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**The Climate Services Partnership (CSP)** is a platform for knowledge sharing and collaboration to advance climate service capabilities worldwide. CSP members are climate information users, providers, donors, and researchers; though they represent diverse interests, all are actively engaged with climate services through their own programs and activities. Partners collaborate to develop and improve climate services; they also learn from each other by sharing resources and experiences. The CSP creates a venue to generate new knowledge, establish best practices, and promote a resilient, sustainable, and climate-smart future. More information is also available on our website: [www.climate-services.org](http://www.climate-services.org).

**The CSP newsletter** is a quarterly publication meant to keep all informed of the latest updates of the partnership community. We rely on you for news of your activities, upcoming events, and recent publications. Please send all material for the next newsletter to Allyza Lustig at [arlustig@iri.columbia.edu](mailto:arlustig@iri.columbia.edu) by **July 15, 2014**.

**Editorial board:** Allyza Lustig (IRI), Cathy Vaughan (IRI), Steve Zebiak (IRI)

# the human face of climate services

an editorial from the CSP secretariat

When we talk about climate services, we frequently talk in conceptual terms. We discuss and debate inputs and outputs; objectives, functions, and processes; appropriate designs. These conceptual discussions are appropriate, considering the rapid rate at which climate services are evolving their potential value to society. But it's also important to step back and consider what constitutes a climate service in practice, and what makes it work.

When we do that, we quickly recognize that people are at the heart of a functioning service. From decision-makers, to those designing and delivering information, to those who communicate and translate information, to those who can help create an enabling environment and needed resources, these people act in various complementary capacities. In the best cases, they are supported by researchers whose work helps to inform and improve services over time. In a very real sense, a climate service can be defined as a set of people – all of whom have been sensitized, informed, and equipped to work in concert toward a shared objective.

With this lens on climate services, the central importance of human capacity is undeniable. Of course there are other prerequisites too, including data and institutional infrastructure of various sorts. But human capacity is the engine of climate services.

This is reported by many of our members, who are engaged in climate services activities and have reported on their experiences in case studies solicited by CSP and through the Global Framework for Climate Services. In reviewing the ~40 case studies collected by CSP (which span all continents and many themes/sectors) we find that most prominent among reported lessons learned is the overriding importance of human capacity. In many settings, it is considered the most important factor in whatever success has been achieved – more so than the availability of advanced scientific techniques and state-of-art equipment.

On the other hand, in many settings a lack of capacity is the most significant obstacle to progress. Many cases emphasize human capacity as an ongoing challenge, not only because of personnel turnover but also because of evolving approaches and technology that require new knowledge and skills. Another finding is that human capacity is key across the entire “value chain,” from decision-makers to intermediaries to information providers; a weak link anywhere in the chain can impede progress. And this applies not only in lower-income settings but also in the more developed economy settings, where aspects of translation, policy engagement, and uptake of services in key sectors have often been lacking.

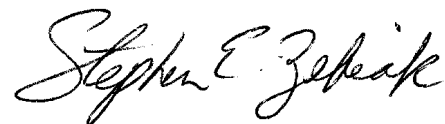
Though many climate service programs have confronted a human capacity challenge, to date they have had little choice but to cope with it in their own way, as with so many other aspects of climate services development. While each setting inevitably has unique circumstances, they likely have a great deal in common in terms human capacity needs. Addressing these needs independently is, at best, inefficient.

To improve this, I'd like to propose a community training curriculum. This could start with identifying existing educational and training resources that have been developed around relevant tools, information products, and approaches to climate service delivery. By collecting, reviewing, and organizing selected resources in a community-based curriculum, we could highlight and promote successful tools and practices, and improve their accessibility among a global audience. Through such a process we might also more easily identify areas where additional work should be fostered, contributing to the development of an increasingly comprehensive resource over time.

There are many possible components to such a curriculum. It could cover basic elements of climate information and value-added products, sector-based climate risk management practices and services, participatory processes, evaluation and assessment, dissemination and communication systems, and target decision support tools/systems, among others. We might prioritize among these initially through assessing community interest and demand.

If there is support for the effort and interest in collaborating on it from our membership, the CSP could help to mobilize an activity on training resources as envisioned here. There would be a number of implementation issues to deal with, such as a proper vetting and review process. We would also need to find a means to deal with intellectual property and proprietary products, while promoting open access to valued resources to the extent possible.

A community training curriculum is certainly an field in which a serious community effort could have a real and positive impact. I hope we can initiate a discussion within the CSP to explore this possibility more fully.



# community spotlight

a conversation with Emily CoBabe-Ammann, University Corporation for Atmospheric Research



**Emily CoBabe-Ammann, director of Community Programs at the University Corporation for Atmospheric Research, talks with us about her work and its relation to climate services.**

**Please describe your work in climate services; what are UCAR’s greatest strengths?**

[The University Corporation for Atmospheric Research] UCAR Community Programs are a set of eight independent service and education training programs that were all established to support the atmospheric and climate community. We’ve been looking at climate services as an area where these programs can work together, providing a way to build a bridge from stakeholders back to science, and translating the science such that non-specialists and decision makers can use it. Some of the areas that current UCP Programs have identified for this emergent work include international education and training programs and climate services and capacity building, including climate product evaluation, risk communication, and economic valuation of climate risk.

**What do you see as the largest challenges to the development of climate services?**

From where I’m sitting, it’s understanding user needs and finding ways to meet them. Every user and stakeholder sits in a different spot. There’s not a way we can stick a scientist in everyone’s living room, so how do we connect the science to sectors and user groups? We’re all struggling with scalability because as soon as we have a model that works, we get fifty phone calls; it’s easy to outstrip our ability to address the increasing need for services. I think there is a role

in virtual space to play in building solid communities of practice. But we will still need the human capacity to facilitate the use of very specific and technical tools, especially at the scales that are on the horizon.

**What are your goals for the future of UCAR?**

In addition to supporting the core missions of our programs, we’re aiming to find emerging areas of work; climate services and international education will allow the UCAR programs to work together in support of the international community. If we can achieve some level of integration and identify specific niches that are unique to UCAR, that is really the definition of success for me.

**Every user sits in a different spot. There’s not a way we can stick a scientist in everyone’s living room, so how do we connect the science to sectors and user groups?**

**What is your favorite part of your work?**

Climate services for UCAR involve a whole bunch of moving parts. We have programs with individual goals and personalities. We support 100 universities in addition to [the National Center for Atmospheric Research] NCAR, and then there is the national and international terrain. Finding a way to fit those moving parts together to meet our mission (“science in service to society”) is definitely the most fun for me.

**How would you define climate services?**

It’s interesting, everyone thinks about it in a different way. When I think of climate services for UCAR, I’m thinking about the translation of science for stakeholders that provides both context and an understanding of uncertainty so that effective decisions can be made.

# conclusions from CLIMRUN-ECLISE

## Paolo Ruti, Italian National Agency for New Technologies, Energy, and Sustainable Economic Development

The two European FP7 climate service projects, Climate Local Information in the Mediterranean region Responding to User Needs (CLIMRUN) and Enabling CLimate Information Services for Europe (ECLISE), organized a joint workshop (10-11 February, 2014, Brussels, Belgium) to bring together the experiences in both projects and discuss the development and delivery of climate services. The workshop was attended by the coordinators and workpackage leaders from both projects, a select number of project scientists, users of climate services, representatives from the European Commission, representatives from the European Environment Agency, and representatives from similar FP7 projects (NACLIM, EUPORIAS, and IMPACT2C). After the projects were introduced, experiences gained were exchanged and a round-table discussion was held regarding lessons learned. The following summary reflects the outcome of these discussions.

Through conversation, it became clear that the application of climate information needs to be better facilitated throughout several societal sectors. The simplified scheme, in which data providers (met services, climatic centers, etc.) develop tailored products and dialogue directly with a large number of different users, does not effectively facilitate a large-scale diffusion of climate information among varying societal niches. A more complex framework is needed, and must include an intermediate player between data providers and users that is able to interact with both, translate information and languages, identify requirements, and trigger new perspectives.

