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### WCRP Academy

#### 1. Description of the Activity

The WCRP Academy will be a new hub for climate science training opportunities, a marketplace that connects people who need climate science training with people and institutions that can provide that training. Fundamentally, this hub is needed to deliver the step-change in research training that is needed to build the scientific workforce required to deliver the aims of the WCRP strategic plan. At a higher level, it will ensure a sound future for WCRP by training the next generation of WCRP leaders.

The Academy will have two primary functions:

- A curated web hub as a focal point for advertising and sharing training opportunities. In the early days of the Academy this should focus on collecting and sharing details of training developed and offered by the WCRP community and resources to support that training. In the long-term, this should develop into a one-stop shop for training opportunities for climate scientists.
- An annual stock-take of research training requirements. Results from the stock-take will be shared widely and openly with the climate science community. It will identify both where there are gaps in training provision and where sustainable markets for training delivery exist.

The knowledge broker role envisioned in the stock-take activity is core to the values of WCRP as a trusted, independent and international partner for the global climate science community. The web hub will also help to lower the barrier to entry for new training providers by simplifying access to training consumers and providing some simple administrative functions which will interface with those of the training providers.

The Academy will initially operate within the climate science community, linking climate scientists who require some form of climate science training with communities who are able to provide relevant training. As such, and for the sake of clarity, we broadly define Climate Science, Climate Scientists and Climate Science Training as follows:

#### **Climate Science**

The quest to observe and understand the structure and dynamics, interactions and variability, coupling processes and feed-back mechanisms, over time and across geographical scales, of the Earth's Climate System physical components; ocean, atmosphere, land, water, cryosphere. It also includes to observe the impact of global heating and changes in biosphere, to employ historic and local knowledge, to estimate future changes and to communicate its findings.

**Climate Scientist:**

A climate scientist seeks to understand and communicate the processes responsible for climate variability and change, using theory, observations, and numerical models. The activities of a climate scientist may include making predictions of the climate system, explaining the role of predictions in decision-making and communicating research results.

**Climate Science Training:**

Training (in our Academy context) aims to improve climate science literacy (see below) of communities who require climate information in their operational or decision-making contexts. A climate scientist would ideally at the end of the training be able to:

- understand and explain the essential principles of Earth's climate system
- have technical skills to be able to analyze and use available tools and methods, quantitatively as well as qualitatively
- critically assess scientific information about climate
- communicate about climate, climate change with different societal groups and thus enable new applications of climate science
- make informed and responsible decisions with regards to actions that may affect climate
- provide expert advice to users of climate information

**2. Relevance to the World Climate Research Programme (WCRP)**

The WCRP Academy is a direct contribution to WCRP's mission "to develop, share, and apply the climate knowledge that contributes to societal well-being," as the sharing of knowledge requires the training of and by those who we wish to share it with. It is a direct contribution to WCRP's engagement strategy. In fact, the Academy should be the flagship program that supports this vision.

The Academy directly contributes to and underpins all four WCRP strategic objectives:

- Objectives 1-3 require a thriving and well-educated climate science community that is truly global and that freely shares knowledge and experiences. The Academy's specialist training and capacity exchange programs will be vital to build that community.
- Objective 4 aims to connect our science to society. This will require climate scientists who have the skills and confidence to interact with a diverse range of stakeholders with varying prior experiences of climate science and the scientific process. The Academy aims to give climate scientists, at all career stages, these skills and confidence.

The Academy will work together with all activities across WCRP, including but not limited to the core projects and lighthouse activities, to ensure that an integrated approach is taken to the delivery of climate science training.

### 3. Partnerships

The most obvious analogue for the WCRP Academy is the WMO Global Campus. We have invited Luciane Veeck, the WMO Global Campus lead, to sit on our science team in order to ensure that the co-benefits of working with the Global Campus can be realized.

The success of the WCRP Academy will also critically depend on partnerships with training providers around the world. We are in discussions with the International Universities Climate Alliance, a new and large global collaboration of leading Universities worldwide, who may be able to support the aims of the Academy.

