WCRP REPORT
World Climate Research Programme

PROJECT REPORT

Report of the first session of the WCRP Data Advisory Council (WDAC)

16 July 2012, Beijing, China

September 2012

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WCRP Data Advisory Council
Session 1
16 July
Beijing, China

Present: Otis Brown (Chair, OB), Toshio Koike (Vice-chair, TK), Joerg Schulz (CGMS, GEWEX, JS), Walter Meier (CliC, WM), Adrian Simmons (AOPC, AS), Jean-Noël Thépaut (WGNE, JNT), Brian Ward (SOLAS, BW), Michael Bosilovich (Reanalysis, MB)

Apologies: Pierre-Philippe Mathieu (CLIVAR, PPM), Kaoru Sato (SPARC, KS), Han Dolman (TOPC, HD), Eric Lindstrom (OOPC, EL), David Schimel (IGBP, DS), Mark Dowell (CEOS, MD)

Invitees: Antonio Busalacchi (JSC chair, AB), Greg Bodeker (SPARC co-chair, GB, attending for Kaoru Sato), Johannes Staehelin (SPARC director, JST), Kerry Sawyer (CEOS, KS)

Input contributions: Duane Waliser (Obs4MIPs, DW), Michel Dequé (Regional Climate, MDE)

Staff: Michel Rixen (WCRP JPS, MR), Ghassem Asrar (WCRP JPS, GA)

1 Introduction

1a. Introduction - WDAC Chair and WCRP JPS

The chair, OB, and the WCRP JPS representative, MR, welcomed all participants, thanked them for participating and hoped that the WDAC would be a rewarding experience for everyone. A quick round table allowed everyone to introduce themselves. OB recalled the origin of WDAC which builds on the WOAP legacy and stressed that the WDAC charge is to include all observing-related information needed for climate studies; thus, it can address a wide scope through various thematic priorities such as reanalysis, assimilation, metrics, OSSEs, *etc*. The key objectives of this meeting included the review of the WDAC ToRs, the review of the current state of ongoing observation activities pertinent to WCRP, the review of actions and recommendations from previous meetings and workshops and the identification of future WDAC activities and collaborations.

Discussion: AS suggested that future meetings be scheduled around April-June, after the annual meetings of AOPC, OOPC and TOPC, which GCOS would seek to hold in the first three or four months of the year, so as to foster efficient information exchange. Also, the group agreed that data assimilation belongs to the WDAC charge, but that some form of consultation with WMAC would be necessary.

1b. Welcome - Chair JSC

AB welcomed the WDAC participants and presented the new structure of the WCRP, composed of a Joint Scientific Committee (JSC), Joint Planning Staff (JPS), the Modelling Advisory Council (WMAC), the Data Advisory Council (WDAC), four Working Groups on Coupled Modelling (WGCM), Regional Climate (WGRC), on Seasonal to Interannual Prediction (WGSIP) and on Numerical Experimentation (WGNE), four core projects (CLIVAR, CliC, SPARC and GEWEX) and seven cross-cutting themes. AB stressed the growing number of data across the core projects having their own data initiatives. He noted that the JSC would not be prescriptive regarding the functioning of WDAC which is to determine the best approach to go forward, favoring a grass-roots approach.

Discussion: AB stated that resources would preferably be provided through task teams.

1c. Adoption of Agenda

The agenda was adopted, with minor adjustments to the sequence of presentations.

1d. Review of the TORs

The TORs were reviewed and can be found in Annex A.

2. Data initiatives from WCRP core projects and partners

2a. CGMS – Joerg Schulz

The CGMS missions include inter-calibration of sensors and products (*e.g.* GSICS initiative), harmonization of meteorological satellite mission parameters and complementarity and compatibility in products (*e.g.* SCOPE-CM climate data records – CDR - from space) and services. An update of the high-level priority plan is under preparation, to be endorsed by the EUMETSAT Council in Nov 2012. The WDAC was briefed by CGMS on advantages of collaborative efforts between research and operational groups in the transitions of research data sets into operational environments. The GEWEX ISCCP to NOAA and European HOAPS data sets to the EUMETSAT CM SAF provide good examples. WDAC was further briefed that the SCOPE-CM initiative is facilitating such collaborations where coordination on the use of multi-agency data is needed. SCOPE-CM already had discussions with the GEWEX GDAP with the goal of fostering collaboration on sustaining GEWEX global data products. SCOPE-CM CDR quality assessments could be led by WCRP. A proposed SCOPE-CM life cycle follows best practices from the science community, many stemming from WCRP and relies on established structures for peer reviews of publications and data records. SCOPE-CM is now entering Phase 2, the goal of which is to further mature the capability to create CDRs of high quality ensuring full traceability of the process and reproducibility of the products.

