

Request to US CLIVAR For Workshop Sponsorship

1. Requesting Panel, Working Group, or person/s:

Prof. Detlef Stammer (University of Hamburg, Germany; Chair of the WCRP Joint Scientific Committee and Co-chair of the WCRP OSC 2023 Scientific Organizing Committee)

Dr. Helen Cleugh (Australia; Vice-Chair of the WCRP Joint Scientific Committee and Co-chair of the WCRP OSC 2023 Scientific Organizing Committee)

2. Title of workshop or meeting:

WCRP Open Science Conference 2023
“Advancing climate science for a sustainable future”

(including associated WCRP Early and Mid-Career Researchers (EMCR) Symposium) - <https://wcrp-osc2023.org>

3. Venue:

Kigali Convention Centre, Kigali, Rwanda

WCRP released in March 2021 an open call inviting qualified institutions to submit proposals to host the conference. Seven proposals were received and evaluated by a sub-group of the WCRP Joint Scientific Committee, and four of those were from institutions in the Southern Hemisphere. After interviews with the groups proposing to host the conference and two site visits, the WCRP Joint Scientific Committee decided to host the WCRP Open Science Conference 2023 in Kigali, Rwanda.

The Rwanda Environment Management Authority (REMA), on behalf of the Government of Rwanda, will host the WCRP OSC 2023 in Kigali. This event at the heart of the African continent will facilitate global engagement with research communities, stakeholders, and practitioners in Rwanda and the region.

Rwanda has a bold vision to become a carbon-neutral and climate resilient economy, as enshrined in the newly adopted Vision 2050. As we move towards a greener Rwanda in 2050, REMA is focusing available resources and seeking additional support to implement projects towards increased climate change data and projections, climate smart agriculture, and private sector engagement in climate change mitigation and adaptation.

Among the safest and friendliest of Africa’s capital cities, Kigali is blessed with a moderate high altitude and temperate climate. It is also conveniently located within three hours’ drive of the main national tourist attractions. The Rwandan capital provides both a comfortable and welcoming introduction to the ‘land of a thousand hills’ and is an ideal springboard from which to explore this magical country. In 2016, Rwanda’s capital city unveiled the new Kigali Convention Centre (KCC), which has become one of the most recognizable modern structures in Africa. Distinguished by its translucent dome, a multi-functional hall with a maximum capacity of 4,500 people, the KCC makes Rwanda the

top Meetings, Incentives, Conferences/Conventions and Exhibitions/ Events (MICE) host destination in East Africa.

4. Key Dates:

- October 2022: Conference program outline available
- November 2022: 2nd Conference announcement
- 1 December 2022: Abstract submission, financial support application and registration open
- February 2023: Abstract submission and financial support application deadline
- April-May 2023: Abstract review and financial support notifications
- June 2023: Final Conference program with speakers
- 22 & 28 October 2023: Early to Mid-Career Researcher Symposium
- 23-27 October 2023: WCRP Open Science Conference

5. Scientific Organizing Committee (include affiliations):

The Scientific Organizing Committee (SOC) of the WCRP OSC2023 reflects the multiverse of existing partnerships and topics that it will be covered during the conference. SOC business is carried out via email and regular teleconferences. A subgroup, dubbed the EXECSOC, has been formed to arrive at consensus after polling the full SOC for input on matters related to the program, local logistics, etc. Several other sub-groups have been formed and are responsible for specific topics of the program or with engagement with WCRP partners.

- Communication and Branding
- North-South Dialogue
- Engagement with Policy Makers
- Hybrid Program
- Early and Mid-Career Researchers (EMCR) Engagement

The full WCRP OSC2023 SOC membership is given in the table below.

Name	Affiliation	Country
Sandrine Bony	Laboratoire de Météorologie Dynamique (LMD/IPSL)	France
Pablo Borges de Amorim	GIZ	Brazil
Pascale Braconnot	Institut Pierre-Simon Laplace (IPSL)	France
Gregory Carmichael	University of Iowa	USA
Tereza Cavazos	Center of Scientific Research and Higher Education of Ensenada (CICESE)	Mexico
Jens Christensen	Danish Meteorological Institute	Denmark
Helen Cleugh	CSIRO	Australia
Chris Davis	National Center for Atmospheric Research	USA
Leandro Diaz	Center for Atmosphere and Ocean Research (CIMA)	Argentina

