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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 programmes 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.

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.

Editorial board: April Humble, Daniela Jacob, María Máñez Costa, Irene Fischer-Bruns (all GERICS)

networking with climate services

letter from the CSP Secretariat

The number of organisations, bodies and networks that span the broad climate services umbrella is huge and the amount of work we collectively carry out is extensive to say the least. However, in order to be effective in the work that we do and the impacts we have, there is an imperative for strong, intelligent and comprehensive networking. This includes strong networks between climate service providers, so that knowledge is coordinated and effectively gathered, shared and disseminated. Extensive networking is also essential between climate science, climate service and users, to ensure the needs of the users and the capabilities of the scientists are clear, improving both the effectiveness of the working relationship and the end results.

This year, we are seeing the birth of a number of strategies aimed at fostering such networking. I would like to bring your attention to two upcoming projects based within Europe that look to do exactly that.

The first is ERA4CS (European Research Area for Climate Services), which is a joint-call for networking and collaboration with climate services at a European scale. The call looks to support the development and enhancement of climate services through two approaches: 1) advanced co-development with users and 2) institutional integration. This will be primarily achieved through aiding scientific research for “developing better tools, methods and standards on how to produce, transfer, communicate and use reliable climate information”. ERA4CS serves as a significant contribution to the European Roadmap for Climate Services, which looks to create European leadership and a coherent framework and operating space for climate services. This ERA4CS represents a vital progression within Europe in advancing climate services for users and institutions, and may inspire, or serve as a prototype, for other regions to embark on similar ventures to improve their climate services.

There is also the ECOMS2 Action (European Climate Observations, Modelling and Services - 2), which was launched at the end of March (2016) and looks to both coordinate and support Europe's climate knowledge pool. The aim is to build capacity for stronger management of climate risks and opportunity. Within this, a European framework for Earth-system modelling and climate service activities will be developed, as well as the support of coordination and integration of European climate science and the enhancing of communication and dissemination activities with stakeholders.

Taken together, these actions highlight a recognition at a leadership level for the need to advance supportive structures to enable strong networking, wherever that be on a knowledge sharing to collaboration of activities basis. This signals a new phase in the progression of climate services.

There is one key area, however, that can be seen to be lacking within our climate service community network. And that is the involvement of climate scientists. The CSP network covers many different actors, from institutions, academic bodies to NGOs, covering a range of climate service providers and users. However, the involvement of climate scientists in CSP should be strengthened.

With this, I invite you to reach out to scientists in the fields of climate change, adaptation, environment, ecology, social sciences, law, economy and to related institutions to alert them to our network.

Daniela Jacob

Director of Climate Service Center Germany (GERICS)

Climate Action Hackathon for Vulnerable Communities in Africa

a conversation with Joost Hoedjes, the United Nations Development Programme

Weather and climate information doesn't reach Africa's most vulnerable communities. There's no weather channel, very limited early warning systems, and limited capacity in National Hydro-Meteorological Services (NHMS) to create rich targeted packages that could reach end-users.

In response to this problem, the United Nations Development Programme (UNDP) dedicated a multi-national [conference in Livingstone, Zambia](#), (15-17 March, 2016) to this subject of 'the Last Mile', that is simply put, the reaching out to end-users. Experts from around the world came to present strategies on data packaging, communications and smart innovative ways to address this.

In a notable side event, UNDP partnered with the Brown Institute for Media Innovations – a bi-coastal collaboration between Stanford's School of Engineering and Columbia's Graduate School of Journalism – and the International Research Institute for Climate and Society (IRI) to create a Hackathon.

The idea for this was born one cold spring night last year over dinner in an Irish pub in New York, as my UNDP colleagues and I were struggling with these very challenges. One thing at the time was clear; innovative thinking would be needed to turn raw data into user-focused information products that could actually reach end users in a meaningful and impactful way. After the nth pint of Goodness, we figured we'd solved it. The Climate Action Hackathon. Let's get a group of talented developers in a room together, provide them with the type of data most NHMSs have, and see the ideas they come up with to this challenge.