2b. CEOS – Mark Dowell

JS represented CEOS on behalf of MD. There are many common approaches and processes between CEOS, CGMS and WMO and there is a rationale for a concerted climate activity within CEOS. The CEOS Working Group on Climate is to facilitate the implementation and exploitation of ECV time series. The Climate Monitoring Architecture (CMA) jointly developed by many member agencies of CEOS and CGMS assists in promotion of a common understanding of the implementation implications of meeting the various space-related climate monitoring requirements (*e.g.* from GCOS). It supports an assessment of the degree to which the currently implemented systems meet the requirements (and the generation of an action plan to address identified shortfalls/gaps/duplication). Furthermore it will advance our understanding of the end-to-end information flows and dependencies (*i.e.* from sensing through to decision-making).
A questionnaire was developed that facilitates a gap analysis at global scale, *i.e.*, involving all member agencies. It is conducted at TCDR level (not only sensor level) to assess the existing and planned capability to create CDRs. The questionnaire was released to CEOS and CGMS agencies end of May with responses expected in October. There is a high level of commonality between the outcome of the Frascati workshop, the current NCDC GOSIC and the CEOS inventory. There is a need to harmonize those activities to activate their full potential. It was suggested to include *in-situ* data into an overall ECV inventory. It was also proposed that WDAC develops a framework for independent CDR assessment.

Discussion: OB noted that the logical flow provides a flexible framework designed to identify gaps but also redundancies.

2c. WGNE – Jean-Noël Thépaut

WGNE has some clear relevance to WDAC (model-data comparison, data assimilation (DA), *etc*). The current trend is toward seamless predictions (*e.g.* transpose-AMIP). Data assimilation is evolving with hybrid variational-ensemble approaches. The characterization of observation errors (including correlations) and diagnostics of observational impacts is gaining importance and provides increased granularity. Data pre- and post-processing are less visible aspects of DA but nonetheless critical. OSSE techniques are evolving to identify the contribution of various observing systems, and should be encouraged for the planning of future missions. DA has many activities (downscaling, coupling, non-linear approaches, reanalysis, *etc*). It is suggested for the WDAC to provide guidance on better exploitation of current data and future satellite missions. It is also suggested that the WDAC ensures the coordination of DA for reanalysis.

2d. SOLAS – fluxes – Brian Ward

SOLAS has a strong focus on the fluxes of carbon dioxide between the ocean and atmosphere, as well as other greenhouse gases. A clear objective of SOLAS is to understand the processes responsible for air-sea exchange. The

SOLAS mid-term strategy focuses on sea-ice biogeochemistry, ocean-derived aerosols, air-sea gas fluxes, nutrient cycles, ship plumes and fixed observatories, the last two items making less progress. Examples are given on parameterization of air-sea CO_2 fluxes, critical for Earth System Models. The Surface Ocean CO_2 Atlas (SOCAT) database is a good candidate for inclusion in the WDAC inventory, with the additional possible functionality of providing the data in Obs4MIPS format.

Discussion: on a question by TK, BW clarified that SOLAS itself does not have specific databases, but the researchers involved have them. Fluxes are highly relevant to coupled models, yet, there is still a lot to do on bio-geochemical fluxes, especially for ESMs.

