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1st hybrid meeting of the WCRP RIFS Scientific Steering Group (SSG)

Barcelona, and online

Regional Information for Society (RIFS)

October 2-5, 2023

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Executive Summary

The new Regional Information for Society (RifS) core project of the World Climate Research Program (WCRP) had its first in-person Scientific Steering Group (SSG) meeting at the Barcelona Supercomputing Center in Barcelona, Spain from Oct 2-5, 2023.

The meeting was conducted in hybrid format, with most attendees present and others joining via video-conferencing. In addition to SSG members, a representative from the WCRP Secretariat, two members of the Joint Scientific Committee (JSC), and the new RifS International Project Office (IPO) director were also present. Attendees got to know one another and learned more about other existing WCRP activities. They participated in brainstorming and planning for potential inaugural RifS activities and took initial steps to assign responsibilities.

The identity of RifS as an organization is still being refined. A great deal of work went into the Science and Implementation Plan, but this SSG meeting accelerated efforts to put it into practice. RifS plays a unique role in the WCRP, attempting to connect across projects, many of which have a societal component or a potential for one. Thus, communication is a key requirement, helping to catalyze activity and coordination across regions. RifS will not provide climate services, but it will weigh in on questions of relevance to climate services including best-practices to produce information from data, and identifying common needs across regions and sectors.

Ideas for initial activities discussed included 1. An expert meeting on robustness of climate information, to provide better guidance on dealing with varied and complementary sources of data for regional decision-making; 2. An activity to map barriers and challenges to the adoption of climate information in decision-making across several differing regions; 3. An exemplar study collaborating with another WCRP project to incorporate end-to-end stakeholder partnerships.

Key action items included follow-up to better define these initial activities, their budgets, timelines and potential participants. Additionally, the International Project Office (IPO) in Montreal is still being set up, with hiring for other roles including a program manager and science officer to fill this spring.

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1. Introduction, framing and purpose

Meeting participants gathered online and in-person at the Barcelona Supercomputing Center (BSC) in Barcelona, Spain from Oct 2-5, 2023. Participants included members of the Scientific Steering Group (SSG) for the World Climate Research Programme (WCRP) Regional Information for Society (RiFS) core project, along with representatives of other WCRP activities, the new International Project Office (IPO) director for RiFS, and a representative from the WCRP Secretariat (see Annex for participant list). This was the first (mostly) in-person meeting of the RiFS SSG.

The meeting began with some effort to get to know one another better, and develop shared understandings of motivations, processes and procedures. Levels of optimism for the future, as measured in likely mid-century warming estimates, varied considerably.

1.1. RiFS Context

The WCRP has six core projects, of which RiFS is one, along with lighthouse activities. The lighthouse activities do demonstration applications, and at the end of their lifetimes their activities can get picked up by a core project. Lighthouse activities are designed to last 5-8 years, they don't all have external funding but some apply for it. The core projects are meant to be more stable long-term efforts. Of course, there is overlap between the core projects, and they must try to coordinate.

The RiFS core project came out of a scoping activity from an Interim Coordinating Group (ICG), and the three co-chairs summarized this down into the Science and Implementation Plan. This was approved by the Joint Scientific Committee (JSC) of WCRP in July 2022, together with feedback that the RiFS SSG is using to continually update this document.

RiFS is the home to two other projects, so far, within the WCRP organizational structure. The RiFS SSG distributes budget and coordinates with these projects, which have their own identity, mission, and internal structure. They are 1. CORDEX (the Coordinated Regional Climate Downscaling Experiment), and the GEP (Global Extremes Platform).

RiFS also has a particular responsibility to create a cross-WCRP conversation space, and to connect with external partners around our objective to bridge climate science and societal needs.

So far in 2022-23 RiFS members have begun developing collaborations and presented at meetings.

RiFS is not just its SSG. The SSG holds the responsibility to propose a task force, workshop, committee, panel, call-for-nominations, etc to extend its activities. These generally have their own co-chairs, and can be of limited lifetime or have long-term prospects.

1.2. The RiFS Science Plan

The RiFS Science plan (available [here](#)) is organized around three challenges and four clusters. The challenges are:

1. How to optimally identify, understand, and model the relevant climate processes and their interactions which are most critical to manage the socio-ecological risks at the decision scales within regions.
2. How to optimally integrate multiple lines of evidence from observations, understanding of physical climate processes, and data from dynamical and statistical regional and global models to inform society's climate information needs.
3. How to best undertake engagement between stakeholders and the science community in different regional contexts to maximize the information benefit for the stakeholder and ensure that the user context is integrated into the design and execution of relevant climate research.

