

WCRP



Communication Strategy



2017-2020

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Executive Summary

The World Climate Research Programme (WCRP) facilitates the analysis and prediction of Earth system variability and change. Communication is critical for both internal coordination of its many groups and activities and for disseminating its key messages. The success of WCRP can be attributed to the hard work and enthusiasm of its community, leaders and the staff of the WCRP Secretariat and International Project Offices. However, communication has largely been performed on an ad hoc basis, without a coherent framework. With a growing urgency to explain how our climate is changing, consistent branding and coherent messages are required.

The WCRP Communication Survey of 2017 provided considerable insights into how the WCRP Community communicates, based on responses from members of the WCRP Community and external stakeholders. The survey responses, together with an assessment of current practices and future opportunities, leads to 30 recommendations for enhanced cooperation and transparency within the Programme and increased collaboration and Programme visibility externally. The recommendations are organized into six overarching objectives: increase Programme visibility; showcase WCRP science findings; inform and engage the WCRP Community; provide ways for those in the WCRP Community to communicate effectively; focus on building strategic partnerships; and encourage current and future leadership in climate science. Progress in achieving the recommendations and overarching objectives will be evaluated by website, newsletter and social media analytics and by a follow-up survey on WCRP communication.

To highlight the work of WCRP, annual strategic themes will be implemented. These themes aim to engage WCRP's audiences in a clear and memorable way and to provide a framework for achieving specific communication goals. In 2017 the strategic theme is 'Looking Ahead', with a focus on WCRP's vision for the future - finding ways to respond to urgent climate challenges and a changing political landscape. In 2018 the strategic theme will be 'Showcasing WCRP Science', which will aim to disseminate WCRP research findings and products to the wider science community and stakeholders in order to increase cooperation and grow partnerships, as well as to enhance the overall visibility of the Programme.

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1 Introduction

Communication has always been important to the success of the World Climate Research Programme (WCRP), which has been due to the enthusiasm and hard work of the WCRP community, its leaders and the staff of the WCRP Secretariat and International Project Offices. However, it has largely been performed on an ad hoc basis, without a coherent framework. There is a growing urgency to understand how our climate is changing and a need to communicate our progress in this task in a timely and robust manner.

At both the 36th and 37th Sessions of the Joint Scientific Committee (JSC) (in 2015 and 2016, respectively), the JSC recognized the need for a WCRP Communication Strategy, to improve communication within the community and to enhance the visibility of the Programme externally. A communication strategy is a plan of action designed to achieve a set of communication aims or objectives. This communication strategy will build a framework to improve WCRP's communication by identifying the Programme's key messages and providing a set of prioritized recommendations and overarching objectives.

It is also important to note that communication proposals for 2017-2020 must be modest in terms of their resource needs, due to severe cuts to the 2017 Programme budget. Communication recommendations that require significant resources will be termed 'blue sky' targets, with the understanding that implementation of these proposals may require either an increase in the total WCRP budget or funding from additional sources.

1.1 Internal and External Communication

This strategy divides its analysis of communication into internal (Chapter 2) and external communication (Chapter 3). Internal communication refers to communication between members of the WCRP Community, which is defined as all the groups listed in Table III.1 of Annex 3. In short, it includes all the members of the JSC, Joint Planning Staff, Core Projects (international project offices, scientific steering groups, panels and other activities), Advisory Councils, Working Groups, Grand Challenges, Co-sponsored projects and endorsed activities. External communication refers to exchanges of information with individuals and organizations outside of the core WCRP community. This includes sponsors, partners, the press, policy makers, decision makers, climate services and other stakeholders as well as individuals and organizations that have a general interest in climate, which we refer to here as the public.

1.2 WCRP Communication Survey

A WCRP Communication Survey was conducted between 2 November 2016 and 20 January 2017 (WCRP, 2017). The survey was public, attracting both internal and external respondents. There were

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196 respondents, who answered questions on both internal (96 respondents) and external (100 respondents) communication. All respondents answered questions related to the WCRP website and newsletter, and provided comments about the how they perceive WCRP. The survey gave many good suggestions and highlighted areas where WCRP could improve. Consideration of the survey responses resulted in recommendations to: increase Programme visibility; showcase WCRP science findings; provide greater transparency of leadership selection criteria and clearer mechanisms for Programme involvement; communicate more effectively with members of the WCRP community; continue to make improvements to the WCRP website structure and content; and to publicize how to subscribe to the WCRP newsletter more widely. The survey findings and these recommendations form the basis for many of the strategies in this report.

1.3 Structure of this Report

This communication strategy begins with an overview of WCRP internal and external communication, in Chapters 2 and 3, respectively. Chapter 4 provides the 2016 Communication financial statement and a projected budget for 2017. Chapter 5 discusses how to measure communication performance, considering a follow-up communication survey and website, newsletter and social media analytics. Lastly, Chapter 6 results in a set of overarching communications objectives and annual strategic communication themes. The overarching objectives are based on 30 recommendations for WCRP communication in 2017-2020, which are given in Annex 5.

2 Internal Communication

Internal communication within the World Climate Research Programme (WCRP) is essential for WCRP leaders to make timely and well-informed decisions for, and recommendations to, the wider WCRP Community. Internal communication is also needed for effective collaboration; to both answer research questions and disseminate the results.

The recent WCRP Communication Survey (2017) recommended that WCRP “communicate more effectively with members of the WCRP Community”. This was based on survey responses that showed that communication with researchers in the WCRP Community was on average infrequent and ineffective. While this was based on just 40 responses from WCRP researchers, it does suggest that improvements in communication in this area are warranted.

2.1 WCRP Community

The WCRP research community is estimated to number several thousand people. This includes all the researchers involved in all projects and activities, including those of the WCRP Core Projects. The leadership of the WCRP community, including members of the various committees and working groups, number around 600 individuals (estimation from WCRP database). The scientific leadership of WCRP is provided by the Joint Scientific Committee (JSC) and the Programme is directed by the WCRP Director with the support of the Joint Planning Staff (JPS). WCRP’s mission and objectives are outlined in Annex 2 and a detailed overview of the structure of the WCRP Community is given in Annex 3.

2.2 Communication Methods

The WCRP Communication Survey (2017) found that the most important methods used to communicate within the WCRP Community are, in order of how extensively used, email, the annual JSC Session, teleconferences and meetings. Telephone calls and web messaging were, in comparison, not used extensively, so will not be considered here. The use of publications, such as reports, as a communication tool will be considered as part of external communication (Section 3.4.3).

2.2.1 Emails

Emails are the primary method of communication between individuals within WCRP (WCRP, 2017). WCRP has a number of aliases that it uses to send emails to particular target audiences, such as the chairs of committees or the directors of the Core Project International Project Offices. There is currently no email alias to send emails to the entire WCRP Community, as the contact information for this group is fragmented. The WCRP Newsletter mailing list may reach a majority of the community, but it also has external recipients and, as such, can not be considered for internal messages.

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2.2.2 The Annual JSC Session

The annual JSC Session is the main opportunity for many within the WCRP Community to meet. Both the length and location of the JSC Session are determined by the JSC, with advice from the WCRP Director and in accordance with the WCRP budget. The meeting usually runs for between three and five days and has around 70 participants (76 in 2015; 68 in 2016).¹ At the 37th Session of the JSC (JSC-37) (2016) the time available for presentations, discussion and JSC decision-making was extremely tight. In response it was decided that in future sessions, rather than extend the meeting, WCRP activity leaders would submit short written reports in advance of the JSC Session and limit their talks to the information needed for JSC decision-making (see Annex IV for the list of communication action points that resulted from JSC-37). Given the cuts to the WCRP budget in 2017, the length and the format of future JSC Sessions will have to be reassessed. The importance of this meeting to the WCRP Community is such that, if possible, the Session should be retained in its current format.

2.2.3 Teleconferences

Teleconferences can be used for leadership meetings, to ensure good internal communication within a group, or for thematic discussions, where particular ideas or problems are examined by key stakeholders. WCRP primarily uses teleconferences for the former category, although the latter is also highly valuable and should be encouraged.

Teleconferences within the WCRP Community are important due to the worldwide distribution of its community members. It is a very efficient way of discussing a lot of information in a set time frame (given good call management), but it also has limitations. The first is that no matter what time a call is scheduled, it will be evening or night in one or more time zones. Another is that calls require a basic level of technological knowledge and infrastructure. Some people are uncomfortable with teleconferencing because they do not spend a lot of time working on computers or they feel more reserved in a teleconference setting because there are no cues regarding when they should speak (cues can be given with good call management, but often are not). If the technical setup of the teleconference is not optimal, it can be impossible to successfully connect to the meeting, hear proceedings or be heard.

Despite these limitations, which can be minimized with good call preparation and management, teleconferences are highly effective and are more environmentally responsible and affordable than face-to-face meetings. It was decided at JSC-37 that at least three intersessional teleconferences should be held between the JSC, including Core Project involvement, and between Core Project Chairs and Directors (Annex IV) — with Joint Planning Staff involvement. These quarterly teleconferences appear to have worked well in the last year, although the dates could be set earlier so that all those involved can do their best to avoid time conflicts. It would be helpful to provide a set of best practices for call hosting and participation and to ensure that participants have access to guides to the interfaces that they will be using.

2.2.4 Meetings

In addition to the annual JSC Session, other meetings also provide an opportunity for members of the WCRP community to communicate. This might be meetings organized by WCRP groups or those

¹ In 2015 and 2016 the 36th and 37th Sessions of the JSC, respectively, were both held in Geneva over three days. The 38th Session of the JSC will be held in Paris, as requested by the International Council for Science as part of the WCRP Sponsor's Review of 2017, over five days, with the official agenda taking three days and the remainder set aside for committee meetings and other business.

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arranged to coincide with other conferences, particularly the large European Geosciences Union (EGU) General Assembly held in (Vienna) Austria every April and the even larger American Geophysical Union (AGU) Fall Meeting held in the United States of America every December. These are good opportunities for WCRP community members to meet informally.