We had a total of 117 applications, from across sub-Saharan Africa, India, Turkey, China to Oxford, with a strong female contingent. Africa's challenges require home-grown solutions, and we were thrilled that so many Africans also applied. It was an amazingly ambitious and skilled pool of young talent. For the top 25 applicants, travel scholarships to Livingstone were offered by the UNDP Programme on Climate Information for Resilient Development in Africa (CIRDA).

The first challenge was to give them a crash course on meteorology, hydrology and the challenges National Met Services in Africa face. Country presentations gave the participants insights into the needs, roadblocks and challenges that NHMS encounter. Presentations from international experts, NHMS and practitioners showed them possible ways forward, as did a [Project Brief](#) we shared with participants on our Slack and Github developer platforms.

It's not enough to just have a bunch of smart and energetic kids with a decent internet connection. They need data! Data experts and representatives from data providers, such as IRI, aWhere Weather, Earth Networks, UBIMET, GEONETCast and the Zambia Meteorological Department were on hand to answer the developers' questions. Crucially, most of these

provided their APIs for the developers to use, giving them the kind of data and information a typical NHMS will have at its disposal.

The developers, who were grouped into five teams, were given 27 hours to develop and present a prototype of their application. During these 27 hours, there was a lot of interaction between the developers and the data providers, practitioners and experts. All of the teams were still coding away long past midnight, and a number of developers continued through the night, working to meet the 11:30 deadline.

The skills, motivation and drive of the participants resulted in five very useful, realistic and pragmatic applications. One app used simple design and processes to provide farmers with a call-in mobile app that provided real-time weather information voice messages in local languages. Other applications included a visualisation and risk-management app that agricultural extension workers could use to easily analyse weather data; a mapping app that African pastoralists could connect with to avoid hazards such as floods and wildfire; and a text app that would allow agricultural extension agents to register farmers to receive tailored texts on weather conditions.

It's amazing to feel the kind of enthusiasm for weather and climate information services that we've experienced during the Hackathon. And even more amazing to realise that most of the applications that were developed can be implemented by NHMS. Although the on-site event has ended, the Climate Action Hackathon will continue online until the 1st of June. After that, together with our country partners, we will help put the best ideas into practice.

You can view the Hackathon overview [here](#).

For more information on the project proposals, briefs and product introductions see: [Climate Action Hackathon Blog](#). The Project Brief can also be viewed [here](#).

Joost Hoedjes is a Country Support Specialist on Hydrology for UNDP's [Programme on Climate Information for Resilient Development in Africa \(CIRDA\)](#), which supports Climate Information and Early-Warning Systems Projects in 11 of Africa's Least Developed Countries in their missions to save lives and improve livelihoods.



Photo: UNDP

a conversation with Madeleine Thomson, International Research Institute for Climate and Society



Madeleine Thomson
WHO Collaborating Centre on Malaria Early Warning Systems and Other Climate Sensitive Diseases at the International Research Institute for Climate and Society (IRI), Earth Institute, Columbia University.

What does your organisation do?

We look at how knowledge and information about the climate can improve health decision making, particularly in developing countries. There is a focus on vector-borne diseases [vectors include mosquitoes and ticks], but we have also been working on other diseases related to environment and climate, including meningococcal meningitis in the Sahel.

How are Zika virus and the climate related?

We know that virtually all vector-borne diseases have a climate dimension. Temperature drives the rate at which vectors and pathogens [things that cause disease, such as viruses and bacteria] develop, while rainfall often supports the creation of sites for the vectors to breed. A lot of work has already been done on the relationship between dengue and climate, looking at rainfall and temperature and at how El Niño and La Niña have an impact. The vectors for dengue are *Aedes aegypti* and *Aedes albopictus* mosquitoes. This is a starting point for Zika, as it shares the same vectors. *A. aegypti* is an urban mosquito that breeds in containers where fresh water might collect, from flower vases to water drums to broken coconut shells. It is found only in tropical and subtropical regions. *A. albopictus* has the potential for a slightly broader geographic range as its eggs can survive long periods in a dormant state.

How easy is it to predict what and where the next big epidemic will be?

The recent expansion of the *A. aegypti* and *A. albopictus* mosquitoes is very much associated with globalisation – activities like the movement of shipping containers around the world, air travel, population movement, forest clearing and urbanisation.