2e. GEWEX – NCAR Climate Data Guide – Joerg Schulz

GEWEX hosts and provides many global and regional data sets as well as data sets for specific model comparison tasks. Global data sets include clouds, water vapor, precipitation, TOA radiation, surface radiation, evaporation and atmospheric circulation. In particular, the GEWEX Data and Assessments Panel (GDAP) develops and reprocesses CDRs of water and energy variables such as clouds (ISCCP), water vapor (assessment underway), precipitation (GPCP, GPCC), radiation fluxes (SRB), aerosols (GACP over the ocean) and turbulent fluxes (SeaFlux – underway - and LandFlux – evolving). Data sets need objective assessments to be most beneficial to the science, user and provider communities. NCAR has developed the Climate Data Guide (http://climatedataguide.ucar.edu - CDG) that has been initiated to be “the go-to source for scientifically sound information and advice on the strengths, limitations and applications of climate data”. The platform contains a lot of information on existing data records but it lacks results on objective assessments.

Discussion: there are some concerns about the independence of data sets but CDG is a very useful resource, currently project-oriented. There is a need to connect these initiatives with more objective assessment activities such as the GDAP ones which may deserve a comprehensive framework within WCRP.

2f. GCOS, AOPC/TOPC/OOPC – Adrian Simmons

AS presented the GCOS mission, governance, activities and structure of GCOS, including the role of the three AOPC, TOPC and OOPC panels, which are co-sponsored by WCRP. The GTOS secretariat is currently disengaged with TOPC and prospect for resolving this disconnect is unclear. AOPC oversees in particular the GCOS Reference Upper Air Network along with baseline surface and upper air networks, and reviews status of some in-situ data products (CRUTEM, GPCC, *etc*). OOPC continues to develop a Deep Ocean Observing Strategy.

2g. CliC – Walt Meier

CliC's goals are to assess and quantify the impacts of climatic variability and change on the cryosphere and their consequences, to enable its prediction and to determine its stability. It has become easier and safer to work in the Arctic, now dominated by new ice instead of multi-year ice. However with increased activity, safety is becoming more of a concern. Many activities build on the legacy of IPY. CliC aims at a standardized metadata and data integrated system from different sources. Of particular note are passive microwave sea ice records, which are produced by several groups, but independently and without formal coordination. Human collected records (newspapers, videos, *etc*) can provide some value because other data are sparse. Consideration is given to ways to peer-review data sets, for example through DOI but the necessary granularity on DOI validated data sets is unclear.

Discussion: The WDAC supports development of climate data stewardship and efforts towards data set publication and traceability of data set versions. WDAC also endorses proper citation of data sets within peer-reviewed journal articles, assessment reports, and other publications; this includes the use of DOIs for data sets.

2h. Wrap-up of briefings and contributions (including CLIVAR, SPARC, IGBP and Regional Climate – Toshio Koike

There is a need for a WDAC strategic approach and understanding the inventory of WCRP data activity is critical. ECV seems to be a priority focus as high quality data are essential to achieve WCRP's mission. The research community has not implemented an end-to-end system, yet. Operational centres are essential to sustain the observing systems.

Discussion: satellite data records are in good hands through CGMS/CEOS. WDAC should facilitate commonality, not to build inventory itself. There is a need to demonstrate the impact of high quality data. Reanalyses can partially address the requirement for model initialization.

3. Actions/Recommendations from previous Observations Meetings

3a. Frascati Workshop and ECVs – Adrian Simmons

WDAC was briefed on the data set inventory proposal developed at the Joint WCRP/GCOS workshop in Frascati, Italy in April 2011, it was also briefed about the subsequent discussion between the WOAP chair and NOAA/NCDC, which had led to the proposal for an implementation based on an expansion of the metadata being developed by NCDC for its GOSIC data portal. WDAC was also briefed on ongoing activities on a data set inventory by CEOS/CGMS developed in the context of the establishment of the architecture for space-based climate monitoring. This inventory is based on a

web-based questionnaire and has been implemented within CEOS's Mission, Instruments and Measurements (MIM) database.

The WDAC endorsed an initial implementation within GOSIC by NCDC in liaison with GCOS and WCRP, but urged that this be harmonized with the CEOS/CGMS initiative, taking into account the need to include products based on in situ as well as satellite observations. WDAC formed a task group from within its membership to monitor progress and report to the next WDAC session.

Discussion: it was noted that the CEOS/CGMS questionnaire is more comprehensive than the WOAP questionnaire developed at the WOAP workshop in 2011. However, about 90% of the questionnaire developed by CEOS/CGMS is applicable to in-situ data sets as well.