2.2.5 Liaisons, Multiple Memberships and New Involvement

To ensure different groups within WCRP are aware of developments in other groups, liaisons between groups are often assigned. A liaison is a person who communicates between two groups to better coordinate their activities and/or improve the understanding between them. This can be very effective as long as the individual reports well to both groups. It can also be time consuming, as to report well to both groups requires a time commitment to both. There are also many leaders in the WCRP Community who are members of multiple committees, which is only prohibited at JSC level. This aids internal communication between the groups concerned and WCRP are extremely fortunate to have such hard-working community members. However, multiple links between groups raises the question of whether additional individuals from the wider research community could rather be included.

The WCRP Communication Survey (2017) included comments that WCRP was a ‘closed shop’ and that it was not clear how to get involved. The survey report recommends to “provide greater transparency of leadership selection criteria and clearer mechanisms for Programme involvement”. This requires clearer and more streamlined practices on how to get involved and better reporting of the opportunities available.

2.2.6 WCRP Community Resources

The WCRP community does not have specific web collaboration tools, but uses a combination of emailing, Google Drive, Google Sheets, Google Docs, Dropbox and similar online platforms. The WCRP JPS and Core Projects all use Google Calendar to list upcoming events. The Google Community Calendar is available on the WCRP and Core Project websites.

In recent months community resources web pages have been added to the WCRP Website. At the time of writing these pages contain a template for WCRP reports, guidelines for WCRP report writing, WCRP logos and the WCRP data policy. There are plans to add a WCRP overview presentation (Microsoft Powerpoint), travel funding information, frequently asked questions and other useful resources.

The WCRP community does not currently have online collaboration tools. A comment in the WCRP Communication Survey stated that “common web based tools, calendars, other services, available for planning purposes” would be useful. Indeed there is much potential for online collaboration, although the costs associated with the application software are potentially limiting.

2.3 Recommendations for 2017-2020

As discussed in the introduction, a major cut in the 2017 WCRP budget requires that communication improvements be financially conservative. Recommendations are to:

- Provide a community-wide mailing list to provide more targeted and regular updates. The names of those on the mailing list can be open to all members to aid transparency, but the membership of the list is primarily community members. The mailing list could be used to provide

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updates about decision-making and opportunities to community members. This would improve community connectiveness and Programme transparency. If this mailing list were to include all those involved in Core Project panels and projects, it would also improve communication between the WCRP Secretariat and the wider community of WCRP researchers.

- Retain the annual JSC Session without significant reduction in its size or number of participants. This is due to its importance to community leaders as the only face-to-face opportunity to meet.
- Set up informal WCRP meetings, over coffee or dinner, at the EGU General Assembly and AGU Fall Meeting, and other meetings as appropriate
- Maintain quarterly teleconference calls between WCRP leadership groups and provide a set of best practices for call hosting and participation and guides to call interfaces
- Investigate and report on the structure of WCRP groups to assess the role of liaisons, multiple group membership and the need for attracting new members into the community
- Determine clearer and more streamlined policies and practices for how researchers can become involved in WCRP. The criteria for membership of WCRP groups should be outlined and selection processes for membership should be transparent. New 'how to get involved in WCRP' information should be publicized Programme-wide on websites, newsletters and social media.
- Expand the community resources pages on the WCRP website to include more information and resources for community members

'Blue sky targets' for 2017-2020 are to:

- Plan and support WCRP events for community members, also aimed to draw in researchers external to WCRP, at major meetings, such as the EGU General Assembly and AGU Fall Meeting
- Implement an online portal for community members to collaborate and share information

3 External Communication

External communication, as defined in this Strategy, is the exchange of information between the World Climate Research Programme (WCRP) Community and those external to it. External communication must be consistent and clear, across all methods of engagement. This requires establishing an effective brand identity and key communication messages and identifying WCRP audiences.

3.1 WCRP Audiences

The primary audience of WCRP is its research community (Section 2.1). However, there are many other audiences that are important to the success of the Programme. These are:

- Researchers and early career researchers who are not involved in WCRP activities
- Sponsor organizations, national contributors and potential funders
- Strategic partners
- Organizations with connections to climate and climate change
- Climate services and other climate data users
- Educators
- Policy makers and government representatives
- Members of the public

How WCRP communicates with these groups depends on whether the dialogue involved is one-way or two-way and what message is being conveyed. Communication that is one-way has a direct impact on the audience, but the effect that it has on WCRP is indirect and harder to determine. The WCRP newsletter and website, conference presentations (except for question time) and scientific publications are all examples of one-way communication. Successful one-way communication relies on information being presented clearly and concisely (see Section 3.2 on brand identity) and that it is effectively tailored to the right audience.

Two-way communication has a direct impact on all participants involved in the dialogue. The annual Joint Scientific Committee (JSC) Session, teleconferences, email and meeting discussions are examples of two-way communication. Effective two-way communication relies on open and willing involvement in the dialogue. This is partly governed by the perceived benefits of the exchange, but may also be affected by the personalities and experiences of those involved.

It is in WCRP's interest to seek two-way communication with a wide range of stakeholders. The current funding situation means that WCRP needs to look for additional sponsorship or seek funding for specific activities or events. The Programme needs to showcase its successes and the value of its

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community's skills and products. A recent report, 'Scoping a framework for WCRP regional activities' (WCRP, 2016), identified the need for WCRP to understand the needs of users of climate information. It stated "the scope of WCRP activities does not include climate services, but includes providing science-based, reliable and locally relevant information on which climate services and impact assessments can be built." The report advocates bridging the gaps between data producers and data users, and between research science and operational services. The same can be said for bridging the gap between the climate research community and policy makers, national governments, those involved in the adaptation and mitigation of climate change and the general public. WCRP is perhaps the only Programme that can effectively bridge those gaps, as it is the voice of the climate research community and also has the legitimacy and connections to communicate on a world stage.

3.2 WCRP Brand Identity

A brand identity is how an organization or business is perceived. The components of the brand (such as logo, typefaces, colors, personality, and more) reflect the values of the organization and convey the essence of what the organization stands for. A strong brand delivers a clear and credible message and connects with its audience at an emotional level, motivating and reinforcing loyalty.

The brand identity of WCRP has a clear logo and colors, as can be seen on the cover page of this report, the WCRP website and in the WCRP Newsletter. The voice with which WCRP communicates depends on its target audience. Reports and website pages aimed at the WCRP research community necessarily use some technical language. However, newsletters and web pages aimed at a more general audience should not. WCRP's brand personality is trustworthy, professional and approachable. It includes the WCRP values shown in Figure 3.1. These are: accountability, approachability, bottom-up, clarity, consistency, integration, legitimacy and transparency.

The community resources pages on the WCRP website provide publication templates and guidelines to allow reports to be presented with WCRP branding in mind. It should be noted that it is not a requirement for publications to use the template (such as the case of this report), in which case WCRP colors and typefaces should be used to create a product that clearly follows the WCRP brand. Core Project publications need not follow the WCRP brand, as the individual identities of the Core Projects are an important part of their own brands.

Presentations by members of the WCRP community on WCRP and its activities should take advantage of the WCRP Microsoft Powerpoint template (soon to be available on the WCRP website). These slides have been prepared with full involvement of leaders within the WCRP community and allow the presenter to mix and match information as appropriate for individual talks.

3.3 Key WCRP Communication Messages

All communication by the WCRP community is based around a set of key messages. These are:

1. Key successes and impacts from WCRP activities
2. Recent progress on urgent climate challenges
3. The importance of WCRP modelling activities as the basis for research and assessments

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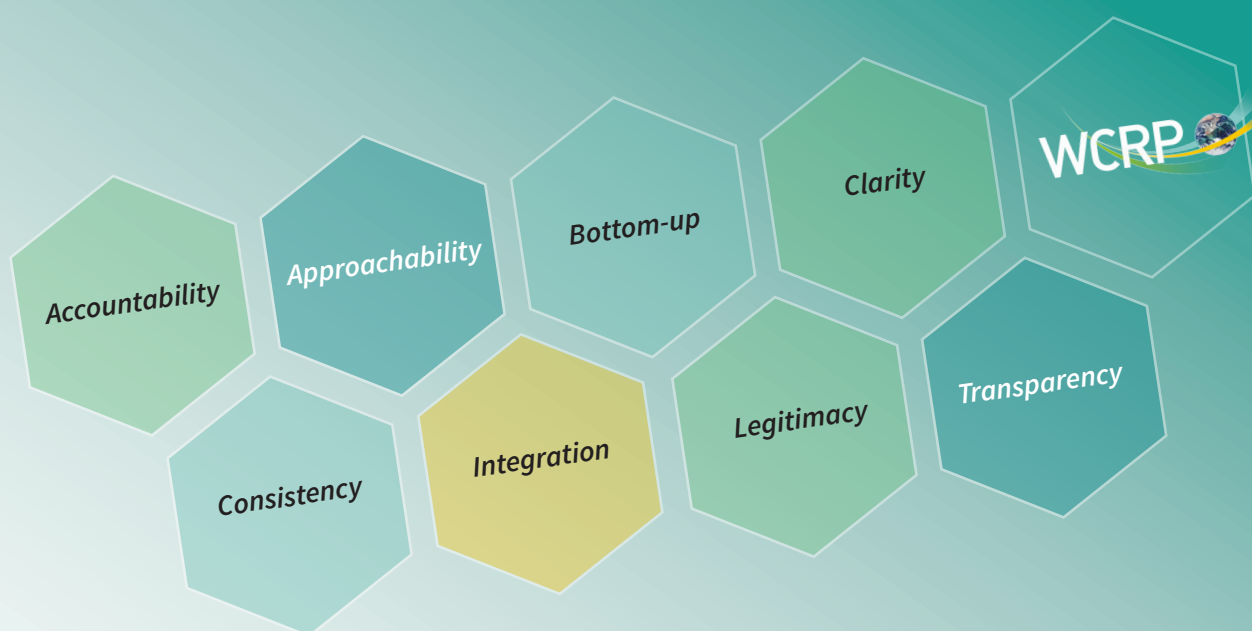


FIGURE 3.1

WCRP COMMUNICATION VALUES:

- **Accountability** - Actions speak louder than words. We take full account of our behavior as well as our words. We reduce our carbon footprint, as responsible Climate Scientists and representatives of WCRP.
- **Approachability** - While our scientific work is professional in format, our newsletters, website news items, social media updates and informal email correspondence uses a more friendly and approachable tone.
- **Bottom-up** - The success of WCRP is based on the enthusiasm and hard work of its research community. Ongoing dialogue with and full inclusion of the researchers and other stakeholders in the community is paramount.
- **Clarity** - Clear language and simple terms keep audiences interested and engaged. Some reports require technical language, but where possible jargon is avoided. Acronyms are used sparingly and always explained.
- **Consistency** - Key messages are delivered in a coordinated, robust manner without contradictions or omissions.
- **Integration** - Internal and external communications are consistent. Sharing information throughout the community is encouraged.
- **Legitimacy** - Evidence-based reporting and communication show the results of community effort and measure the progress that we are making towards our mission.
- **Transparency** - All key information regarding WCRP projects, activities and events is made available on the website. Contact details of staff, project and activity leaders are also listed.

