SEPTEMBER 2023

The GHRSST Newsletter

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GHRSST Newsletter – September 2023

Dear GHRSST Community,

It is time for this month's GHRSST Newsletter.

Welcome to our new format for the GHRSST Newsletter. We hope you find this new way of disseminating upcoming events and information relating to GHRSST engaging!

We have an exciting issue for you this month as we gear up for the 24th International SST Users' Symposium and GHRSST Science Team Meeting taking place next month in Ahmedabad, India.

Your GHRSST Project Office

Your Short Practical Guide for GHRSST24

In one month's time, GHRSST will be heading over to Ahmedabad, India for the 24th International SST Users' Symposium and Science Team Meeting.

We are keeping the GHRSST24 event page updated, so be sure to check it out to stay up to date. Here you can find practical information including the venue location for those participating in-person as well as general information related to visas, hotel booking and more. However, to make things easy for you, we will go over some housekeeping points and teasers for the Science Sessions!

Register for Attending GHRSST24 Online

Thank you to everyone who has registered for GHRSST24! The in-person registration has closed, however the registration for attending GHRSST24 online is still open.

Register here: https://www.eventbrite.dk/e/online-international-sst-users-symposium-ghrsst-stm-ghrsst24-tickets-588996774207?aff=oddtdtcreator

Book your Hotel!

For those already registered for attending GHRSST24 in-person, please note that due to a popular World Cup match in Ahmedabad on 15th October, the hotels' rates across the entire city could be exorbitant on that particular day. Recently the match got preponed to 14th October and therefore the rates at Wyndham Hotel (which is the venue where the meeting would be held) on 15th (and also from 16-21 October) are now fixed at INR 6200

+ taxes, especially for the guests attending the meeting. It is therefore advised that the room bookings at Wyndham be made as soon as possible as the hotel may not hold rooms for long at these rates.

The contact details of Wyndham Hotel can be found in the PDF file on this page: https://www.ghrsst.org/ghrsst-news/24th-international-science-team-meeting-ahmedabad-india-ghrsst-xxiv-ghrsst24/

The Program for GHRSST24

We are still working on the final touches of the agenda for GHRSST24. As soon as we have finalized the program, we will communicate this to all participants (both online and in-person). In the meantime, please take note of the overarching program for the International SST Users' Symposium and GHRSST Science Team Meeting.

16 October 2023 – GHRSST International Science Team Meeting (by invitation only)

17 October 2023 – International SST Users' Symposium (all day)

18 October 2023 – International SST Users' Symposium (all day)

19 October 2023 – International SST Users' Symposium (all day)

20 October 2023 – International SST Users' Symposium (until lunchtime). In-person training on GHRSST specified/formatted products will take place during the afternoon (the training is by invitation only)

Are you a Keynote Speaker, Speaker, or Poster Presenter?

All participants delivering a keynote, talk or poster (whether online or in-person) are to provide a pre-recording of their presentation (MP4 file format). The deadline to submit this is **30 September 2023.**

Below you can find an overview of all the requirements for to be submitted by **30 September 2023** based on your role at GHRSST24.

Keynote Speakers

1. PDF of your presentation
2. Pre-recorded video of your presentation (MP4 file format)

Presenters (Talks online and in-person)

1. PDF of your presentation

2. Pre-recorded video of your presentation, maximum 10 minutes (MP4 file format)

Poster Presenters (online and in-person)

1. PDF and JPEG of your poster
2. Pre-recorded video of your poster presentation (MP4 file format)

GHRSST24: International SST Users' Symposium Outline

The symposium will cover six exciting science sessions. Check them out below!

Session 1 – Science applications for operational users of SST in India

This session aims to understand the requirements of SST for operational use in India. The session will explore the spatiotemporal requirements and error tolerance in SST for these applications alongside challenges existing GHRSST products can pose while in use for applications like numerical weather prediction and data assimilation, fine-scale features and thermal front detection, coastal processes, marine heat waves, cyclone track forecasting, tropical cyclone heat potential, marine ecosystem studies and many more. Read the full session description here.

Imranali M Momin will deliver the keynote address from the National Centre for Medium-Range Weather Forecasting (NCMRWF) on the "Impact of satellite-derived sea surface temperature data in the variational assimilation system"

Find the line-up of talks for Science Session 1 **here**.

Session 2 – Processing and product generation

In this session, the goal is to provide a review of state of art processing SST algorithms at different levels (L2, L3, L4) and improvements developed (e.g. cloud masking, noise reduction, application of different new-merged techniques like machine learning) using satellite and in-situ data. Read the full session description **here**.