3b. Reanalysis Conference, Obs4MIPs – Michael Bosilovich

The report of the 4th WCRP International Conference on Reanalyses indicated a distinct need for international coordination of the input observations (*in situ* and remotely sensed and covering atmosphere, ocean and land) for climate reanalyses. Given the complexity and depth of the issues involved, the WDAC finds that an appropriate way forward is to develop a proposal for a WCRP workshop (probably jointly with ECMWF and relevant EU projects) addressing these issues which would likely be planned within about 2 years at ECMWF and determine the need for and scope of a potential task group.

The ESGF is the primary repository for the CMIP5 data. NASA presently hosts relevant satellite-based datasets for model evaluation (i.e. like-variables in the same format as the CMIP model output) on their ESGF Portal (esg-gateway.jpl.nasa.gov). This activity developed in concert with PCMDI and now termed Obs4MIPs, can facilitate the evaluation of global climate models and provide useful observation-based metrics information for the Climate Metrics Panel. NASA has formed an Obs4MIPs Science Working Group that includes membership from PCMDI and NOAA, and is seeking inputs from ESA-CCI, EUMETSAT and CEOS WG. Included in the discussion of the expansion of the Obs4MIPs activity is the addition of ARM *in-situ* observations as well as reanalysis products. Some reanalyses, such as MERRA are already available and permission is given for additional reanalyses to be included as part of the ongoing effort called Ana4MIPS. Additional information Obs4MIPs can be found at the activity's home page http://obs4mips.llnl.gov:8080/wiki.

Discussion: WDAC recommends that relevant entities (e.g. GCOS, CEOS, CGMS, WCRP core projects, surface fluxes, IGBP, reanalysis, etc) promote the provision of monthly means of observed quantities through the Obs4MIPs component to facilitate the assessment of model and data within the ESG. A Obs4MIPs formal panel is probably premature given the WDAC recent establishment but could be envisaged in the future.

4. Discussion

The next WDAC meeting should consider addressing the following topics:

1. Obs4MIPs
2. Workshop on observations for reanalysis
3. CEOS and GOSIC to brief on ECV inventories including maturity matrix approach
4. Four core projects to brief on their best data assessment practices in guiding users to specific data sets
5. SCOPE-CM presentations on the outcome of phase 1 considering specific ECV data records
6. Network design, OSSEs
7. Data needs to initialize models to provide seasonal ice outlooks
8. Bio-geochemical data brief for Earth system models by IGBP representative
9. Surface fluxes
10. ESGF governance – follow-up from various meetings

5. Joint meeting between WDAC and WMAC

This agenda item was cancelled during the course of the meeting at the request of the WMAC who requested more time for their internal discussions. Co-chairs of respective groups and interested people met over lunch to clarify the boundaries of responsibilities of both groups.

WDAC would remain the prime entity for Obs4MIPs, reanalysis, data assimilation, and satellite simulators matters, with involvement of - and coordination with - WMAC when necessary.

6. WDAC Business

6a. Review of planned meetings/events – gaps, duplicates, requirements

The CLIVAR-GSOP workshop on “Ocean Synthesis and Air-Sea flux evaluation” will be held November 27th – 30th 2012 at Woods Hole Oceanographic Institution, Woods Hole, USA.

Arctic Climate Scenario Assessment, an AMAP Workshop” will be held October 16th – 18th 2012 at the NOAA Pacific Marine Environmental Lab, Seattle, Washington, USA.

Upcoming WGCM and WGSIP sessions, 24-26 September 2012

EC ExArch meeting on ESG, 1-3 October, London

SPARC will be holding a Data Requirements workshop at ESRIN in Frascati in February 2013.

See also action list in Annex D.

6b. WDAC – WMAC liaising

See point 5.

6c. Next WDAC Meeting

A suggestion was made to hold the next meeting at JRC, Ispra, Italy in April-May (TBC). TK stressed he is only available Mondays and Tuesdays.

6d. AOB

N/A

6e. Review of Draft actions list

Participants finalized the list of actions to be presented the next morning at the JSC session. OB and MR thanked all participants for their contributions and inputs. See action list in Annex B.