A key part of planning the activity will be to ensure that there is a viable and enduring model for training providers to participate in the Academy. The regional hub approach will enable those partnerships to be meaningfully driven at the regional level.

As training is part of many national and international research programs, a close collaboration of the WCRP Academy with the activities of our major sponsors (WMO, IOC and ISC) and partners (e.g., Future Earth) will be vital and must be facilitated at both the central and regional level. Specific partnerships will likely emerge from the stock-take that the science team is undertaking. Plans to engage with major international academic training providers (e.g., University Corporation for Atmospheric Research (UCAR), International Centre for Theoretical Physics (ICTP)), universities and national professional bodies are being developed in the establishment phase of the Academy.

### 4. Scope of the Activity

The scope of the activity is best described by a set of core principles which we developed in the first two science team meetings.

#### What is the WCRP Academy and why is it needed?

- Now, more than ever, the world needs climate experts. Climate expertise is particularly needed in countries most vulnerable to the negative impacts of climate change.
- Although there is a large amount of excellent climate science training available, coordination of access to this training would benefit those in need of it.
- Provision of climate science training could be made more efficient and sustainable by better connecting providers and consumers of training.
- Climate science has an applied science component that integrates disciplinary knowledge from many fields. No one institution can provide the complete training that modern climate scientists require.
- Climate science training could be made more useful if designed with the impact of climate variability and change on society in mind.
- Barriers to access to training are primarily geographical and financial, not a lack of prior learning or desire for training. The WCRP Academy seeks to particularly

provide training opportunities for early career scientists in low and middle income countries.

- Delivery of climate science training needs to be funded through a combination of governmental, institutional and philanthropic grants and fees paid by consumers of training, when possible.
- Training at the scale and quality that is required for the next generation of climate scientists will require delivery through various means and can be both online and in-person.
- The WCRP Academy will be a hub which connects training providers and consumers, a marketplace for climate science training.
- Inclusion of training within the WCRP Academy hub implies that the training is high quality. As the Academy develops, it will need to build a light-touch mechanism of quality assurance.
- The WCRP Academy will build and maintain an evidence base of what climate science training is required, where and by whom. This evidence base will enable training providers to develop courses that meet market needs.
- The WCRP Academy will help build a global community of climate researchers at all career stages to provide global networking and mentoring opportunities to facilitate lifelong learning and skills matching for current and future research projects across the globe.

Working to these core principles, the scope of the Academy includes serving as a networking hub that facilitates the capacity of climate scientists to do excellent climate science and interact with stakeholders who require climate information. These core principles also place boundaries on the scope and activities of the Academy. It is important to clearly set out what these boundaries are in order that the project is successful.

- The WCRP Academy does not have a climate science outreach function and is not involved in explaining climate science to the general public. Climate science outreach is a vital part of making the best use of our science, but there are many organisations that do this job very well.
- The WCRP Academy is not a training provider.
- The WCRP Academy is not a pathway for accessing formal tertiary or accredited qualifications nor does it offer financial support (such as stipends or scholarships) to support individuals in this endeavor.
- The Academy is not a source of funding to attend any training activities but may provide information about potential funders of these activities.

