



SBG-TIR Data Harmonization

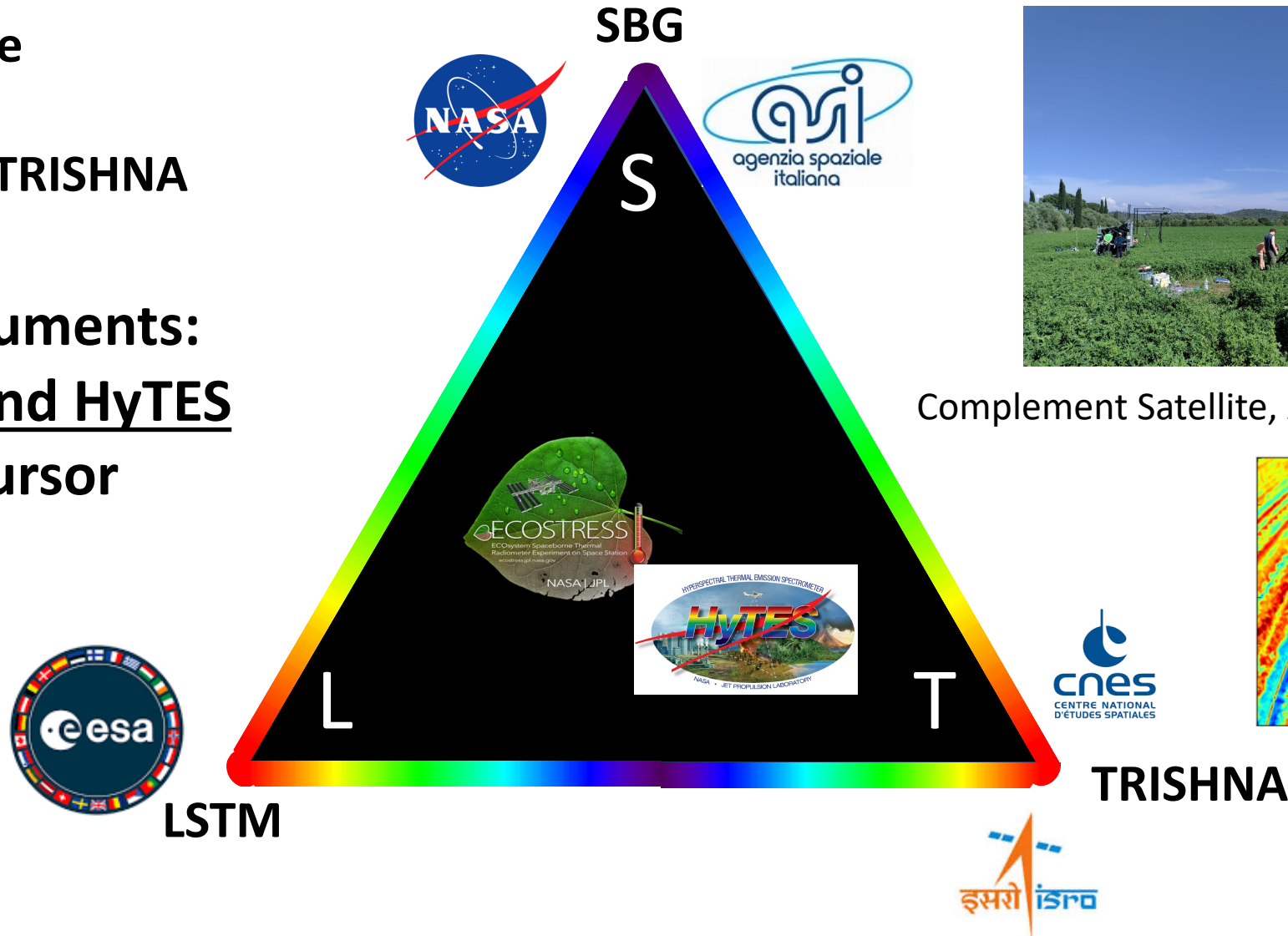
Kerry Cawse-Nicholson, Simon Hook, and the SBG-TIR Research
and Applications Team

Jet Propulsion Laboratory, California Institute of Technology

LSTM-SBG-TRISHNA (the LST Suite)

3 New Satellite
Instruments:
LSTM – SBG - TRISHNA

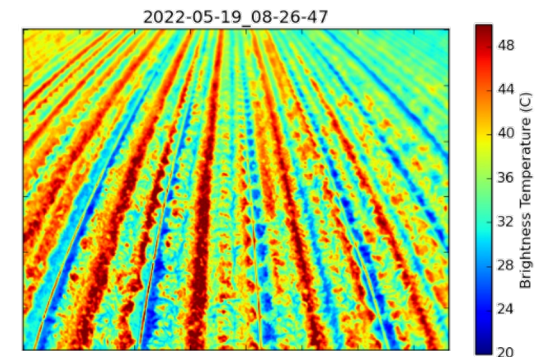
Existing instruments:
ECOSTRESS and HyTES
provide Precursor
Datasets