7. WCRP Joint Scientific Committee 33rd Session

7a. Summary of first WMAC meeting

Dr Mitchell reviewed the JSC motivation for forming the WMAC, namely that there was neither enough expertise in JSC, nor time during the annual meetings, to discuss modelling issues in depth; the WMAC was to serve as extension of JSC. WMAC had sent a questionnaire to the WCRP modelling community asking what their expectations from the Panel were. Reactions had been mixed; some noted that there was already a lot of coordination in the existing modelling working groups. WMAC discussed this at some length during this first meeting and concluded that there was a role for this group in addition to existing groups. They proposed a shorter and revised terms of reference, as follows:

In partnership with WCRP projects and working groups act as a focal point for WCRP modelling and advise the JSC and WCRP community on issues pertaining to modelling.
1. Regularly assess modelling capabilities within WCRP and identify gaps, overlaps and opportunities for synergy.
2. Provide advice on priorities for modelling across WCRP including the Grand Challenges.
3. Facilitate effective communication on modelling issues within the WCRP and with the broader community.
4. Promote capacity development in model development, evaluation, and applications.

Main responsibility for working level coordination should remain with the individual modelling groups and hence the WMAC membership should be at the level of Chair of the various groups. A request was made to add a representative from the WMO Weather Research Programme (WWRP) in the

interest of increasing interaction between the weather and climate communities. WMAC would act as a forum for discussion and should identify and promote priority areas. The Council proposed to facilitate coordination amongst the groups and Projects through the use of online communication tools. The Council would prefer to meet for one day after the project and working group reports at the annual session of JSC.

Discussion

The need for a joint activity with IGBP to advance prediction of the Earth system (in addition to the biannual joint meetings of WGCM and IGBP AIMS) was highlighted. The issue of the relationship between the WMAC and the joint WMO CAS/WCRP Working Group on Numerical Experimentation (WGNE) was raised. It was concluded that the two groups were complementary – WGNE addressed mainly atmospheric modelling whereas WMAC was about the earth system as a whole. A question was raised as to where interactions with the end users would be considered. In general these would be dealt with in the existing modelling groups, but if WMAC saw a gap, it would advise the JSC on appropriate action. It was emphasized that the Councils were primarily advisory and would not to take on activities themselves.

WMAC ACTION: Adopt revised WMAC Terms of Reference

WMAC ACTION: WMAC to form task team with IGBP on prediction of Earth system

7b. Summary of first WDAC meeting

Dr Brown briefed the JSC on the outcomes of the first WDAC meeting. The council sought only minor adjustments to their terms of reference (see Appendix C). The first meeting was very busy with a variety of issues to address, as reflected in the action items below. Dr Brown highlighted the SCOPE-CM collaboration between research and operational groups on the transition of data sets and remarked that these initiatives were worthy of wider participation by WCRP projects, and that significant scientific support from WCRP was needed to make the operational processing tasks successful. The Council had also considered the inventory of Essential Climate Variables (ECVs) proposed at the recent meeting co-sponsored by WCRP and GCOS in Frascati (see recommendation below). The WDAC would take responsibility for organizing the next reanalysis conference that would most likely be held in Europe within 3-4 years. In the mean time, there is a need to better coordinate the observation data sets input into reanalyses among the data producers and the reanalysis developers. It was proposed to hold a specialized workshop on this matter. The objectives of the workshop would be to determine the state of observation and reanalysis development, and to determine the best mode of communications among the interested institutions (*e.g.* a task group or committee). The WDAC was also already planning for its next meeting that would include on the agenda a discussion of the Earth System Grid and possible need for further governance.

Discussion

A question was raised as to what would be WDAC's advisory role vis à vis the core Projects, for instance for CLIVAR that worked closely with OOPC on data issues. Dr Brown reaffirmed that the WDAC did not wish to supplant anything that was ongoing, but rather wanted to ensure that all core projects had representatives on WDAC so they could raise issues of broader concern. It was noted that the GEWEX Data and Assessments Panel had expressed concern that some of the data sets being considered by Obs4mips might not have been sufficiently quality controlled. Dr Brown remarked that the WDAC was aware of this matter and wanted to develop a more uniform quality assessment approach; this would be an opportunity for WCRP to make expert assessments of these data sets. The need for coordination between the WDAC and WMAC on issues such as Obs4mips and model data was highlighted; Dr Brown said discussion would take place between the two groups to coordinate on common topics.