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4. The importance of coordinating, collating and sharing climate observations
5. Processes and initiatives to identify gaps in our current understanding of climate
6. The importance of fostering the next generations of climate scientists
7. Opportunities and examples for reducing the carbon footprint of climate science

While we promote these messages across all WCRP activities, the Grand Challenges in particular lend themselves to communication aimed at those outside of the WCRP Community. The Grand Challenges are areas of climate science where we face major obstacles and where we rely on a concerted effort to make progress. The Challenges are narrow in focus and are able to capture the imagination of the general public. A short brochure on the Grand Challenges could be produced to promote urgent climate challenges and the role of WCRP in addressing them.

The first and second key messages outlined above tie into two recommendations of the WCRP Communication Survey (2017), which are to: (1) “increase Programme visibility” and (2) “showcase WCRP science findings”. It is not practical to disseminate the results of every study related to WCRP due to the sheer number of papers published either by the WCRP community or using WCRP products/data. However, it is possible to select key results for strategic dissemination. This is discussed further in Section 3.4.3.

The importance of modelling and observations as the foundation of WCRP activities is clear. However, links to the products produced by these WCRP groups are deeply hidden on the WCRP website and presented solely to the members of the community that use them (highly technical language). While this is adequate for the WCRP community, it does not showcase WCRP outcomes or highlight the importance of these activities (key messages 3 and 4). One solution would be to create separate ‘WCRP products’ pages, that would give an overview of key WCRP products and their application. No changes should be made to the location of current product pages, to ensure that external links to these products are preserved.

Connecting with Early Career Researcher (ECR) networks, in WCRP activities, at events and through social media, is beneficial for fostering future leaders in climate science and for raising the visibility of WCRP. There are dedicated ECR events, such as symposia and competitions, at all major WCRP conferences and workshops. WCRP has strong links to ECR networks, most notably the Association of Polar Early Career Scientists (APECS) and the Young Earth System Scientists (YESS). APECS has long been a key ECR partner of WCRP, particularly of the Core Project on Climate and Cryosphere (CliC). In 2016 the WCRP JSC endorsed a strong connection to and identification with the YESS Community and it welcomes further such links with other ECR networks to bring fresh perspectives to the Programme.

As a climate organization, WCRP recognizes that it has a responsibility to provide a good example in terms of reducing its carbon and environmental footprint. As the WCRP Secretariat is hosted by the World Meteorological Organization, there are many cases where the Programme is required to follow organizational procedures. However, there is some freedom of choice in terms of modes of travel, publication production, meeting frequency and meeting procedures. Environmentally responsible practices — such as taking a train when it is possible and supplying reports digitally rather than in printed form — are largely performed on an ad hoc basis. Regardless of the difficulties, it is possible for the WCRP Secretariat and leaders to take stock of WCRP’s carbon and environmental footprint and

communicate ways in which it can be reduced.

3.4 Communication Methods

In the 2017 WCRP Communication Survey respondents were asked how they find out the latest information about WCRP. Overall the WCRP Newsletter was given the highest ranking, followed jointly by information presented at conferences/meetings and published articles. The Core Project newsletters ranked next, followed by the WCRP website, email correspondence with WCRP members, social media and the Core Project websites, respectively (Figure 3.2).

These results show that in the current data age, it is not enough to have information on a website. If you do not direct your audience to your website, through social media posts or through a clear and concise newsletter, then it will remain largely unread. The other thing to note is that the method of communication depends on what audience you would like to target. In Figure 3.2 public respondents engaged more with social media and with the WCRP Newsletter than they did with other methods. In contrast, Early Career Researcher (ECR) respondents engaged more with conferences and through email correspondence with WCRP members, than they did with other communication methods. While these results should be seen as indicative, rather than representative, it does show that audience consideration is important in external communication.

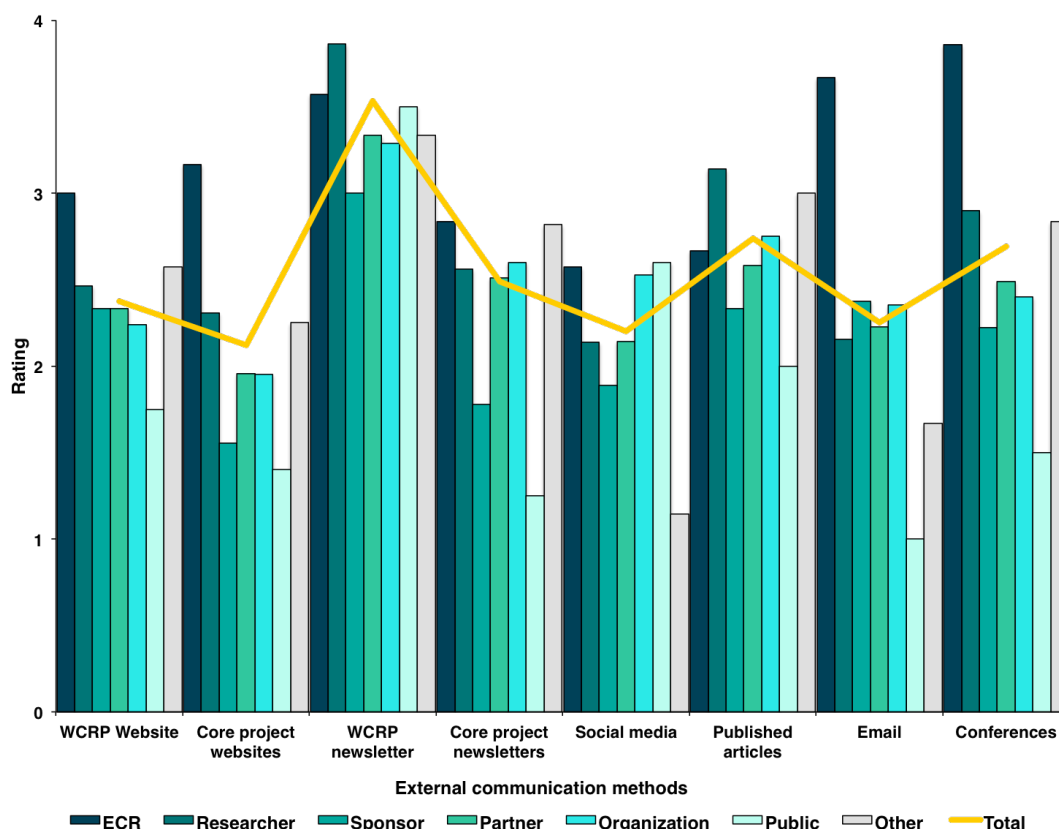


Figure 3.2. How external respondents find out the latest information about WCRP. Ratings are from 1 (seldom used) to 5 (often used). Yellow line shows average rating across all survey respondents, which is also given numerically (number of respondents = 100). Colored bars correspond to the respondent categories. ECR – Early Career Researcher, Sponsor – Staff member of a WCRP sponsor organization, Partner – Staff or community member of a WCRP partner organization, Organization – Staff or community member of an organization or service that has an interest in world climate, Public – Member of the public with an interest in world climate.

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3.4.1 WCRP Newsletter

The WCRP Newsletter (WCRP News) is published every three months. It contains 3-4 community relevant articles and other community information, including a list of events. It is sent out to a mailing list of nearly 2000 individuals, both within the WCRP community and external to it. Subscription to the newsletter is available via the WCRP website.

Responses to the WCRP Communication Survey (2017) showed that the majority of respondents who receive the WCRP Newsletter either really like it (43 percent) or mostly like it with a few things that could be improved (49 percent). Suggested improvements included increasing its frequency, for it to contain more science results and literature highlights, inclusion of details of how to get involved, more coverage of decision-making and an increase in originality and community feel (WCRP, 2017).

The WCRP Communication Survey (2017) also shows that subscription to the WCRP Newsletter could be better publicized. Of the 180 respondents, 42 percent were not subscribed to the newsletter, and of those 76 respondents, 51 percent were not aware of the newsletter's existence (WCRP, 2017). A recommendation of the survey report is to "publicize how to subscribe to the WCRP newsletter more widely" (WCRP, 2017).

The four Core Projects also have newsletters/eNews bulletins:

- CLIVAR: CLIVAR Bulletin - monthly
- SPARC: SPARC Newsletter - every six months, SPARC eNews - every two months
- CliC: Ice and Climate - roughly four times a year
- GEWEX: GEWEX News - four times a year, GEWEX E-News - monthly

It is important that the WCRP Newsletter draws from these newsletters to promote the Core Projects, without unnecessary duplication of information (assuming that the mailing lists have some overlap).

3.4.2 Conference Presentations

Conference presentations are a good opportunity for the visibility of WCRP to be enhanced, particularly among the wider research community. However, for the majority of talks by those within the WCRP Community their place in or connection to the Programme is not integrated into their scientific presentations. Those presenting research that is part of a WCRP or Core Project activity should be encouraged to include a single slide or a few sentences on a poster of how their research fits into the wider WCRP framework. The slide should show key research themes, rather than just the names of WCRP groups.

3.4.3 WCRP Publications and Published Articles

Official WCRP publications are available on the WCRP website, each with a WCRP publication number that is part of a single series. Currently, the WCRP Publications section of the website is outdated and non user friendly. Some publications are missing and others are not in the correct location. The publications section of the WCRP website requires updating to improve accessibility to the publications.