Han Dolman	Royal NIOZ	The Netherlands
Kristie Ebi	University of Washington	USA
Greg Flato	Environment and Climate Change Canada	Canada
Pierre Friedlingstein	University of Exeter	UK
Aimable Gahigi	Météo Rwanda	Rwanda
Bruce Hewitson	University of Cape Town	South Africa
Jin Huang	NOAA Climate Program Office (CPO)	USA
James Hurrell	Colorado State University	USA
Maria Ivanova	Northeastern University	USA
Vladimir Kattsov	Russian Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet)	Russia Federation
Roxy Mathew Koll	Indian Institute of Tropical Meteorology	India
Orli Lachmy	Open University of Israel	Israel
Jean-François Lamarque	McKinsey	USA
Benjamin Lamprey	Suez Consulting Company	Ghana
Sonya Legg	Princeton University	USA
Amanda Lynch	Brown University	USA
Pearl Nkusi	Rwanda Environment Management Authority (REMA)	Rwanda
Jon Padgham	START	USA
Thomas Peters	ETH Zürich	Switzerland
Jan Polcher	Institut Pierre Simon Laplace (IPSL)	France
Regina Rodrigues	Federal University of Santa Caterina	Brazil
Roberto Sánchez-Rodríguez	El Colegio de la Frontera Norte	Mexico
Steven Sherwood	UNSW Sydney	Australia
Detlef Stammer	University of Hamburg	Germany
Jianqi Sun	Institute of Atmospheric Physics (IAP)	China
Mouhamadou Bamba Sylla	African Institute for Mathematical Sciences (AIMS)	Rwanda
Toste Tanhua	GEOMAR Helmholtz Centre for Ocean Research Kiel	Germany
Susann Tegtmeier	University of Saskatchewan	Canada
Martin Visbeck	GEOMAR Helmholtz Centre for Ocean Research Kiel	Germany
Xuebin Zhang	Environment and Climate Change Canada	Canada

The Early and Mid-Career Researchers (EMCR) Engagement sub-group is responsible for the program of the EMCR Symposium. The membership of this sub-group is formed by Pascale Braconnot (co-lead), Leandro Diaz (co-lead), Roxy Mathew Koll, Sonya Legg, Pierre Friedlingstein, Orli Lachmy, Jianqi Sun, Susann Tegtmeier, Chris Davis,

Kristie Ebi, Sandrine Bony, Teri Cavazos, Pablo Borges de Amorim, Bruce Hewitson, and Mouhamadou Bamba Sylla.

6. Proposed attendees, include estimate number (indicate if open or by invitation):

The WCRP OSC2023 will be a true hybrid event, with an anticipated 1,500 attendees in person and an equal number attending the event remotely. In addition to members of WCRP Core Projects and Lighthouse Activities, the WCRP OSC2023 aims to attract science leaders, politicians, policy makers, intergovernmental agencies and NGOs, inviting them to share their ideas on how climate research can lead to a sustainable future. Natural and social scientists, humanities scholars, and practitioners from around the world will showcase their work, learn from each other, and explore new ways to work together to build the future we want.

Early and Mid-Career Researchers (EMCR) will play a prominent role throughout the OSC program, at the dedicated EMCR Symposium, and as speakers and session convenors at the Conference. The number of participants in the symposium will depend on funds available; the target is 100 participants.

7. Aims and objectives:

There is an urgent need to limit human-induced climate change for a sustainable climate future. With the mission of advancing climate science for a sustainable future, this once-in-a-decade Conference is an opportunity for WCRP's climate science to develop new plans and design new projects by reaching out to society, to strengthen connections between physical, social, economic, and political sciences, and to build bridges between the global north and south.

Urgent actions and solutions must be guided and informed by scientific knowledge and information that is credible, relevant, trusted and accessible. WCRP's climate science and the engagement of WCRP's climate scientists is therefore vitally important. The Conference aims to inspire our community of climate scientists to make their research useful and useable.

The Conference will be a forum that inspires our communities to jointly explore and develop transformative actions and solutions to the threats that the climate change crisis poses to society, our environment and livelihoods.

