



An update on obs4MIPs



WDAC Observations for Model Evaluation Task Team

Peter Gleckler, co-chair, PCMDI and **Duane Waliser**, co-chair, JPL/NASA

Mike Bosilovich, GSFC/NASA

Helene Chepfer, IPSL

Carol Anne Clayson, WHOI

Veronika Eyring, DLR

Robert Ferraro, JPL/NASA

Pierre-Phillipe Mathieu, ESA

Jerry Potter, GSFC

Roger Saunders, UKMO

Jörg Schulz, EUMETSAT

Karl Taylor, PCMDI

Jean-Noël Thépaut, ECMWF

Additional regular contributors: Otis Brown, Michel Rixen

Tsengdar Lee (NASA) and Renu Joseph (DOE)

Luca Cinquini (JPL) – CoG technical support

Denis Nadeu (PCMDI) – CMOR development

Paul Durack (PCMDI) – Data specifications

Sophie Cloché (IPSL) – CFMIP archive

Jim Biard (NCEI) and Matthias Tuma (WCRP) – beta testers

... and many others

WDAC7, Geneva, 26-27 March 2018

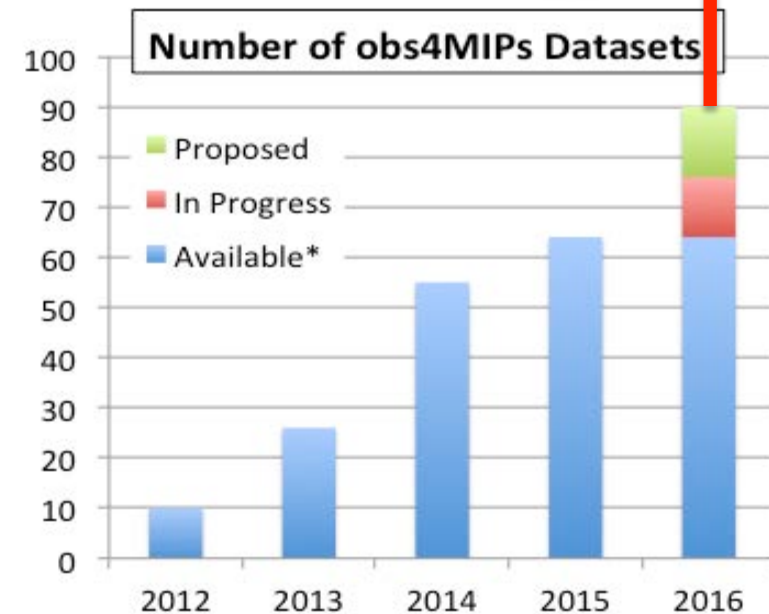
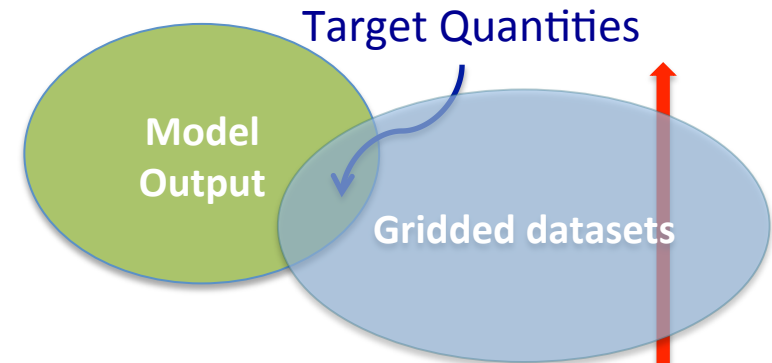
Presentation outline

- Quick review, general status report
- Challenges, solutions in the works
- Strategic considerations for WCRP SP

obs4MIPs

<https://www.earthsystemcog.org/projects/obs4mips/>

- A project for identifying, documenting and disseminating observations for climate model evaluation in WCRP model intercomparisons, notably CMIP.
- Data (and tech notes) accessible with the distributed CMIP model output, adhering to same conventions
- Guided by the WCRP Data Advisory Council obs4MIPS Task Team