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Community journal publications are not uniformly listed on the WCRP website, due to the time it takes to filter and collect citations. Those publishing research that is part of a WCRP or Core Project activity or that uses WCRP data/products are encouraged to acknowledge WCRP, but often do not — making them harder to locate. Searching for WCRP related papers on the internet was trialled and proved too time consuming to continue and a call for members of the community to send in published papers to WCRP only resulted in a few papers being received. However, if the aim is to highlight WCRP science findings, listing every paper published on the WCRP website is not necessary.

To promote WCRP science it is better to highlight a smaller number of key research papers that best demonstrate science outcomes in relation to a number of high-impact research areas that span the breadth of the Programme. ‘High-impact research areas’ in this context are research areas where the community is currently making substantial and reportable progress. The groups involved in these high-impact areas would then report key papers to WCRP as they are published, allowing them to be widely publicized in a timely manner. Awareness of high profile science findings and products increase the overall visibility of the Programme. This proposal is in line with the first and second recommendations of the WCRP Communication Survey (2017), which are to: (1) “Improve Programme visibility” and (2) “Showcase WCRP science findings”, and with the first two key messages presented in Section 3.3.

The last thing to consider in relation to publications is that WCRP encourages open access to research findings and data. This ensures that research is not limited by the ability of individuals and institutions to pay subscriptions and copyright fees. In terms of data, the WCRP Data Policy (WCRP, 2017b) states that “research data that is fully owned by WCRP should be made freely available, through adequate mechanisms and to the maximum extent possible”. This implies that data are: available free of cost; accessible; published via citable, persistent and traceable means; complete, quality controlled, with mechanisms for error reporting in place; and published and equipped with meta-data in ways that make the data discoverable, intelligible, assessable and usable. To this end WCRP encourages its members to publish their findings in open access journals where possible.

3.4.4 WCRP Website

The WCRP Website is the main online presence of the Programme. It is principally aimed at the WCRP research community, with pages dedicated to all WCRP Working Groups and Grand Challenges and links to the Core Project websites and co-sponsored activities. There are also pages that are of interest to a wider audience, particularly the homepage, news items, scientific highlights and the WCRP Community calendar.

The WCRP Website was upgraded between mid July and late September 2016. This included an update of the content management system, migration and installation on a new version of the host server, security improvements and a redesign of the website’s templates. In addition, many of the main pages on the website were redesigned, as they needed to be compatible with the new template. At the same time the pages were updated for search engine optimization (SEO) and for responsiveness across all screen sizes. The content and functionality of older pages has not all been improved, due to the sheer volume of pages involved. It is only practical that this is completed over a longer time frame. One of the recommendations of the WCRP survey report (WCRP, 2017) is that WCRP “continue to make improvements to the WCRP website structure and content”, in response to comments in the survey that the WCRP website could have a clearer structure, with more obvious coherent linkage between

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WCRP groups and more up to date information. An internal website user guide has been developed to ensure that all those updating the website have access to design, layout and best practice guidelines. All images on the WCRP Website must have appropriate copyright permission.

As well as the main WCRP website, there are other websites associated with the Programme. Most notable are the websites of the Core Projects and the Coordinated Regional Climate Downscaling Experiment (CORDEX). The content on community websites is decided by the groups, but should generally be in keeping with WCRP's mission and objectives. Those working on all of the WCRP Community websites need to ensure that information is complementary and traffic is directed between websites effectively, minimizing duplication.

3.4.5 Emails

The WCRP email address (wcrp@wmo.int) is the main contact address for the Programme. In a normal week there are between 2-5 unsolicited emails and 5-10 general emails, list-type emails or spam advertising. It is important that genuine emails are replied to in a timely manner (no longer than a few days for non-urgent emails) or forwarded appropriately. This gives the impression of Programme efficiency and approachability.

3.4.6 Social media

WCRP posts regularly to Facebook, Twitter and LinkedIn. Social media messages often need to be short and targeted. This means that in some cases normal grammar and punctuation rules may be ignored, but not at the expense of clarity. All relevant hashtags and share quotes (@-mention) should be included. Relevant images, with approved copyright permission, should be added where possible. There is currently no social media strategy. A strategy would maximize the effectiveness of posts by using information from social media analytics (Section 5.2.3), such as which posts perform best, and outlining a set of best social media posting practices.

3.4.7 The Press

WCRP does not have a press office or media relations staff. Maintaining contact with journalists and sending our regular press releases is beyond the capabilities of current resources. Instead, good relations are maintained with the World Meteorological Organization (WMO) Press Office. WCRP works with the WMO Press Office on event promotion, press releases and press conferences, as opportunities arise. This is advantageous in terms of maximizing WCRP resources, but limiting in that the Programme does not control its own media relations. WCRP does periodically produce press releases, which should be to a set template to ensure consistency.

3.4.8 Video

Video is a fantastic way of showcasing information to a range of audiences. Videos can tell stories in a way that written information and static imagery can not, as it brings personality and warmth to the message conveyed. With the accessibility of YouTube and the ability to embed video in websites, videos are a powerful tool. Video content needs to be good quality: reasonably high resolution with good audio. Video editing software can be used to add text and credits. At present WCRP has only a small selection of videos on its YouTube channel. There is currently a video in production detailing the Coupled Modelling Intercomparison Project Phase 6. More general videos about the WCRP

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Programme would help to raise Programme visibility. Options such as video podcasting (or audio podcasting) are currently not being considered due to the time commitment involved.

3.4.9 Exhibits Resources

WCRP does not currently undertake exhibits at conferences, primarily due to the expense of doing so. At present there are no exhibit resources available, such as posters, brochures or videos. A good first step would be to establish these materials.

3.4.10 Funding Communication

With the substantial reduction in funding in 2017, targeted funding communication has become a necessity. Solicitation letters to national contributors went out in February 2017 accompanied by the first WCRP Highlights Newsletter. This is a one page overview of WCRP activities listing where WCRP funds in 2016 were used. It is envisioned that this newsletter may also be used more widely and be updated twice annually.

3.5 Recommendations for 2017-2020

Targets for improving communication for 2017-2020 are modest due to extensive budget cuts in 2017. Recommendations are to:

- Ensure that the WCRP key messages are central in communication planning
- Encourage open dialogue with data users, climate services, policy makers, national governments, those involved in the adaptation and mitigation of climate change and the general public
- Utilize the WCRP website to:
 - Showcase WCRP Community data and products
 - Improve access to WCRP publications
 - Update content to ensure good SEO and page responsiveness
- Continue promotion of and connection with Early Career Researchers to foster future leaders and to bring fresh perspectives to the Programme.
- Communicate how the WCRP Secretariat and leaders are reducing their environmental and carbon footprint and ways in which the wider community can do so
- Improve the WCRP Newsletter taking into consideration comments in the WCRP Communication Survey (2017)
- Create an MS Powerpoint slide (or a selection of slides) that can be used by researchers within the community to show where their research fits within the Programme. This resource should be made available on the WCRP Website
- Identify high-impact research areas where the WCRP community is currently making substantial and reportable progress and develop communication methods to allow timely reporting of important science findings to a wide audience to raise the visibility of the Programme
- Encourage open access publication of WCRP community research and data
- Develop a WCRP social media strategy

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- Continue good relations with the WMO Press Office and develop a template for WCRP press releases
- Prepare short, targeted newsletters to sponsors, national representatives/contributors and potential funders to showcase WCRP science highlights (twice annually to existing sponsors/contributors and as needed to potential funders)

‘Blue sky targets’ for 2017-2020 are to:

- Design and publicize a brochure on WCRP brand identity
- Design and publicize a brochure on the WCRP Grand Challenges
- Increase the frequency of the WCRP newsletter in order to deliver information in a more timely manner.
- Create exhibit material that provides an overview of WCRP science and how to become involved at strategically chosen conferences and meetings
- Sponsor Early Career Researcher events at major conferences
- Design and publish an annual ‘science highlights’ report, aimed at a general audience
- Develop videos about WCRP to show what the Programme does and why it is important

4 Resources and Budget

The budget for WCRP communication is considered as part of the Programme's operational budget and is largely administered on an ad hoc basis. Table 4.1 gives communication expenditure in 2016. This includes all advertising and promotion, photo-visual materials, contractual printing, technical publications, software acquisition, office automation equipment, subscriptions, standing orders, website hosting, WCRP's share of WMO annual departmental charges for communications (ICT) and consultancy charges. Consultancy charges included engagement of a part time web clerk (CHF 4 500), a content management system and web developer to upgrade the WCRP website (CHF 6 000) and a part time communication consultant from April to December 2016 (CHF 46 558). Note that ICT costs are not solely communications related, but also include WCRP offices and other departmental expenses. However, at present the exact breakdown of this expense is not known and so the total amount is listed here. It should be considered an overestimation.

The Communication Budget for 2017 is based on 2016 expenditure with several differences. In 2017 there are no funds allocated to upgrade the WCRP website, but there is an annual figure of CHF 3600 allocated to maintain and support the WCRP website content management system, allocated at four hours per month support (which can be accumulated and used as needed). In addition, the 2017

TABLE 4.1: WCRP COMMUNICATION FINANCIAL STATEMENT 2016

Expenditure	CHF
Advertising and promotion	785
Photo-visual materials	302
Contractual printing	84
Technical publications	4,170
Software acquisition	1,115
Office automation equipment	198
Subscriptions and standing orders	3,795
WCRP share of WMO annual departmental charge for communications	44 000
Web hosting	175
Consultancy services	57,058
Travel	1,166
TOTAL	112,848

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TABLE 4.2: WCRP COMMUNICATION BUDGET 2017

Expenditure	CHF
Advertising and promotion	800
Photo-visual materials	350
Contractual printing	500
Technical publications	1,000
Software acquisition	1,200
Office automation equipment	200
Subscriptions and standing orders	3,800
WCRP share of WMO annual departmental charge for communications	45 000
Web hosting	200
Consultancy services	66,000
Travel	1,000
Contingency (10 percent)	12 005
TOTAL	132,055

budget does not include a web clerk, but does include a part time communication consultant for the year. The 2017 budget also includes a contingency fund that is calculated at 10 percent of the total budget.