The Conference will cover the following themes:

- **Theme 1: Advances in climate research**

Theme leads: Regina Rodrigues (Brazil), Rowan Sutton (UK), Orli Lachmy (Israel)
Showcasing progress and future challenges in understanding Earth's climate system, and advances in climate science capacity around the world. *Sessions will cover, inter alia, climate processes; gaps identified by IPCC; energy, water and carbon cycles; climate modelling, observations and model-data fusion.*

- **Theme 2: Human interactions with climate**

Theme leads: Lisa Alexander (Australia), Pierre Friedlingstein (UK), Izidine Pinto (South Africa)

Analyzing key drivers and impacts of climate change (past, current and future), identifying risks to human and ecosystem health. *Sessions will cover, inter alia, climate extremes and associated risks and impacts; water availability, food, ecosystems, health and cities in a changing climate.*

- **Theme 3: Co-produced climate services and solutions**

Theme leads: Cathy Vaughan (USA), Bruce Hewitson (South Africa), Mouhamadou Bamba Sylla (Rwanda)

Connecting scientific knowledge, planning, decision-making and policy processes. Sessions will cover, inter alia, near-term regional and climate change information for adaptation and mitigation; climate scenarios; climate intervention research.

EMCR goals for the main Conference and the dedicated Symposium

- Contribute to the Conference outcomes
- Develop long-lasting connections amongst participants leading to future collaborative projects, especially those of a trans- or inter-disciplinary nature;
- Learn more about WCRP and discuss how EMCRs can actively engage with WCRP activities, especially LHAs;
- Build self-confidence and leadership abilities through peer interactions
- Explore how to participate most effectively in, and reap maximum benefits from, the OSC.
- Enhance EMCR prominence at the main conference, e.g. chair plenary sessions, convene/co-convene parallel sessions, organize town hall discussions, evaluate posters and student talks (as member of evaluation committee), and rapporteur for particular sessions.
- Increase EMCR visibility through flash talks, discussions around poster sessions, and more visibility within existing EMCRs networks.
- Include Table Topics during the OSC (at mealtimes) where people can choose tables where they wish to sit based on topics of discussion and especially of interest for EMCRs.
- Establish contacts with seasoned experts.

8. Relevance and/or benefits to US CLIVAR:

The WCRP OSC2023 is highly relevant to all scientists involved in climate science as represented and coordinated by WCRP, and specifically for research on the coupled climate-ocean system that, under WCRP, is coordinated by CLIVAR. USCLIVAR is a major contributor to this research and shares many similar foci, e.g., on decadal variability and underlying mechanisms, on changes of the heat content in the climate system, especially the ocean, and on extreme events, coastal climate, and polar climate change. USCLIVAR scientists are directly involved in many WCRP activities and play leadership roles by serving on project committees and working groups.

The conference will address many aspects of model improvement, better predictions and advances in climate observations, and model-data fusion. As such the proposed

conference is highly relevant to the goals of USCLIVAR as outlined in the US CLIVAR Science Plan 2013 (<https://usclivar.org/us-clivar-science>).

Sessions organized under many of these topics will allow USCLIVAR scientists to exchange and develop new ideas relevant to the USCLIVAR research challenges, and to broaden their view with respect to what the international community is pursuing, including many aspects of transdisciplinary research. This should contribute to shaping new science directions within US CLIVAR and for coordinating them with international efforts. In addition, participating early career researchers from the USA will gain new perspectives and views on current research topics from the leading scientists around the world, contribute their own ideas on important research topics, as well as to network and collaborate with their international counterparts.

9. Format of meeting:

The WCRP OSC2023 sessions will be fully hybrid and will be recorded to allow participants in other time zones to view the proceedings. Participants both in person and online will be able to interact with each other via the hybrid platform that has been selected (Pathable).

The program of the WCRP OSC2023 will have four main components: Dome Plenaries, Parallel sessions, Poster sessions and Evening sessions. The distribution of these components is shown in the figure below in a typical day of the event and descriptions of these components can also be found below.

A typical day at the Open Science Conference.

