Dive into GSICS Products and Deliverables

GSICS VIS?NIT Webmeeting 2021

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GSICS Global Space-based Inter-Calibration System

Introduction

GSICS has over 21 GSICS products in the VIS/NIR These are distributed via the GSICS Product Catalog.

We introduce here a platform that can be accessed free from the browser with the following features

1. Can read in GSICS products (DCC), process and visualize them
2. Read in GSICS deliverables and process them collaboratively
3. Read in TISIS Solar data and process the data.

Dive Demo

SRF for GIRO

by *Masaya Takahashi (JMA)*

GSICS Product (DCC) SEVIRI VS MODIS

by *Sebastien Wagner (EUMETSAT)*

TSIS Hybrid Solar Reference Spectrum (HSRS)

LASP

Takeaways

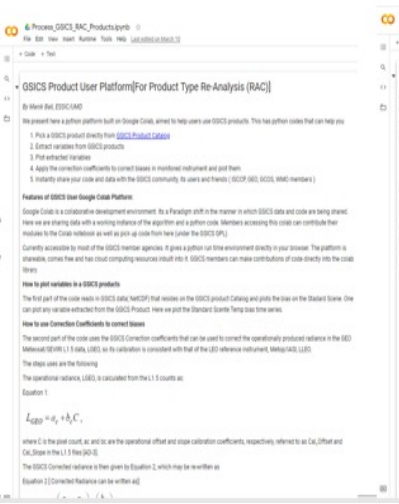
GSICS Google Colab Notebook

Colab Advantages

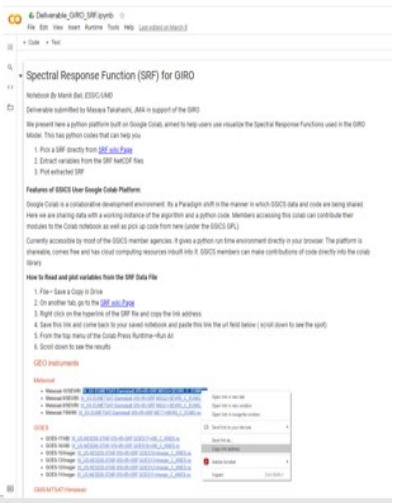
- The Python Script can read and use GSICS Products/Deliverables. It can be run directly from the browser.
- Connects Users directly with product producers which helps in collaborative development.
- Can be shared instantly. Click on hyperlinks below and start using GSICS Products/Deliverables

GSICS RAC Product

GSICS NRT Product



GSICS Deliverables SRF/Cal Tables



- DCC Product notebook
  - This notebook reads DCC products and plots and lists them.
- GIRO SRF notebook
- GSICS Product RAC notebook and NRT notebook

Notebooks:

- Run from the browser access
- Python Environment
- Processors
- Reader Code
- Correction Code

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Conclusions and Future course action

- Python scripts have been developed that can generate the main charts for GSICS products and deliverables
- These scripts can be run directly from the **browser** or can also be downloaded from **github** and run in Jupyter notebooks locally.
- Members are encouraged to use and contribute to these scripts in an open-source development environment and be co-authors.
- ***Colab and Github(supported by KMA) Provide Collaborative ecosystem***
- Future ideas such as developing a conda/pip module are welcome

Can colab replace the User Guide acceptable in GPPA ?

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Backcup Slides

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Overview of the State of Observing System Report

The report attempts to summarize the departure summaries/in orbit performance of satellites instruments operated by GSICS members

Challenges

- The reports attempts to put together complex information for instruments in GEO as well as LEO orbits measuring in the VIS/NIR, IR and UV channels.

- Agencies have to deploy resources to generate updated satellite performance charts each year to contribute the to the state of Observing System report.

There is a need to simplify creation of the State of Observing report / Calibration reports provided by agencies and to harmonize the tables and figures.

Contents of State of Observing System (SOB) report

Types of charts in the SOB report

- Tables depicting
  - Mean Standard Bias of past year
  - Mean Standard Deviation of bias in past year
  - Mean Standard Bias Drift
- Time Series of Standard Biases
- Scatter Plots Monitored versus Reference

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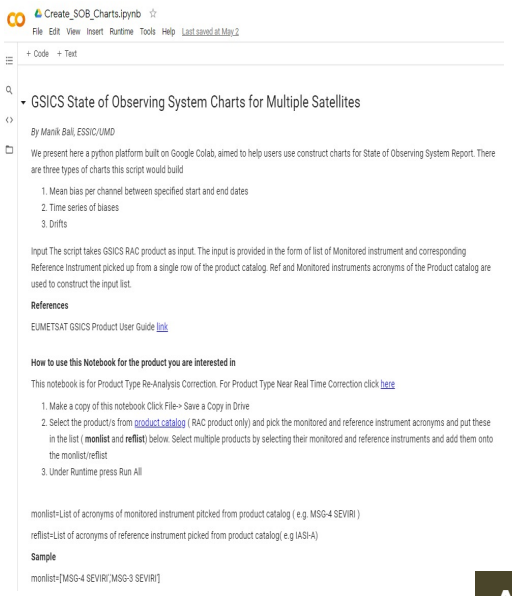
Demo of Google Colab: Tool to generate SOB Charts