The four clusters relate to how to identify, model, and understand the most relevant processes to decision scales with core physical climate science over long-term projections (cluster 1) seasonal-scale prediction (clusters 2), and extremes (cluster 3), and finally to bridge science and society (cluster 4). One comment on the science plan asked whether CORDEX might be one and the same with cluster 1, but it was agreed that cluster 1 is broader than that and can encompass many different modeling approaches.

Clusters exist because there are existing communities that are divided in these ways, but the intent is not to restrict RfS to operating in silos, so the group agreed a preference for fuzzy boundaries. The notion of making fuzzy boundaries explicit in the organizational structure, as in a continuum instead of discrete cluster categories, will be further explored by a small sub-group to recommend reframing some of the info-graphics and science plan structure.

1.3. Terms of Reference and Expectations

The RfS SSG consists of 15 people, all of whom need to be actively involved and commit time to activities. Terms are four years, with the possibility of a two-year extension. Ambiguity about when the first year commenced was resolved by agreeing that the "first year" will end in late May at the next JSC meeting. The current group all go through 2026, with the opportunity to start rotating out at that point, so that turnover happens in a staggered fashion.

SSG members are expected, in particular, to involve and engage a wider community from their own regions, and to be proactive. Because our success depends on volunteers, it is important for SSG members to be realistic about what they can personally do, generally seeking alignment with their existing work. Examples of activities that SSG members might engage in include to develop regional workshops, organize conferences, trainings, or joint projects with other WCRP projects, dialogue with external partners, or design guidance documents for the community. If SSG members think that something beyond their own capacity is of importance, then it is their role to know who to contact and involve them.

The SSG decides how the funds from the JSC are spent. Historically each core project receives 80-85k in USD for activities, although this year is expected to be lower. The JSC is also discussing some changes to how this is administered. RfS also has access to some additional funds for activities from the IPO.

Because CORDEX falls under RfS in the new organizational structure, CORDEX will make its request to the RfS SSG instead of directly to the JSC as they have done in the past. Historically CORDEX has received ~60k USD, which is primarily spent on training activities in the various regions. These originate

as proposals from those regions, usually in excess of available funds. Occasionally CORDEX has also funded requests from young scientists to participate in particular conferences or workshops. The RIFS SSG agreed in principle to keep CORDEX funding consistent with its historical levels (so if funding for all core projects drops this year, it will drop in proportion.) This suggests a challenge for RIFS in future years budgeting new activities, which are still being scoped.

2. Reports from other projects

The second and third days of the meeting included presentations from most other WCRP projects, to provide the RIFS SSG with additional context on the structure, organization, and gaps within WCRP, as well as potential points of collaboration with each of the existing projects.

2.1. WCRP core projects

All of the other core projects were present except for Climate and Cryosphere (CliC).

- **SPARC, soon to be APARC:** One of the co-chairs of SPARC, Amanda Maycock, joined remotely to share background and future prospects with the RIFS SSG. SPARC was founded in 1992, but it has a new strategic plan and soon to have a new name de-emphasizing the centrality of the stratosphere to its activities. SPARC has 15 activities; these form when new science questions arise and undergo a process to become an emerging activity. In this cycle activities emerge and sunset, and some are longer lasting while others are more short-lived. Most activities are self-organized, and there are also outside collaborations. SPARC's activities are organized around three scientific themes, and they also have new panels around engagement including assessments coordination, a partnership advisory panel and an outreach advisory panel focused on the public and policy domains. Several potential activities with links to RIFS were proposed: the DynVar activity relates to regional climates, ATC looks at atmospheric temperature trends, ACAM focuses on the Asian summer monsoon, and S-RIP is focused on tropospheric representation in reanalysis. The SPARC IPO is in the process of moving to Juelich Germany.
- **CLIVAR:** The CLIVAR presentation was shared remotely by Hindumathi Palanisamy from the WCRP secretariat because the co-chairs were unavailable. CLIVAR launched in 1995, building on TOGA and the ocean circulation experiment. CLIVAR has quite a few core panels, including regional panels focused on each part of the ocean. There are two new research foci (intended to last 3-5 years), on marine heatwaves and on tropical basin interactions. Some of the other panels have to do with ocean model development, global synthesis and observations, climate dynamics, as well as three regional monsoon working groups (Asian-Australian, African, and American). They also currently have an open call for new panels and SSG members, and are planning summer schools for next year. The CLIVAR IPO is being reestablished at Ocean University of China.
- **GEWEX:** One of the co-chairs, Jan Polcher, joined remotely to provide an overview of GEWEX activities. The primary science goals of GEWEX are to understand the extent that the water cycle can be predicted, the physics of the water/energy cycle, and anthropogenic influence. GEWEX is organized into a number of panels: GDAP for data and analysis, GHP hydroclimate panels, GASS atmosphere system study, and GLASS for the interactions at regional scale. The GHP panel was identified as being the most likely point of collaboration with RIFS, as it contains