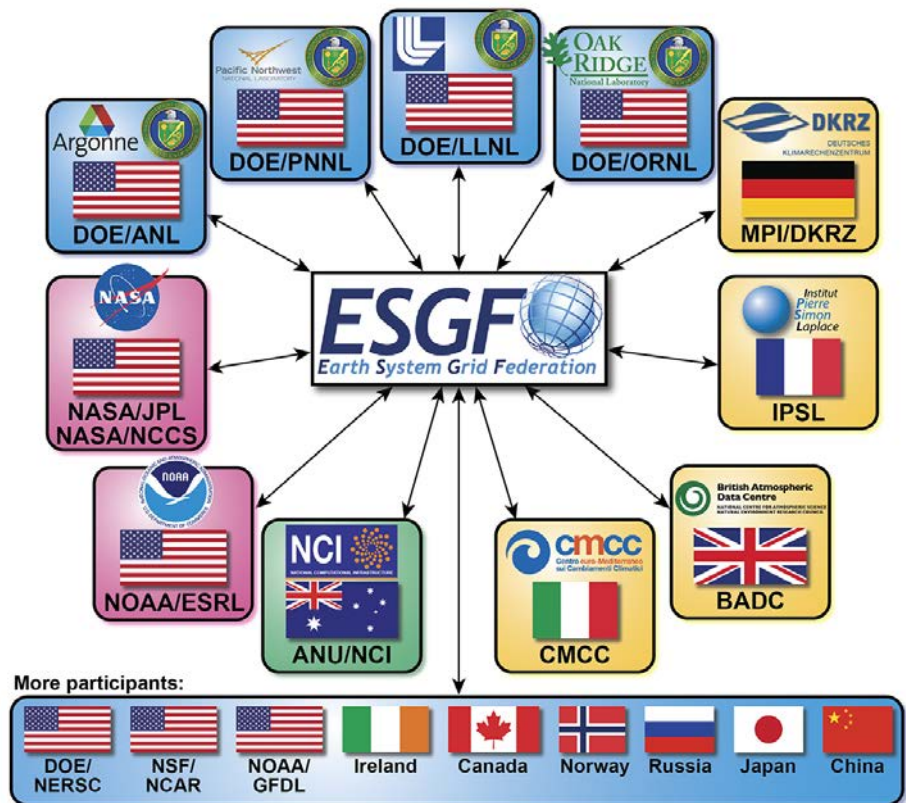
Complete (~125*)
In Progress* (~15)
Proposals from Data Call (~100)



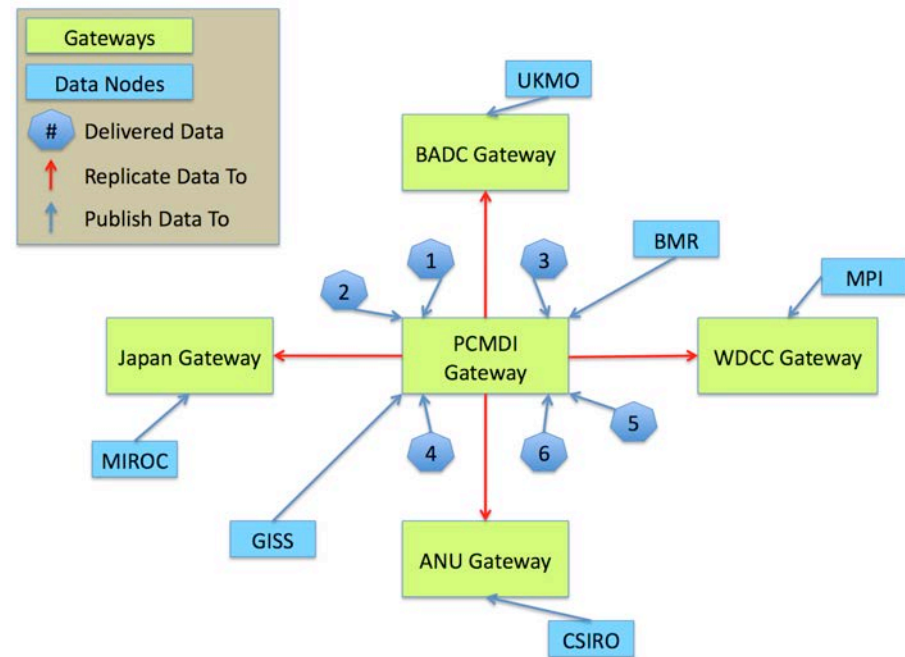
.... and growing!

Data accessibility for WCRP projects

The Earth System Grid Federation (**ESGF**) is being used for **CMIP6** and other WCRP projects



**Additional participants could not be illustrated in this figure.*



[ESGF Dec 2016 conference report \(Williams et al., 2017\)](#)

[ESGF Dec 2017 Recap \(final report in preparation\)](#)

Data access and project connectedness



University of Colorado Boulder | Welcome to the Earth System Grid Federation. You are at the CoG-CU node. ESGF | Welcome, Guest. | Login | Create Account

Obs4MIPs

Home | About Us | Governance | Contact Us | Technical Support

Observations for Climate Model Intercomparisons

Obs4MIPs (Observations for Model Intercomparisons) is an activity to make observational products more accessible for climate model intercomparisons.