This meeting has been able to identify some key elements needed for the development of a European framework for climate services:

1. **Expertise.** Scientific expertise needs to be maintained and fostered, and social science and communication experts are also needed to connect with the users and understand the non-climatic constraints of the decision-making process.
2. **Credibility.** Quality assurance of climate services can begin with the climate models used as input, e.g. the Euro-CORDEX and Med-CORDEX data. This is important in fostering trust among users; the climate services market is essentially self-regulating, and separates services that are less reliable from those with a more solid foundation.
3. **Quality.** We need to define indicators that can be used objectively to measure the quality of climate services, emphasizing usefulness for the user. Has the service positively influenced an important decision? Climate service products must also be accurate and tailored. Furthermore, correctly conveying the reliability of data is critical, e.g. in terms of spatial and temporal resolution and scale.
4. **Continuity** of service is needed for most users. This is an issue concerning the users of the CLIMRUN and ECLISE projects, which are finite; JPI-climate and the European Climate Services Association could play a role in alleviating this challenge.
5. **Uncertainty** of predictions/forecasts. Decisions must be made despite uncertainty, and uncertainty therefore must be managed, by e.g. policy makers. This is already the case in other arenas (e.g., economic models and public opinion are also uncertain).
6. **Flexibility.** Users often have their own systems/models to incorporate climate data. Climate services should be flexible enough to accommodate these exiting structures.
7. **Language.** We need to be very clear on language used in the communication of climate information and services. (e.g. clearly distinguish seasonal/decadal predictions from climate projections). We also need to make sure that users understand the scientific vocabulary used, or that the language is appropriately translated for the target audience.
8. **Organization of services** in Europe. There is a need of a translation layer, or downstreamed services, between climate scientists and (non-science) users. This layer is responsible for translating a vast array of scientific data to tailored information for the user community. Processes in this layer need to be further developed.
9. **User engagement.** Knowledge of the user sector is essential to identifying good services, and training users to increase understanding of products/services is also needed. Inviting users to science-focused workshops of scientists is not ideal; rather, it is better to approach users in their spheres, for example at conferences.
10. **Research agenda.** Climate science should take requirements from climate services into account in planning research. This is being organized through the World Climate Research Program (WCRP) working group on regional climate and the Global Framework for Climate Services (GFCS).
11. **Upscaling** local services to European-level services. SMEs can perform marketing and produce operational services. Note that user requirements often differ substantially, also within a sector.



**Dick Dee, head of Reanalysis Section, European Centre for Medium-Range Weather Forecasts, talks with us about his work and its relation to climate services.**

**Please describe your work in climate services; what are the greatest strengths of the ECMWF?**

My work at the European Centre for Medium-Range Weather Forecasts (ECMWF) is concerned with production of global climate data sets using a process called 'reanalysis.' Reanalysis uses a forecast model to combine meteorological observations from many different sources, such as weather stations, ships, balloons, aircrafts and satellites, into a gridded data set that describes the evolution of the atmosphere during the recent past and up to the present. The use of a model ensures that there are no spatial or temporal gaps in the data set and that physically meaningful estimates can be obtained even for variables that are not well observed. Reanalysis data are used to monitor global climate change, to support research and education, and as a key information resource for climate services.

ECMWF's core business, as the name suggests, is numerical weather prediction for the medium range (days to weeks ahead). Tools and systems developed for this purpose include state-of-the-art forecast models, data processing systems that handle millions of weather observations daily, and the world's largest archive of meteorological data. The organization's greatest strength, in my opinion, is its highly collaborative work environment supported by an excellent technical and scientific infrastructure. This is why the same tools and systems originally developed for weather forecasting can also be used to produce and disseminate high-quality climate data sets.

**How does climate change and/or variability affect your country/region or the countries/regions in Europe?** ECMWF is an international organization that serves 20 member states and 14 cooperating states, most of them located in Europe. Many European countries are vulnerable to sea level rise and are already affected by increasing coastal erosion. General warming trends have major impacts in various parts of Europe: increasing frequency of

droughts in the Mediterranean area; decreasing river flow in eastern Europe; changes in forest species and biodiversity in Scandinavia; northward migration of agricultural crops in many regions. Recent flooding events in the UK may be associated with a trend towards warmer and wetter winters. The capacity to cope with and adapt to climate change varies greatly among different countries in Europe.

**How can climate services mitigate these impacts and/or take advantage of opportunities?**

Climate services are essentially about providing reliable climate information in a form that meets the specific needs of an end-user. In my field we are mainly concerned with the supply side of the information chain – our job is to transform raw observations into an accessible knowledge base that can support a wide variety of climate-related products and services. I think our work is important because it helps provide the best data and the best science to inform society's response to climate change. However, it seems to me that there is a very long distance between our data sets and the needs of the end user, and a great deal of work is still needed to shorten that distance.

**What do you see as the largest challenges to the development of climate services?**

I believe that the most important challenge we face is to develop services that reach and support those who are most vulnerable to the effects of climate change.

**What are the goals for the future of ECMWF?**

The primary focus for ECMWF will continue to be numerical weather prediction, but our role in supporting climate services will grow. This is inevitable because the science and technical infrastructures needed for weather and climate are the same. Europe has made major investments in weather forecasting during the past 35 years, and it is only logical that the results of these investments are used to help address one of the most pressing scientific problems of our times, namely adaptation to and mitigation of climate change.

**What is your favorite part of your work?**

We are currently working on a new reanalysis that extends back to the beginning of the 20<sup>th</sup> century, which is mainly based on surface weather observations that were originally recorded in books and journals. This project involves many collaborators around the world who are engaged in 'data rescue': the discovery and preservation of valuable climate observations that exist only on perishable media. Data rescue is very interesting and extremely important – there is not much science one can do without observations. One of the most gratifying aspects of my work is to see how the reanalysis of these early observations can help improve our knowledge of the early 20<sup>th</sup>-century climate.

# csp working groups

## an update on the activities of the CSP working groups

**Ethics.** The CSP's Ethics Working Groups is a new collaborative activity that draws on the discussions at the special Side Event on Climate Services Ethics, held in conjunction with the Third International Conference on Climate Services (ICCS3) in December, 2013. Two areas have been identified for a working group to address as priorities: 1) standards for climate information products delivered in the name of climate services; and 2) guidelines for the conduct of climate services. The first is concerned with the matter of quality control, and fostering of good practices in information for climate services. The second deals with identifying and promoting standards for such attributes as equity, accessibility, transparency, and accountability.

The working group membership is currently being developed, with attention to key stakeholder groups, regions, and settings. In the mean time, initial plans are being developed for the main work of the group over the coming year. The group will 1) conduct a review of relevant codes, guidelines, and standards from other communities; 2) engage in consultations within the climate services community; and 3) develop a white paper that summarizes key issues and makes initial recommendations on the content and process for developing community standards for climate services. We expect the white paper will then serve as a means to conduct necessary wider consultations, and for engaging partners in pursuing next steps.

The designated lead author team will likely assemble for a working meeting sometime in the second quarter of this year. At this time, suggestions for the work plan and the membership of the group are welcome (please forward to the CSP secretariat).

**Evaluation.** The CSP Evaluation Working Group has now completed four evaluations using the mid-level evaluation guidelines developed last year. These evaluations are on the website, and can be accessed here: <http://www.climate-services.org/evaluation>.

Based on feedback on the use of the methodological guidelines, the team is now improving and contextualizing the guidelines and hope to produce an online resource that can be shared widely with the community by the end of the year. Another round of evaluations is also forthcoming. Those interested in participating should please contact Cathy Vaughan at [cvaughan@iri.columbia.edu](mailto:cvaughan@iri.columbia.edu).