regional hydroclimate projects (RHPs) organized on watershed boundaries to take an integrated, multi-disciplinary perspective. They might have cross-cutting projects on high-mountains, evaporation, or irrigation for example. They also often address the biosphere, carbon cycle, human interactions with landscapes, and even socio-economic factors. ANDEX, focusing on cities all up-and-down the Andes is a new/current RHP, which they are using as a test case for the ability to model and predict topographic precipitation at km-scale.

- **ESMO:** A member of the ESMO SSG, Alison Cobb, presented remotely on ESMO, the other new core project just setting up its IPO. ESMO is meant to coordinate modeling and data activities across other projects. They have a draft strategic plan with three main areas of science objectives: predictions and projections, observations and attribution, and emerging technologies. Similar to RfS, ESMO is the home for some other existing activities in the organizational structure of WCRP, namely the Coupled Model Intercomparison Project (CMIP) and several other long-standing working groups.

2.2. WCRP lighthouse activities

All of the lighthouse activities were present except for Safe Landing Climates, and the then soon-to-be-announced Climate Intervention lighthouse activity.

- **Digital Earths:** Luigi Vidale, one of the co-chairs of the Digital Earths lighthouse activity was present at the SSG meeting, and provided an overview. One point of alignment is the desire to enable user understanding instead of being a mere data provider. The Digital Earths approach to this problem is to focus on tools to examine the data right away, so that analyses don't take longer than running the high-resolution global model. Examples of this problem include 1. Finding all of the storms in an output dataset, or 2. Still analyzing the simulation from 3 years ago when a new one is available. To enable more rapid deployment of analysis tools, Digital Earths aims to bring the people to the data and the machine used for processing. The science questions for Digital Earths are focused around whether/how km-scale processes feedback up to the global large-scale circulation, and questions around convective parameterizations. As there will remain many forms for modeling regional processes, they support moving towards process intercomparisons in place of model intercomparisons, which would also better integrate observational products at an earlier stage. They also have a land-surface group that might connect more with regional work in eg CORDEX. Other relevant activities include a seminar series, catalog of hi-resolution input datasets, a catalog of workflow and analysis tools, and a joint group on initialization and spinup.
- **Explaining and Predicting Earth System Change (EPESC):** Markus Donat attended to present about the EPESC activity. The point of alignment is in developing the capabilities and knowledge to inform adaptation. EPESC is focused on annual-to-decadal variability and change. Their three themes are 1. Monitoring and modeling the Earth system, 2. Integrated attribution, prediction, and projection, and 3. Assessing extremes and hazards. These are meant to build on each other, so that the last one can be used for societal benefit. EPESC has contributed to reports and advised GCOS on observational requirements. They've done some cross-cutting foci, for example on atmospheric waves in Northern hemisphere summer circulation. The primary connections to RfS identified were quantifying emerging changes, quantifying meteorological hazards, improving predictions and early warnings, and building confidence in predictions.

