

WDAC report to JSC37

Geneva, April 26, 2015

WCRP Data Advisory Council (WDAC)

Mission

- act as a single entry point for all WCRP data, information, and observation activities with its sister programmes,
- coordinate their high-level aspects across the WCRP,
- ensure cooperation with main WCRP partners such as GCOS, CEOS, CGMS and other observing programmes

WDAC works with the WCRP Modeling Advisory Council to promote effective use of observations with models and to address issues related to the coordinated development of data assimilation, reanalysis, Observing System Sampling Experiments, fluxes and paleoclimatic data and their assessments (metrics, *etc.*).

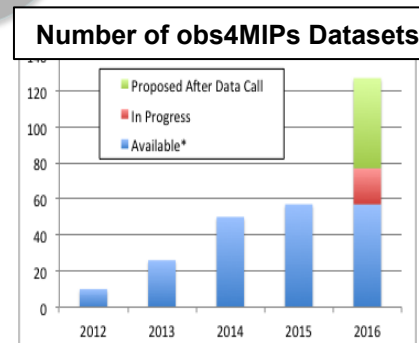
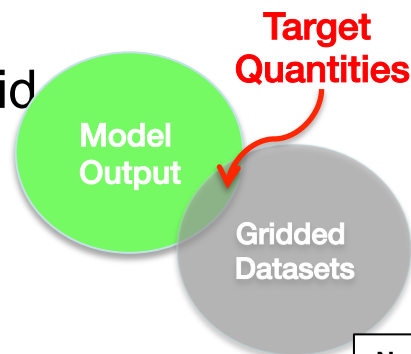
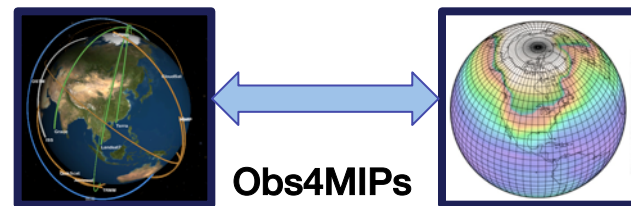
WDAC Current Activities

- **obs4MIPs**
- **Reanalysis**
- **Surface Fluxes**
- **Dataset Assessments**
- **Data needs from core projects, WGs and Grand Challenges**
- **Polar Challenge**
- **WCRP – GCOS collaborations, Data Prize, Open Data Policy**
- **Possible contributions to WCRP Strategic Plan**

obs4MIPs Task Team

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

- A Project for identifying, documenting and disseminating observations for climate model evaluation.
- Data sets accessible on the Earth System Grid Federation (ESGF) alongside the Coupled Model Intercomparison Projection (CMIP) model output, adhering to the same data conventions, greatly facilitating research
- Guided by the World Climate Research Program (WCRP) Data Advisory Council obs4MIPS Task Team



obs4MIPs Task Team [2]

Status of Observation Holdings/ Submissions

April 2016

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

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

Complete* (~57)
In Progress* (~20)
Submissions After Data Call (~50)

*some tech notes remain and ESGF re-loading

Reanalysis Activities

- Copernicus Climate Change Service (C3S)
 - Workshop on “Climate Observation Requirements”, 29 Jun – 1 Jul 2015, with WDAC4
 - C3S – NOAA Workshop, 7-8 Apr 2016, prior to WDAC5
- WCRP Task Team for Intercomparison of ReAnalyses (TIRA)
 - *White Paper* (Michael Bosilovich *et al.*) Discussed at WDAC4/WDAC5
 - Task Team endorsed; membership being finalized
 - Reanalysis.org
 - ana4MIPs and CREATE-IP
- 5th *International Reanalysis Conference* planning for 2017
 - To be held in Europe; joint sponsorship with C3S
 - Develop Organizing Committee and forward plan (Jean-Noël Thépaut, Michael Bosilovich)

Surface Flux Task Team

[<https://www.earthsystemcog.org/projects/surflux/>]

Task Team Members

- Carol Anne Clayson (co-chair, WHOI), Brian Ward (co-chair, NUI-G), Anton Beljaars (ECMWF), Michael Bosilovich (NASA), James Edson (UConn), Peter Gleckler (PCMDI), Petra Heil (UTasmania), Pierre-Philippe Mathieu (ESA), Nobuko Saigusa (NIES), Hape Schmid (KIT), Paul Stackhouse (NASA), Russ Buss de Souza (INPE)

Status...

- ESGF / CoG presence - <https://www.earthsystemcog.org/projects/surflux/>
- Plans to publish selected data sets on ESGF in coordination with obs4MIPs
- Flux – ECV cross walk

Dataset Assessments

- WDAC Best Practice document published in 2015
- Building on collective experience from core projects (GEWEX, SPARC, CLIVAR, CliC), agencies (ESA, EUMETSAT, NASA, etc), etc

POLAR CHALLENGE

Be the first to complete a
2000 km continuous mission
with an Autonomous
Underwater Vehicle (AUV)
under the sea ice.



Compete for the Prize!
Become a co-sponsor!
www.wcrp-climate.org/polarchallenge

Co-sponsors:



POLAR CHALLENGE

**500K
swiss fr**



CONTEXT

The cryosphere plays a fundamental role in the climate system. We need much better monitoring and prediction capabilities for the polar regions.



CHALLENGES AND OPPORTUNITIES

Polar observations are expensive, risky and sparse. We can expand AUVs' endurance, navigation and communication capabilities to operate under the sea ice.



VISION

A cost-effective, sustainable and autonomous polar ocean monitoring system to drive a new era for climate research and services.



JSC-36 Actions

- GCOS
 - Coordination currently is through *ex officio* members on WDAC
 - Action to broaden current ECVs to include surface fluxes, among other parameters (underway)
 - Continuation of joint meetings with GCOS panels
 - Inputs to implementation plan
- WCRP / GCOS Data Prize
 - Endorsed by WDAC5
 - Will circulate a draft announcement to WDAC and GCOS Chairs
 - Concerns about "Early career" definition
- WCRP / GCOS Best Practices Data Policy
 - Drafted, will be circulated to WDAC and GCOS Chairs for review

JSC Action Recommendations

- WDAC Membership
 - Membership changes moving towards 1/3, 1/3, 1/3 rotation sequence
- Concerns about *in situ* networks degeneration
 - BSRN
 - ARGO
 - ISMN (soil moisture)
 - ozonesondes (GAW more generally)
- Emergent satellite mission gaps
 - COP21 requirement for space-based Carbon observations
 - Passive microwave missions
 - Limb sounders for atmospheric composition / UT/LS
 - Lower troposphere water vapour
 - WDAC will forward concerns to WG-Climate

Thank you