Input
GSICS Products on the thredds server can be selected as input

Google Colab
Python scripts that read inputs and produce SOB charts


Create_SOB_Charts.ipynb

File Edit View Insert Runtime Tools Help Last saved at May 2

+ Code + Text

GSICS State of Observing System Charts for Multiple Satellites

By Manik Bali, ESSIC/UMD

We present here a python platform built on Google Colab, aimed to help users use construct charts for State of Observing System Report. There are three types of charts this script would build

1. Mean bias per channel between specified start and end dates
2. Time series of biases
3. Drifts

Input The script takes GSICS RAC product as input. The input is provided in the form of list of Monitored instrument and corresponding Reference Instrument picked up from a single row of the product catalog. Ref and Monitored instruments acronyms of the Product catalog are used to construct the input list.

References

EUMETSAT GSICS Product User Guide link

How to use this Notebook for the product you are interested in

This notebook is for Product Type Re-Analysis Correction. For Product Type Near Real Time Correction click here

1. Make a copy of this notebook Click File-> Save a Copy in Drive
2. Select the product/s from product catalog (RAC product only) and pick the monitored and reference instrument acronyms and put these in the list (**monlist** and **reflist**) below. Select multiple products by selecting their monitored and reference instruments and add them onto the monlist/reflist
3. Under Runtime press Run All

monlist=List of acronyms of monitored instrument pitcked from product catalog (e.g. MSG-4 SEVIRI)

reflist=List of acronyms of reference instrument picked from product catalog(e.g IASI-A)

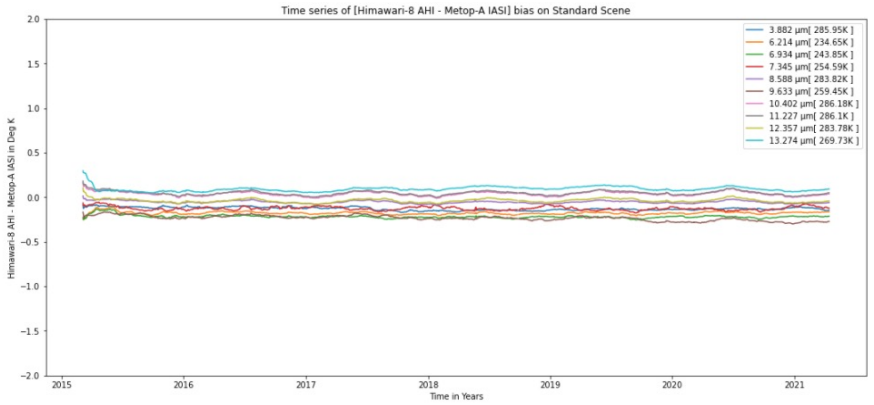
Sample

monlist=['MSG-4 SEVIRI','MSG-3 SEVIRI']

Output
Tables and Time Series
Scatter plots can be taken from GPRCs

[Himawari-8 AHI - Metop-A IASI]

	3.882 µm	6.214 µm	6.934 µm	7.345 µm	8.588 µm	9.633 µm	10.402 µm	11.227 µm	12.357 µm	13.274 µm
Standard Scene Temp (K)	285.950012	234.649994	243.850006	254.589996	283.820007	259.450012	286.179993	286.100006	283.779999	269.730011
Tb Bias (K)	-0.129638	-0.179958	-0.226564	-0.133395	-0.060384	-0.274399	0.031438	0.039970	-0.045292	0.083150
Std Dev (K)	0.007747	0.007758	0.009383	0.017330	0.012503	0.012925	0.018872	0.018495	0.016011	0.013730
Drift (K)	0.021601	0.023436	0.046819	0.099899	-0.095499	-0.100415	-0.148667	-0.146881	-0.122940	-0.108993



Features

- Python Script can be run from **browser**
- A instance available on **github**
- Script is scalable and contributors are invited to coauthor the script and develop new modules in an open-source style development environment.