- **Global Precipitation Experiment (GPEX):** Lincoln Alves, also a member of the RfS SSG, presented on the GPEX lighthouse activity, which officially launched at the Open Science Conference later in October. Sara Pryor, one of the RfS co-chairs, is also on the committee. GPEX exists because precipitation prediction and projection skill remains low despite its importance. As an example of this, NCEP and all other organizations failed at the winter 2022-23 precipitation outlook. GPEX intends to have a “Year of Precipitation” sometime in years 4-6 of the project. The science questions have to do with uncertainties in quantitative precipitation estimates, moist-processes and interactions, and sources of bias in models and how to reduce them. GPEX is also focused on enhancing regional and local capacity-building to address these problems. The activities include engaging and coordinating with national and international funding agencies, and working with GEWEX, SPARC, and RfS on precipitation-relevant datasets and measurement networks. GPEX will seek to advance process understanding, modeling, and prediction and leverage simulations from projects like Digital Earths and CORDEX.
- **My Climate Risk:** The co-chairs of My Climate Risk, Ted Shepherd and Regina Rodriguez, presented virtually on this activity. The rationale behind My Climate Risk is that regional aggregation often leaves out local knowledge, and can result in eg less definitive attribution statements than might be possible in some specific locations. My Climate Risk is specifically organized in a bottom-up manner, working through regional hubs towards a non-hierarchical network not unlike a mycorrhizal network. Four of the hubs are ocean-oriented ones which are joint with CLIVAR. Some of the hubs are doing work with local and regional stakeholders and others are not. Some have a stronger social sciences component. Several hubs engaged with CORDEX spontaneously. One area of potential collaboration with RfS is to expand on discussion on the rational-social dichotomy which Ted Shepherd and RfS co-chair Bruce Hewitson are already engaged in.
- **WCRP Academy:** Chris Lennard, one of the WCRP Academy co-chairs, presented virtually on this activity, which officially launched at the Open Science Conference later in October 2023. The purpose of the Academy is to train future generations of climate scientists. It will start by connecting people who need training with training providers. This was based on a stock-take of what is going on inside and outside of WCRP. The desire for these resources is high, especially in the Global South. The Academy website also has a repository for past workshops and webinars, which they can catalog and analyse. Some potential connections with RfS are to engage the go-between communities between science and users, which is not as large of a community in the South. Another idea is to understand why early warning systems in North vs South can present very different results.

2.3. CORDEX and GEP

These two projects fall under RfS in the organizational chart of WCRP. CORDEX is a successful long-standing project with a wide network, and GEP is new, building on prior efforts.

- **CORDEX:** Silvina Solman, who is a co-chair of both CORDEX and of RfS, shared some background on CORDEX with the rest of the group. CORDEX organizes global collaboration to provide projections at regional and local scale, as well as research to understand regional climate phenomena and variability, and capacity-building in the regions. It has recently coordinated white papers on empirical statistical downscaling and future challenges and pathways. CMIP6 downscaling is still ongoing, mostly at 25km scale, although some groups are using finer meshes. This kind of data has been used in the past in impacts assessments and climate services provided by other organizations. The 25km scale remains the priority because

centers can afford to do it for multiple GCMs and RCMs. As global modeling increases in resolution, it is expected that regional modeling in sub-domains at even higher resolution will remain a common tool. The next generation will include statistical downscaling comparisons as well.

CORDEX has a robust network of participants across many regions globally. Workshops and training activities are largely responsible for this wide and engaged community. The CORDEX budget covers these requests, to the extent possible, in response to open calls. Sometimes these activities are coordinated with external partner organizations. Additionally, CORDEX has initiated flagship pilot studies (FPS) to answer targeted science questions, which can utilize different domains or other elements of experiment design that differ from the standard CORDEX simulations. For example, some of the FPS have performed modeling at convection-permitting scale. CORDEX has an IPO, based at SMHI in Sweden.

- **Global Extremes Platform (GEP):** Xuebin Zhang, one of the GEP co-chairs, provided an overview of this emerging effort. There is a need for a new iteration of coordination on data for extreme indices. The ETCCDI indices, which have been used in IPCC reports are an important precursor. GEP is envisioned to be an integrator and enabler, and provide a needed data platform. The key areas of GEP activity will be 1. An annual synthesis of the state of weather and climate extremes; 2. Develop datasets of indices and provision global datasets; 3. Applying this coordination to support impact activities like detection and attribution; and 4. Quantifying compound events. GEP is still developing its formal Science and Implementation Plan, and an open call for membership nomination will be out soon. The GEP has a support unit (SU) based in Nanjing, China.