Annex A – Revised Terms of Reference

Mandate

A combination of climate observations and models are resulting in significant amount of data and information. Research on and development of Earth observing systems, models and field experiments comprise an intrinsic part of WCRP activities and contribute to continuation and expansion of global environmental monitoring. Every WCRP project develops data and information and has a set of observation activities. The WCRP Data Advisory Council (WDAC) will act as a focal point for all WCRP data, information, and observation activities with its sister programmes, and will coordinate their high-level aspects across the WCRP, ensuring cooperation with main WCRP partners such as GCOS and other observing programmes. WDAC will work with the WCRP Modelling 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 Sensitivity Experiments, and paleoclimatic data and their assessments.

Terms of Reference:

- To serve as a focal point for observations and data in WCRP
- To advise JSC and coordinate with WCRP Projects and Working Groups on issues pertaining to observations and climate data
- To promote research using sustained observations and data from process studies across the WCRP
- To promote assessment of the adequacy of sustained observations and derived products to support climate research
- To promote assessment of gaps in the global observing system in cooperation with observation programmes
- To promote coordinated assessment and comparison of climate-data products, including those from reanalyses
- To promote research for continuing improvement in the processing and reprocessing of climate data
- To promote development of mechanisms for archival and preservation of, access to and analysis of data, and associated meta data
- To promote standards for product generation, including global and regional reanalyses
- To promote development of coupled data assimilation and a coordinated approach to reanalysis across all domains

Meeting schedule:

The Data Council meets annually and reports to the subsequent JSC session and partner programmes. Dates will be chosen by consensus of membership.

Membership:

Members will be appointed by JSC for a 3-year term with a possibility of two 2-year extensions:

- Chair and vice-chair (both independent)
- Representative from each of the 4 projects (SSG nominates, JSC confirms)
- Representative from each of the 3 GCOS panels (chairs or their nominees)
- Representative of the WCRP Modelling Advisory Council
- Representative from the Working Group on Regional Climate
- Representative of IGBP (IGBP SC nominates)
- Representative of SOLAS (SOLAS SSC nominates)
- Representative of CEOS (chair or vice-chair of WG Climate)
- Representative of CGMS (CGMS secretariat nominates)
- Representative of PCMDI (PCMDI nominates, JSC confirms)

Representatives are *ex-officio* appointments representing their respective organizations. Other international agencies and observations coordinating bodies may participate as observer members of the Council.

Mode of functioning:

The WCRP Data Advisory Council is expected to:

- Communicate regularly by email, teleconference or videoconference
- Meet in person, annually as a minimum
- Encourage joint meetings of working groups and/or panels to promote communication or to launch focused joint initiatives

WDAC should have the flexibility and resources to promote action within existing WCRP projects and panels or by appointing limited duration task teams to accomplish its tasks.

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Annex B – Agenda

Time	*Agenda Item*	*Docs*
	Monday 16 July 2012	
1. Introduction – Chair O. Brown		
08h00 – 08h20	a. Introduction – WDAC Chair and WCRP JPS	11
08h20 – 08h30	b. Welcome - D/WCRP or Chair JSC	10
08h30 – 08h40	c. Adoption of agenda	1
08h40 – 09h10	d. Review of the TORs	2
2. Data initiatives from WCRP core projects and partners – part 1 (includes 5 mins for questions) – Vice-Chair O. Brown		
09h10 – 09h30	a. CGMS – J. Schulz	4
09h30 – 09h50	b. CEOS – J. Schulz o.b.o. M. Dowell	5, 6
09h50 – 10h10	c. WGNE, data assimilation – J.N Thepaut	7
10h10 – 10h30	d. SOLAS, fluxes – B. Ward	8, 20, 22
10h30 – 10h50	*Coffee break*	
2. Data initiatives from WCRP core projects and partners – part 2 (includes 5 mins for questions) – Chair T. Koike		
10h50 – 11h10	e. GEWEX, Climate Data Guide – J. Schulz	12, 13, 24
11h10 – 11h40	f. GCOS, AOPC/TOPC/OOPC – A. Simmons	16,17
11h40 – 12h00	g. CliC – W. Meier	21
12h00 – 13h00	*Lunch*	
13h00 – 13h20	h. Wrap-up of briefings and contributions (including CLIVAR, SPARC, IGBP and Regional Climate) – T. Koike	14, 22, 26, 27, 28, 29
3. Actions/Recommendations from previous Observations Meetings (includes 5 mins for questions) – Chair O. Brown		
13h20 –13h50	a. Frascati Workshop and ECVs – A. Simmons, O. Brown	3, 9
13h50 –14h10	b. Reanalysis Conference, obs4MIPs – M. Bosilovich	18, 23, 25
4. Discussion – Chair O. Brown		
14h10 – 15h10	a. What are the possible common	