To Get Data - Please go to the "Search Data" box or "Advanced Data Search" link to the right.

A wide variety of observationally-based datasets are used for climate model evaluation. Obs4MIPs refers to a limited collection of well-established and documented datasets that have been organized according to the 5th Coupled Model Intercomparison Project (CMIP5) model output requirements and made available on the Earth System Grid Federation (ESGF). Each Obs4MIPs dataset corresponds to a field that is output in one or more of the CMIP5 experiments. This technical alignment of observational products with climate model output can greatly facilitate model data comparisons. Guidelines have also been developed for Obs4MIPs product documentation that is of particular relevance for model evaluation. This effort was initiated with support from NASA and the U.S. Department of Energy (DOE) and has now expanded to include contributions from a broader community including CFMIP-OBS and products that rely on ESA satellites.

To summarize, products currently available via Obs4MIPs are:

1. Directly comparable to a model output field defined as part of CMIP5
2. Open to contributions from all data producers that meet the [Obs4MIPs requirements](#)
3. Well documented, with traceability to track product version changes
4. Served through ESGF (and directly available through this COG).

Efforts are underway to coordinate obs4MIPs with CMIP6

Last Update: Nov. 7, 2014, 4:57 p.m. by Robert Ferraro

Share | SHARED | Tweet

No Comments

Project Activity

ESGF sponsors and partners: DoE Office of Science | IS-ENES | NASA | NOAA | NCI | NSF | CoG version 2.10.0 | ESGF P2P Version 1.7.1-phenix-release-master | Earth System CoG sponsors and partners: NOAA | NASA | NSF | DoE Office of Science | IS-ENES

http://www.earthsystemcog.org | cog_support@list.woc.noaa.gov | privacy policy

- Obs4MIPs data (and ana4MIPs) are available through the CoG
- CoG is integrated with ESGF
- CMIP6 will be hosted on the CoG, as are many other projects

Obs4MIPs leverages key protocols and infrastructure

- Experiment protocol and **CMIP standard output**
- **Climate Forecast (CF) Convention (as applied in CMIP)**
- **CMIP data governance** led by WGCM Infrastructure panel (WIP)
- Utilities to ensure data complies to CMIP structure: **CMOR3**
- Distribution/replication via **ESGF**, technically aligned with CMIP data
- **CoG**: Project information, data search/retrieval, integrating projects

Pros: Pulling together key efforts that serve WCRP projects

Cons: Vulnerable to weak links



obs4MIPs planning meeting for CMIP6

April 2014, NASA HQ but still relevant!



Selected consensus recommendations that applied to all of the meeting topic areas:

- **Expand the inventory**
- **Include more higher frequency data** (a “golden period”?)
- Reliable and defensible **error characterization**/estimation of observations
- Include datasets in support of **off-line simulators** (prime example: COSP—Cloud Feedback Model Intercomparison Project [CFMIP] Observation Simulator Package)
- **Collocated observations, including in-situ datasets** for processes level diagnostics
- **Precise definitions of data products** (what’s actually being reported), including biases, and precise definitions of the model output variables are required

[Ferraro et al. \(2015\) BAMS and full meeting report on CoG website](#)

Progress since WDAC6



- 5 TT telecons, multiple presentations at scientific meetings
- Two manuscripts in-prep (#1 strategy, #2 data description governance)
- Further streamlining, e.g., [managing controlled vocabularies on GitHub](#)
- Datasets span across 7 ESGF nodes, complete listing generated daily

CMIP6/obs4MIPs data convention integration completed

[\(obs4MIPs Data Specifications ODS 2.1\)](#)

- Collaboration with ES-DOC to handle obs4MIPs tech notes, DOI's
- Two strategic efforts to broaden project scope prototyped:
 - obs4MIPs [data indicators](#) now established
 - [Mechanism for including Supplemental Information](#)

