obs4MIPs in CCI

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What is obs4MIPs?

Observations for Model Intercomparisons

- WCRP initiative designed to make comparisons between CMIP model output and satellite observations as easy as possible…

    - … to facilitate use of satellite obs by the model analysis community.

- obs4MIPs is a collection of satellite data formatted and organized according to CMIP model output requirements.

- obs4MIPs data is stored with the CMIP model output on the Earth System Grid Federation (ESGF).

- Data format:

    - netCDF following CF Conventions

    - with CMIP-specific metadata fields

- Compatible with CMIP model evaluation tools, including: ESMValTool, PMP, NCAR, and ILAMB analysis packages.

- Accompanied by a 5 page Technical Note at grad-student level

obs4MIPs data set characteristics
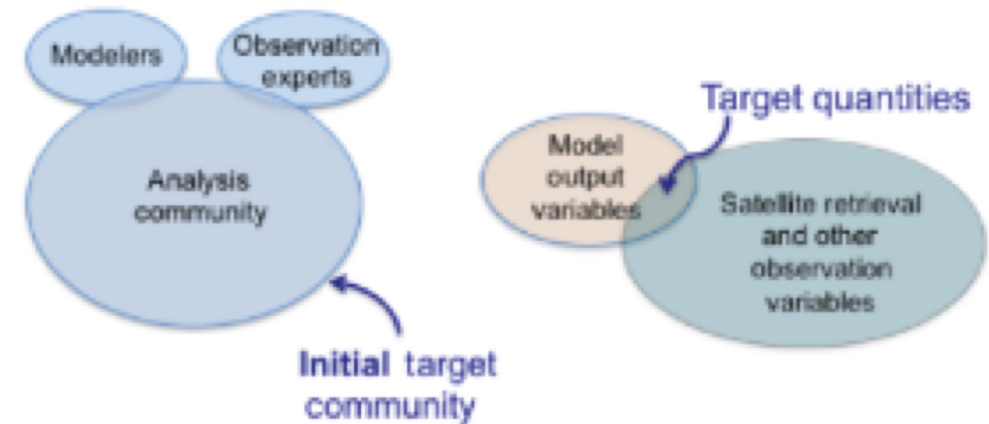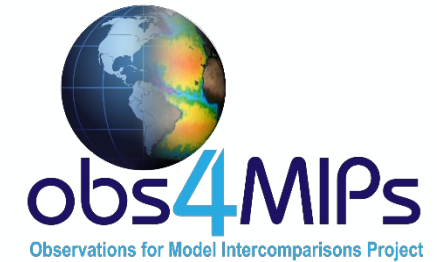
An entry point for simple comparisons between models and observations

- Standard dataset: global, monthly average, on low-resolution 1x1 deg lat-lon grids

  - Regional products and higher resolutions also OK, but little point going much finer than the climate model resolution.

- Avoids observations that are not directly comparable with model outputs, *e.g.*:

  - where satellite-observed quantity doesn't correspond to a standard CMIP model output variable

  - where the observed variable is significantly different from the model variable

  - where satellite sampling results in very different monthly averages compared to model output

- Satellite simulators (*e.g.* COSP) needed for more complex comparisons, but out of scope for obs4MIPs (so far)

- Currently, minimal support for uncertainty estimates

- Efforts currently underway by WCRP's obs4MIPs Task Team to enhance and evolve for CMIP7.

  - NB: Best efforts!

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Published obs4MIPs data sets

Current data holdings:

- 75% of the database contributed by US (NASA, NOAA, RSS, NSIDC, ...)

- 25% contributed by Europe (CNES, IPSL, LOA, LMD, DWD, FUB, IUP, UoE, UoR, SU, IC)

- Many data sets are 5-10+ years old

- From CCI:
  Aerosol, Cloud, CO_2, CH_4, SST
  In progress:
  C3S O_3 , LST, Ocean Colour,
  Water Vapour

CCI+ ECV project requirement (see your SoW)

Task 3: System Development and ECV Data Processing

The Contractor **shall** prepare and submit the final ECV products produced in Year 3 to the WCRP's obs4MIPs initiative. Submission to obs4MIPs requires preparation of an **obs4MIPs Package**, which shall also be submitted to ESA as a formal project deliverable. The obs4MIPs Package consists of:

- obs4MIPs proposal form, as submitted to the obs4MIPs Task Team
- ECV data set prepared according to the obs4MIPs Data Specification
- obs4MIPs Technical Note (description of the data set according to the obs4MIPs requirements)

Full instructions on how to submit data sets to obs4MIPs are provided here:

esgf-node.llnl.gov/projects/obs4mips/HowToContribute   **← URL no longer valid!**

Deliverable

D3.3 obs4MIPs Package, consisting of:

- obs4MIPs proposal form
- obs4MIPs formatted data set
- obs4MIPs technical note.

obs4MIPs Data Set Technical Note

- Target audience is the climate model analysis community, particularly CMIP model analysis

- Understandable by a graduate student

- Summarize essential information: ~ 5 pages + references to more detailed information

Table of Contents:

How to Contribute

Updated instructions! (obs4MIPs has changed since the CCI+ SoW was written)**:**

1. Discuss your plan for submission with me, as not all data sets are suitable
   - Choose gridding and metadata content (see obs4MIPs Data Specificaion ODSv2.1)
2. Register a new source_id on the github repository
3. **Wait for go-ahead from obs4MIPs steering team – *i.e.* acceptance of source_id**
4. Start writing Technical Note according to the template provided
5. Prepare the data set in the chosen grid
6. Download and install python version of CMOR3
7. Use CMOR3 to create an obs4MIPs-compliant data set (see github instructions)
8. Submit dataset to CCI Knowledge Exchange team for upload to CEDA's obs4MIPs ESGF node.

Every CCI ECV project should attempt to submit at least one data set.

Does not need to be updated more than once every few years.

References

Main references:

- CCI point of contact: simon.pinnock@esa.int
- obs4MIPs web site: https://pcmdi.github.io/obs4MIPs/

Also of interest:

- Waliser *et al.*, 2020: https://doi.org/10.5194/gmd-13-2945-2020
- obs4MIPs Data Specification (currently v2.1) : https://pcmdi.github.io/obs4MIPs/dataStandards.html
- GitHub site: https://github.com/PCMDI/obs4MIPs-cmor-tables/blob/master/inputs/README.md
- CMOR3 documentation: https://cmor.llnl.gov/