Design of the new WCRP Home
"Regional Information for Society - RifS"
Telecon, 20 November 2020 18:00-19:30 CET

Participants: See the appendix

Jacob chaired the meeting. She briefly informed about the preparatory work carried out by the Task Team for Regional Activities (TTRA) for this Home and explained the draft structure. Then she opened the floor for discussions.

Summary of oral contributions and comments from the chat

FIRST PART *On the RifS structure and the individual building blocks:* *Do they make sense? Are we missing something?*

ABOUT BB1(REGIONAL CLIMATE SCIENCE), BB2 (GLOBAL INFORMATION FOR REGIONAL SCALES) & BB3 (PREDICTING CLIMATE)

- The distinction of BB1 and BB2 was questioned. Regional scale information can also be derived from GCMs, in particular high-resolution ones. It seems that BB2 addresses only the large-scale drivers of regional climate even though it is very important. There is also a lot of overlap between climate change and decadal scale variability. This issue becomes stronger with shorter (e.g., seasonal) timescales. BB1 does not sound it does anything else but climate change. <u>In short</u>: BB1 should integrate information from GCMs as well. This way it would also foster the analysis of added value.
- Put BB3 instead of BB2 in order to go from the regional projection to the seasonal one, and then to the transformation to society, i.e., 3 steps that are quite distinctive, yet complementary and building on each other.
- Support to the present BB1 as is because it is about very high resolution (km-scale) and the GCMs are just not there yet. BB1 will also produce information for society.
- Suggestion to call BB1 "Regional Climate Projections" because the science is everywhere, by adapting the general scientific knowledge to the user society.
- BB1 should be broader than just CORDEX activities as regional climate science is being carried out in other WCRP Core Projects too
- There are multiple delivery systems for the kind of information that could be generated from BBs 1 to 3. These include the RCOFS, informing national climate policies like NAPs and Nationally Determined Contributions to the Paris Agreement, National State of the Climate Reports to underpin climate negotiations, etc. Identifying these pathways, and their information requirements, would give BB4 some structure.
- Pull RifS out from the Lighthouse Activities (LHA) and away from the "predicting climate" (BB3) which is being done well in other groups. Instead use BB3 to concentrate on extreme hazards, e.g., infrequent but very extreme events. That would make RifS unique. It can be argued that much of the needed information for society is about hazards. Should BB3 be a call-out directly to quantifying and projecting hazards (predicting climate is not very specific to 'us' RifS)?

BB4: Dialogue with Society

- What is exciting about RifS is actually the co-production of actionable information that shapes what the other BBs are doing.
- “Understanding pathways to application”, this is a time series that is put into a, for instance, crop model. It is the top of the distribution, the tale of facts that informs worse case scenarios preparations. It would also be interesting in using this to identify the non-traditional indices or hazards beyond the top/obvious ones (e.g., heat waves).
- The whole dialogue in how we assess skill would mean a change in the way we do climate science to a climate application perspective.
- This block should position itself (very carefully) within the adaption/resilience/ development landscape where climate information often lands. Using terms like trans-disciplinary implies a lot and also implies different things to different communities. Must figure out what our role is within the landscape, and what it isn't. Perhaps BB4 should primarily be viewed as an "input" to guide BB1 to 3 rather than an "output". BB4 should be viewed as guiding the home, not as the "dissemination wing"
- The society/user landscape is wide and complex, and they have different approaches; how will RifS deal with that? Connecting/dialogues with decision makers it is very contextually dependent. For this it is important the bottom-up approach, for instance, what type of dialogue you mean: is it putting together a product or is it to discuss how the science is being done? The question in the working document: “how can scientists engage with the user landscape?” is very relevant. It is also important to learn about this landscape in order to best engage with them.
- Use the already existing regional interfaces, for instance the local/regional climate centres and service providers + scientific community not directly connected with WCRP. RifS can ensure this connection through coordination. In fact, there are several examples of such coordination, where WCRP has provided climate indices, models scenarios in Asia and South America.
- “Dialogue with society” sounds vague and might be unachievable. Suggest to change the name of BB4 to: "Development of actionable information" via dialogue with stakeholders across a range of scales. We as domain experts should be able to identify products that are achievable, even in the absence of that engagement. Advise also to collect learned lessons and experiences from research and engagement outside of WCRP, e.g., activities funded by NOAA in the USA, DfID in UK, etc.
- This block seems designed top-down. Misses bottom-up approach: it is the society or users that decide what type of information they want? By communicating with the users, you establish a two-way dialogue (top-down and bottom-up).
- if BB4 is on distillation, then it should link much stronger to BB1-BB3. Distillation is not just deriving useful indices, but implies communication and stakeholder dialogue.
- Suggest to move the points on reconciling information from multiple lines of evidence into this block, and change the name of BB4, as it would have a component on information generation and a component on translating this information for use by stakeholders in a specific context.
- One could separate the modelling activities from the analyses/ understanding activities. The latter ones should be cross-community on distilling information.