obs4MIPs Dataset Suitability & Maturity Indicators

<i>Technical Requirements</i>		<i>Dataset Suitability and Maturity</i>			<i>Comparison Complexity</i>
Meets obs4MIPs data technical requirements	Includes obs4MIPs technical note information	Closeness or robustness of measurement to observed reference quantity	Maturity with respect to climate model evaluation	Provision for robust uncertainty information	Complexity of Model Observation Comparison
Data suitably processed with CMOR and/or consistent with obs4MIPs standards	Complete technical note information provided	Measurement approach provides a very close relationship to observation quantity	Multiple peer-reviewed examples of application to climate model evaluation	Uncertainty information provided per retrieval/grid point	Comparison can be made directly with CMIP model output variable
Largely complete with minor metadata inconsistencies	Technical note information incomplete and/or could be improved	Measurement approach requires complex and/or non-linear retrieval methods and/or subjective inferences/definitions	One peer-reviewed example of application to climate or component model evaluation.	General uncertainty information given relative to the methodology and dataset as a whole - backed by actual field/in-situ validation exercises	Comparison requires some simple post processing of CMIP output variable(s) (e.g. vertical integral or ratio of two variables)
Non-compliant. Should be removed from database!	Technical note not provided	Measurement approach requires significant use/influence from complex or weakly constrained model and/or has significant ambiguity in definition(s)	No peer-reviewed examples of application to model evaluation	No uncertainty information provided	Comparison requires complex processing of CMIP output (e.g. "simulator", budget calculation)

Indicators for all datasets will be determined by TT in consultation with dataset providers

WCRP Da... Obs4... x

https://www.earthsystemcoq.org/search/obs4mips/

Obs4MIPs

Home About Us Governance Contact Us

You are at the CoG-CU node

Technical Support

Last Search | My Data Cart (1)

Institute +
Instrument +
Time Frequency +
Realm +
Variable +
Variable Long Name +
CF Standard Name +
Data Node -
esgf-data.jpl.nasa.gov (16)

Enter Text:

Search Reset Display 10 results per page [More Search Options]

Show All Replicas Show All Versions Search Local Node Only (Including All Replicas)

Search Constraints: ~~esgf-data.jpl.nasa.gov~~

Total Number of Results: 16
<< Previous 1 -2-
Add all displayed results to Data Cart Remove all displayed results from Data Cart
Expert Users: you may display the search URL and return results as XML or return results as JSON

- 11. obs4mips.RSS.SSML.sfcWind.mon**
Data Node: esgf-data.jpl.nasa.gov
Version: 20160523
Total Number of Files (for all variables): 2
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Globus Download]
[Add to Data Cart] [Progress Indicators]
- 12. obs4mips.NASA-JPL.GNSS_RO.ta.monClim**
Data Node: esgf-data.jpl.nasa.gov
Version: 20160601
Total Number of Files (for all variables): 1
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Globus Download]
[Add to Data Cart] [Progress Indicators]
- 13. obs4mips.REMSS.AMSRE.tos.mon**
Data Node: esgf-data.jpl.nasa.gov
Version: 20111031
Total Number of Files (for all variables): 3
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Globus Download]
[Add to Data Cart] [Progress Indicators]
- 14. obs4mips.NASA-JPL.QuikSCAT.sfcWind.mon**
Data Node: esgf-data.jpl.nasa.gov
Version: 20120411
Total Number of Files (for all variables): 3
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Globus Download]
[Add to Data Cart] [Progress Indicators]
- 15. obs4mips.CNES.AVISO.zos.mon**
Data Node: esgf-data.jpl.nasa.gov
Version: 20110829
Total Number of Files (for all variables): 3
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Globus Download]
[Add to Data Cart] [Progress Indicators]
- 16. obs4mips.NASA-JPL.TES.tro3.mon**
Data Node: esgf-data.jpl.nasa.gov
Version: 20110608
Total Number of Files (for all variables): 3
Full Dataset Services: [Show Metadata] [List Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [summary] [Supplementary Data] [Globus Download] [Progress Indicators]

TT will be responsible for confirming indicators (proposed by data providers) for all datasets

SI is "free form", accessible from "best estimate" but not searchable independently

Coordinated CMIP/obs4MIPs global attributes, controlled vocabulary (CV), Registered Content (RC), and Data Reference Syntax (DRS)

Some predefined global attributes (there are many others)

	<i>Sample</i>
Variable ID #	'sfcWind'
Source_id * +	'NOAA-NCEI-SeaWinds-1-2'
Source_version_number * +	'1.2'
Institution_id +	'NOAA-NCEI'
Region * * #	'global ocean'
Frequency *	'Amon'
Nominal_resolution * #	'1x1 degree'
License	

* New obs4MIPs search facets

+ Registered Content (RC)

CV with pre-defined options [maintained on github](#)



2018 Timelines

Winter'18	Spring'18	Summer'18	Fall'18	Winter'19
<i>Make existing obs4MIPs data consistent with ODS2.1</i>				
	<i>Prepare new datasets including from "1st Dataset Call"</i>			
	<i>Prototype enhanced CoG features</i>			
		<i>Propogate use of new CoG features across ESGF nodes (<u>search facets</u>, <u>indicators</u> and <u>Supplemental Info</u>)</i>		
		<i>Submit two papers (strategy and conventions)</i>		
			<i>Possible 2nd Dataset Call: Beyond Gridded?</i>	