We have to expect more of this type of emergence: new diseases that were historically isolated (and therefore didn't have a big impact) which can spread very rapidly and have a huge impact on a large community. Zika is not the last. There'll be others, but predicting exactly what, where and when is really difficult. Instead we need to prepare ourselves to be able to respond rapidly to a broad range of possible threats.

How will climate change affect the frequency and severity of epidemics?

We have to look at climate change in the context of all the other changes that are going on. Yes, it will have an effect, but the key question is how important that effect will be relative to other things that are happening. That is quite challenging. For instance, in the highlands of eastern Africa or of Latin America you don't get transmission of dengue or malaria above a certain altitude because it is too cool. Those areas will definitely start to be exposed to transmission as temperatures rise in association with climate change.

People have low immunity in areas where you don't have prior transmission and therefore you can get explosive epidemics of diseases that people are already pretty familiar with in other parts of the world. But it also depends on other factors, including whether areas are highly populated or not and whether there is the capacity to respond rapidly.

How can climate scientists help the world prepare better for future epidemics?

Climate scientists have to be interested in how their science can benefit society in a practical way. Then they have to really look at the timeframe of decisions. Climate variability, which includes the impact of El Niño and La Niña, has a significant short-term impact on global temperatures and regional rainfall. Longer-term trends in climate (including those associated with human-induced changes) interact with this variability, meaning that, while likely changes in 50 or 100 years' time are well-understood for some regions, making predictions for the next 5 to 15 years is very difficult. And this is the timeframe often requested by decision makers.

People are often asked questions around climate change, but if you are down in the weeds as a malaria, dengue or Zika control person, you are really largely dealing in the timeframe of climate variability. What is happening now? What happened last year? What might happen next year in this particular locality? However, policy makers still need to be aware of what the longer-term trends might be so they can build the institutional capacity needed to respond effectively down the line. You need climate scientists who are able to support decision makers across a range of time and spatial scales.

What's the one change you'd make in the world to make us better prepared for epidemics?

I would incorporate some fairly straightforward information on climate and environmental disease drivers in all epidemiological training that happens around the world. Outbreak response people can work with partners in countries to get the best data, but if the health sector doesn't understand the issues, particularly around climate variability and change, then it's very hard for them to use the information effectively.

This Q&A originally appeared on the Wellcome Trust blog, accessible [here](#).



Photo: Rattikankeawpun (freedigitalphotos.net)

community spotlight

a conversation with Sabine Nallinger, Stiftung 2°



Sabine Nallinger,
Managing Director,
Stiftung 2°
(Foundation 2°)

Tell me a bit about what the German Stiftung 2° does, and the ways in which it is involved with the wider climate services community.

The Stiftung 2° is a politically independent, cross-sector organisation. It is more than merely an alliance between different companies. It is a platform for proactive cooperation that makes it possible to develop joint, solution oriented responses to questions surrounding corporate climate protection. Our sole and overriding objective is to promote climate protection and the sustainable use of natural resources and environmental systems. We work to support politicians in implementing effective market-based conditions for climate protection and tap into the expertise of German entrepreneurs in order to find solutions in this area.

What was Stiftung 2°'s involvement in COP21?

The Stiftung 2° was partner of the "Train to Paris" – a specially chartered Deutsche Bahn train to the world climate conference in Paris. Passengers on board the train included the German delegation with the Federal Minister for the Environment, as well as a whole host of other conference participants from NGOs, businesses, civil society and the media. On a national level, Stiftung 2° participated in the broad-based participatory process concerning the German Climate Action Plan 2050 launched by the Federal Government in light of the results of the 2015 climate conference in Paris.

What was your reaction to the COP21 outcome?

The clear signal of the Paris summit is an important milestone on the way to a lowcarbon, eco-friendly 2°-economy. The companies that make up Stiftung 2° are aware of their responsibility and support effective, market-oriented climate protection. Businesses have a key role in implementing climate protection targets.

In 2015, Foundation 2° launched its decarbonisation initiative, concentrating on five areas of action: Switching to renewable energies, cutting energy consumption, increasing resource efficiency, climate-friendly transport and increasing climate-friendly investment.