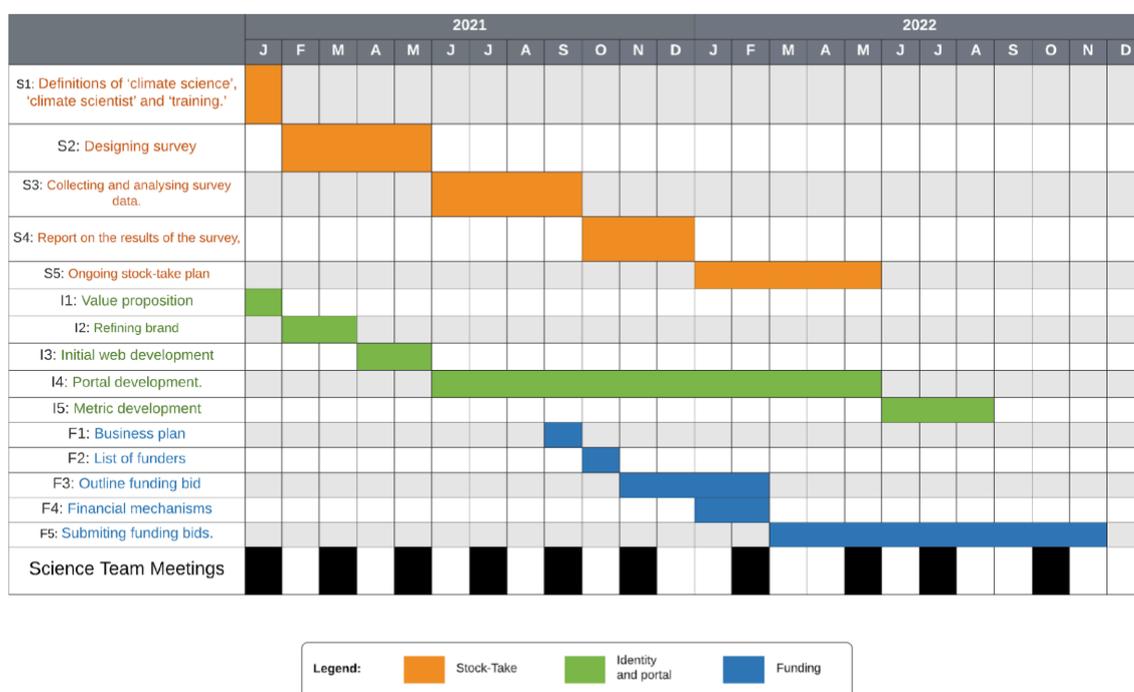
### 5. Similar activities

A list of related and similar activities is included in the appended document. Apart from WMO Global Campus, none of these initiatives provide the function the Academy will fulfill, but they are useful partners for the Academy.

## 6. Timeline

The work of the Academy science team will proceed mainly through three working groups, all of whom report to the main science team meetings. The three working groups are the stock-take group, the identity and portal group and the funding group. The main tasks of each of the groups over the first two years of the project are shown in the Gantt chart below. Following the first two-year phase, and assuming the deliverables have been met, the intention would be to transition to a full-time Academy support team to build out and embed the Academy portal and concept. In this phase, a new Academy advisory board would be appointed to oversee the development of the Academy.

### WCRP Academy work plan



## 7. Requirements

In the long-term, the WCRP Academy will require the following resources to deliver the vision as the marketplace for climate science training.

1. A modern, well developed platform that allows researchers to learn about and access training opportunities.
2. A mechanism to regularly survey climate science training needs and communicate this information to training providers.

3. A funded, permanent Academy team that liaises with the climate science community, maintains and develops the platform, runs the surveying mechanism and maintains communications with potential students and training providers.

In the short-term, we request funding for a consultancy for the prototype web portal development and another for some time to support the stock-take activity.

## 8. Budget

In the long-term, the Academy would require resources to manage the hub, annual stock-take and knowledge broker aspect. With no constraint, we would imagine a full-time team of one manager of the Academy and one full-time (or equivalent) administrator. There are three potential scenarios for how this team might be resourced (all costs USD):

1. Consultants are hired through WMO (working anywhere in the world). Based on typical WMO rates, the cost would be 10K per month for the manager and 7K per month for the administrator, in total 204K per year. This approach may be sensible in the short-term, to get the Academy team up and running but is not suitable in the long-term.
2. Hire two staff members of WMO with funding sought from external sources. Our estimate for these costs would be about 180K per year for the Academy Manager and 140K for the Administrator, in total 320K per year. This would be a suitable long-term solution.
3. An alternative long-term solution is to seek in-kind support from a large WCRP partner external organisation. In this model, there would likely be no physical space requirement and we would be seeking support for the 2 FTE positions (even if these are ultimately split between multiple organisations).