**Valuation.** Since a 2013 workshop in Geneva, Switzerland (co-organized by the CSP and the World Meteorological Organization [WMO]), the CSP Working Group on the Valuation of Climate Services has been developing a primer on the economic analysis of weather, climate, and hydrological (WCH) services. The working group consists of a team of WCH practitioners and economists; the primer is a collaboration between the WMO, the World Bank, and the CSP, with financial support from the United States Agency for International Development (USAID) through the Climate Change Resilient Development (CCRD) project.

The primer's target audiences will include National Meteorological and Hydrological Services (NMHS), donors and funding agencies, other public and private providers of WCH services, users, and economists. A key element of developing the primer has been the vetting of an annotated outline with editors, authors, and NMHS. The WMO organized several one-week seminars in Brunei, South Africa, and Curacao for regional representatives of NMHS, which included training on the design of socio-economic benefits studies and WCH service delivery. The seminars also afforded the primer writing team the opportunity to receive input from seminar participants on the structure and content of the primer. In addition, the World Bank conducted a review of the annotated outline and provided valuable suggestions for improving the primer in December.

The writing team is currently working on the second draft of the primer. It is anticipated that this draft will be revised during a meeting of editors and writers in Boulder, Colorado at the end of April 2014 and will be circulated to external reviewers shortly thereafter. The primer is expected to be finalized later this year.

## Climate and health workshop in Brazil

**Catalan Institute for Climate Sciences (IC3)**. A workshop on the integration of environmental remote sensing products to inform health early warning systems was held in Rio de Janeiro, Brazil 3-14 February, 2014. The workshop was funded by the Oswaldo Cruz Foundation (**Fiocruz**) and coordinated by Dr. Christovam Barcellos (ICT, Fiocruz) and Dr. Marilia Sa Carvalho (PROCC, Fiocruz).

Although a wide variety of remote sensing data can help inform the analysis of environmental factors on health in Brazil, this data is rarely translated into specific prediction models for health to inform planning and mitigation actions. The workshop aimed to introduce various tools that can be used to access, display, and analyze these data sets, then translate information into indicators to drive disease prediction models. Students from various post-graduate programs at Fiocruz and across Brazil participated in the event. The main outcome of the workshop was the development of three pilot studies, focussing on the impact of climate on malaria, dengue, and diarrheal diseases, at different spatial and temporal scales, in Brazil.

Dr. Pietro Ceccato (IRI) and Dr. Rachel Lowe (IC3) led lectures during the workshop, and Dr. Antonio Miguel Vieira Monteiro (INPE) also participated in the activity.

Read more here: <http://www.ensp.fiocruz.br/portal-ensp/informe/site/materia/detalhe/34677>

## ESA Climate Change Initiative

**European Space Agency (ESA)**. ESA's Climate Change Initiative (CCI) responds to the need for continuous data, which allows us to better understand the slowing increase in sea-surface temperature. ESA can observe changes in sea-surface temperature from the 19th

century onwards using millions of measurements gathered by buoys and voluntary observers at sea. Meanwhile, CCI develops sea-surface temperature information from satellites that provides an independent assessment of these changes over the last few decades. When comparing changes in global average sea-surface temperature from these two sources, ESA sees they provide a consistent picture since 1996, when the most reliable satellite measurements began.

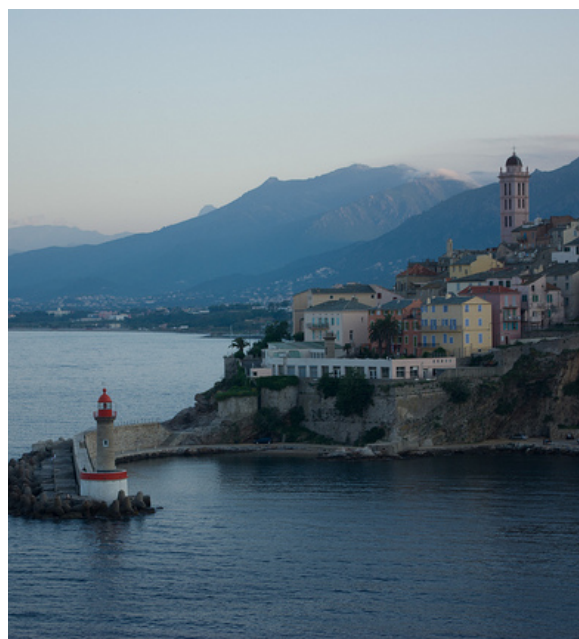
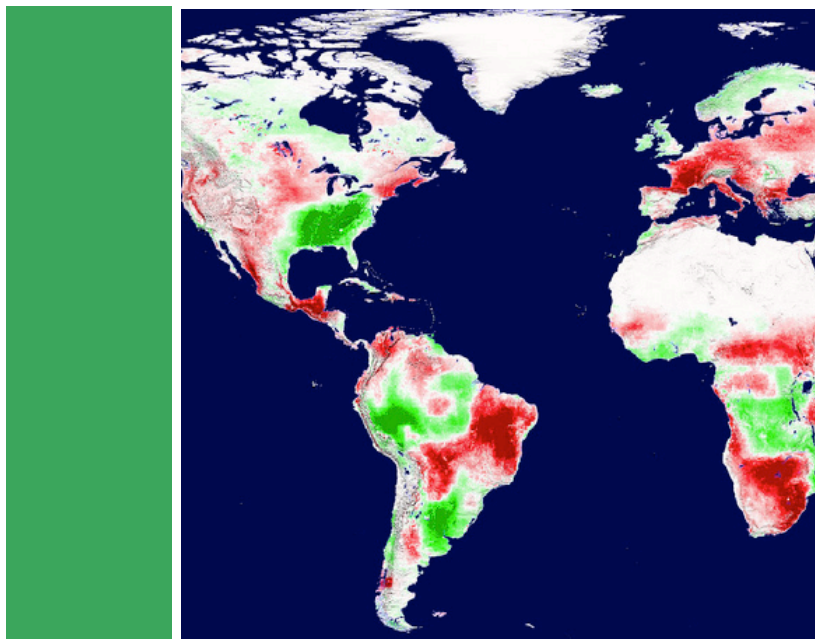
Work is now being undertaken to apply these methods to earlier satellites and thus extend reliable satellite-based information back into the 1980s. That will allow scientists to combine, with increased confidence, the sea-surface temperature information from satellites with measurements gathered in the ocean and thus build a better, more complete picture of past changes. These topics, among others, were discussed recently during the CCI's Collocation Meeting at ESA's Centre for Earth Observation in Frascati, Italy.

Read more here: [http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/Space\\_for\\_our\\_climate/Is\\_global\\_warming\\_hiding\\_underwater](http://www.esa.int/Our_Activities/Observing_the_Earth/Space_for_our_climate/Is_global_warming_hiding_underwater)

For video coverage, visit: [http://www.esa.int/spaceinvideos/Videos/2014/02/Earth\\_from\\_Space\\_Special\\_edition](http://www.esa.int/spaceinvideos/Videos/2014/02/Earth_from_Space_Special_edition)  
[http://www.esa.int/spaceinvideos/Videos/2014/02/Earth\\_from\\_Space\\_Special\\_edition2](http://www.esa.int/spaceinvideos/Videos/2014/02/Earth_from_Space_Special_edition2)

## Pilot climate change adaptation study: Turkey

**European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC)**. Small and medium-sized businesses (SMEs) in Turkey are increasingly concerned about the scale of the climate challenge facing their operations. In a country



where water scarcity is a growing problem, their anxiety is not unfounded. According to a groundbreaking study, funded by EBRD and IFC, SMEs also struggle to determine the most effective strategies to reduce climate risk. The study identifies opportunities for business investment to effectively manage the risks associated with climate change.

The Pilot Climate Change Adaptation Study: Turkey, identifies priority actions for Turkish businesses to increase their climate resilience. The research, undertaken by Acclimatise, Mavi Consultants, and COWI, aims to help businesses identify the measures that make business sense.