With our business practices, we are supporting Germany to reach the upper range of its climate protection target, namely a 40 per cent reduction in GHG emissions by 2020 and a 95 per cent reduction by 2050.

How do you feel this effects mitigation efforts on a business level?

Corporate climate protection offers many opportunities to innovative companies with a long-term outlook. Sustainable business practices don't just cost money; they help save it, too. The prime examples are energy costs, climate-friendly investments and low-carbon innovations that ensure the viability of the companies. The overall objective is to break the link between economic growth and GHG emissions. Within our foundation, the companies together with the Climate Service Centre Germany (GERICS) in Hamburg have looked at the economic effects of global warming on their businesses. As a result climate mitigation is set higher on their agenda.

What future plans do you have around mitigation and other climate actions?

Within the Stiftung 2°, the companies will continue to advance their climate-friendly business practices in a systematic, quantifiable and transparent manner. The work of the foundation and its member companies from a range of sectors will concentrate on the implementation of our decarbonisation initiative, paving the way to a low-carbon economy. And, of course, we invite other companies to join us on our path!

Stiftung | 2°

Deutsche Unternehmer
für Klimaschutz

Copernicus Climate Change Service Sectoral Information System projects underway

Copernicus Climate Change Service (C3S)

Sectoral Information Systems (SIS) proof of concept projects have begun for the Copernicus Climate Change Service (C3S). The SIS will be the shop window for the C3S climate data store, where tools and products will be developed and tested directly with users from the sectors for whom Copernicus wishes to provide.

From these proof of concept projects and based on their interactions with users, C3S will select a set of tailored sectoral climate indicators to be routinely produced and visualised. The service will also support the tools and promote best practices needed by these sectors to take advantage of the C3S climate information to enhance their businesses. There are seven proof of concept projects, they focus on water, energy, insurance, agriculture and infrastructure and health sectors.

Each of the proofs of concept is run by a consortium of organisations that bring sector-specific expertise to the projects. These include:

- > The Swedish Meteorological and Hydrological Institute (SMHI): SWICCA (Water) and UrbanSIS (Infrastructure & Health) projects
- > The University of East Anglia: the European Climatic Energy Mixes (ECEM) project (Energy)
- > Telespazio: Agriclass project (Agriculture)
- > CGI: Wind Storm Climate Service (WISC) project (Insurance)
- > Centre for Ecology and Hydrology (CEH): End-to-end Demonstrator for Improved Decision Making in the Water Sector in Europe (EDgE) project (Water)
- > Le Laboratoire des Sciences du Climat et de l'Environnement (LSCE): Clim4energy project (Energy)

Copernicus is the European Commission's flagship Earth Observation programme that delivers data and information services freely and openly.

More information on Sectoral Information System proof of concept projects is available on the Copernicus Climate Change Service website [here](#).

Contact point: Silke.Zollinger, Press & Events Manager Copernicus, ECWMF (Silke.zollinger@ecmwf.int)

Latin American Observatory's (OLE2) Datoteca Center for Scientific Modeling & International Research Institute for Climate Society

The Latin American Observatory's Datoteca was recently launched as a collaborative effort between the Center for Scientific Modeling (CMC, Zulia University) and the International Research Institute for Climate and Society (IRI). The Datoteca, a local Spanish-speaking incarnation of IRI's Data Library, offers an in-the-cloud interface with a Situation Room that presents climate information at different timescales, from historical behaviour of key variables to one-week extreme rainfall forecasts, sub-seasonal products and high-resolution seasonal predictions made by the Observatory itself.

The probabilistic seasonal forecasts of accumulated rainfall, frequency of rainy days, minimum, mean and maximum temperature are statistically corrected to be consistent with the observed climatology, and involve both observed and dynamical model predictors. This forecast process has been standardised and automated. The products are available on the 10th day of every month via interactive maps and a *Bulletin* in video format, after a technical discussion has been carried out by the different members of the Observatory (National Met Services and Research Institutes in Latin America).