Summary and Perspective

- **obs4MIPs is well positioned to have substantial impact on CMIP6 and other WCRP MIPs**
- **WCRP SP: might obs4MIPs provide a basis for better connecting models and data?**
- **obs4MIPs TT has been able to address many recommendations (e.g., enable more data and information to be included)**
- **Key challenge continues: further “greasing the wheels” so that datasets can be efficiently made to meet the obs4MIPs data specifications, and published on ESGF**
- **The goal for the coming year is to greatly expand the obs4MIPs archive, exploiting the new obs4MIPs data specifications (ODS2.1), supplemental information and data indicators**
- **Efforts to advance obs4MIPs remain focused on gridded datasets. Expanding the scope to include in-situ data will required new contributors prepared to do substantial work**

Summary and Perspective ii

- Presuming obs4MIPs continues to successfully mature, there will likely be a need to revisit how it is supported and governed.
- While a great deal of infrastructure is in place, a broader obs4MIPs would require more people doing hands on work.
- The [WGCM's WIP](#) may serve as a good example of how to do this, and perhaps could be further leveraged.

Links to related material – NEEDS TO BE UPDATED

- [ESGF Dec 2016 conference report \(pdf\)](#)
- [CMIP6 data specifications \(google docs\)](#)
- [obs4MIPs data specifications](#)
- [obs4MIPs tables controlled vocabulary \(github\)](#)
- [Climate Model/obs Output Rewriter, CMOR \(website\)](#)
- [Draft user guide for preparing obs4MIPs \(google docs\)](#)

EXTRAS

obs4MIPs: The 4 Commandments



1. Use the CMIP* Standard Model Output as guideline for selecting observations
2. Observations to be structured in coordination with the CMIP output (e.g. NetCDF, CF Convention, **common vocabularies**)
3. Hosted side by side on the ESGF with CMIP model output
4. Include a Technical Note for each variable describing observation and use for model evaluation (at graduate student level)

* obs4MIPs conventions have been updated to be consistent with CMIP6

CMOR 3

- Overview
- Getting started
- CMOR API
- Acknowledgements
- PrePARE
- PDF
- Installation
- Examples
- Appendix
- Contact us!

Getting started overview

Table of Contents

- Design Considerations and Overview
- Preliminary notes

Design Considerations and Overview

This document describes Version 3 of a software library called "Climate Model Output Rewriter" (CMOR3)^[1], written in C with access also provided via Fortran 90 and through Python^[2]. CMOR is used to produce CF-compliant^[3] netCDF^[4] files. The structure of the files created by CMOR and the metadata they contain fulfill the requirements of many of the climate community's standard model experiments (which are referred to here as "MIPs"^[5] and include, for example, AMIP, PMIP, APE, and IPCC [DN1] scenario runs).

CMOR was not designed to serve as an all-purpose writer of CF-compliant netCDF files, but simply to reduce the effort required to prepare and manage MIP model output. Although MIPs encourage systematic analysis of results across models, this is only easy to do if the model output is written in a common format with files structured similarly and with sufficient metadata uniformly stored according to a common standard. Individual modeling groups store their data in different ways, but if a group can read its own data, then it should easily be able to transform the data, using CMOR, into the common format required by the MIPs. The adoption of CMOR as a standard code for exchanging climate data will facilitate participation in MIPs because after learning how to satisfy the output requirements of one MIP, it will be easy to prepare output for other MIPs.

CMOR output has the following characteristics:

- Each file contains a single primary output variable (along with coordinate/grid variables, attributes and other metadata) from a single model and a single simulation (i.e., from a single ensemble member of a single climate experiment). This method of structuring model output best serves the needs of most researchers who are typically interested in only a few of the many variables in the MIP databases. Data requests can be satisfied by simply sending the appropriate file(s) without first extracting the individual field(s) of interest.
- There is flexibility in specifying how many time slices (samples) are stored in a single file. A single file can contain all the time-samples for a given variable and climate experiment, or the samples can be distributed in a sequence of files.
- Much of the metadata written to the output files is defined in MIP-specific tables of information, which in this document are referred to simply as "MIP tables". These tables are JSON files that can be read by CMOR and are typically made available from MIP web sites. Because these tables contain much of the metadata that is useful in the MIP context, they are the key to reducing the programming burden imposed on the individual users contributing data to a MIP. Additional tables can be created as new MIPs are born.
- For metadata, different MIPs may have different requirements, but these are accommodated by CMOR, within the constraints of the CF convention and as specified in the MIP tables.
- CMOR can rely on NetCDF4 [See unidata web page](#) to write the output files and can take advantage of its compression and chunking capabilities. In that case, compression is controlled with the MIP tables using the shuffle, deflate and deflate_level attributes, default values are respectively 0, 0 and 0(disable). It is worth noting that even when using NetCDF4, CMOR3 still produces NETCDF4 CLASSIC formatted output. This allows the file generated to be readable by any application that can read NetCDF3 provided they are re-linked against NetCDF4. When using the NetCDF4 library it is also still possible to write files that can be read through the NetCDF3 library by adding ".3" to the appropriate cmor_setup argument (see below). Note: CMOR3 **NOW** output NetCDF4 files by default. For CMIP6, the NetCDF4/NC_CLASSIC_Model mode is used (and chunking is **NOW** invoked... shuffle and deflation can be invoke on-demand by setting flags in the table. [example](#)).
- CMOR also must be linked against the udunits2 library [see http://www.unidata.ucar.edu/software/udunits/](http://www.unidata.ucar.edu/software/udunits/), which enables CMOR to check that the units attribute is correct^[6]. Finally CMOR3 must also be linked against the uuid library [see http://www.oss.org/pkg/lib/uuid](http://www.oss.org/pkg/lib/uuid) in order to produce a unique tracking number for each file.

- **CMOR3** now supports observational data!
- Strongly recommended for obs4MIPs – it is the easiest way to ensure compliance
- Support for CMIP and obs4MIPs users
- Open source, can be adopted for other purposes
- Being used by most CMIP participating modeling groups
- Available via Anaconda with python, C and fortran interfaces

Temperature data (HadCR... | 5th Session of the WCRP Data... | obs4MIPs-IPSL Data Search... | obs4mips cog ipsl

node.ipsl.upmc.fr/search/obs4mips-ipsl/ | obs4mips cog ipsl

Hosted by Institut Pierre Simon Laplace | is-enes | Powered by ESGF and CoG

The Earth System Grid Federation is currently in the process of redeployment. Although individual sites such as this one have been brought online you should consider the system at risk until integration testing between sites is completed. An update to this notice will be made once this is the case.

Welcome, Guest | Login | Create Account

WCRP obs4MIPs
World Climate Research Programme

You are at the ESGF-NODE.IPSL.UPMC.FR node

Home | Technical Support

Project +
Institute +
Instrument -
 AIRS (1)
 MLS (1)
Time Frequency +
Realm +
Variable -
 ta (2)
 taNobs (2)
 taSliderr (2)
Variable Long Name +
CF Standard Name +
Datanode -
 esgf-data.jpl.nasa.gov (2)

Enter Text: Search Reset Display 10 results per page

Show All Replicas Show All Versions Search Local Node Only

Search Constraints: *esgf-data.jpl.nasa.gov | *ta

Total Number of Results: 2
-1-
Please login to add search results to your Data Cart
Expert Users: you may display the search URL and return results as XML or return results as JSON

1. **obs4MIPs AIRS Air Temperature L3 Monthly Data**
Description: Obs-AIRS model output prepared for obs4MIPs NASA-JPL observation
Data Node: esgf-data.jpl.nasa.gov
Version: 20110608
Total Number of Files (for all variables): 3
[Show Metadata] [Show Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [Tech Note] **Supplemental info**

2. **obs4MIPs MLS Air Temperature L3 Monthly Data**
Description: Obs-MLS model output prepared for obs4MIPs NASA-JPL observation
Data Node: esgf-data.jpl.nasa.gov
Version: 20111025
Total Number of Files (for all variables): 3
[Show Metadata] [Show Files] [THREDDS Catalog] [WGET Script] [LAS Visualization] [Tech Note]

SGF sponsors and partners
OE Office of Science | IS-ENES | NASA | NOAA | NCI | NSF
ESGF version 3.3.0
ESGF P2P Version v2.2.3-master-release
Earth System CoG sponsors and partners
NOAA | NASA | NSF | DoE Office of Science | IS-ENES
https://www.ipsl.fr

Beyond the “best estimate” obs4MIPs dataset Supplemental Information

Strategy currently in preparation by WDAC task team

A possible path forward to deal with multiple unresolved issues within obs4MIPs, e.g.:

- Additional documentation
- Uncertainty data
- Data flags, masks
- Supporting validation data
- Detailed Maturity matrices

Organization of supplemental data will initially be more heterogeneous than associated “best estimate”, and therefore not searchable from a higher level. It will be alongside best estimate as a zipped archive