ABOUT THE LINK TO CLIMATE SERVICES

- Climate Services provide an important pathway for BB4, which connect with WMO commissions and services. Climate services would primarily be delivered by National Meteorological & Hydrological Services, but they need a strong connection with academia to develop the underlying tools. It is crucial to implement co-production as early as possible in the process.

- The links to climate services can be through the services and operational folk in WMO, IOC and others. There is a need to work with them to ensure what WCRP does is useful to them.
- Supports the idea of cooperating with climate service providers as a channel of communication instead of directly addressing the stakeholders as they are signs of “stakeholder fatigue” e.g., scientist asking stakeholders what they need. Note: This holds for LHA My Climate Risk as well.
- Strengthen existing channels of communications with stakeholders and establish new ones as there is also a need to get more people involved to tackle some of these issues, i.e. inject fresh blood in the system.
- Take advantage of the experience from WCRP on-going activities where scientists, services people, policy folk and engineers etc. are/have worked together. Examples are the Grand Challenges on (i) *Weather and Climate Extremes, (ii) Regional Sea Level change and coastal impacts*, and (iii) *Near-Term Climate Prediction* (that led to the WMO Decadal Outlook)

ABOUT THE DESIGN, RELATIONSHIPS AND BOUNDARIES OF RIFS

- During the design it will be important to (i) define what the boundaries are and also the interconnections, (ii) encourage interdisciplinarity and learn from what others have done. Maybe BB4 is the place to do it. The WCRP approach is to coordinate activities - it should be a natural part of being in the home to work with and across different scientific discipline boundaries. So, this should be encouraged by the structure
- Save a block dedicated to the coordination of RCM technical/production work as for CMIP in dialogue with the others blocks
- Important how RifS will interact with the other Core Projects/Homes/LHAs. At the end, the goal of the LHAs is to work together. Where does RifS ends and when RifS reaches the Core Projects for input?
- Not clear what distinguishes RIfS from the *My Climate Risk* LHA. Would the LHA start some flagship projects to kick of what is going on here? Is the LHA scope more narrow? Clarify the connection/boundaries with the LHA My Climate Risks to avoid overlap.
- The RIfS home is very interdisciplinary and even has transdisciplinary aspects - so the distinction between the LHA and RIfS is not quite clear. Maybe this must be discussed within the LHA as well.
- Where is the study of regional climate phenomena (incl. extremes events), all phenomena relevant for regional climate and local people?
- Should attempt to cover all the components of the regional climate system (aerosol, regional seas, cities, ...) not just atmospheric and land as the initial CORDEX did.
- Don't forget the words "regional climate understanding" and "improve scientific knowledge" and all what is needed for the long-term model improvement.
- The Home should have 'doors' that can bring in people from the social sciences, adaptation and resilience communities, and statisticians since they are expert in making sense out of data.
- Can be problematic with expectations of RifS "producing" regional information for decision makers (as in doing a climate services job) as RifS shall not become a producer of information alongside the plethora of other producers. Yet, the science behind the services can be informed by emerging needs.
- If regions are the overarching domain for RifS it would make sense to have the building blocks focused on prediction and information on various timescales on regional scales. This would facilitate Regional Climate Outlook Forums to provide a platform for research to operations.

ON STATISTICIANS/STATISTICS ANALYSIS

- Suggested to include statisticians in this work, to provide useful information about probability occurrence and limitations of prediction skill. Statistics have more prediction than model scenarios and provide information about the probabilities, e.g., statistical downscaling is very suited for that. Favours accuracy instead of uncertainty as it tells you more the limitations, for instance, what cannot be predicted. Stronger involvement of statisticians may perhaps provide an additional perspective - PDFs may be more predictable than individual outcomes.