In addition, there would be a small cost to maintain and update the hub each year. We estimate this to be a few thousand CHF per year (based on existing WCRP contracts).

There are multiple possible models to fund this team, one approach would be for these functions to be adopted by existing core project IPOs once the initial development phase of the Academy is complete (or to set up an additional Academy support unit as outlined in 3 above). Another approach would be to seek funding from external sources, to be routed through WCRP structures. We think that the concept of the Academy, with a well-defined capacity building rationale, would be particularly attractive to philanthropic donors who are increasingly interested in funding climate science and outreach programmes. We are investigating this possibility through WCRP contacts and the Belmont Forum.

In the short term, we request funding for two periods of consultancy:

- A web developer to lead and develop the prototype Academy portal, branding and logo. Estimated cost for four months of development work is (at minimum) CHF 15K
- Initial desk research into provision of climate science training around the world. This research will help the stock-take group to further target the ongoing survey. Estimated cost for one month of educational consultancy is CHF 7K. An alternative here is to ask

for this work to be done on a voluntary basis by Academy partners (perhaps by an MSc student at a participating institution).

### 9. Deliverables and outcomes

Deliverable within the first two-years of Academy development (by end-2022)

- Annual stock-take of training needs, to be completed in 2021 and 2022 and published either in a journal or on the WCRP website.
- WCRP hub set up and operational with at minimum more than 50% of WCRP training opportunities included.

Long-term deliverables, measures of success:

- A stable financial mechanism for funding the team maintaining the Academy hub and the stock-take established.
- All WCRP training included in the hub.
- An equal or greater number of external training opportunities included in the hub.
- Annual stock-take established with publishing mechanism and timetable.
- Traffic to and other analytics from the Academy hub monitored and growth plan established.

### 10. Communication and capacity exchange

We have established a list to coordinate communication with partner organizations both inside and outside WCRP. We feel this is the most efficient way to connect with the many organisations delivering climate science training and have already had a number of meetings with internal WCRP partners and some external partners. All members of the science plan development team have access to this list and can suggest new meetings. The co-chairs represented the WCRP Academy team at Scientific Steering Group meetings of many WCRP Core Projects and some of the new WCRP Climate Research Forums.

A landing page for the Academy, which is a critical part of broader communications, has been developed. This page will include some of the information included in this science plan. Once this landing page is externally visible we will be able to approach a broader group of external partners and develop our own social media channels.

The first stock-take survey will also help us to deliver on our communications objectives, since we aim to share the survey very broadly and make use of many of existing WCRP communication channels to promote it. Wide uptake of the survey is a key part of the early success of the Lighthouse Activity.

### 11. Risks

There are two main categories of risk associated with the Academy:

- That the Academy hub cannot be appropriately set up in a way which facilitates input of training course information that can be shared (technological risk). We aim to mitigate this risk by employing a specialist contractor to develop the web hub. A key

directive to the contractor will be the ease of use and sustainability of the web hub and we have prior expertise in the team on setting up and designing a similar system (van Oevelen). One of our working groups will have a strong focus in this area.

- That there is insufficient engagement with the Academy activity, either the hub or the annual stock-take (engagement risk). This is a significant risk, particularly with any new activity of this type. It is important for our team to get the brand and identity of the Academy right from the initial stages and to have a clear value proposition for stakeholders. The co-chairs are spending significant time interacting with different groups in the early stages in order to position the Academy to mitigate this risk.

### 12. Transition planning

The level of enthusiasm for the Academy concept displayed at the various fora we have presented it at makes us confident that there will be a large number of members of our community wishing to step into the science team as the project evolves. To ensure a smooth transition we have begun inviting interested parties to take part in our working groups, with no limit on the membership of these groups. In the long-term, as these new recruits become more engaged with our programme, we imagine they would step into the science team as others step down.

### 13. Supplementary information

List of related projects

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