Obs4MIPs: Status of Observation Holdings/ Submissions

Early 2018

Air Temperature
 Specific Humidity
 Air Temperature
 Specific Humidity
 Sea Surface Temperature
 TOA Outgoing Longwave Radiation
 TOA Outgoing Clear-Sky Longwave Radiation
 TOA Outgoing Shortwave Radiation
 TOA Outgoing Clear-Sky Shortwave Radiation
 TOA Incident Shortwave Radiation
 Surface Downwelling Longwave Radiation
 Surface Downwelling Clear-Sky Longwave Radiation
 Surface Upwelling Longwave Radiation
 Surface Downwelling Shortwave Radiation
 Surface Downwelling Clear-Sky Shortwave Radiation
 Surface Upwelling Shortwave Radiation
 Surface Upwelling Clear-Sky Shortwave Radiation
 Total Cloud Fraction
 Sea Surface Height Above Geoid
 Precipitation - monthly
 Precipitation – 3 hourly
 Precipitation - daily
 Precipitation - monthly
 Near-Surface Wind Speed
 Eastward Near-Surface Wind
 Northward Near-Surface Wind
 Leaf Area Index
 Mole Fraction of Ozone
 Ambient Aerosol Optical Thickness at 550 nm
 Ambient Aerosol Optical Thickness at 550 nm
 Water Vapor Path
 ISCCP Cloud albedo
 ISCCP Cloud albedo
 CALIPSO Scattering Ratio, srbox1
 CALIPSO Scattering Ratio, srbox2
 CloudSat Radar Reflectivity CFAD
 CALIPSO Cloud Fraction
 CALIPSO Clear Cloud Fraction
 CALIPSO High Level Cloud Fraction
 ISCCP Cloud Fraction
 CALIPSO Low Level Cloud Fraction
 CALIPSO Mid Level Cloud Fraction
 CALIPSO 3D Clear Fraction
 CALIPSO Total Cloud Fraction
 CLOUDSAT Total Cloud Fraction
 ISCCP Total Cloud Fraction
 ISCCP Cloud Top Temperature
 ISCCP Cloud Top Temperature
 Missing data fraction
 Overpasses
 PARASOL Reflectance
 Solar Zenith Angle
 ISCCP Cloud Top Pressure
 ISCCP Cloud Top Pressure
 MISR CTH-OD Cloud Fraction
 CALIPSO 3D Undefined fraction

Water Vapor Path
 Fraction of Absorbed Photosynthetically Active Radiation
 Snow area fraction
 Ambient Aerosol Extinction Optical Thickness at 550 nm
 Sea Ice fraction
 Sea Ice fraction
 Sea Surface Temp
 Sea Surface Temp
 Sea Surface Temp
 TOA Outgoing Longwave Radiation
 TOA Outgoing Longwave Radiation
 TOA Outgoing Shortwave Radiation
 TOA Outgoing Longwave Radiation
 Mole Fraction of Ozone
 albedo; Ratio of two variables
 Ice Sheet Temperature?
 Ambient Aerosol Optical Thickness at 550 nm
 Surface Aqueous Partial Pressure of CO₂
 dry_atmosphere_mole_fraction_of_carbon_dioxide
 Near-Surface Wind Speed

Complete (~125*)
In Progress* (~15)
Submissions From Data Call (~90)

* A few technotes remain to be completed

Near-Surface Air Temperature
 Air Temperature
 Geopotential Height
 Eastward Near-Surface Wind
 Northward Near-Surface Wind
 Near-Surface Wind Speed
 Near-Surface Specific Humidity
 Surface Downward Latent Heat Flux
 Surface Downward Sensible Heat Flux
 Near-Surface Air Temperature
 Precipitation
 Sea level pressure
 Sea Surface Temp
 Total Chlorophyll Mass Concentration
 Infrared brightness temperatures (11 μm, 0.6 μm, 6.7 μm)
 Leaf Area Index
 normalized difference vegetation index
 Fraction of Photosynthetically Active Radiation
 Sea Surface Temperature
 precipitation
 air temperature
 Burnt Area Fraction
 Surface Snow Amount
 Mid Tropospheric Humidity
 Upper Tropospheric Humidity
 Air Temperature
 geopotential height
 bending angle
 refractivity
 CLARA cloud_area_fraction; CFMIP 45
 surface albedo
 cloud_area_fraction
 cloud top phase; area_fraction_of_liquid_cloud_water_particles_at_cloud_top
 cloud top pressure; air_pressure_at_cloud_top
 cloud optical thickness; atmosphere_optical_thickness_due_to_cloud
 cloud ice water path; atmosphere_cloud_ice_content
 surface_downwelling_shortwave_flux_in_air
 surface downwelling clear sky shortwave flux
 surface_downwelling_shortwave_flux_in_air
 cloud ice water path; atmosphere_cloud_ice_content
 cloud liquid water path
 cci cloud area fraction (7x7 table); CFMIP 45 (tbd)
 cloud area fraction
 cloud top phase; area_fraction_of_liquid_cloud_water_particles_at_cloud_top
 cloud top pressure; air_pressure_at_cloud_top
 cloud optical thickness; atmosphere_optical_thickness_due_to_cloud
 Sea Ice Area Fraction
 Surface Temperature
 Sea Ice Area Fraction
 surface (2m) air temperature anomaly
 Near-Surface Specific Humidity
 Near-Surface Relative Humidity,
 Near-Surface Air Temperature