Multi-Angular Ground Measurements



Complement Satellite, Airborne Measurement



International collaboration (credit: LSTM)

Three missions harmonized as one

- Long Data Series
- Improved Revisit → up to daily



TRISHNA

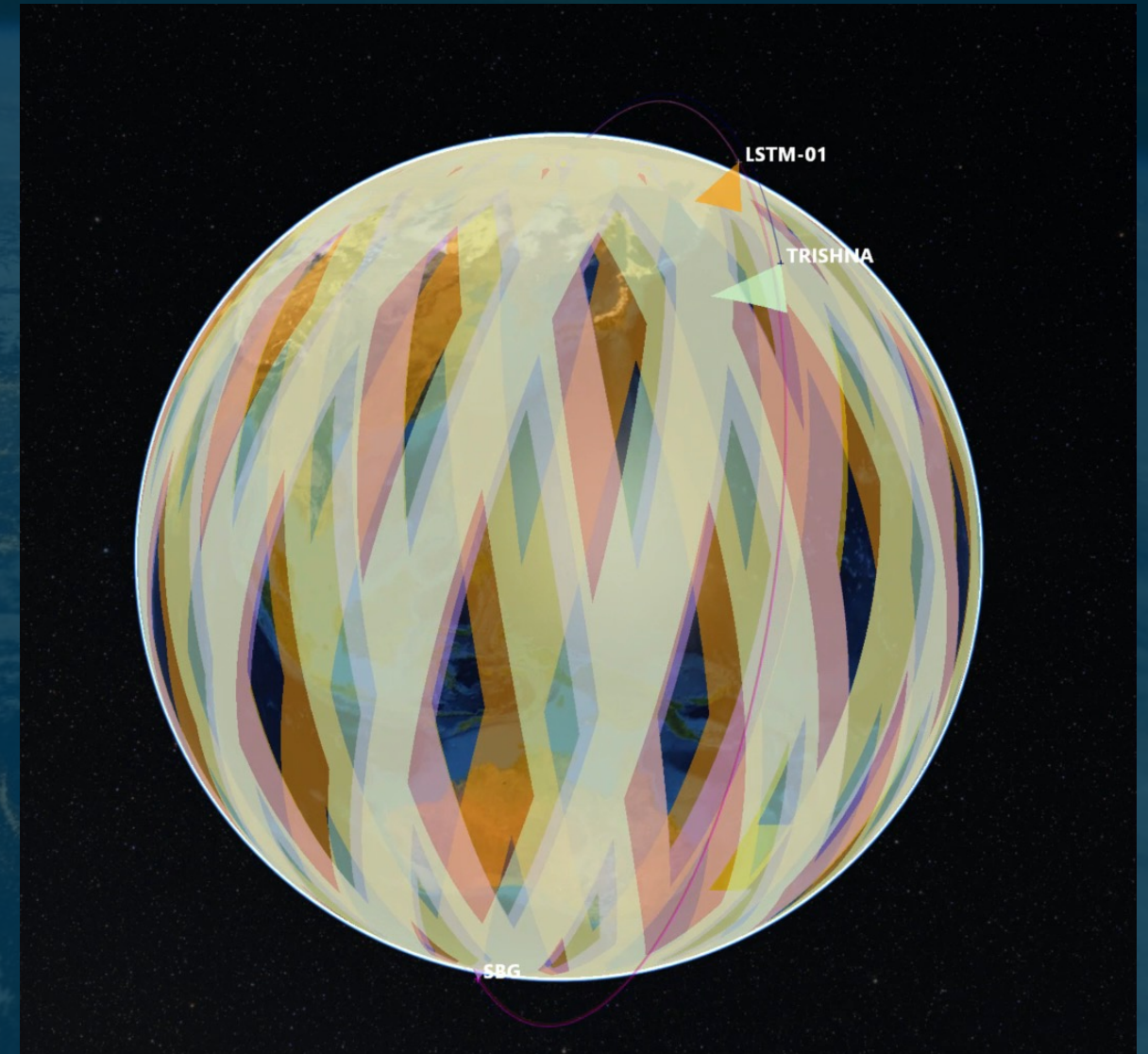
SBG

LSTM - A

LSTM - B

Synergies:

- Product Harmonization, ATBDs
- Orbit Coordination
- In-flight inter-comparison
- Common CAL/VAL approach
- Airborne Campaigns