Assumptions:

Coalb scripts currently support

1. **Input data follows GSICS meta data conventions and is on a THREDDS server.**

2. GSICS product has been created continuously over the period for which charts are sought.

***Charts for *FY2E , (a non GPPA product) has been implemented and tested**

Script is scalable to non GSICS data conventions

Demo SOB Report: Contd…

Sample Charts that the Colab can generate

[Himawari-8 AHI - Metop-A IASI]

	3.882 µm	6.214 µm	6.934 µm	7.345 µm	8.588 µm	9.633 µm	10.402 µm	11.227 µm	12.357 µm	13.274 µm
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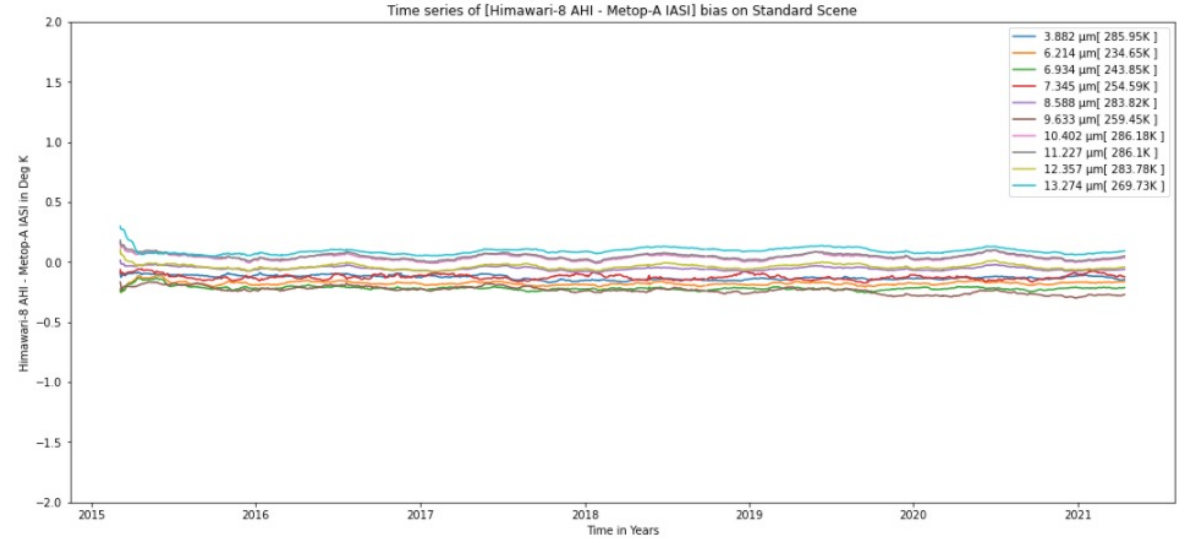
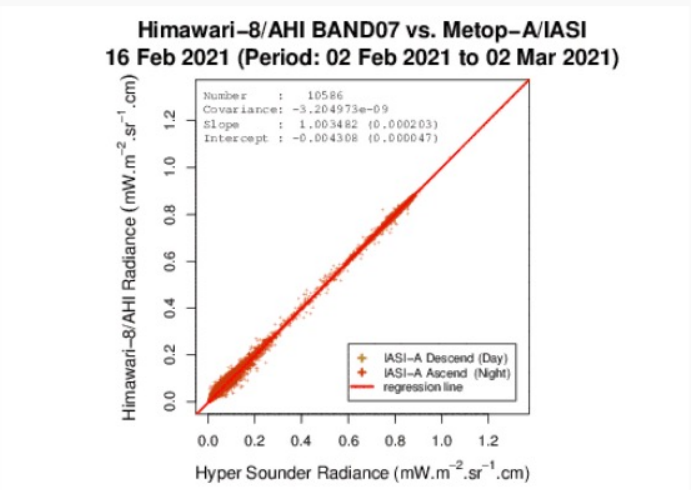
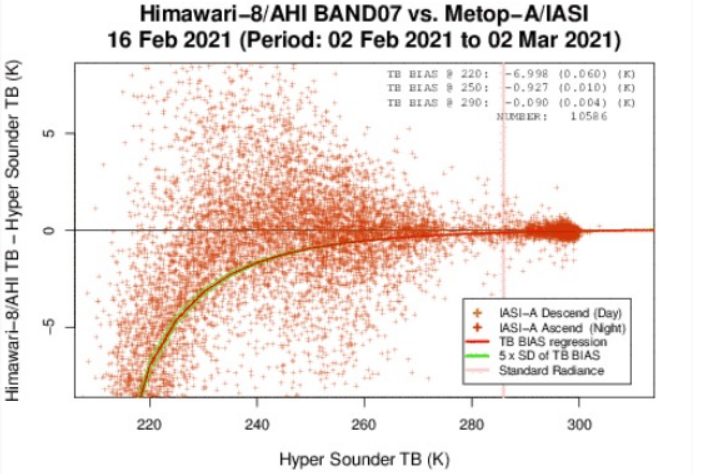


Template (Conclusion)
Low bias/drift and std indicate that Himawari-8 continues to provide L1 measurements in-orbit according to design specifications

Charts that can be picked up from GPRC





https://www.data.jma.go.jp/mscweb/data/monitoring/gsics/ir/monit_geoleoir.html

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