5

Measuring Performance

In order to discern how effective WCRP communication is over time we can measure performance and periodically reevaluate it. Ways of doing this include conducting a follow-up survey to the 2016-2017 Communications Survey and analyzing newsletter, website and social media analytics.

5.1 WCRP Communication Survey

As was outlined in Section 1.2, a WCRP Communication Survey was conducted between November 2016 and January 2017, attracting 196 respondents. The responses and comments given in the survey provided insights into how WCRP communication, both internally and externally, is perceived. This feedback provides the insights needed to help prioritize communication objectives. To evaluate how well WCRP meets its communication challenges, it would be good practice to repeat the survey in the future (around 2019) to assess whether concerns have been addressed and to determine the priorities for the next communication strategy period.

5.2 Analytics

5.2.1 Newsletter Analytics

The WCRP Newsletter is produced and distributed using MailChimp. It is currently sent to a list of 1886 subscribers (March 2017). Since the newsletter was redesigned in early 2016 there have been four WCRP newsletters, in March, June and September 2016 and in January 2017. MailChimp list analytics are quite basic, but report that the number of subscribers has been mildly fluctuating over the last year, reflecting both unsubscribes and new signups during that period.

Every newsletter has a statistical report, which gives open rates (whether the newsletter is opened), click rates (whether links in the newsletter are clicked on) and an overview of how each newsletter performed (Figure 5.1). Each report also shows how the newsletter performed over a 24 hour period, top links clicked and what emails addresses and locations (countries) had the most opens. The most useful of these is links clicked, as it show which article snippets were the most popular. In January 2017 the top links clicked were on articles about WCRP ‘looking ahead’ (110 clicks) and ‘Sharpening our view on climate research’ (62 clicks).

Information is also available about what countries the newsletter is reaching. The countries with the most newsletter opens were the United States (611 opens), Germany (210 opens), the United Kingdom (116 opens), Switzerland (113 opens) and Australia (88 opens). The countries with zero opens mostly occurred in Africa (only 20 in the entire continent), the Middle East (only 7 in Turkey and 2 in Saudi Arabia), as well as parts of Asia, Indonesia, Central and South America (Figure 5.2).

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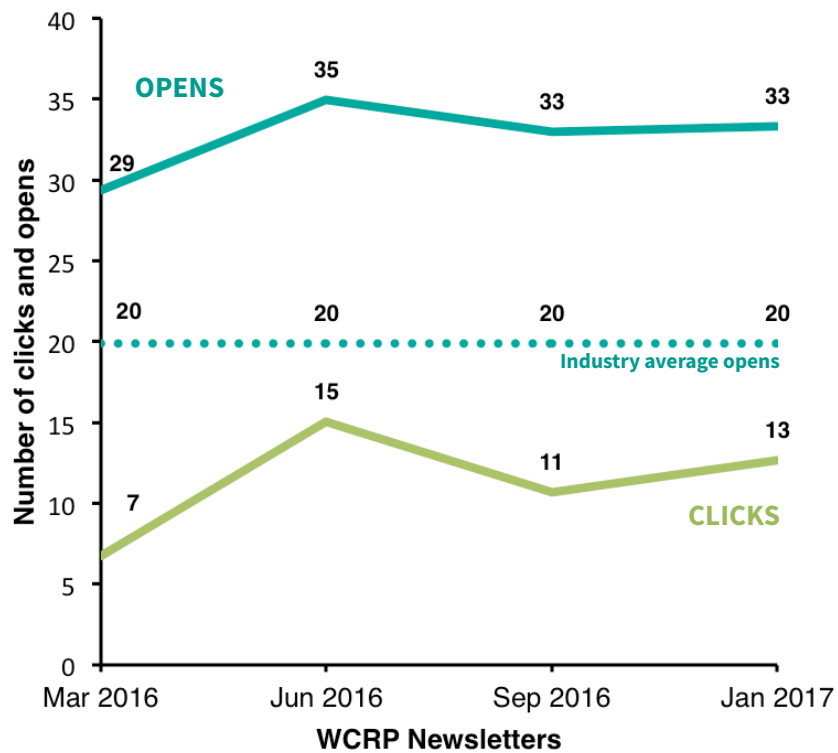


Figure 5.1. Number of WCRP Newsletter clicks and opens from March 2016 to January 2017 (4 newsletters). An ‘open’ is when a newsletter is opened and a ‘click’ is when a link in the newsletter is clicked on.



Figure 5.2. Map of WCRP Newsletter ‘opens’ in January 2017. Darker shading reflects more opens. For reference the United States of America had 611 opens and the gray shade of Greenland had zero opens.

5.2.2 Website Analytics

Website analytics provide statistics and basic tools for tracking, analyzing, and reporting on website data. The most popular is Google Analytics, which provides information on website visitors and web page traffic. Between October 2016 and February 2017 there was on average 430 users and an average of 940 page views of the WCRP website per month. As there are no Google Analytics data from before the website upgrade, there are currently not enough data to see whether there is an upward trend in website visitor numbers. However, we can tell that most visitors are accessing the site for the first time (or at least with a new Internet Protocol address) - with 75 percent of traffic being new visitors. The main countries accessing the website are the United States (14 percent of sessions), Switzerland (11 percent of sessions - reflecting the location of the WCRP Secretariat), Germany (10 percent of sessions), India (9 percent of sessions) and the United Kingdom (5 percent of sessions).

There are a number of other metrics which are available to better understand the WCRP web audience. For example, Google Analytics tells us that 78 percent of website visitors enter the site directly, 21 percent use a search engine and 1 percent enter from page referrals. This suggests that we could increase of page traffic by (1) using more referrals, from the WCRP Newsletter or from social media, and (2) by improving site optimization for search engines. We can also see which pages are performing well and how long visitors spend on a page. The average time spent on a WCRP website page between October 2016 and February 2017 was one minute and 45 seconds. Note that website analytics should be interpreted with caution and compared with the output from other tools for overall site evaluation. Website analytics should be monitored over time and periodically reported on in order to investigate whether the website is performing well — increasing its overall traffic and the amount of time that visitors spend on the site.

5.2.3 Social media analytics

Social media have analytics to show how well WCRP is communicating in this medium. Facebook 'Insights' reports on how many 'likes' the WCRP Facebook page receives, which has increased from 1398 likes on 1 October 2016 to 1562 likes on 28 February 2017. Facebook Insights supplies individual information about each post, including how many people it reached, how many people clicked on a link in the post and whether people interacted with the post in terms of reactions, comments or shares. Facebook also gives basic demographics of those that 'like' the WCRP Facebook page, including their gender (60 percent male), age (highest percentage — 21 percent between 25 and 34 years old), language (43 percent speak English) and country of origin (10 percent from the United States of America, 7 percent from India and 4 percent each from Germany, the United Kingdom and Brazil).

Twitter gives analytics on 'tweets' as monthly summaries and quick overviews for the last 28 days. It is possible to track how well you are connecting to your audience by changes in the number of followers the account has, which in the case of WCRP is steadily increasing (from 1111 on 26 July 2016 to 1465 on 6 March 2017). Tweet analysis includes the number of impressions (number of times users view a tweet) and engagements (the number of times a user has interacted with a tweet - including clicks, retweets, replies, follows and likes). During the month of February 2017 there was an average of 454 impressions per day (total of 12.7K impressions) with an engagement rate of on average 1.4 percent — which translates to, on average, two link clicks, two retweets and one like on each day

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of the month. The report also gives feedback on how each individual tweets performed. Audience analysis in Twitter provides information on followers, including their gender (59 percent of followers are male), age (52 percent between 25 and 34 years old), language (94 percent of followers are English speaking) and country of origin — the top five being the United States of America (19 percent), United Kingdom (14 percent), Germany (6 percent), France (6 percent) and Australia (4 percent) (results for the last 28 days).

LinkedIn is a social media network aimed at professionals. WCRP posts on LinkedIn in a similar way as it does on Facebook and, as of 6 March 2017, has an audience of 662 members. Analytics are not currently available for LinkedIn Groups, so we can only gauge connections by changes in the number of LinkedIn members linked to the WCRP Group. At present we do not have accounts for Google+ or other social media networks and have no current plans to develop them.

Looking at social media analytics it is clear that WCRP is making steady progress in growing its networks and the number of individuals it is connecting with. Social media audiences are predominantly English speaking, male, and between the ages of 25 and 34. As well as English speaking countries, WCRP posts also reach other locations, such as Germany, France and Brazil (and many more that are not as highly ranked).

The extent to which the WCRP Core Projects use social media varies considerably. For example, on Twitter the Core Project Climate and Cryosphere (CliC) (@*CliC_WCRP*) has 2107 followers, CLimate and Ocean VARiability, Predictability and Change (CLIVAR) (@*WCRP_CLIVAR*) has 1200 followers, Global Energy and Water EXchanges (GEWEX) (@*GEWEX_WCRP*) has 183 followers and Stratosphere-troposphere Processes And their Role in Climate (SPARC) (@*WCRP_SPARC*) has 123 followers (14 March 2017). On Facebook CliC (*Climate and Cryosphere*) has 1671 page likes, CLIVAR (*Climate Variability and Predictability (CLIVAR)*) has 1959 page likes, SPARC (*SPARC WCRP*) has 74 page likes and GEWEX is not really established.

5.3 Evaluation Plan for 2017-2020

In 2020 WCRP will need to renew its communication strategy. As part of this process an evaluation of the 2017-2020 period will be useful to see what progress has been made and to determine where communication priorities should be concentrated. To do so it may be useful to conduct a follow up communication survey to establish where progress has been made.

Newsletter, website and social media analytics also give an indication of whether the overall visibility of the Programme has increased over time, who WCRP's main online audiences are and what works best in posts to ensure maximum reach. The social media strategy, proposed in Section 3.4.6, can use the available analytics to ensure that social media posting is effective at disseminating WCRP messages to our audiences, also by linking posts to the WCRP website.