A copy of the report can be found here: <http://www.acclimatise.uk.com/login/uploaded/resources/turkey-adaptation-study.pdf>

A podcast interview discussing the report's findings can be found here: <http://www.acclimatise.uk.com/network/article/podcast-new-study-uncovers-opportunities-for-investment-in-climate-adaptation-in-turkey>

More information about the report can be found here: <http://www.acclimatise.uk.com/network/article/ebrd-and-ifc-study-identifies-climate-change-opportunities-for-turkish-businesses>

**Taking science to society: A game on the ethics of providing climate services**  
 International Federation of Red Cross and Red Crescent Societies (IFRC). The Climate Center and the [Climate System Analysis Group](#) at the [University of Cape Town](#) have been working together to develop the *Taking science to society* game to help illustrate the ethical dimensions of climate services. The game has been designed to help both climate scientists and those involved in the dialogue around climate



change to recognize the dangers of failing to communicate the value of detailed but uncertain climate information.

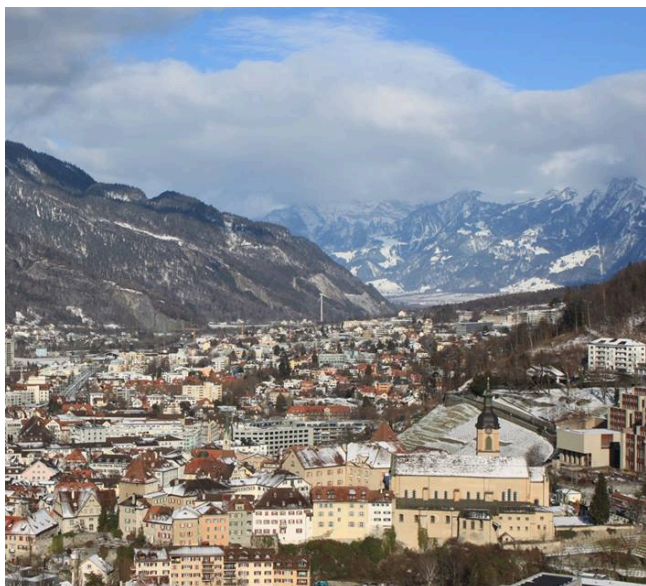
The game [was first played](#) at the Third International Conference on Climate Services in Montego Bay, Jamaica, last December, and now this month at a [British Council](#) workshop in Cape Town. Entitled, "From Climate Science to Climate Services for Society," the workshop was led by the [UK Met Office](#) and brought together researchers from Britain and South Africa. Participants enjoyed the game, and said they found it allowed them to immerse themselves in situations that closely paralleled the real-life challenges of providing information to decision-makers.

Read more here: <http://www.climatecentre.org/site/news/516/taking-science-to-society-a-game-on-the-ethics-of-providing-climate-services?type>

**Caribbean Reference Centre for Disaster Risk Management launches virtual library**

International Federation of Red Cross and Red Crescent Societies. The IFRC's Caribbean Disaster Risk Management Reference Centre (CADRIM), hosted by the [Barbados Red Cross Society](#), launched its [new website](#), featuring a "virtual library" with a wealth of reports and case studies from Red Cross Red Crescent Movement work in the region. The site is currently available in English, though content will eventually be translated to other Caribbean languages including Spanish, Creole and Dutch. Other highlights include photos and videos from various events including training sessions, a feedback tool for users, and information about the core functions of CADRIM and the [IFRC](#), as well as links to other resources.

Read more here: <http://www.climatecentre.org/site/news/504/caribbean-reference-centre-for-disaster-risk-management-launches-virtual-library?type>





### Making better use of scientific information - IPCC authors play *Decisions for the decade*

International Federation of Red Cross and Red Crescent Societies. During an IPCC authors' meeting, a group of the world's leading climate scientists participated the Climate Centre game *Decisions for the decade*, which is intended to promote discussion about the interface between climate information and real-world decision-making. The game was originally designed in 2013 for the World Bank's chief economist for sustainable development and is now specially adapted for the IPCC – the scientist-players became policy-makers facing changing risk.

Read more here: <http://www.climatecentre.org/site/news/503/making-better-use-of-scientific-information-ipcc-authors-play-decisions-for-the-decade?type>

### Mapping of climate service providers in Italy

Euro-Mediterranean Center on Climate Change (CMCC). The Joint Programming Initiative on Climate, launched in 2010, is a European initiative among fourteen European countries that coordinate climate research, fund new transnational research, connect scientific disciplines, and facilitate a connection between science and its application.

Climate services constitute one of the four foundational JPI pillars. To identify climate services happening throughout Europe, JPI member countries have distributed a survey to organizations throughout the climate services community. This work was initiated by Germany and continued by Austria and Italy. The questionnaire in Italy was sent out at the end of 2013 with a response rate of 40%.

The main outcomes are:

- 1) Most of the respondents are large public institutions which offer services since the 1990s
- 2) The main reasons to offer climate services are to provide for specific sector/institutional needs
- 3) The services offered are very diverse, covering multiple formats, application areas, timescales, and geographic scopes
- 4) Climate service providers generally come from the technology, research, management, and education sectors
- 5) The main thematic focus of regional climate services are impacts, vulnerability, adaptation, and climate systems
- 6) The communication of uncertainty is often explained directly to users via ad-hoc meetings/scientific papers
- 7) The main time horizon is 2040, and spatial scales are mainly local, regional, and/or national
- 8) Climate services are mainly financed publicly, and approximately half of the services are provided freely
- 9) Most of the users are decision makers/politicians, researchers, consultancies, and part of the general public
- 10) Agriculture is the main user sector

Read more here: <http://www.cmcc.it/files/rp/rp0213-serc-02-2014.pdf>

### Circle-2 project: a decade of cooperation on adaptation research in Europe

Euro-Mediterranean Center on Climate Change. The final conference of the EU project CIRCLE-2 (titled "Adaptation Frontiers") was held in Lisbon on 10-12 March, 2014 and marked another milestone of the 10-year European cooperation effort on climate change adaptation research and funding. Since the launch of the first version of the CIRCLE network in 2004, much has been achieved in terms of awareness, knowledge gathering and sharing, and joint initiatives on impacts, vulnerability, and adaptation.

The final conference was meant not only to celebrate the success of the project but also to provide a forum for interaction between the two communities of research and policy. New research findings were presented in the parallel sessions, and in the plenary sessions key European research-policy actors discussed main challenges in terms of adaptation practices, services, and user needs. The legacy of CIRCLE-2 will be taken up by other initiatives including JPI CLIMATE and future HORIZON2020 projects.

CMCC participated in the "Economics, financial instruments and insurance" session (Sergio Castellari and Fabio Eboli) and in the "Climate adaptation services" session (Eva Banos de Guisasaola).

To review the conference highlights visit: <http://new.livestream.com/livestreaming-pt/adaptation-frontiers>

Link to presentations here: [http://www.circle-era.eu/np4/AdaptationFrontiers\\_Presentations.html](http://www.circle-era.eu/np4/AdaptationFrontiers_Presentations.html)

### Global Drought Information System

US National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center, Climate Monitoring Branch. The Global Drought Information System (GDIS) aims to support decision makers who require data and information on water resources issues around the world. Relevant sectors include water, agriculture and food, and national security. GDIS has been recognized as forming the foundation for a global drought early warning system. The tool benefits from collaboration with the World Meteorological Organization (WMO), the Group on Earth Observations, and numerous national and international meteorological organizations and coordinating bodies.

GDIS aims to (1) provide an apples-to-apples comparison of drought conditions around the world and (2) allow national and international organizations to provide input on actual conditions on the ground. The former is accomplished through computation of drought indices, leveraging existing data sharing mechanisms and common code bases that are made available in simple graphics formats as well as through web services. The latter is accomplished through direct submission of conditions from regional coordinating bodies around the world such as the European Union Joint Research Commission, the North American Drought Monitor (NADM), Africa's Intergovernmental Authority on Development's Climate Prediction and Applications Center in conjunction with Princeton University, and the Australian Bureau of Agriculture and Resource Economics and

Sciences. Additionally, the WMO, through its World Climate Research Program, is developing and validating drought-specific forecasts for the world. Further strides are being taken to include regional information for South America and Asia.