Time	Session	Description
7:30 – 8.45	Breakfast Session	Time available for World Cafés, Early- Mid Career Researcher breakfasts etc.
9:00 – 10:30	Dome Plenary	Dedicated Session, including Conference Opening; Africa-specific topic(s); Cross-cutting themes or issues.
10:30 – 11:00	Break	Dedicated tea and coffee break.
11:00 – 13:00	5 Parallel Sessions	Dedicated Sessions, comprising Keynote talks from invited speakers and selected from Abstracts; Q&A and Panel Discussions as needed.
13:00 – 14:30	Lunch	Dedicated lunch break.
14:30 – 16:30	5 Parallel Sessions	Dedicated Sessions, comprising Keynote talks from invited speakers and selected from Abstracts; Q&A and Panel Discussions as needed.
16:30 – 18:30	Posters & Coffee	Dedicated Poster Session, plus aligned Speakers' Corners, Lightning talks, Workshops and World Cafés.
18:30 – 19:00	Dome Plenary	Dedicated Session: Wrap up key discussion and preview the next day's sessions / events.
From 19:00	Networking Session	Networking and socializing, including World Cafés, with refreshments available.
20:00 – 22:00	Evening Session	Public lectures, Town Halls, Learning Labs, Workshops.

- **Dome Plenaries:** These sessions will be held in the main conference hall of the Kigali Convention Centre that is under a dome. Our aspiration is for the Dome Plenaries to be forward looking fora where integration occurs across and between the physical, social, behavioral, economic and political sciences, as well as the associated communities of researchers, multi-institutional actors, and practitioners. The purpose of the Dome Plenaries is therefore to be integrative, with a focus on action and solutions. At the same time, these Plenaries should inspire the “core” WCRP scientists on how to make their research useful and useable.
- **Parallel sessions:** these sessions will explore in depth topics relevant to the three overarching Conference themes, as follows. Some sessions will be jointly organized across themes.

Theme 1: Advances in climate research

- Session 1:** Climate variability on timescales from weeks to centuries
- Session 2:** Climate predictability and prediction
- Session 3:** Global and Regional Monsoons
- Session 4:** Storms, eddies and jets in the atmosphere and ocean
- Session 5:** Clouds and their role in climate
- Session 6:** Polar processes and change
- Session 7:** Rapid and/or irreversible changes in the climate system
- Session 8:** Atmosphere-land interactions: energy, water & carbon
- Session 9:** Ocean-atmosphere interactions: energy, water & carbon
- Session 10:** Interactions between atmospheric composition and climate, including aerosol processes
- Session 11:** Lessons from paleoclimate for recent and future climate change
- Session 12:** Advances in global and regional climate modelling (including AI/ML)
- Session 13:** Advances in climate observations and model-data fusion (including AI/ML)

Theme 2: Human interactions with climate

- Session 14:** Carbon Cycle (*Joint Session between Themes 1 and 2*)
- Session 15:** Global Energy Budget (*Joint Session between Themes 1 and 2*)
- Session 16:** Water Cycle (*Joint Session across Themes 1, 2 and 3*)
- Session 17:** Ice Sheets and Sea level change (*Joint Session across Themes 1, 2 and 3*)
- Session 18:** Current and future forcing (including aerosols & scenarios)
- Session 19:** Land use/land cover change
- Session 20:** Impacts on ecosystems (land/marine)
- Session 21:** Impacts on humans (e.g. food security, water)
- Session 22:** Impacts on humans (e.g. health, urban)
- Session 23:** Circulation change in the climate system (atmosphere and ocean)
- Session 24:** Attribution of changes
- Session 25:** Regional climate change
- Session 26:** Mitigation scenarios including overshoot and climate intervention

Theme 3: Co-produced climate services and solutions

- Session 27:** Hazards & Extreme events (*Joint Session across Themes 1, 2 and 3*)
- Session 28:** Regional information – Data and methods
- Session 29:** Regional information – Constructed in context

- Session 30:** Plausibility, probability, likelihood, and uncertainty
- Session 31:** Climate knowledge co-production
- Session 32:** Capacity development for climate services
- Session 33:** Linking policy and climate information
- Session 34:** Climate services: effectiveness and evaluation
- Session 35:** Regional information and scales in time and space
- Session 36:** Observations for decisions
- Session 37:** Regional Attribution
- Session 38:** Connecting Regional Impacts and Climate Information
- Session 39:** Institutions and Frameworks
- Session 40:** Lessons from Failures

- **Poster sessions:**

Poster sessions are a key part in the design of the conference program and a vital component for networking. Given the wider scope of the themes, poster sessions will be and opportunity for more in depth discussions among the community. To that end, the WCRP OSC2023 has issued a call for poster cluster topics. Participation in a specific cluster will be open to anyone who submits an abstract. Clusters will bring together a community working on a specific topic within the broader conference themes. The aim is also to help participants organize their poster viewing and provide a forum for discussion about the cluster topic. In addition to dedicated on-site poster sessions, all posters will be available on the hybrid platform poster gallery at least two weeks before the conference. Virtual poster sessions will be organized during these two weeks. Ideally, all presenters in a poster cluster will attend the OSC in Kigali, but it is also possible to form poster clusters having some, or only, virtual participants.