	actions/recommendations requiring pan-WCRP coordination? b. Who will have the lead on follow up for such action/recommendation? c. What should future WDAC meetings look like?	
15h10 – 15h30	*Coffee break*	
5. Joint meeting between WDAC and WMAC – WDAC and WMAC Chairs		
15h30 – 16h30	a. Short reports from the individual meetings (5 minutes each) b. Interaction on themes of mutual interest (*e.g.* data assimilation, reanalysis, OSSE, model verification, metrics, model-data archives and ESG, obs4MIPS, *etc*) c. Long-term common strategy	2,15, 17
6. WDAC Business – Chair O. Brown		
16h30 – 17h00	a. Review of planned meetings/events – gaps, duplicates, requirements	
17h00 – 17h15	b. WDAC – WMAC liaising	2,15, 19
17h15 – 17h30	c. Next WDAC Meeting – Date/Venue d. AOB	
17h30 – 18h00	e. Review of Draft actions list	
18h00	*Dinner*	
<u>Tuesday 17 July 2012</u>		
7. WCRP Joint Scientific Committee 33rd Session		
11h00 – 11h15	a. Summary of first WMAC meeting – WMAC Co-Chairs Drs John Mitchell and Christian Jacob	
11h15 – 11h30	b. Summary of first WDAC meeting – WDAC Chair Dr Otis Brown and Vice-Chair Dr Toshio Koike	

Annex C – List of contacts

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Annex D – List of actions

	Action	POC	Date
1	WDAC to forward revised WDAC Terms of Reference to JSC for approval.	MR	Done
2	WDAC to help facilitate harmonization between the GOSIC and CEOS/CGMS initiatives that would provide a composite inventory of in situ and satellite observations.	AS, MD, JS, OB, HD, EL	
3	WDAC to encourage contributions from WCRP core projects, CEOS, CGMS, IGBP, SOLAS and the reanalysis community so as to populate the ESG with observations and further facilitate model-data comparisons.	All	
4	WDAC will develop planning activities for a 5th WCRP reanalysis conference in the 2016 timeframe, likely in Europe. .	JNT	2016
5	WDAC will begin planning a workshop addressing issues raised at the 4th reanalysis conference; focus on coordination of observations that are input into reanalysis.	AS, MB, JNT	2014
6	WDAC to work with GCOS, GEOS and CEOS to encourage existing networks to place higher priority on measuring non-physical variables such as partial pressure of carbon dioxide (pCO2) (an Essential Climate Variable (ECV).	BW	
7	WDAC to liaise with the WMO Global Cryosphere Watch (GCW) and CliC on Arctic data issues and to help GCW integrate efforts within the wider climate data community activities.	WM	
8	WDAC to encourage development of climate data stewardship and efforts towards data set publication and traceability of data set versions (citations, peer-reviewed articles, DOIs).	All	
9	WDAC advises JSC to encourage all WCRP projects to engage with operational activities such as SCOPE-CM regarding satellite observing data sets.	All	
10	WDAC to invite ESA SPARC Initiative (SPIN) to present to WDAC.	OB, MR	Next WDAC
11	WDAC web page to add links to core projects' data initiatives, to reanalyses.org and to the Climate Data Guide	MR, JS, PPM, WM, KS	Dec 2012