2.4. Other activities

- **Global Framework for Climate Services (GFCS):** Wilfran Moufouma from the WMO Regional Climate Prediction Services Division joined virtually to share information about the GFCS. This is the effort to develop standards for climate services in terms of observations, predictions, and projections. The presence of observations among these pillars was emphasized. There is an interest in building the community engaged with this effort. After a stocktake in 2022 they are adding an urban sector, though the framework should apply to any sector. Part of the mission includes training activities. RfS was encouraged to interact with the GFCS research board.
- **World Weather Research Programme (WWRP):** Estelle de Coning joined virtually to share about relevant WWRP activities. There are a number of efforts which could be points of overlap with RfS, in particular AWAR3E (Advancing Weather Research to Reduce Risk to Society). WWRP generally operates with five year projects, which can be renewable after that; co-chairs are one physical scientist and one social scientist. Some of these projects are 1. InPRHA on precipitation and hydrology with an emphasis on early warning, communication and capacity development; 2. SAGE on sub-seasonal to seasonal prediction for agriculture and the environment; 3. PEOPLE on public engagement of practitioners, learners, and educators; 4. The SERA working group creating a Weather and Society online conference next February-March; and 5. EWSA (Early Warnings for Southern Africa), working with disadvantaged urban groups and nowcasting with satellite data.
- **Barcelona Supercomputing Center (BSC):** Dragana Bojovic, a member of the RfS SSG who works at BSC shared a bit about their work. The Earth Sciences division is one of four, and within it one of the departments is Climate Services. They actively work in transdisciplinary environments and study and implement how to do coproduction of these services with partners all over the world. One of the sites of coproduction that captured interest was using hackathons as a way to build these connections.

3. Discussions and planning

3.1. Science talks to spur conversation

On day 3, two SSG members shared short presentations on work of relevance to RfS and our planning. First Alessandro Dosio discussed issues of consistency of regional projections over Africa. CORDEX CORE is drying over Africa, while CORDEX and CMIP5 and CMIP6 are wetting in the mean. However, if you look more closely, all agree on the intensity, frequency, and maximum changes. This is illustrative of the challenges for data users and how useful information can require more detailed analysis.

Dragana Bojovic shared some research on transdisciplinarity and knowledge co-production for climate change applications. Some of the issues that come up with climate services include focus on process versus products, a demand-relevant versus a demand-driven approach, and the issues of evaluation versus valuation. The language we use can be very important, and binary language isn't always useful. For transdisciplinarity, meaningful interdisciplinarity can be a starting point. Finally, they see climate services co-production done on a number of different levels from engagement (awareness raising), to involvement (knowledge exchange), to empowerment (co-development). Co-exploration is something to move towards.

3.2. Group discussions and next steps

Participants discussed a number of questions about scope, including what it means to study the process for climate services without providing an operational service, which users to engage with directly or through partner organizations, how do we identify strategic gaps within WCRP, and what would we be proud of having achieved? Then, there were smaller groups discussions to generate ideas for how to organize RfS activities, with a focus on the first year.

1. Create a panel or a task-force that would leverage existing WCRP activities, including the my climate risk hubs to interrogate the situation of where the barriers and challenges are as seen by the stakeholder to using information that is fit for purpose. This could be organized around 3 or 4 locations, and with advice from social scientists, with attention to geographic representation. This is continuing to evolve, with special input sought from early career researchers.
2. Position papers, either as a white paper or a journal article, that people are interested in pursuing include the topics of a. where we are now and where we want to go; b. a paper that explores the evolution of the framework on ethics and values in climate services.
3. An expert meeting on robustness of climate change information for decisions — some time in 2024, perhaps co-sponsored by GCF and seeking other co-sponsorships. A small working group is moving ahead with this for late April 2024.
4. An exemplar study that results in a framework for the greater incorporation of societal elements and co-production into projects with a regional focus. This could begin with a collaboration with one or several existing WCRP projects. ANDEX was suggested in particular.

Other themes that were emphasized as well, included data access, providing guidance on fitness-for-purpose of models that summarizes findings for different regions, and how to integrate information before provision.

Over the coming months the RfS IPO will be hiring staff and setting up technical infrastructure for the project, including mailing lists. Incorporating early career researchers and continuing to identify gaps in existing research are priorities for the SSG.

Annex 1 - List of Participants

In person:

Bruce	Hewitson	SSG co-chair	University of Cape Town
Silvina	Solman	SSG co-chair	University of Buenos Aires
Lincoln	Alves	SSG member	INPE -- Brazilian Space Research Institute
Paul	Block	SSG member	University of Wisconsin
Dragana	Bojovic	SSG member	Barcelona Supercomputing Center
Louis-Phillippe	Caron	SSG member	Ouranos
Alessandro	Dosio	SSG member	European Commission Joint Research Center
Kevin	Horsburgh	SSG member	Green Climate Fund
Morten	Larsen	SSG member	Danish Meteorological Institute (DMI)
Ken	Takahashi	JSC representative	Ministerio del Ambiente - Instituto Geofísico del Perú
Xuebin	Zhang	GEP	Pacific Climate Impacts Consortium
Naomi	Goldenson	RIFS IPO Director	RIFS IPO
Nico	Caltabiano	Secretariat	WCRP
Markus	Donat	EPESC lighthouse	Barcelona Supercomputing Center
Pier Luigi	Vidale	Digital Earths lighthouse	University of Reading