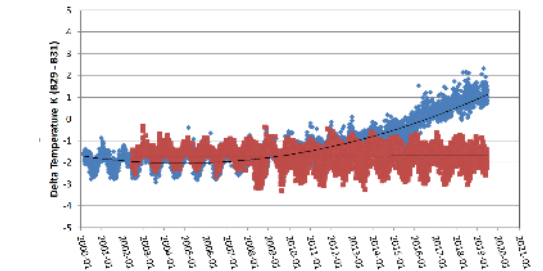
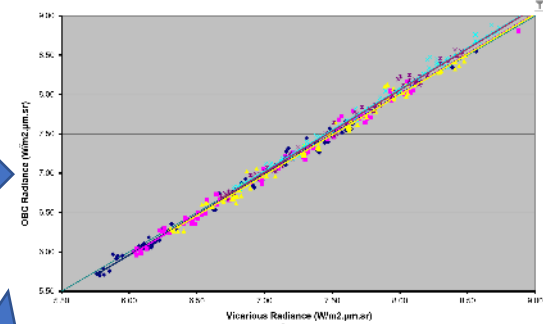
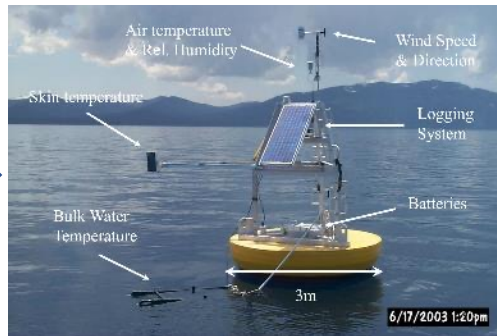


Harmonized calibration

- Agree on field sites for consistent calibration
- Lake Tahoe and Salton Sea sites have been used to calibrate MODIS, Landsat, ASTER, VIIRS, ECOSTRESS, etc.
- Possibility for in-space maneuvers for coincident overpass over calibration sites

Calibration and Validation

- We will develop a suite of sites with the necessary instrumentation to calibrate and validate the data and products for SBG.
- Existing sites are used as reference standards for numerous domestic and international aircraft and satellite hosted instruments.



Lake Tahoe Buoy

- Lake Tahoe 470 meters deep at lowest point, average 330 meters
- North America's high altitude natural lake – 6224 feet (1897 m)
- Collecting water skin temperature
- Four buoys deployed with:
 - JPL Radiometer
 - Heitronics KT-15.85
 - 2 - MET stations
 - RBR Thermistor chain to 0.5 – 5.5 meters
 - Onset temperature loggers
 - 2 - Kipp & Zonen CNR4 Net Radiometers
 - Garmin GPS
 - UC Davis instruments – Snow measurements, etc.