Recommendations are to:

- Conduct a follow up Communications Survey (around 2019)
- Provide periodic (at least annual) evaluation reports based on website and social media analytics and other metrics

6 Recommendations, Objectives and Annual Strategic Themes

Chapters two, three and five resulted in 30 recommendations for WCRP Communication in 2017-2020 (Annex 5). These recommendations form the basis of a communication framework and feeds into overarching communication objectives and annual strategic themes.

6.1 Overarching Communication Objectives

The 30 communication recommendations in Annex 5 can be aligned with overarching communication objectives. The six overarching objectives are to:

1. Increase Programme visibility

This objective will be achieved by the recommendations outlined in Annex 5 (primarily recommendations 10 to 28) and will be made possible by focusing on the dissemination of WCRP's key messages (Section 3.3). The WCRP and Core Project websites, WCRP and Core Project newsletters and social media will form the foundation of this effort, complimented by blue sky efforts when opportunity and the WCRP budget allow.

This objective also includes improvements to WCRP websites, newsletters and social media channels for enhanced Programme promotion, corresponding to recommendations 12 (website), 15 and 24 (newsletter) and 19 (social media). Generally, this implies making the best use possible of these tools to disseminate WCRP's key messages (Section 3.3).

2. Showcase WCRP science findings

This objective will primarily be implemented by recommendation 17, to "identify high-impact research areas where the WCRP community is currently making substantial and reportable progress and develop communication methods to allow timely reporting of important science findings to a wide audience to raise the visibility of the Programme." This also corresponds to key messages 1 and 2 in Section 3.3.

3. Inform and engage the WCRP Community

One of the best mechanisms for achieving this is to provide greater transparency of leadership selection criteria and clearer mechanisms for Programme involvement and to disseminate the Programme's vision and decision-making processes more widely. Clearer criteria for leadership selection and Programme involvement correspond to recommendation 6 to "determine clearer

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and more streamlined policies and practices for how researchers can become involved in WCRP". It involves both considering how to make the selection of those involved in projects, working groups, committees and activities clearer and more transparent, as well as how to provide mechanisms for wider involvement. The 'how to get involved' section of the WCRP website should contain all necessary procedures and levels of involvement.

Disseminating the Programme's vision and decision-making processes more widely corresponds to recommendation 1, to "provide a community-wide mailing list to provide more targeted and regular updates". Regular short emails to this mailing list would ensure that the community were aware of the key plans and decisions made by the Joint Scientific Committee, Joint Planning Staff and other leaders in advance of public announcement. This would result in a feeling of membership and inclusion and feedback from the community to the WCRP email address should be encouraged.

4. **Provide** ways for those in the WCRP Community to communicate effectively

This objective is about increased cooperation and understanding between those within the WCRP Community, which is primarily related to recommendations 1 to 9. The strategy provides a number of complementary methods by which community members are connected. These may be specific to their role in the community (such as teleconferences between committees or individual leaders) or more general (such as a community-wide mailing list or the annual JSC Session).

5. **Focus** on building strategic partnerships

This objective is related to recommendation 11, to "encourage open dialogue with data users, climate services, policy makers, national governments, those involved in the adaptation and mitigation of climate change and the general public". The 'Scoping a Framework for WCRP Regional Activities' (2016) report gave an overview of how to do this in the context of regional activities (see Annex 3, Recommendations for "Leg 3"). It is important to assess how WCRP will build strategic partnerships in all sectors as well as in all regions.

6. **Encourage** current and future leadership in climate science

This overarching objective reflects the importance of fostering future climate researchers and facilitators. Recommendations 13 and 26 go some way to achieving this aim, but there needs to be greater inclusion of early career researchers in WCRP leadership roles in order that they gain the experience necessary to be future leaders. This is also WCRP's key message number 6 (Section 3.3).

Consideration of the WCRP Communication Survey recommendations (Section 1.2. Also see WCRP, 2017) shows that elements of those recommendations are clearly conveyed above, with some additional themes that were apparent in the survey but did not come through strongly enough to lead to recommendations.

The 30 recommendations in Annex 5 have been prioritized as either first priority (1), second priority (2) or 'blue sky' (requiring additional funding). This ranking is subjectively based on the expected impact of the recommendation on the overarching communication objectives. In practice resource

Table 6.1. Timeline for Communication Strategy Implementation and Reevaluation	
Apr 2017	JSC-38. JSC comment on WCRP Communication Strategy 2017-2020. Decision by JSC on Communication Strategy amendments and on format, time and location of future JSC Sessions. 2017 adopted as the year of 'Looking Ahead'.
Aug 2017	WCRP Communication Strategy 2017-2020 amended and published online
Jan 2018	Year of 'Showcasing WCRP Science' begins
Apr 2018	JSC-39. Reevaluation of and reporting on communication targets
Nov 2018	Second Communication survey launched
Jan 2019	Year of 'Rising to the Challenge' begins (example)
Feb 2019	Second Communication survey closes
Apr 2019	JSC-40. Reevaluation of and reporting on communication targets
May 2019	WCRP Communication Strategy 2020-2025 in preparation
Jan 2020	'40 Years of World Climate Research' begins (example)
Apr 2020	JSC-41. Decision by JSC whether to adopt WCRP Communication Strategy 2020-2025

availability and opportunity are likely to also play a role in which recommendations are completed first. It is recommended that the WCRP Joint Planning Staff oversee the implementation of the recommendations to make the best use of opportunities as they arise. Priorities should be reviewed and reassessed on an annual basis at the JSC Session.

6.2 Annual Strategic Themes

Each year WCRP communication, and the Programme as a whole, will have a strategic theme. The strategic themes target some of WCRP's main priorities in terms of advancing its mission and increasing its international visibility. The strategic theme names are short and memorable and clearly state the priorities for the given year.

For 2017 and 2018 the strategic themes are:

- **2017 - Looking Ahead** — The focus is on a vision for the future of WCRP, aided by a review by the WCRP Sponsor Organizations and driven by a need to reassess how WCRP will operate in response to urgent climate challenges and a changing political landscape.
- **2018 - Showcasing WCRP Science** — The focus is on dissemination of WCRP research findings and products to the wider science community and stakeholders in order to enhance cooperation and grow partnerships and to enhance the overall visibility of the Programme. Integrated contributions will be needed from all WCRP Core Projects, Advisory Councils, Working Groups and Grand Challenges.

As we are entering a time of rapid change, both in terms of climate and in terms of political responses to climate, it is recommended that strategic themes for 2019 and 2020 be decided by the JSC at the JSC Session of the preceding year. Possible examples are:

- **2019 - Rising to the Challenge** — The focus is on the Grand Challenges, to push forward their agendas and promote their achievements. All WCRP Core Projects, Advisory Councils, Working Groups collaborate with the Grand Challenges to maximize this effort.
- **2020 - 40 Years of World Climate Research** — A celebration of the last 40 years of climate research and definition of a new WCRP vision for the future.

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6.2.1 Practical application of strategic themes

How annual strategic themes are implemented largely depends on the subject matter of the theme and the Programme budget. It is envisioned that the JPS would take a lead role in terms of liaising with the WCRP Community to determine a number of practical ways that each strategic theme could raise the visibility of the Programme given available resources. At the current time there is no possibility of allocating substantial funding to the 2017 strategic theme and the 2018 strategic theme must also plan for financially conservative implementation. However, use of existing tools (newsletters, website, social media) to promote the theme has much benefit and there are also opportunities to secure external support in this endeavor. The WCRP Ahead document, which is currently in preparation, will be a major outcome of the 2017 strategic theme. In 2018 a report that showcases WCRP science and products would be a worthy consideration.

6.3 Timeline

The timeline for implementation of the recommendations listed in Annex 5 depends on the future budget of WCRP and should be reassessed at the annual JSC session. Individual communication recommendations have not been given a specific time frame and progress on their achievement should be overseen by the WCRP Joint Planning Staff. Table 6.1 gives an overview of WCRP communication strategy implementation, in terms of the timing of the annual themes and reevaluation procedures.

6.4 Summary

The WCRP Communication Strategy gives the Programme a framework by which it can maximize cooperation and understanding between its community members, successfully engage with strategic partners and stakeholders and raise the visibility of the Programme. The annual strategic themes, overarching objectives and 30 recommendations for WCRP communication from 2017-2020 provide actionable communication goals. These goals ensure that WCRP will continue to advance its mission in a time of urgent climate challenges and a turbulent political landscape. WCRP's legitimacy, earned over the last 37 years, gives it a voice on behalf of the climate science community — a voice that is needed now more than ever.

ANNEX I: Acronyms and Abbreviations

AOPC	Atmospheric Observation Panel for Climate
CAS	Commission for Atmospheric Sciences
CCI	Commission for Climatology
CEOS	Joint Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
CLiC	Climate and Cryosphere
CLIVAR	CLimate and Ocean VARIability, Predictability and Change
CMIP	Coupled Model Intercomparison Project
CORDEX	COordinated Regional climate Downscaling EXperiment
ETCCDI	Expert Team on Climate Change Detection and Indices
GCOS	Global Climate Observing System
GCOS	Global Climate Observing System
GCP	Global Carbon Project
GEWEX	Global Energy and Water EXchanges
GFCS	Global Framework for Climate Services
ICSU	International Council for Science
iLEAPS	Integrated Land Ecosystem Atmosphere Process Studies
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPO	International Project Office
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
JPS	Joint Planning Staff
JSC	Joint Scientific Committee
JSC-37	37th Session of the JSC
JSC-38	38th Session of the JSC
OOPC	Ocean Observations Panel for Climate
PAGES	Past Global Changes
PCMDI	Programme for Climate Model Diagnosis and Intercomparison
S2S	Subseasonal to Seasonal Prediction Project
SOLAS	Surface Ocean Lower Atmosphere Study
SPARC	Stratosphere-troposphere Processes And their Role in Climate
SSG	Scientific Steering Group
START	SysTem for Analysis, Research and Training
TOPC	Terrestrial Observation Panel for Climate
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
WCRP	World Climate Research Programme
WDAC	WCRP Data Advisory Council
WGCM	Working Group on Coupled Modeling
WGNE	Working Group on Numerical Experimentation
WGRC	Working Group on Regional Climate
WGSIP	Working Group on Seasonal to Interannual Prediction
WMAC	WCRP Modelling Advisory Council
WMO	World Meteorological Organization
WWRP	World Weather Research Programme
YESS	The Young Earth System Scientists

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ANNEX II: WCRP Mission and Objectives

The mission of the World Climate Research Programme (WCRP) is to facilitate analysis and prediction of Earth system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society. There are two main objectives: to determine the predictability of climate and to determine the effect of human activities on climate. Progress towards these objectives is made through the efforts of the WCRP research community, driven by its Joint Scientific Committee and aided by the WCRP Joint Planning Staff at the WCRP Secretariat in Geneva, Switzerland. WCRP coordinates multidisciplinary efforts to:

- **Observe** changes in the components of the Earth system (atmosphere, oceans, land and cryosphere) and in the interfaces between these components
- **Improve** our knowledge and understanding of global and regional climate variability and change, and of the mechanisms responsible for this change
- **Assess** and attribute significant trends in global and regional climates
- **Develop** and improve numerical models that are capable of simulating and assessing the climate system for a wide range of space and time scales
- **Investigate** the sensitivity of the climate system to natural and human-induced forcing and estimate the changes resulting from specific disturbing influences

Since the formation of WCRP in 1980, substantial progress has been made in understanding our climate and predicting how it may change in the future. This information is critical in assisting global communities to respond to the impacts of climate variability and extreme weather events with effective adaptation and mitigation strategies.

