, 0.1 ° resolution for the western North Pacific
  - Operation started in Nov. 2016
  - Input: Himawari-8 in addition to data used in MGDSST
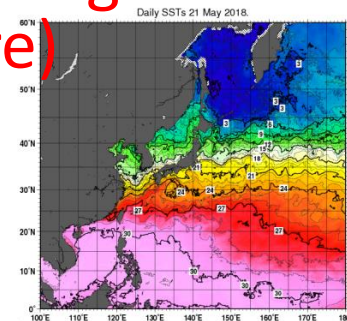
Introduction (2)

- ## Satellites

    – JMA operates geostationary
    satellites: Himawari-8, -9

- ## Himawari SST

    – 0.02 ° horizontal resolution

    – Time interval of the product has changed since late March 2019.
    hourly -> every 10 minutes.

    – Same SST retrieval algorithm as used by JAXA based on a quasi-physical
    algorithm (Kurihara et al. 2016)

    – Data period: from Aug. 2015 onwards

    Y. Kurihara, H. Murakami, M. Kachi, Sea surface temperature from the new
    Japanese geostationary meteorological Himawari-8 satellite, Geophys. Res. Lett.,
    43 (2016), pp. 1234-1240
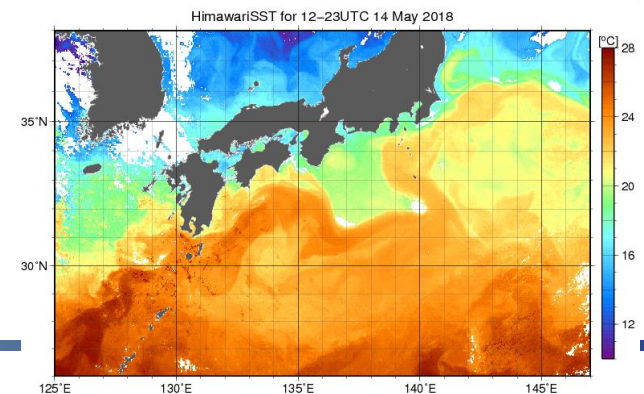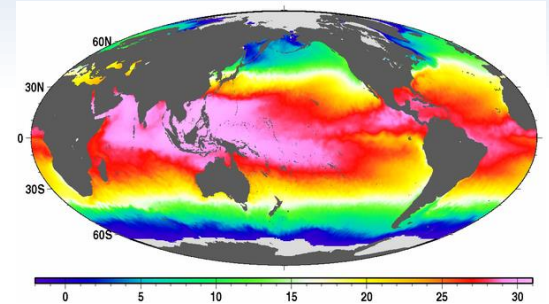
Data availability

- ## MGDSST (L4 product)

  – GDS 2.0 implementation is underway.

  – Available via NEAR-GOOS Database:

    - https://www.data.jma.go.jp/gmd/goos/data/database.html
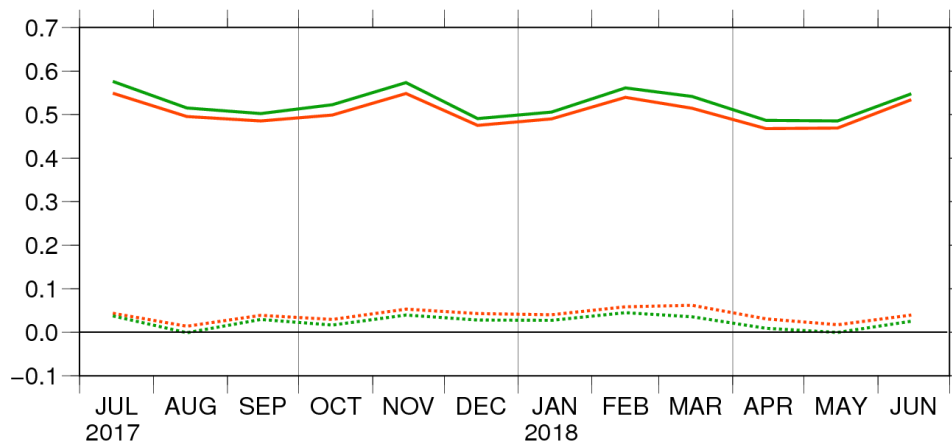   - Text format

- ## HIMSST (L4 product)

  – Available via NEAR-GOOS Database (text format).

Main activities since G-XIX (1)

- We investigated the impact of assimilating NOAA ACSPO VIIRS L3U SST for prompt analysis of MGDSST and HIMSST.

Validation of MGDSST against buoy SSTs

RMSE for Test run is reduced by about 0.02 K in global average.

RMSE：Test ——— Control ———
BIAS ：Test - - - Control - - -

The test run data will be validated in the context of NWP system, and then VIIRS SST will be introduced to MGDSST and HIMSST.

Main activities since G-XIX (2)

- New satellite SST data acquisition (Polar Orbiting Satellites)

  - GCOM-C/SGLI L2P SST provided by JAXA/EORC
    - Spatial resolution 1km for global in HDF format, from Dec 2018
  - NOAA20/VIIRS SST L3U provided by NOAA/NESDIS/OSPO through PDA system
    - 0.02 ° x 0.02 ° resolution for global in GDS2.0 netCDF format
    - ACSPO version 2.60 from Dec. 2018

 => These data will be used for MGDSST and HIMSST analysis.

Main activities since G-XIX (3)

- New satellite SST data acquisition (Geostationary satellites)

  - GOES-16/ABI L3C, L3U SST provided by NOAA/NESDIS/OSPO through PDA system
    - 0.02 ° x 0.02 ° resolution for global in GDS2.0 netCDF format
    - ACSPO Ver. 2.50 L3U from late Feb. 2018, Ver. 2.70 L3C from Apr. 2019

◆ We have a plan to develop 0.1 ° x 0.1 ° global SST analysis as a natural extension of HIMSST. SST data from geostationary satellites such as GOES-16, GOES-17, MSG (MTG) will be used for this analysis.

GOES16SST for 28 May 2019
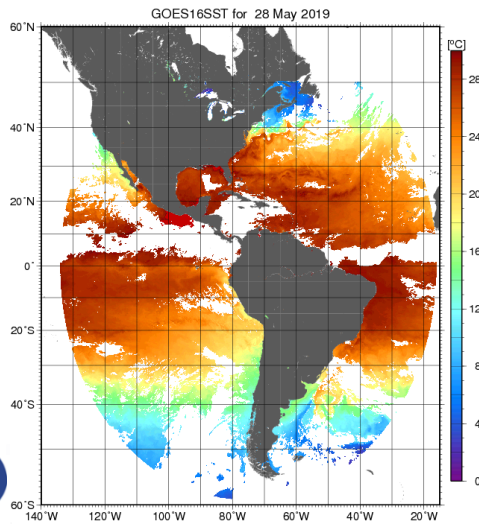
Example figure of NOAA ACSPO GOES-16 SST for 28 May. 2019.

GHRSST
Group for High Resolution
Sea Surface Temperature

cal Agency

Future of GHRSST

- Our ocean data assimilation system (MOVE/MRI.COM) will be higher resolution and use L2P and/or L3 SST products instead of MGDSST (L4).

    => SSES/DV are more important

    => more reasonable bias correction among satellites SSTs will be needed (not based on in-situ or one   standard satellites)

Thank you for your attention