Online:

Sara	Pryor	SSG co-chair	Cornell University
Luke	Harrington	SSG member	University of Waikato
Wendy	Sharples	SSG member	Australian Bureau of Meteorology
Lisa	Alexander	JSC representative	University of New South Wales
Daniela	Jacob	CORDEX	Climate Service Center



Annex 2 - Meeting agenda

Preamble

The first face-to-face SSG meeting is a critical time to establish foundations and set initial directions. There is much to discuss, and many details may at times feel like overload as one wrestles with the jargon, WCRP structures, and uncertainties. To that end, it is important to frame this SSG in four overarching objectives:

1. To better understand each other, our different perspectives, passions, and skills, so that we may best work together.
2. Identify research "entry points" to each of the science plan clusters. The science plan is broad and diverse, and we cannot tackle all issues at this stage, thus finding the priority starting points for research that can best help develop the RfS agenda is important.
3. Scope and plan added-value actions that are realistically deliverable for the coming year. It is important that we gain traction with measurable deliverables that address the RfS mission and vision.
4. Develop actionable partnership strategies for collaboration within (at least some of) the WCRP (and perhaps beyond).

The agenda below is not intended to be rigidly prescriptive, and we will likely evolve the schedule as events unfold. We will use the same Zoom link for online participation throughout the week.

Day 1: 2nd Oct			
Morning is a closed session for the core participants			
Through the meeting keep a Miro board and/or google doc open to capture ideas and post questions.			
Time	Topic	Notes	Session lead (place)
8.45 - 9.00 Arrival			
9.00 - 10.30	1.1 Opening and welcome <ul style="list-style-type: none"> • Welcome from the co-chairs (10 min) • Round table introductions from individuals (40 min) • Introduction from WCRP Secretariat, GEP, CORDEX, and RfS IPO (20 min) • Get to know-each-other activity (20 min) 	Priority is to develop relationships, and become comfortable with the SSG's diversity of capacity and interests Individual introductions should be limited to ~2 min Think: Regional Information FOR or WITH Society Think: What do we understand by "Climate Services"	Bruce and Silvina (BSC room 4-1-17 and online)

10.30-11.00 Tea (BSC Terrace 1st floor)			
11.00 - 12.30	1.2 Developing a common understanding and setting expectations	<p>Short presentations on each topic with a focus on discussion and Q&A.</p> <p>Relevant history to RfS, and how RfS is positioned within WCRP: Lighthouses, Core projects. (15 min)</p> <p>Review the RfS Vision, Mission, and Management. What does RfS seek to do and how does it seek to accomplish this. (10 min)</p> <p>SSG terms of reference, and expectations of SSG members (15 min)</p> <p>The RfS Science plan as a living document - overview of intention, boundaries, and how these relate to activity objectives. (20 min)</p> <p>Q&A / Open discussion (20 min)</p>	Bruce and Silvina (BSC 4-1-17 and online)
12.30-13.00	1.3 Issues framing our discussions	Introduction to the budget issues the SSG needs to address at the end of the meeting and how this will frame our subsequent discussions.	Nico, Silvina, Sara (BSC 4-1-17 and online)
13.00 - 14.00 Lunch (BSC Foyer)			
Lunch thinking: individuals rank their provisional interest in engaging in each of the 4 clusters			
14.00 - 14.15	1.4 Welcome to representatives of other groups (Open)	<p>Brief introductions</p> <p>Review the agenda</p>	(BSC 4-1-17 and online)
14.15 - 15.15	1.5 RfS research purpose The science plan	<p>Provide the JSC comments in advance</p> <p>Review the JSC comments, and discuss the response to the JSC on their proposed change of Cluster 1 to be CORDEX</p> <p>Open discussion on views of the priority frontiers in each of the science plan clusters, including consideration of What makes these the priority How well are they addressed outside of RfS Are there critical cross-cluster dependencies</p>	(BSC 4-1-17 and online)
15.15 - 15.30	1.6 Survey outcomes	Review of survey results and the priority	(BSC 4-1-17)