ANNEX III: WCRP Community Structure

The WCRP Community is a network of research scientists, organized as core and co-sponsored projects, working groups and cross-cutting initiatives (Figure III.1). It includes:

- **Joint Scientific Committee (JSC)**
- **Joint Planning Staff (JPS)**
- **Core Projects**
- **WCRP groups:** including advisories, working groups, the WCRP Grand Challenges, projects, panels and steering groups.

Scientific guidance for WCRP is provided by the JSC. This includes (WCRP, 1993):

- **Formulating** the concept and scope of the Programme
- **Defining** the inter-disciplinary scientific strategy
- **Determining** specific objectives and priorities for the Programme
- **Reviewing** and **assessing** the development of all elements of WCRP
- **Formulating** recommendations to guide further actions
- **Reporting** periodically on the progress of the Programme to the sponsoring organizations
- **Facilitating** the exchange of information among the scientists participating in the Programme and the Earth system science community in general, and relevant scientific institutions and agencies, at national and international levels.

WORLD CLIMATE RESEARCH PROGRAMME ORGANIZATION

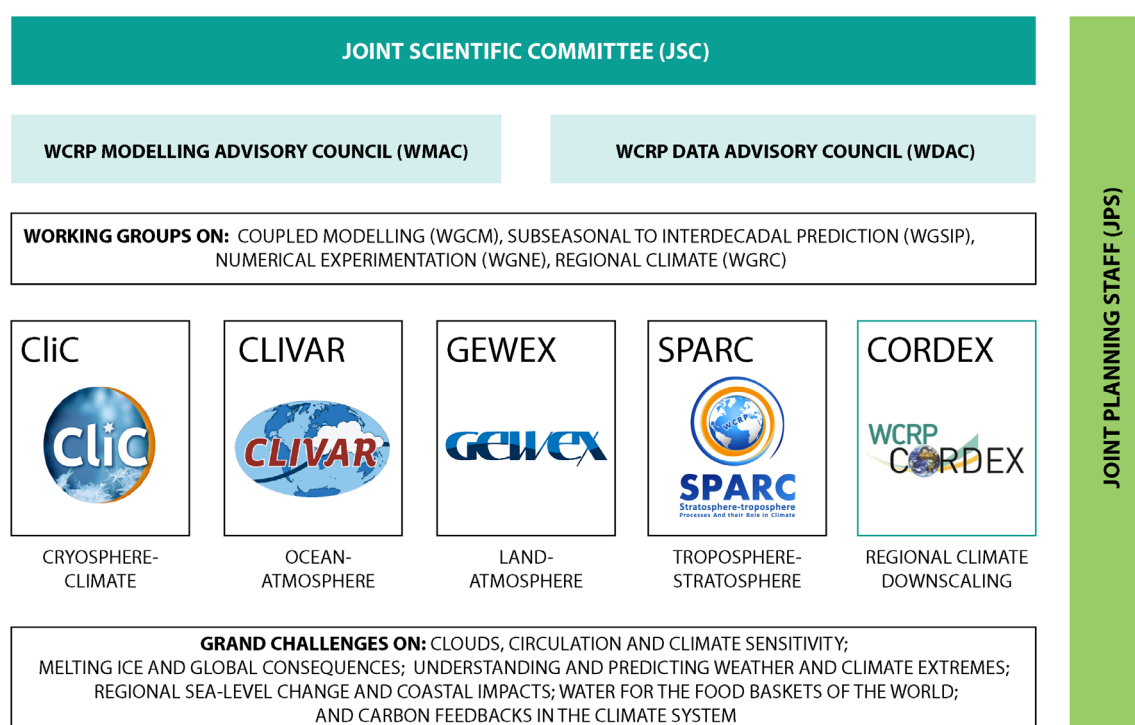


Figure III.1. Schematic of the WCRP Community

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The JSC currently includes 18 scientists (Including Chairman, Vice-chairman and three other Officers), selected by mutual agreement between the three sponsoring organizations (Table III.2) and representing climate-related disciplines in atmospheric, oceanic, hydrological and polar sciences. The JSC meet annually at a dedicated JSC Session. Members are selected based on their expertise, giving due consideration to a geographical and gender balance.

The JSC is supported by the JPS. As of March 2017 the JPS consists of the Director of WCRP, three Senior Science Officers, a Communication Officer (currently a Consultant at 50 percent), a WCRP Support Unit Staff Member (part time), a Consultant, a Junior Professional Officer and three Administration Assistants. The JPS assist the JSC in formulating the concept and organizing the implementation of WCRP, and other organizational and technical tasks. This includes:

- **Preparing** plans and other guidance materials for the development and implementation of WCRP
- **Providing** secretarial support to the JSC
- **Assisting** in the preparation of reports and supplying information
- **Following up** the implementation of all components of WCRP
- **Keeping** the JSC informed of the progress of the Programme
- **Serving** as the documentation and information centre for WCRP
- **Organizing** the work of, **making** appropriate arrangements for, and **providing** secretarial support to working groups, study groups and panels of experts
- **Taking** actions and **making** arrangements for the implementation of WCRP projects and the promotion of WCRP objectives

The JSC have established a number of core projects, councils, working groups, panels of experts and projects. At present, WCRP has four Core Projects, which form the foundation of its research agenda:

- **Climate and Cryosphere (CliC)** encourages and promotes cryospheric research in order to improve our understanding of the cryosphere and its interactions with the global climate system.
- **CLimate and Ocean VARiability, Predictability and Change (CLIVAR)** is aimed at understanding the dynamics, interaction and predictability of the coupled ocean-atmosphere system.
- **Global Energy and Water EXchanges (GEWEX)** observes, understands and models the hydrological cycle and energy fluxes in the Earth's atmosphere and at the surface.
- **Stratosphere-troposphere Processes And their Role in Climate (SPARC)** promotes and facilitates research activities on how chemical and physical processes in the atmosphere interact with climate and climate change.

The Core Projects each have Scientific Steering Groups (SSGs) (two Co-chairs) and their own International Project Offices (IPOs). The IPOs consist of a Director and support staff, maintain their own websites and put out their own newsletters and other publications.

In addition to the Core Projects is the COordinated Regional climate Downscaling EXperiment (CORDEX). CORDEX's vision is to advance and coordinate the science and application of regional climate downscaling through global partnerships. CORDEX has a similar organizational structure to the Core Projects, with an IPO and Science Advisory Team (two Co-chairs).

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Interlinked with the Core Projects and CORDEX there are a number of WCRP groups. Modelling activities and data sharing are overseen by two advisory councils. The WCRP Modelling Advisory Council (WMAC) coordinates high-level aspects of modeling across the Programme and the WCRP Data Advisory Council (WDAC) is the single entry point for data across WCRP. Both Councils ensure cooperation with WCRP partners and are expected to:

- **Communicate** regularly
- **Meet** at least once annually
- **Encourage** joint meetings of working groups and/or panels to promote communication or to launch focused joint initiatives

In addition WMAC should:

- **Avoid** duplicating or overlapping with existing working groups or panels

WMAC has two Co-chairs (one external to WCRP and the other a chair of one of the WCRP modelling panels and working groups) and includes Co-chairs of the remaining two WCRP modelling panels and working groups, the Core Projects, WDAC and from the Working Group on Regional Climate (WGRC). WDAC consists of a Chair and Vice-chair and has representatives from the Core Projects, the Global Climate Observing System (GCOS) Panels, WMAC, the Surface Ocean Lower Atmosphere Study (SOLAS), the Joint Committee on Earth Observation Satellites (CEOS)-Coordination Group for Meteorological Satellites (CGMS) Working Group on Climate, the Programme for Climate Model Diagnosis and Intercomparison (PCMDI), the biogeochemistry community and from WGRC.

In addition, there are working groups on coupled modelling, subseasonal to interdecadal prediction, numerical experimentation and regional climate, and projects on model intercomparison, climate change detection and subseasonal to seasonal prediction. Each working group, project panel or steering group has a Chair or two Co-chairs and membership often overlaps with other groups. A full list of all these working groups and projects is given in Table III.1.

Research questions that have been identified by the JSC as particularly high priority are recognized as WCRP Grand Challenges. The Grand Challenges are time limited (5-10 years), highly specific and highly focused questions, the answers to which face barriers in a critical area of climate science. In terms of communication, the Grand Challenges are of interest to the media and general public. All current Grand Challenges are listed in Table III.1.

All the members of the WCRP organizational committees, councils, steering groups, working groups and panels are drawn from the wider WCRP research community. This ensures that the Programme is guided to meet its objectives with the best expert advice available.