- **Evening sessions:**

The evening sessions are being designed as a forum for side events that would include specific project meetings, learning labs, world cafés, dialogues, and roundtables of experts. The objective of these sessions is to expand on discussions that took place in the parallel sessions, as well as to introduce new topics not covered during the main program.

10. Tentative list of invited speakers/participants:

The theme leads and session convenors will propose names of invited speakers for the parallel sessions to the SOC. A special working group is developing the plenary program. The aim is to have near-final list of invited speakers by late January/ early February. The majority of the speakers in the parallel sessions will be selected by the convenors after review of the abstract submissions. It is envisaged that many US senior scientists and EMCRs will be invited as speakers and also as session convenors.

11. Deliverables:

- New collaborations between WCRP Core Projects, Lighthouse Activities and external partners, leading to new scientific advances
- Innovation in useful and useable climate data and information
- Improved understanding and prediction of precipitation in regions around the world through launch of a global experiment/WCRP Decade of Water Research

- Improved assessment of climate risks and extremes
- Innovative ways to bridge science and society and build a Global North/South dialogue
- Increased climate science leadership from the Global South and around the world
- Input to the UNFCCC Conference of the Parties (COP 28), taking place in the United Arab Emirates in November 2023

12. Approaches to address diversity, equity, and inclusion:

WCRP embraces diversity, demands equality, and builds capacity for the future. At the Open Science Conference, this will be no different. The SOC has a broad and balanced membership in terms of gender, geographical distribution, and career stage. The aim is also to bring researchers and practitioners from groups that WCRP has not fully engaged with in the past. Design of the Conference Program, including the EMCR Symposium, will also reflect such diversity and inclusion.

Equity and inclusiveness are also addressed through reduced registration fees and travel support for early career scientists and participants from low and lower-middle income countries.

13. Budget request from US CLIVAR:

This request to US CLIVAR sponsoring agency programs is for support of travel of 43 US participants, including 8 members of the organizing committee, 15 invited speakers, and 20 early career scientists, plus UCAR travel coordinator staff time. This is separate from support provided by agency HQ offices for conference coordination and logistics.

Travel for 8 US Organizers	\$29,624
Travel for 15 US Invited Speakers	55,545
Travel for 20 US ECS	72,540
Travel Staff Time	5,518
Indirect Costs	<u>1,942</u>
Total	\$165,169

14. Other sources of funding:

The SOC has been successful in identifying several sponsors, including AIMS, NASA HQ, NOAA CPO, UCAR, ESA, IPSL, Mercator Ocean and EUMETSAT. A full budget is being finalized and potential sources of funding include:

- Registration fees - \$600,000 (this is estimated based on scenarios considering a mix of early bird, ECRs and low and lower-middle income countries attending in person, and also a mix of online participants) – full list of registration fees listed below
- WCRP and its sponsors (WMO, ISC, and IOC-UNESCO) – \$400,000 for logistics and travel
- National governments and international organizations:

- Rwanda Environment Management Authority – \$60,000 for supporting venue hire
- NOAA – \$250K for conference coordinator contract
- NASA – \$50K for registration/hybrid platform
- ESA – €10,000 for logistics
- EUMETSAT – €5,000 for logistics
- IPSL – €20,000 for communication and logistics
- Mercator Ocean – \$10,000 for logistics
- APN – USD \$40,000 for travel of ECRs from Asian countries
- START – for support to ECRs from developing countries - TBD
- Local institutions and laboratories:
 - African Institute for Mathematical Sciences (Rwanda) – \$50K for logistics and travel for the EMCR Symposium
- Private sector – TBD

Table: Registration fees

	REGISTRATION FEES (US\$) (includes full program, , refreshments, gala dinner)	
ON -SITE ATTENDANCE	EARLY BIRD	AFTER 30 JUNE
Standard	\$550	\$750
Early career researchers	\$300	
Low and lower-middle income countries	\$300	
VIRTUAL ATTENDANCE	REGISTRATION FEE	
Standard	\$300	
Low and lower-middle income countries	\$0	