		implications for RfS activities messages for the meeting	and online)
15.30 - 16.00 Tea break (BSC Terrace 1st floor)			
16.00-17.00	<p>1.7 Breakout Groups BOG 1: Unpack the cluster discussions from the preceding session.</p> <p>This session is about big picture thinking of pathways to objectives, not getting into the minutia.</p>	<p>Participants start in the cluster they ranked highest. After 30 minutes allow for migration between groups, chair and rapporteur stay in the group.</p> <p>Articulate short and long term outcomes of added value knowledge outcomes applicable to stakeholders at decision scales. Brainstorm regionally relevant attributes of importance for society Identify logical intellectual collaborations within WCRP to support the above objectives.</p> <p>Three breakout groups: Clusters 1+2 - prediction and projection, Cluster 3 - Extremes Cluster 4 - stakeholder engagement</p> <p>Go to the group you are most passionate about ... we may need to balance numbers.</p> <p>Two tasks for each group. What are important knowledge areas that are not well addressed by the communities activities, where RfS can bring leadership and additional value What are the cross-cutting issues between the clusters where there is important codependency needed to achieve a value outcome.</p>	<p>Delegate chair and rapporteur in advance</p> <p>(BSC rooms 4-1-17, 4-3-16, 4-3,17)</p>
Dinner			

Day 2: 3rd October			
Through the meeting keep a Miro board and/or google doc open to capture ideas and post questions.			
Time	Topic	Notes	Session lead
8.45 - 9.00 Arrival			

9.00 - 9.30	2.1 BOG 1 Highlights	Rapporteurs	(BSC Auditorium and online)
9.30 - 10.30	2.2 Hearing from the WCRP: Core Projects	09:30hs - SPARC (Amanda Maycock) 09:40hs - CLIVAR (Hindumathi Palanisamy) 09:50hs - CliC (Ed Hannah) 10:00hs - GEWEX (Jan Polcher) 10:10hs - ESMO (Alison Cobb) 10:20hs - Discussions	(BSC Auditorium and online, open to BSC staff)
10.40-11.10 Tea & Coffee break (BSC Terrace 1st floor)			
11.10 - 12.45	2.3 Hearing from the WCRP: Lighthouse activities (LHAs)	11:10hs EPESC (Markus Donat) 11:20hs Digital Earths (Pier Luigi Vidale) 11:30hs GPEX (Lincoln Alves) 11:40hs WCRP Academy (Chris Lennard/Mellissa Hart) 11:50hs MCR LHA (R. Rodrigues/T.Shepherd) 12:00hs Discussion interaction with Core Projects and LHAs	(BSC Auditorium and online, open to BSC staff)
12.45 - 13.00	2.4 Input from JSC liaisons	JSC liaisons provide perspective and feedback, with open discussion (Ken Takahashi and Lisa Alexander)	
13.00 - 14.00 Networking lunch (BSC Foyer)			
14.00 - 14.30	2.5 Gaining science momentum 2023/24	Briefing from co-chairs on what sort of options could be in-scope: e.g. webinars, workshops, white papers, etc. Discussion	(BSC room 4-1-17 and online)
14.30 - 15.30	2.6 BOG 2: Pilot research ideas	Brainstorm actions aligned with the science objectives. consider: Resource implications Partnership development Linking to existing regional activities Opportunities for stakeholders Capacity development and ECRs Practical (including partnerships)	Delegate chair and rapporteur responsibilities in advance (BSC 4-1-17, 4-3-16, 4-3,17)
15.30 - 16.00 Working tea break (BSC Terrace 1st floor)			
16.00 - 16.30	2.7 Report back from BOG 2	5 min each with discussion	(BSC 4-1-17)
16.30 - 17.00	2.8 Cross-cutting activities	Open discussion on options to develop holistic approaches, For	(BSC 4-1-17 and online)

		example: A workshop A research framework that can be adopted by regions (e.g. akin to CMIP, CORDEX) Joint actions with other WCRP groups An open call for pilot actions / flagship projects. Etc.	
20.00 Dinner in Fiskebar (please let Dragana know if you are NOT coming, the no. confirmed to 13)			