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Table III.1 WCRP Community overview

Joint Planning Staff	
Joint Scientific Committee	
Core Projects	Climate and Cryosphere (CliC)
	Climate and Ocean - Variability, Predictability, and Change (CLIVAR)
	Global Energy and Water Cycle Exchanges (GEWEX)
	Stratosphere-troposphere Processes and their Role in Climate (SPARC)
Other Projects	Coordinated Regional Climate Downscaling Experiment (CORDEX)
Modelling Groups	WCRP Modelling Advisory Council (WMAC)
	Working Group on Coupled Modeling (WGCM)
	Working Group on Subseasonal to Interdecadal Prediction (WGSIP)
	Working Group on Numerical Experimentation (WGNE) (Joint with the WMO Commission for Atmospheric Sciences (CAS))
	Coupled Model Intercomparison Project (CMIP)
	Subseasonal to Seasonal Prediction Project (S2S) (Joint with WWRP)
Observations and Analyses Groups	WCRP Data Advisory Council (WDAC)
	Expert Team on Climate Change Detection and Indices (ETCCDI) (Joint with the WMO Commission for Climatology (CCI) and the Joint Technical Commission for Oceanography and Marine Meteorology JCOMM))
Grand Challenges	Clouds, Circulation and Climate Sensitivity
	Melting Ice and Global Consequences
	Understanding and Predicting Weather and Climate Extremes
	Regional Sea-Level Change and Coastal Impacts
	Changes in Water Availability
	Near-term Climate Prediction
	Carbon Feedbacks in the Climate System
Other Groups	Regional Climate - Working Group on Regional Climate (WGRC)
Co-sponsored Activities	Atmospheric Observation Panel for Climate (AOPC)
	Ocean Observations Panel for Climate (OOPC)
	Terrestrial Observation Panel for Climate (TOPC)
	SysTem for Analysis, Research and Training (START)
Endorsed Activities	The Young Earth System Scientists (YESS) Community
	Year of Maritime Continent
	Year of Polar Prediction

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Table III.2 WCRP Sponsors and Partners	
Sponsors	World Meteorological Organization (WMO)
	International Council for Science (ICSU)
	Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO)
Partners	Intergovernmental Panel on Climate Change (IPCC)
	UN Framework Convention on Climate Change (UNFCCC)
	Global Framework for Climate Services (GFCS)
	World Weather Research Programme (WWRP)
	Global Climate Observing System (GCOS)
	Future Earth
	Past Global Changes (PAGES, Scientific Partnership Agreement)
	Surface Ocean Lower Atmosphere Study (SOLAS, Scientific Partnership Agreement)
	Integrated Land Ecosystem Atmosphere Process Studies (iLEAPS, Scientific Partnership Agreement)
	Global Carbon Project (GCP, Scientific Partnership Agreement)

ANNEX IV: Communication actions from the 37th Session of the Joint Scientific Committee (2016)

At the 37th Session of the JSC (JSC-37) in April 2016 a number of issues regarding internal and external communication were identified.

- Members of the Joint Scientific Committee (JSC) indicated that they did not have enough time for discussion during the JSC meeting and did not meet, either physically or by teleconference, enough during the year to be able to provide effective scientific guidance to WCRP. Suggestions were: lengthen the annual JSC Session, change the annual JSC Session format, add additional meetings and/or formalize at least three teleconferences per year. There was much discussion on the best approach, given the increased costs of a longer meeting.
- Members of the JSC highlighted the fact that the international presence of WCRP is not as prominent as it could be. It was discussed that moving the JSC Session to different parts of the world each year, possibly at the home institutions of JSC Members, and including a ‘Science Day’ could go some way to address this. There was significant discussion about the effect of this on the WCRP budget and on the carbon footprint of the Programme. The next JSC Session will be held in Paris at the International Council for Science (ICSU) Headquarters, as part of the WCRP Sponsors review in 2017.
- Several leaders in the WCRP Community voiced concerns over internal communication within the WCRP Community. The Chairs of the Core Projects felt disconnected from the decision making process and felt that the Core Projects were becoming less visible within the WCRP framework. They highlighted that there was a lack of communication with the JSC in between JSC Sessions. Several working group Chairs stated that better communication was needed in order for the working groups to know what was expected of them and that interactions did not always happen at working group level. It was suggested that there could be two JSC liaisons to each Core Project, one an expert in the area of the project and the other not. In addition it was suggested that the Core Projects have teleconferences with the WCRP Director and JSC Chair once or twice a year to be better involved in strategic planning.
- General concerns about communication were also voiced. In particular, the need for a communication strategy was identified.

Specific actions identified at JSC-37 were (action numbers from 37th Meeting of the Joint Scientific Committee Report):

1. Core Project IPOs to self-organize quarterly teleconferences for Core Project Chairs and Directors (action 2).
2. Core Projects IPOs and JPS to work together for joint-outreach: newsletters and other media outreach of WCRP groups/activities should be highlighted and made available on the WCRP website (action 2).
3. Core Project Chairs and Directors to self-organize a meeting dinner during JSC Sessions (action 2).
4. JSC and JPS to explore labeling/branding of the Grand Challenges in connection with the Core Projects (action 10).

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5. JSC and JPS to consider the optimal length of JSC meetings, for example organizing a five day meeting including a 'Science Day' to allow more time for discussion (action 15).
6. JSC and JPS to consider re-locating JSC venues to different regions, liaising with/hosted by national academies and research entities and to include a dialogue session with such entities (action 15).
7. JPS to organize that WCRP activities submit short written reports in advance of the JSC Session to a set template (action 15).
8. JPS to prepare an annotated agenda at least a month in advance of the JSC Session (action 15).
9. JSC and JPS to set a formal block of time for review/agreement for decisions during the JSC Session (action 15).
10. JSC to arrange at least three teleconferences during the intersessional period, including Core Project involvement (action 15).
11. JSC to appoint/renew two liaisons within the JSC for each Core Project (and other groups as required), and encourage direct interactions (action 15).
12. Communication Officer to re-develop WCRP communication strategy (action 16).

ANNEX V: Summary of Recommendations

NO.	RECOMMENDATION	TYPE	WHO	PRIORITY
1	Provide a community-wide mailing list to give more targeted and regular updates.	Internal	JPS	1
2	Retain the annual JSC Session without significant reduction in its size or number of participants.	Internal	JSC	1
3	Set up informal WCRP meetings, over coffee or dinner, at the EGU General Assembly and AGU Fall Meeting, and other meetings as appropriate.	Internal / External	Core Projects, JPS	2
4	Maintain quarterly teleconference calls between WCRP leadership groups and provide a set of best practices for call hosting and participation and guides to call interfaces.	Internal	JPS, JSC, Core Projects, others	1
5	Investigate and report on the structure of WCRP groups to assess the role of liaisons, multiple group membership and the need for attracting new members into the community.	Internal	JPS, WCRP groups	2
6	Determine clearer and more streamlined policies and practices for how researchers can become involved in WCRP.	Internal / External	JPS, JSC, WCRP groups	1
7	Expand the community resources pages on the WCRP website to include more information and resources for community members.	Internal	JPS	2
8	Plan and support WCRP events for community members, also aimed to draw in researchers external to WCRP, at major meetings, such as the EGU General Assembly and AGU Fall Meeting	Internal / External	JPS, JSC, Core Projects, others	Blue sky
9	Implement an online portal for community members to collaborate and share information.	Internal	JPS	Blue sky
10	Ensure that the WCRP key messages are central in communication planning	Internal / External	JPS	1
11	Encourage open dialogue with data users, climate services, policy makers, national governments, those involved in the adaptation and mitigation of climate change and the general public.	External	WCRP Director, WCRP groups, JPS, JSC	1
12	Utilize the WCRP website to: Showcase WCRP Community data and products, improve access to WCRP publications, ensure optimal search engine results and page responsiveness.	Internal / External	JPS	1
13	Continue promotion of and connection with Early Career Researchers to foster future leaders and to bring fresh perspectives to the Programme.	Internal / External	JPS, JSC, Core Projects, WCRP groups	1
14	Communicate how the WCRP Secretariat and leaders are reducing their environmental and carbon footprint and ways in which the wider community can also do so.	Internal / External	JPS	2
15	Improve the WCRP Newsletter taking into consideration comments in the WCRP Communication Survey (2017).	Internal / External	JPS	1

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NO.	RECOMMENDATION	TYPE	WHO	PRIORITY
16	Create a MS Powerpoint slide (or a selection of slides) that can be used by researchers within the community to show where their research fits within the Programme.	Internal / External	JPS	2
17	Identify high-impact research areas where the WCRP community is currently making substantial and reportable progress and develop communication methods to allow timely reporting of important science findings to a wide audience to raise the visibility of the Programme.	Internal / External	JSC, JPS, Core Projects, WCRP Groups	1
18	Encourage open access publication of WCRP community research and data	External	All	1
19	Develop a WCRP social media strategy.	External	JPS	2
20	Continue good relations with the WMO Press Office and development of a template for WCRP press releases.	External	JPS	1
21	Prepare short, targeted newsletters to sponsors, national representatives/contributors and potential funders to showcase WCRP science highlights (twice annually to existing sponsors/contributors and as needed to potential funders).	External	JPS	1
22	Design and publicize a brochure on WCRP brand identity.	Internal / External	JPS	Blue sky
23	Design and publicize a brochure on the WCRP Grand Challenges.	External	JPS, Grand Challenges	Blue sky
24	Increase the frequency of the WCRP newsletter to monthly in order to deliver information in a more timely manner	Internal / External	JPS	Blue sky
25	Create exhibit material that provides an overview of WCRP science and how to become involved at strategically chosen conferences and meetings.	External	JPS, others	Blue sky
26	Sponsor Early Career Researcher events at majors conferences.	Internal / External	JPS, WCRP groups	Blue sky
27	Design and Publicize an annual 'science highlights' report, aimed at a general audience.	External	JPS	Blue sky
28	Develop videos about WCRP to show what the Programme does and why it is important.	External	JPS, others	Blue sky
29	Conduct a follow up Communications Survey (around 2019)	Internal / External	JPS	2
30	Provide periodic (at least annual) evaluation reports based on website and social media analytics and other metrics	External	JPS	1

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