Read more here: <http://www.drought.gov/gdm>

**NCAR Climate Inspector**

**National Center for Atmospheric Research (NCAR).** [Climate Inspector](#) is the newest addition to the [NCAR GIS Program's Climate Change Scenarios web portal](#), which has offered downloadable climate change data in a GIS format to users since 2005. The Climate Inspector is an interactive web application that expands Geographic Information Systems (GIS) mapping and graphing capabilities to visualize possible temperature and precipitation changes throughout the 21st century. The maps and graphs are generated from a large dataset of climate simulations by the NCAR Community Climate System Model (CCSM4). These simulations were prepared for the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). With Climate Inspector, users can explore how temperature and precipitation may change based on different emission trajectories (i.e., representative concentration pathways, RCPs), investigate changes around the globe and through time, inspect climate variability and uncertainty, and download maps and data.

For further information, please contact Olga Wilhelm: [olgaw@ucar.edu](mailto:olgaw@ucar.edu)

**Future Climate for Africa**

**UK Department for International Development (DFID), Natural Environment Research Council (NERC).** In April 2014, DFID and NERC will launch a global open call for research via a new program, Future Climate for Africa (FCFA). FCFA will be a multidisciplinary program supporting world-leading research consortia to improve scientific understanding and prediction of extreme weather and climate change in sub-Saharan Africa and enhance the use of this information in decision making.

FCFA places the concept of climate services at its core and will specifically target sectors involved in longer-term decision making, such as infrastructure, water resources management, energy, and urban planning. The partnership between DFID and NERC reflects the triple focus of the program on scientific excellence, achieving impact, and strengthening scientific capacity and international collaboration. The program will take a co-production approach, providing information and services that are designed and tested with practitioners to inform real decisions. It will also place equal emphasis on extracting more value from existing climate information and generating new information; the program will draw on multiple disciplines to do this, including, for example, economics, decision science, social sciences, and behavioral sciences.

Further information on FCFA will be available on the NERC website in April and the announcement of opportunity will be launched in the second half of April.

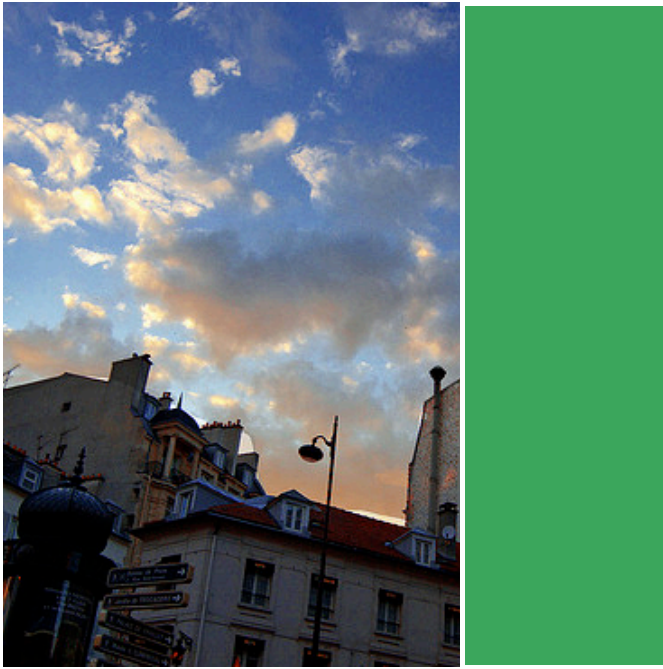
Read more here: <http://www.nerc.ac.uk/>

**Climate Services Adaptation Program and the National Climate Outlook Forums**

**Global Framework for Climate Services (GFCS).** In February, the Climate Services Adaptation Program in Africa, which aims to build resilience in disaster risk management, food security, nutrition and health, held kick-off meetings in Tanzania and Malawi. The meetings brought together project partners to initiate detailed activity planning at the country level and start the process of establishing national frameworks for climate services and building national structures for program management.

A separate meeting, a pilot National Climate Outlook Forum (NCOF) took place on 3-6 March in Mozambique with the aim of bringing together climate information providers and the user community. A special session devoted to agrometeorology was also held. As per the activities agreed upon at the National Consultation on a Framework for Climate Services (Belize, October 2013), an NCOF will also take place





in Belize just prior to the start of this year's rainy season. Since 2013, the country has made progress towards advancing its national framework for climate services, and the National Climate Change Committee has recently endorsed the formation of the inter-ministerial subcommittee to support the process. Consultations for climate services were held in Senegal on 26-28 March and in the Cook Islands for Pacific Islands from 31 March to 4 April.

Read more here: <http://www.gfcs-climate.org/>

**CHG/FEWS NET GeoCLIM training implemented East Africa Climate Hazards Group (CHG) and US Agency for International Development (USAID).** In October 2013, the Climate Hazards Group (based at the University of California, Santa Barbara) hosted a series of GeoCLIM training sessions for three regional core-trainers from IGAD Climate Prediction and Applications Centre (ICPAC), the University of Nairobi, and the USAID Famine Early Warning Systems Network (FEWS NET). The GeoCLIM, a climatological analysis tool developed by FEWS NET in support of the USAID/PREPARED project, is intended for [analysis of historical rainfall and temperature data](#). The rainfall and surface temperatures are expected to inform national and regional stakeholders and decision makers on current climatic trends and future projections in support of vulnerability analysis and resilience building.

The three core trainers went on to train 15 national trainers from various national meteorological services at ICPAC. The national trainers were from Kenya, Uganda, Sudan, South Sudan, Tanzania, Rwanda, Burundi, and Djibouti. Subsequently, 10 Kenya Meteorological Services personnel were trained to implement the GeoCLIM at a national level. As a result, over 300 rain gauge stations have been incorporated in the Kenya rainfall gridded datasets. Similar national training is planned for Uganda, Rwanda, Tanzania, and Burundi before the end of April 2014. Further national surface temperature gridding will be incorporated in the coming months.

## Open Climability Suite

**Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Climate Babel.** The DATACLIM project (Data and Information Management on Adaptation to Climate Change) is pleased to introduce the Open Climability Suite, an open source, transferrable, customizable, and extensible climate information system. The award-winning system provides products and a wealth of features to meet the needs for a powerful data-driven climate service in climate change-related projects.

The Open Climability Suite offers two key products: (1) The Climability Dashboard can be used for managing, exploring, and visualizing climate data. The Dashboard allows a project to more fully engage its climate data by exceeding static and ordinary map and data exploration. (2) The Climate Toolbox is used for processing, cleaning, and analyzing climate data. The Toolbox is a state-of-the-art set of routines to create climate information products from weather and climate data. It is readily extensible and already contains routines for over 40 internationally recognized climate variables and climate indices. A valuable set of further routines is included for checking, cleaning, and evaluating data series.

DATACLIM is a joint cooperation between the Indonesian National Weather Service (BMKG) and GIZ. It is funded by the BMUB (German Federal Ministry for the Environment, Nature Conservation, Building, and Nuclear Safety) through the International Climate Initiative (IKI).

A webinar covering the lessons learned from the launch of the Climate Information System of Indonesia will be held on Wednesday, 9 April, 2014 from 10-11:30am, CET. For a recording of the webinar session, please visit <https://gc21.giz.de/ibt/var/app/wp342deP/1443/index.php/exchange/webinare/>

Read more here: [www.climability.org](http://www.climability.org)

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## GOMC Climate Network updates

**US National Oceanic and Atmospheric Administration.** For 25 years, the Gulf of Maine Council (GOMC) has engaged representatives from Massachusetts, New Hampshire, Maine, New Brunswick, and Nova Scotia in collaborative work to foster the environmental health of the Gulf and its watershed. The GOMC Climate Network facilitates information sharing among program managers and researchers across federal, state, and provincial lines and among different sectors (such as emergency management, transportation, forestry, and marine fisheries), fostering integrated climate adaptation planning.