Owen Embury will give the keynote for this session from the University of Reading and National Centre for Earth Observation on "A 40-year Sea Surface Temperature Climate Data Record from the ESA Climate Change Initiative"

Find the line-up of talks for Science Session 2 here.

Session 3 – Calibration, Validation and Product Assessment

This session aims to highlight recent advancements in sea-surface temperature (SST), with a particular focus on the calibration and validation of satellite-derived SST products and the assessment of their quality and applicability. Read the full session description **here**.

Haifeng Zhang (Bureau of Meteorology) delivers the keynote for this session on "Validation of Himawari-8 Sea Surface Temperature Retrievals Using Infrared SST Autonomous Radiometer Measurements"

Find the line-up of talks for Science Session 3 **here**.

Session 4: Retrieval Algorithms

In this session, the goal is to discuss the recent developments in the retrieval algorithm including techniques for cloud mask, atmospheric correction due to water vapor as well as aerosol. Special emphasis will be on recent advances in the field of AI/ML techniques for retrieval algorithm as well as cloud detection and atmospheric correction. Read the full session description **here**.

Chong Jia from the Rosentiel School of Marine and Atmospheric Science, University of Miami will present the keynote on "Effects of the Hunga Tonga-Hunga Ha'apai Eruption on MODIS-retrieved Sea Surface Temperatures"

Find the line-up of talks for Science Session 4 **here**.

Session 5: Computing and products

In this session, the goal is to present new SST products to the SST users and producers community. The products can include both level 2, 3 and level 4 products. Improvements to existing products can also be presented in this session, together with new ways of analyzing the vast amount of satellite data that are available. Read the full session description **here**.

GHRSST Science Team member, Ed Armstrong will deliver the keynote on "Optimizing Data and Services in the Cloud for User Exploitation"

Find the line-up of talks for Science Session 5 **here**.

Session 6: High-resolution future satellite missions

In this session, the goal is to focus on the following:

- Overview of the future high resolution thermal infrared missions for coastal and inland waters SST (TRISHNA, LSTM, SBG).
- Towards new data products combining high-resolution water color variables and SST.
- Improving continuous monitoring of SST with future high resolution thermal infrared missions: issues and challenges.
- How to enhance synergies between future missions for data processing, reprocessing, archival, dissemination, and utilization.
- On-orbit cross-calibration of thermal infrared instruments.
- Assess GHRSST contribution to the future missions (gathering user's needs, expertise on the SST retrieval algorithms, validation of the products).

Read the full session description **here**.

Session 6 will have two keynotes. The first keynote address will be presented by Bimal K Bhattacharya on "TRISHNA – A joint Indo-French TIR-VSWIR science mission towards global water and food security". The second keynote will be delivered by Steffen Dransfeld, European Space Agency on "Land Surface Temperature Monitoring (LSTM) Mission".

Find the line-up of talks for Science Session 6 **here**

Meet the GHRSST Science Team: Marouan Bouali

Next up in our 'Meet the GHRSST Science Team' series, we are excited to introduce Dr. Marouan Bouali. Dr. Bouali is a Chief Scientific Officer (CSO) and Senior Satellite Remote Sensing R&D Scientist at the start-up, Orbty Ltda., based in São José dos Campos, Brazil.

Educational and Professional Journey

Dr. Marouan Bouali holds an engineering degree in Computer Science from Télécom Physique Strasbourg and a Master's degree in Signal and Image Processing from the Univeristy of Louis Pasteur in Strasbourg. In 2011, he received his PhD in Signal and Image Processing from élécom ParisTech, Université Paris VI.

Following his PhD, Dr. Bouali joined the NOAA/NEDIS/STAR Sea Surface Temperature team as a Postdoctoral Scientist and then as Research Scientist I where he was affiliated with the Cooperative Institute for Research in the Atmosphere (CIRA). In 2014, he made the move to Brazil where he worked as a Research Scientist at the Satellite Oceanography Laboratory at the Institute of Oceanography at the University of São Paulo (IOUSP) until 2021. Since then, he has been with ORBTY Ltda. Where is he leads and coordinates ORBTY's R&D activities related to remote sensing of water quality parameters (chlorophyll-a concentration,

turbidity) using high-resolution satellite sensors (Sentinel-2 MSI and Landsat 8/9 OLI). He is also responsible for ORBTY's Multidimensional Dynamic Data Fusion System (M3DFS) which is currently used for the generation of Level 3 meteorological and oceanographic datasets from microwave and infrared instruments.