Task Team Efforts/Organization

- Regular TT telecons (~monthly)
- All project management data accessible to TT via Google Docs
- Much of the TT effort has been helping to better define strategic path, but increasingly...
- Moving toward helping to shepherd datasets from proposal to publication on ESGF

Monitoring datasets across the distributed federation: A new capability scans all ESGF nodes and generates a catalog of available datasets

Obs4MIPs

Obs4MIPs Data Table

The following table is automatically updated with Obs4MIPs datasets available throughout the Earth System Grid Federation.

Obs4MIPs Datasets			
Instrument	Dataset Name	Variables	Tech Note
AIRS	obs4MIPs AIRS Air Temperature L3 Monthly Data	Air Temperature Air Temperature Number of Observations Air Temperature Standard Error	Tech Note
AIRS	obs4MIPs AIRS Specific Humidity L3 Monthly Data	Specific Humidity Specific Humidity Number of Observations Specific Humidity Standard Error	Tech Note
AMSRE	obs4MIPs AMSRE Sea Surface Temperature L3 Monthly Data	Sea Surface Temperature Sea Surface Temperature Number of Observations Sea Surface Temperature Standard Error	Tech Note
ARC-SST-1-1	obs4MIPs UOE ARC-SST-1-1 Monthly Data	sea surface temperature	
AVISO	obs4MIPs AVISO Sea Surface Height Above Geoid L4 Monthly Data	Sea Surface Height Above Geoid Sea Surface Height Above Geoid Number of Observations Sea Surface Height Above Geoid Standard Error	Tech Note
CFMIP-Obs-CALIPSO	obs4MIPs CFMIP-Obs CALIPSO Low Level Cloud Fraction L3 Monthly Data	CALIPSO Low-Level Cloud Fraction	Tech Note
CFMIP-Obs-CALIPSO	obs4MIPs CFMIP-Obs CALIPSO Low Level Cloud Fraction L3 Monthly(Day) Data	CALIPSO Low-Level Cloud Fraction	Tech Note
MLS	obs4MIPs MLS Specific Humidity L3 Monthly Data	Specific Humidity Specific Humidity Number of Observations Specific Humidity Standard Error	Tech Note
MLS	obs4MIPs MLS Air Temperature L3 Monthly Data	Air Temperature Air Temperature Number of Observations Air Temperature Standard Error	Tech Note
MODIS	obs4MIPs MODIS Total Cloud Fraction L3 Monthly Data	Total Cloud Fraction Total Cloud Fraction Number of Observations Total Cloud Fraction Standard Deviation	Tech Note
QuikSCAT	obs4MIPs QuikSCAT Northward Near-Surface Wind L2B Monthly Data	Northward Near-Surface Wind Northward Near-Surface Wind Number of Observations Northward Near-Surface Wind Standard Error	Tech Note
QuikSCAT	obs4MIPs QuikSCAT Eastward Near-Surface Wind L2B Monthly Data	Eastward Near-Surface Wind Eastward Near-Surface Wind Number of Observations Eastward Near-Surface Wind Standard Error	Tech Note
QuikSCAT	obs4MIPs QuikSCAT Near-Surface Wind Speed L2B Monthly Data	Near-Surface Wind Speed Near-Surface Wind Speed Number of Observations Near-Surface Wind Speed Standard Error	Tech Note
SSMII-MERIS	project=obs4MIPs, institute=FUB-DWD, instrument=SSMII-MERIS, time_frequency=mon, variable=prw	Water Vapor Path	Tech Note
TES	obs4MIPs TES Mole Fraction of O3 L3 Monthly Data	Mole Fraction of O3 Mole Fraction of O3 Number of Observations Mole Fraction of O3 Standard Error	Tech Note

~125 DataSets