In September 2013, the Climate Network hosted a [two-day climate change meeting](#) in Orono, Maine, that drew more than 60 people from diverse sectors. Evaluations were overwhelmingly positive, and many participants commented on the value of "cross-border and cross-sectoral synergy." Outcomes from this meeting are guiding new initiatives that leverage in-kind and external support in both nations.

Examples underway include:

- launching new [Climate Network web pages](#) that help local and regional decision makers take an integrated, strategic approach to adaptation planning
- summarizing and publicizing regional climate trends and patterns through a new Gulf of Maine Climate Impacts and Outlook bulletin—a direct outgrowth of the North American Climate Services Partnership (to be issued every March, June, September, and December, available at <http://drought.gov/drought/content/resources/reports>)
- incorporating data from New Brunswick and Nova Scotia into the [NExUS](#) database of climate-related products and projects
- encouraging inclusion of more climate indicators in the [GOMC's Ecosystem Indicator Partnership](#)

#### **FAPESP advanced lectures on the physical processes in the Brazilian Earth System Model**

**The National Institute for Space Research (INPE).** INPE is organizing the São Paulo Research Foundation (FAPESP) advanced lectures on the physical processes in the Brazilian Earth System Model (BESM). It is a series of modules focused on the physical processes governing the Earth system and is primarily aimed at researchers and graduate students interested in the development of the BESM model.

The cycle comprises eight modules, all directed to physical parameterization, with funding from the FAPESP Research Program on Global Climate Change (PFPMCG) and supported by the Brazilian Research Network on Global Climate Change (Rede CLIMA), the National Institute of Science and Technology for Climate Change (INCT-MC), the Center for Weather Prediction and Climate Studies (CPTEC/INPE), and the Center for Earth System Science (CCST/INPE).

Two modules have already been conducted: cloud microphysics (19 - 28 February, 2014) and atmospheric planetary boundary layer and convection processes (19 - 21 March, 2014). The classes are theoretical-practical and address roughly 30 students. Among the invited lecturers were Dr. Hugh Morrison (NCAR) - cloud microphysics, and Dr. Sangsu Park (NCAR) - PBL and cloud parameterization.

#### **Strengthening the capacities of hydro-met services**

**United Nations Development Program (UNDP).** UNDP has been making positive strides toward building the resilience of vulnerable countries, communities, and economic sectors to climate risks and impacts. One of the many initiatives of UNDP is the Climate Risk Management-Technical Assistance Support Project (CRM-TASP), which is a series of climate risk assessments carried out in 17 countries. One of the key recommendations that emanated from the assessments is the importance of improving the management of information and data on climate and vulnerability in particular; climate-sensitive sectors like agriculture require better monitoring and accessibility of climate data in order to improve short- and long-term decision making. As such, effective hydro-meteorological systems are critical to support timely and coordinated responses to hazards that exceed the coping capacity of farmers and agrarian communities.

Building from these recommendations, UNDP is working in six countries to develop the capacity of national hydro-

meteorological agencies. Efforts are focused on analyzing existing systems and capacities in the context of climate monitoring, analysis, and forecasting, and identifying emerging needs. This will inform the necessary measures to improve existing systems and identify opportunities for application within national and sub-national development processes. To this end, UNDP is fostering collaboration between climate service providers and end-users (e.g., government agencies) to provide more advanced technical assistance. Information exchange is also promoted by collecting successful cases and initiatives that will help in designing strategies for capacity development and identify options (e.g., modeling methods, software and early warning systems) that can be adopted by governments.

#### **Traditional knowledge to minimize weather and climate impacts in Vanuatu**

**The Vanuatu Meteorology and Geo-Hazard Department (VMGD).** VMGD signed a Memorandum of Understanding with partners including the Vanuatu Kaljoral Senta (VKS), SPC-GIZ, and the Vanuatu Red Cross Society to work together to collect traditional knowledge in Vanuatu. The MoU facilitates the implementation of a three-year project funded by the Australian Government through the Climate and Oceans Support Program in the Pacific (COSPPac). Information will be collected primarily from four sites, stored in a database, validated, integrated into conventional seasonal forecasts, and disseminated to be used along with scientific climate information to inform community-level decision making.

This pilot project is fuelled by the fact that communities in Vanuatu, which are highly exposed to risks of extreme events including tropical cyclones, flooding, and droughts, have adapted in their own traditional and culturally rooted management strategies and forecasting methods, which have been tested and prove to be very reliable. Currently, the Vanuatu Meteorology and Geo-Hazards Department uses modern science information in its services, but majority of the Ni-Van indigenous community does not have the capacity to understand and utilize the information decision making. The project will incorporate modern science and local knowledge to provide climate prediction for Vanuatu's disaster risk reduction (DRR) and climate change adaptation (CCA) efforts. The department is also implementing activities under the Global Framework for Climate Services.

#### **PROCLIM launch**

**TEC.** Developed by TEC, PROCLIM launched in March 2014 with the mission of offering climate services for all, putting scientific results and language in user words. The company transfers the best of science, ensuring robust and timely decisions, mobilizing knowledge for action. PROCLIM relies on a set of proprietary databases – derived in particular from the CORDEX program – and on a network of internationally renowned scientists. The company develops specific metrics, uncertainty assessments, visualization methods and adaptation processes, truly adapted to users' needs, inspired by experiences at all scales and in all regions. Ultimately, PROCLIM aims to bridge the gap between climate scientists and policy makers, seeking more efficient ways of adapting to the impacts of climate change.

Read more here: <http://pro-clim.org/>



**Title:** Science to prevent disasters

**Author(s):** E. Coughlan de Perez, F. Monasso, M. van Aalst and P. Suarez

**Summary:** Predictable weather continues to result in disaster around the world. Despite this predictability, those who will be most affected often do not receive warning when hazardous events are likely to happen. This communication failure results from insufficient linkages between government agencies/humanitarian organizations with climate science. The Red Cross/Red Crescent Climate Centre aims to bridge this gap between scientific understanding and decision-making by facilitating action based on climate information in the context of both humanitarian work and longer-term development. Based on this experience, we argue that four features make publications in climate research particularly useful and action able: 1) a focus on extremes or threshold events rather than average conditions; 2) characterization of the full range of variability over time; 3) attention to implications of model uncertainties; and 4) a clear, jargon-free and succinct outline of the main findings of a paper.

**Link:** <http://www.nature.com/ngeo/journal/v7/n2/index.html>

**Title:** Toward a coordinated North American daily precipitation analysis

**Author(s):** M. Dimitrijevic, V. Fortin, W. Shi, H. Robles, P. Xie, R. Pascual

**Summary:** A reliable gridded precipitation dataset available in near real-time is of great value for many environmental prediction systems, some of which are shared between North American countries. For example, hydrological models provide guidance for managing watersheds shared between Canada and the US, as well as between the US and Mexico. The three countries also jointly develop and use the North American Ensemble Forecasting System. In both cases, all parties involved need to come to an understanding as to which precipitation dataset to use. For this reason, as part of the North American Climate Services Partnership (NACSP) initiative, the US Climate Prediction Centre (CPC), the Canadian Meteorological Centre (CMC) and the Mexican National Water Commission (CONAGUA) are working towards the development of a coordinated daily precipitation analysis for North America, which should be completed by the end of 2016.

**Title:** Social justice in climate services: engaging African American farmers in the American South

**Author(s):** C. Furmana, C. Roncolib, W. Bartelsc, M. Boudreaud, H. Croquette, H. Grayf, G. Hoogenboomg

**Summary:** This article contributes to efforts to develop more inclusive climate services, understood as institutional arrangements and processes that generate and disseminate science-based climate information to promote improved preparedness to climate impacts. Discussion on equity in climate services tends to focus on the specific challenges of women and the poor in developing countries. We seek to broaden this scope by considering a farming population in the southern United States, whose particular circumstances are shaped by rural poverty as well as by racial discrimination, namely African American farmers. The findings show that farmers in this study are vulnerable to drought given their relatively limited access to resources and risk management mechanisms. Climate forecasts can help these farmers move from coping strategies to deal with the effects of climate anomalies to proactive planning to anticipate and mitigate those effects.