Research Interests

Within the GHRSST framework, Dr. Marouan Bouali's research interests include satellite SST gradients (intercomparison and validation with in situ data), cloud detection algorithms, sensor noise correction and computer vision/machine learning methods for the fusion of multi-mission SST datasets. Currently, he is working on new techniques for the generation of Metocean Level 3C/3S/4 products from microwave and infrared satellite instruments.

Journey with GHRSST

Dr. Marouan Bouali first became involved with GHRSST during his tenure at NOAA/NEDIS/STAR. Since the SST Team was highly involved with the GHRSST framework, Dr. Bouali started participating in the GHRSST International Science Meetings. After making the career move to IOUSP in 2014, he continued to be engaged in the community, participating regularly in the GHRSST annual meetings.

Since starting his journey with the GHRSST Community, Dr. Bouali says that GHRSST has allowed him to stay updated on the main scientific challenges associated with the estimation of SST from satellite sensors – both from a user and data provider perspective. Further, GHRSST has provided him with the opportunity to collaborate with scientists across several institutions who are actively involved in GHRSST's scientific efforts.

For Dr. Marouan Bouali, dedicating an important part of his research activities at NOAA and IOUSP, where he worked on several SST topics including cloud masking, destriping and data fusion, stand out as significant achievements and memorable experiences during this time as a member of the GHRSST Community. Moreover, he was pleased and honoured to be elected as a member of the GHRSST International Science Team in 2018.

Upcoming GHRSST Talk

On November 30, 2023, Dr. Marouan Bouali will be taking the GHRSST Talk stage, presenting his work on "Multidimensional dynamic data fusion of satellite geophysical datasets: Application to level 3C/3S sea surface temperature products and impacts on gradients"

Find more information about his GHRSST Talk and register here.

30 November 2023 from 6:00 to 6:45 pm CET, online

Come meet the GHRSST team at these upcoming events

📅 SAVE THE DATE! 5 - 7 December 2023, Darmstadt (DE) - 8th Sentinel-3 Validation Team (S3VT) meeting

📅 SAVE THE DATE & ABSTRACT SUBMISSIONS! 18 - 23 February 2024, New Orleans (USA) - AGU Ocean Sciences Meeting

📅 SAVE THE DATE! 10 - 14 June 2024, Montreal (CA) - GHRSST25 International SST Users' Symposium & GHRSST Science Team Meeting

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Your GHRSST Trivia Round-up

Over the past few weeks, we have been posting weekly trivia questions on all things GHRSST. Here are first 5 answers!

What can SST measurements be useful for?

SST measurements benefit a wide spectrum of operational applications, including ocean, weather, climate and seasonal monitoring/forecasting, military defence operations, validation of atmospheric models, sea turtle tracking, evaluation of coral bleaching, tourism, and commercial fisheries management (O'Carroll et al., 2019).

Read here more: GHRSST - Quick start guide

Can seals help measure sea surface temperature?

To measure sea surface temperature (SST), scientists deploy temperature sensors on satellites, drifting and moored buoys, ships, Argo floats, gliders, marine mammals, for example seals, and ocean reference stations.

Read here more: GHRSST - Quick start guide

What temperature do infra-red instruments typically measure?

Infra-red instruments measure SST skin at high spatial resolution but the surface is obscured by clouds.

Read more here: GHRSST - Products

What should you consider selecting a satellite SST products?

To select from an increasingly wide array of SST products, you need to consider which of the following parameters are most important for the application and analyses being undertaken (Beggs, 2021):

- SST measuring depth- skin, subskin, or foundation?
- Temporal needs -are the dataset extent, local time of measurement, and latency suitable? Or is the local time of measurement (night, noon) an issue

- Temporal resolution—what is the characteristic time period of the process you wish to measure? Daily or sub-daily?
- Spatial resolution – how fine a resolution is required for the feature/ process of interest?
- Spatial coverage completeness – gaps versus gap-free?
- Do you need microwave data to measure SST under cloud, for example during or after a tropical cyclone?
- Quality level (cloud/rain contamination) – what is the minimum acceptable level?
- Level of processing – native projection (L2P) or gridded (L3 or L4) or analysed (L4)?
- SST accuracy and stability- with respect to what reference? Is it for climate applications?
- Stability of sensor and orbit – what deviation is acceptable?

Read more here: GHRSST - Products

What are all measures of water temperature beneath SSTsubskin referred to as?

All measurements of water temperature beneath the SSTsubskin are referred to as depth temperatures (SSTdepth) measured using a wide variety of platforms and sensors such as drifting buoys, vertical profiling floats, or deep thermistor chains at depths ranging from 10-2 – 103m.

Read more here: GHRSST - Products

The GHRSST Project Office is funded by the European Union Copernicus Programme