ON IMPACT MODELLING

- Not clear where impact modelling fits in this structure. This is important because it is often a connection point with decision making. Climate information and impacts modelling is increasingly interactive, so would be good to improve linkages within programs rather than seeing impacts as external follow-on. Impacts modelling is not just an operational community endeavour but involves a lot of basic research with direct connections to the types of climate information we need to create and evaluate. One could do worse than acknowledge explicitly the several global and regional impact MIPs in the list under "3. Relationships" in the working document, outside the WCRP community, such as the AgriculturalMIP and Inter-sectoralMIP.

SECOND PART

What happens in the climatic "hotspots", what kind of research is needed, what are the drivers, etc?
How will climate change impact on business, economic sectors, life as a whole?
Can RifS answer these questions or are we missing something?

- What is needed is the local knowledge and the sustain dialogue with the local community. Regarding the physics we can plough through the long-term data series available. But the challenging part is the communication of that information, something that goes beyond WCRP. So, we must connect with social sciences and develop sustainable channels of communication with the local communities in order to understand what their responsibilities, constrains, histories, cultural issues are. That is the difficult part.
- Attribution of core patterns and understanding all of the variables that play a role in the model outputs about the extreme event in question (e.g., drought impact on water availability) is important. In the decision making there are a number of aspects to take into consideration such as, water supply, water demands, the financial aspects for water utilities, etc. All these are valuable factors and information that must feed back into the type of science that should be carried out to answer those questions and aid in the decision making. There is a lot of ambiguity in this landscape and more two-way dialogue can clarify in that subject and others.
- The climate science is the easy part. "Thresholds of failure", i.e., tolerance levels, successive tipping points are needed, but often hyper-tailored to system elements. When is it that societal systems fail and what are the climate drivers exceeding that threshold? Finding out about these thresholds would fit nicely back into the science.
- How society response to those climate hotspots is very subjective. From the short-term scale variability point of view, what is needed is long-term observations which are not always available, and models that perform well for the region in question. Only then you can move forward and do the analysis and start to understand the climate part of it.
- Regarding information: not necessarily lack of it, but using the existing one and most importantly, helping the individuals that are trying to make sense of that information in order to navigate that space. One should navigate through the existing information, not always necessary to get more of it.
- WMO and the Green Climate Fund are working with local communities and local funding. There will be a need to engage with the local scientists and help them in having a more authority voice in their own context, as a way to channel the info into the decision making through them.

- The context of the climate information is critical for steering the research. We also need to learn to walk before we run. There are fundamental issues around the development of regional climate information that is defensible, applicable and in the right context. But there is a need to find a balance between bringing this context into the WCRP without neglecting the fundamental science behind that. We must ensure we are advancing the fundamental science.
- The question could be rephrased to: 'How does weather affect you where you live? Why does it matter?' One can use statistical theory and data to answer some of the questions, and then ask if one can get a more reliable answer by bringing in information based on climate models and scale dependencies. Such extreme events are usually difficult to quantify. Also, drought has several definitions and there is not one unique definition of a 'heatwave'. But it may be possible to predict the shape of the pdfs.
- The term "hot spot" is problematic - one person's hot spot may be another's lower priority. It is politically difficult to justify such definitions, because there are so many vested interests involved
- The question about drought would inform model development: one may argue our GCMs are currently not fit projecting changes in the circulation causing drought. So, within BB2 one could develop diagnostics to evaluate models, and could inform the choice of models as well as development of better models?

SUGGESTIONS OF NAMES INSTEAD OF BUILDING BLOCKS
Clusters / Domains / Themes / Nodes / Building Branches

WHAT´S NEXT

Participants were invited to contribute to the RifS working document at https://docs.google.com/document/d/1W2XM2t_xLpkOqws99fY16uzWIg7GHpReVA0E_psxZo0/edit?usp=sharing

Highlights from the input in the working document and all the comments, ideas, suggestions from the meeting today will be presented to the WCRP Joint Scientific Committee at their extraordinary meeting 30 Nov-3 Dec 2020 (JSC-41B).

The design of the science plan, structure governance and implementation plan for RifS will continue in 2021. A number of meetings and workshops among this community will be organised for this purpose in order to prepare a white paper by the end of June.

Jacob, Solman, Goodess and Hewitson thanked all the participants for stimulating discussions, ideas and recommendations.

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