**Link:** <http://www.sciencedirect.com/science/article/pii/S2212096314000047>

**Title:** Leveraging the climate for improved malaria control in Tanzania

**Author(s):** T. Dinku, A. Kanemba, B. Platzer, M.C. Thomson

**Summary:** While the potential usefulness of climate in health decision-making is increasingly recognized, few countries in Africa have the capability to routinely provide the health community with relevant, accurate and timely information that can readily be integrated into decision-support tools. This stalemate is beginning to change as new high-quality information services are being established in some African countries using a blend of quality controlled national observations and the



best available remote sensing and other products. This new approach, “Enhancing National Climate Services” (ENACTS), designed to improve the availability, access and use of climate data, includes generating historical rainfall and temperature data that have the potential to transform the capacities of national meteorological agencies in partnership with stakeholders and research collaborators. This article introduces the latest tools and services piloted by the Tanzania Meteorological Agency (TMA), with technical support from the International Research Institute for Climate and Society (IRI), in service to the national health community.

**Link:** <http://www.earthzine.org/2014/02/15/leveraging-the-climate-for-improved-malaria-control-in-tanzania/>

**Title:** The concept of Essential Climate Variables in support of climate research, applications, and policy  
**Author(s):** S. Bojinsk, M. Verstraete, T.C. Peterson, C. Richter, A. Simmons, M. Zemp  
**Summary:** Climate research, monitoring, prediction and related services rely on accurate observations of the atmosphere, land and ocean, adequately sampled globally and over sufficiently long time periods. This paper describes the rationale for Essential Climate Variables (ECVs) and their current selection, based on the principles of feasibility, relevance and cost-effectiveness. It also provides a view of how the ECV concept could evolve as a guide for rational and evidence based monitoring of climate and environment. Selected examples are discussed to highlight the benefits, limitations, and future evolution of this approach. The article is intended to assist program managers to set priorities for climate observation, dataset generation and related research, for instance within the emerging Global Framework for Climate Services (GFCS). It also helps the observation community and individual researchers to contribute to systematic climate observation, by promoting understanding of ECV choices and the opportunities to influence their evolution.

**Title:** A decade of climate scenarios – The Ouranos Consortium modus operandi

**Author(s):** D. Huard, D. Chaumont, T. Logan, M. Sottile, R.D. Brown, B. Gauvin St-Denis, P. Grenier, M. Braun

**Summary:** This paper discusses the experience and insights acquired at Ouranos over the last ten years in building climate scenarios in support to these impact and adaptation studies. Most of our work is aimed at making climate science intelligible and useful for end users, and the paper describes approaches to developing climate scenarios that are tailored to the needs and level of climate expertise of different user categories. Our experience has shown that a group of professionals dedicated to scenario construction and user support is a key element in the delivery of effective climate services.

**Link:** <http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-12-00163.1>

**Title:** Moving climate information off the shelf: boundary chains and the role of RISAs as adaptive organizations

**Author(s):** M.C. Lemos, C.J. Kirchoff, S.E. Kalafatis, D. Scavia, R.B. Rood

**Summary:** While research focusing on how boundary organizations influence the use of climate information has expanded substantially in the past few decades, there has been relatively less attention to how these organizations innovate and adapt to different environments and users. This paper investigates how one boundary organization, the Great Lakes Integrated Sciences and Assessments Center (GLISA), has adapted by creating “boundary chains” to diversify its client base while minimizing transaction costs, increasing scientific knowledge usability, and better meeting client climate information needs. In this approach, boundary organizations connect like links in a chain and together, these links span the range between the production of knowledge and its use. Three main chain configurations are identified. Each of these approaches represents an adaptive strategy

that both enhances the efficiency and effectiveness of participating boundary organizations' work and improves the provision of climate information that meets users' needs.

**Link:** <http://journals.ametsoc.org/doi/abs/10.1175/WCAS-D-13-00044.1>

**Title:** The role of climate forecasts in smallholder agriculture: lessons from participatory research in two communities in Senegal

**Author(s):** P. Roudiera, B. Muller, C. Roncolie, M.A. Soumaréf, L. Battég, B. Sultan

**Summary:** This article presents results from participatory research with farmers from two agro-ecological zones of Senegal. Based on simulation exercises, the introduction of seasonal and decadal forecasts induced changes in farmers' practices in almost 75% of the cases. Responses were categorized as either implying pure intensification of cropping systems (21% of cases), non-intensified strategies (31%), or a mix of both (24%). Impacts varied according to the nature of the actual rainy season, forecasts accuracy and the type of response, positive ones being higher in wetter years, with intensified strategies and with accurate predictions. These results validate prior evidence that climate forecasts may be able to help Senegalese farmers adapt to climate variability, especially helping them capitalize on anticipated favorable conditions. Realization of potential advantages appears to be associated with a context where there is greater varietal choice and options for intensification.

**Link:** <http://www.sciencedirect.com/science/article/pii/S2212096314000035>

**Title:** Weather matters for energy

**Author(s):** A. Troccoli, L. Dubus, Haupt, S.E. Haupt (Eds.)

**Summary:** This book aims to provide the meteorological knowledge and tools to improve the risk management of energy industry decisions, ranging from the long term finance and engineering planning assessments to the short term operational measures for scheduling and maintenance. Most of the chapters in this book are based on presentations given at the inaugural International Conference Energy & Meteorology (ICEM), held in the Gold Coast, Australia, 8-11 November 2011. The main aim of the conference was to strengthen the link between Energy and Meteorology, so as to make meteorological information more relevant to the planning and operations of the energy sector. The ultimate goal would be to make the best use of weather and climate data in order to achieve a more efficient use of energy sources. This book seeks to realise the same objective.

**Link:** <http://www.springer.com/environment/global+change++climate+change/book/978-1-4614-9220-7>

**Title:** Soil dust aerosols and wind as predictors of seasonal meningitis incidence in Niger

**Author(s):** C.P. García-Pando, M.C. Stanton, P.J. Diggle, S. Trzaska, R.L. Miller, J.P. Perlwitz, J.M. Baldasano, E. Cuevas, P. Ceccato, P. Yaka, M.C. Thomson

**Summary:** Epidemics of meningococcal meningitis are concentrated in sub-Saharan Africa during the dry season, a period when the region is affected by the Harmattan, a dry and dusty northeasterly trade wind blowing from the Sahara into the Gulf of Guinea. We used time series of meningitis incidence from 1986-2006 for 38 districts in Niger and tested models based on data that would be readily available in an operational framework. At the district level, the best spatio-temporal model included zonal wind, dust concentration, early incidence in December, and population density. We showed that wind and dust information, and incidence in the early dry season predict part of the year-to-year variability of the seasonal incidence of meningitis at both national and district levels in Niger. Models of this form could provide an early-season alert that wind, dust and other conditions are potentially conducive to an epidemic.

**Link:** <http://ehp.niehs.nih.gov/1306640/>  
<http://iri.columbia.edu/news/climate-conditions-help-forecast-meningitis-outbreaks/>



## upcoming events in the climate services community

### Regional meeting on climate risk management and adaptation to climate change in the Amazon region: a health perspective

**Lead organization(s):** Amazon Cooperation Treaty Organization, Panamerican Health Organization, World Health Organization, Ministry of Health, Brazil

**Date:** 26-28 March, 2014

**Location:** Belem de Pará, Brazil

**About:** At this meeting, member states of the Amazon Cooperation Treaty will come together to share their experiences and achievements in the area of climate risk management for public health. A special session will be geared toward the development of a Guide to Climate Risk Adaptation in the Amazon Region for Public Health.