Day 3: 4th Oct			
Through the meeting keep a Miro board and/or google doc open to capture ideas and post questions.			
Time	Topic	Notes	Session lead
8.45 - 9.00 Arrival			
9.00 - 09.45	3.1 External perspectives	09:00hs - GFCS (Wilfran Moufouma Okia) 09:15hs - WWRP (Estelle De Coning) 09:30hs - BSC (Dragana)	(BSC 4-1-17 and online)
09.45 - 10.30	3.2 CORDEX and GEP Strategy	CORDEX (Daniela + Silvina) (15+5) GEP (Xubin) (15+5)	(BSC 4-1-17 and online)
10.30-11.00 Tea & Coffee break (BSC Terrace 1st floor)			
11.00 - 13.00	3.3 Discussion of RfS Strategy	CORDEX and GEP (30 mins) Budget (30 mins)	(BSC 4-1-17, 4-3-16, 4-3,17)
13.00 - 14.00 Lunch (BSC Foyer)			
14.00 - 14.30	3.4 Funding	Discussions on funding opportunities International opportunities Regional opportunities Horizon Europe Other	(BSC 4-1-17 and online)

14.30-15.30	3.5 RfS operations	5 min briefing on each with discussion The resource of the IPO Policy document on RfS endorsement for external projects Policy on responding to external requests for collaboration Commissioning work (e.g. white paper or publications)	Nico - (BSC 4-1-17 and online)
15.30 - 16.00 Working tea break (BSC Terrace 1st floor)			
16.00 - 16.30	3.6 Advisory board / WCRP forum	5 min briefing introducing the concept from the RfS management plan. Open discussion on when, if, and how this aspect should / could be developed.	(BSC 4-1-17 and online)
16:30 - 17:00	3.7 Science Talks	TBC	
Dinner			

Day 4 : 5th Oct Closed session for core participants			
Through the meeting keep a Miro board and/or google doc open to capture ideas and post questions.			
Time	Topic	Notes	Session lead
8.45 - 9.00 Arrival			
9.00 - 10.30	4.1 Logistics	Budget discussion: actions and deferred decisions Membership discussion Communications / use of Google docs and Slack Role of ECRs SSG virtual meetings Logo Website Sub-group meeting at OSC Other	(BSC room 3-1-16 and online)
10.30-11.00 Tea & Coffee break (BSC Terrace 1st floor)			

11.00 - 12.30	4.2 Final Review	Confirm proposed actions Agree responsibilities Next virtual meeting Thanks and close	(BSC 3-1-16 and online)
12.30 - End of meeting			

Annex 3 – List of Acronyms

ANDEX — an RHP for the Andes under the GEWEX GHP

APARC — Atmospheric Processes and their Role in Climate, a WCRP Core Project

AWAR3E — Advancing Weather Research to Reduce Risk to Society, a WWRP focus area

BSC — Barcelona Supercomputing Center

CLIC — Climate and Cryosphere, a WCRP Core Project

CLIVAR — Climate and Ocean – Variability, Predictability, and Change, a WCRP Core Project

CMIP — Coupled Model Intercomparison Project

CORDEX — Coordinated Regional Climate Downscaling Experiment

EPESC — Explaining and Predicting Earth System Change, a WCRP Lighthouse Activity

ESMO — Earth System Modeling and Observations, a WCRP Core Project

EW4All — Early Warnings for All, UN initiative

EWSA — Early Warnings for Southern Africa, WWRP project

FPS — Flagship Pilot Study

GASS — Global Atmospheric System Studies, a GEWEX Panel

GDAP — GEWEX Data and Analysis Panel

GEP — Global Extremes Platform

GEWEX — Global Energy and Water Exchanges, a WCRP Core Project

GFCS — Global Framework for Climate Services, WMO project

GHP — GEWEX Hydroclimatology Panel

GLASS — Global Land-Atmosphere System Studies, a GEWEX Panel

GPEX — Global Precipitation Experiment, WCRP Lighthouse Activity

ICG — Interim Coordinating Group

InPRHA — Integrated Prediction of Precipitation and Hydrology for Early Actions, WWRP project

IPO — International Project Office

JSC — Joint Scientific Committee of WCRP

PEOPLE — Progressing EW4All Oriented to Partnerships and Local Engagement, WWRP project

RHP — Regional Hydroclimate Project, part of GEWEX

RIFS — Regional Information for Society, WCRP Core Project

SAGE — Sub-seasonal to seasonal Applications for Agriculture and Environment, WWRP project

SERA — Societal and Economic Research Applications, WWRP working group

SSG — Scientific Steering Group

SPARC — former name of APARC

SU — Support Unit

WCRP — World Climate Research Programme

WMO — World Meteorological Organization

WWRP — World Weather Research Programme