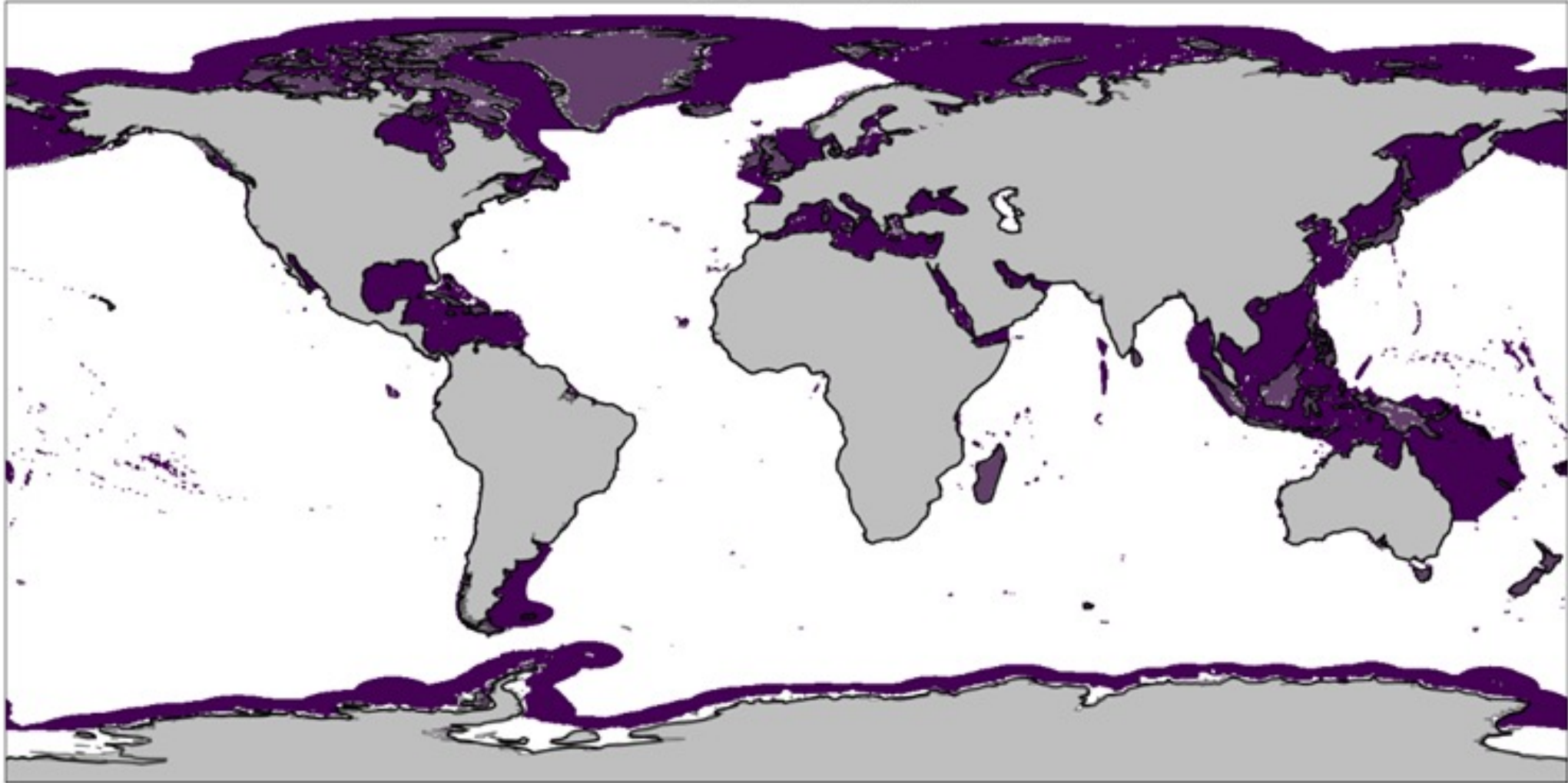
Salton Sea Platform

- Harsh environment – Summer temperatures over 40 degrees C
- Depth of water – 50 feet (15.2m) deepest point and at platform 25 feet (7.6 m)
- 2 - JPL Radiometer
- 2 - MET stations
- Camera – Picture every hour
- Onset temperature loggers
- Kipp & Zonen CNR4 Net Radiometers



Consistent Observing Masks

TIR_3_44_0030_v6IntTif_0deg



Mask Settings

Strategy	Current settings
Masks	Universal mask -> v.6 mask. Note that we will not fully overlap LSTM/TRISHNA
Polar culling	Culling in region above 60 N and below 60 S. Cull every other overpass.
Number of bands	8 bands during day and 7 bands at night
Masks	Reduced spatial resolution below 60 deg S (250 m)

This fits within our Near-Space Network downlink allocation



Boulogne forest

International Workshop on High-Resolution Thermal EO

10–12 May 2023 | ESA–ESRIN | Frascati (Rome), Italy



Boulogne forest

Future data harmonization meetings between the three mission teams

Harmonization topics



CALIBRATION AND VALIDATION



GROUND REFERENCE
IMAGES/ORTHOBASES AND
DIGITAL ELEVATION MODELS FOR
GEOLOCATION



DATA NAMING AND FORMATS



LST ALGORITHMS



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to Measure](#)

ECOSTRESS Science and Application Team Meeting – Fall 2023



Hold these dates for the Fall - ECOSTRESS Science and Application Team Meeting

Location

Ventura Beach Marriott
2055 E Harbor Blvd,
Ventura, CA 93001

We will meet "In-person" and "virtual" this fall to provide updates on ECOSTRESS mission, Collection 2 data products, and advances in science and applications. This year's meeting will also include LP DAAC and joint ECOSTRESS/ EMIT hands-on training using test workflows for accessing and analyzing ECOSTRESS Collection 2 datasets and EMIT. This is a good opportunity to include students, postdocs, and other colleagues who would like to get a guided training on ECOSTRESS and EMIT synergies.

[REGISTER HERE](#)

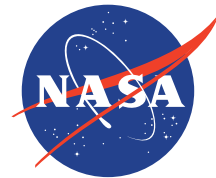
When	Oct 17, 2023 08:00 AM to Oct 19, 2023 01:00 PM
Where	Ventura CA
Add event to calendar	 vCal  iCal

Upcoming Events

ECOSTRESS Science
and Application Team
Meeting - Fall 2023

Oct 17, 2023 - Oct 19,
2023 — Ventura CA

[Upcoming events...](#)



Jet Propulsion Laboratory
California Institute of Technology

jpl.nasa.gov