### Association of American Geographers, annual meeting

**Lead organization(s):** Association of American Geographers

**Date:** 9-13 April, 2014

**Location:** Tampa, Florida, United States

**About:** This session seeks a critical engagement with the institutional governance of climate change adaptation by focusing on how adaptation policies are shaped, framed and ultimately implemented. Specifically, what conceptual approaches and governance mechanisms are most influential and why; what challenges/benefits do different scales of governance present; and how, or to what extent, is climate science used as decision support.

**Web link:** <http://www.aag.org/cs/annualmeeting>

### Data for Decision Makers: NCAR & UCAR research and partnerships summit

**Lead organization(s):** National Center for Atmospheric Research, University Corporation for Atmospheric Research

**Date:** 21-22 April, 2014

**Location:** Boulder, Colorado, United States

**About:** This event will feature world-leading researchers describing emerging technologies for renewable energy, highway safety, water management, wildfire prediction, air pollution, regional climate, health impacts, big data management, supercomputing, and more. This is a unique chance to preview emerging scientific and technological developments and to learn about research, licensing, and commercialization opportunities with us and our partners.

**Web link:** <http://us4.campaign-archive2.com/?u=289033ba2718c3aa3d2b2e76f&id=e8455e307d&e=22463c391f>

### Earth League annual workshop: The world under 2-4 degrees warming

**Lead organization(s):** Earth League, Climate Service Center, Germany

**Date:** 23-25 April, 2014

**Location:** Santa Fe Institute, New Mexico, United States

**About:** Earth League members and international scientists

working in research, policy, and in on-the-ground projects will come together to explore the impacts of and ways to prepare for a 2-4 degree temperature rise.

**Web link:** <http://www.the-earth-league.org/>

### European Geosciences Union General Assembly 2014

**Lead organization(s):** European Geosciences Union

**Date:** 27 April - 2 May, 2014

**Location:** Vienna, Austria

**About:** The EGU General Assembly 2014 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geosciences. The Face of the Earth theme intends to celebrate the diversity of geoscience processes and the great variety of associated forms, across all scales and from the core of the Earth to interplanetary space.

**Web link:** <http://www.egu2014.eu/>

### 31st Conference on Agricultural and Forest Meteorology

**Lead organization(s):** American Meteorological Society

**Date:** 12-15 May, 2014

**Location:** Portland, Oregon, United States

**About:** The 31th Conference on Agricultural and Forest Meteorology is sponsored by the American Meteorological Society and organized by the AMS Committee on Applied Climatology. It will be jointly held with the Second Conference on Atmospheric Biogeosciences.

**Web link:** <https://www.ametsoc.org/meet/fainst/201431agforest.html>

### Adaptation Futures 2014

**Lead organization(s):** Earth System Science Center of the National Institute for Space Studies, UNEP's Program of Research on Climate Change Vulnerability, Impacts and Adaptation

**Date:** 12-16 May, 2014

**Location:** Fortaleza, CE, Brazil

**About:** The conference will bring together researchers, policy makers, and practitioners from developed and developing countries to share insights into the challenges and opportunities that adaptation presents, and to share strategies for decision making from the international to the local scale. Early birds registration: 20 March 2014

**Web link:** <http://adaptationfutures2014.ccst.inpe.br/>

### Exploring how climate science can better inform adaptation and development decision making in the medium to long term

**Lead organization(s):** Red Cross/Red Crescent Climate Centre, UK Met Office

**Date:** 20-21 May, 2014

**Location:** Lusaka, Zambia

**About:** In May 2014, as part of a DFID/CDKN-funded Future Climate for Africa grant, the Climate Centre and the UK Met



Office will convene stakeholders in Zambia to facilitate dialogue on climate smart decision-making over the next 5-40 years. The workshop will feature a participatory game to enhance understanding and use of climate information for designing strategies for disaster resilience. Activities will aim at critically examining how to make climate science actionable so that decision-makers can make informed adaptation and development investments that are robust in the face of a range of outcomes in the medium to long-term future.

#### **Caribbean Climate Outlook Forum (CariCOF)**

**Lead organization(s):** Caribbean Institute for Meteorology and Hydrology

**Date:** 28 May, 2014

**Location:** Kingston, Jamaica

**About:** The CariCOF brings together climate experts and forecasters from the national met services and regional institutions within the Caribbean, as well as representatives from sectors impacted by hazards arising from seasonal climate variability. The sectoral stakeholders include international, regional and national public institutions and NGOs from the fields of disaster risk reduction, agriculture, food security and fisheries, water resource management, health, tourism and environmental sustainability.

A two-day, pre-COF technical training workshop for forecasters will build on the two previous training sessions in 2012 and 2013, with a focus on developing regional capacity in the Caribbean and Central America for seasonal drought and temperature forecasting products. The training is organized by CIMH and the International Research Institute for Climate and Society (IRI), in partnership with the Central American Regional Committee for Hydraulic Resources (CRRH), and supported by USAID, NOAA, WMO and Higher Education for Development (HED).

Following the COF, a workshop through the Integrating Climate Information and Decision Processes for Regional Climate Resilience (IRAP) project will focus on discussions and exercises meant to work through aspects of forecast interpretation, its implications, and related actions. Project partners include CIMH, IRI, University of Arizona, the US National Oceanic and Atmospheric Administration (NOAA), and the US Agency for International Development (USAID).

#### **AMS Summer Policy Colloquium**

**Lead organization(s):** American Meteorological Society

**Date:** 1-10 June, 2014

**Location:** Washington DC, United States

**About:** The Summer Policy Colloquium, presented by the American Meteorological Society Policy Program, brings a cohort of about 40 earth and atmospheric scientists from academia, government, and the private sector to Washington, D.C. for an intense, ten-day immersion in science policy.

**Web link:** <http://www2.ametsoc.org/ams/index.cfm/policy/summer-policy-colloquium/>

#### **21st Conference on Applied Climatology**

**Lead organization(s):** American Meteorological Society

**Date:** 9-13 June, 2014

**Location:** Denver, Colorado, United States

**About:** The 21st Conference on Applied Climatology is sponsored by the American Meteorological Society and organized by the AMS Committee on Applied Climatology. It will be jointly held with the 17th Symposium on Meteorological Observation and Instrumentation.

**Web link:** <http://www.ametsoc.org/meet/fainst/201421appliedclimate.html>

#### **Third Lund Regional-Scale Climate Modeling Workshop**

**Lead organization(s):** World Climate Research Program

**Date:** 16-19 June, 2014

**Location:** Lund, Sweden

**About:** The aim of the workshop is to review the overall and specific developments and progress in regional climate modeling over the last five years, to discuss pertinent open issues and challenges, and to provide input for new developments on the field.

**Web link:** <http://www.baltex-research.eu/RCM2014/>

#### **Society for Risk Analysis Europe Annual Meeting**

**Date:** 16 - 18 June, 2014, abstract deadline: 31 January 2014

**Location:** Istanbul, Turkey

**About:** The special theme of the conference is "Analysis and Governance of Risks beyond Boundaries." The conference aims to emphasize that risks are able to travel through the virtual boundaries labeled as "regions," "territories," and "countries." It also aims to promote recent scientific novelties in risk reduction and enhance inter-disciplinary approaches to develop new strategies in both evaluating and coping with well-known and less-known risks.

**Web link:** <http://www.sraeurope.org/home.aspx?pag=1252>

#### **14th European Meteorological Society Annual Meeting & 10th European Conference on Applied Climatology**

**Date:** 6-10 October, 2014

**Location:** Prague, Czech Republic

**About:** The theme of this year's EMS annual meeting is "creating climate services through partnerships." Several programs will be incorporated into the larger meeting framework, including ECAC – Applied climatology: developing climate services in partnerships, communication and education, numerical weather prediction, and the atmospheric system and its interactions.

**Web link:** <http://www.ems2014.eu/home.html>