In addition to the Situation Room, the Datoteca also includes a *Validation Room* for the Observatory's seasonal forecasts, offering different metrics to identify when and where these products are more skilful. Other datasets, for example high resolution dynamically-downscaled simulations, are provided for more research-oriented purposes.

The resources are freely available to everyone and can be accessed using any internet-capable device. The Datoteca represents an important step forward in the Latin American Observatory's policy for providing scientifically-based actionable climate information for decision-makers. You can view the Datoteca [here](#).



Climateurope

Met Office

The climateurope project had its kick-off meeting in Paris in January, 2016. The funding for climateurope has come through the European Commission's Horizon 2020 programme.



The aims of this five-year project are to coordinate and support Europe's knowledge base, to enable better management of climate-related risks and opportunities and create greater social and economic value. This will be achieved by forming a network of European, national and international activities and organisations in the fields of Earth-system modelling and climate services. This network will enhance the exchange of knowledge and information between suppliers and users from the public sector, businesses, industry and society. Some key activities already taking place in this network are the Copernicus Climate Change Service, the Climate-KIC, the JPI-Climate and its recently launched ERANET for climate services, and the European Network for Earth System modelling.

To achieve these aims, climateurope will facilitate coordination across European initiatives, including research projects under Framework Programme 7 and Horizon 2020. It will establish multi-disciplinary expert groups to assess the state-of-the-art in Earth-system modelling and climate services in Europe, and identify existing gaps, new challenges and emerging needs. It will also conduct a series of events to bring the network together and enhance communication with stakeholders. The project consortium for climateurope comprises 11 key organisations across eight European countries and is led by the Met Office.

For more information, see [here](#).

Contact: Chris Hewitt (chris.hewitt@metoffice.gov.uk).

IMPADAPT PROJECT – IMPACT and ADAPTION to global change in water resources systems in SPAIN

Research Institute of Water and Environmental Engineering of the Technical University of Valencia

The IMPADAPT project, led by M. Pulido-Velazquez from the Research Institute of Water and Environmental Engineering (IIAMA) of the Technical University of Valencia (UPV), and financed by the Spanish National Research Plan 2013-2016, aims at developing new methods and tools to investigate the

impact of global change in water resources systems. It also intends to support the design of adaptation strategies using an integrated approach to improve the current practices in water resources planning and management. The project has a clear interdisciplinary focus (hydrology, economics, urban hydraulics, agronomy, statistics, system analysis, ecology, etc.), integrating several teams within each sub-project to strengthen an investigation of significant practical interest and international dimension.

The project will develop a decision support system using hydro-economic models for the design of adaptation strategies, including multiple (hydrologic, economic, energetic, agronomic and environmental) impacts and policies (including economic instruments). Participatory approaches are used to assess vulnerabilities, develop future demand scenarios (scenario building workshops), and define a locally-defined catalogue of adaptation measures. The measures are characterised in terms of cost and efficiency, and river basin simulations models are used to assess the environmental and economic impact of different combinations of measure. Finally, optimisation models contribute to the selection of least-cost measures under a multi-criteria approach.

The research will focus on the adaptation of a complex river basin such as the Jucar basin and its decisive interaction with the Mancha Oriental aquifer, in which global change brings in new management challenges. The integrated approach for scenario generation, impact assessment, and adaptation to a broad range of system typology represents an innovative objective.

For more information see [here](#).



Photo: artur84 (freedigitalphotos.net)

Enlightening the environment and development issues in the Mediterranean

Plan Bleu

Plan Bleu studies solutions towards a more sustainable development.

The Plan Bleu - observation, analysis and prospective center - was implemented in the late seventies in the framework of the Mediterranean Action Plan of the United Nations Programme for the Environment and the Convention for the protection of the Marine environment and Coastal Region of the Mediterranean (Barcelona Convention).

It is now widely recognised that the Mediterranean region is a hot spot of climate change. According to the IPCC, it is expected a temperature rise of 2 to 3°C in the Mediterranean region by 2050, and from 3 to 5°C by 2100. In this scenario, summer rainfalls could decrease by 35% on the southern rim and by 25% on the northern rim by the end of the century (Giorgi 2007).

Mediterranean countries are already facing important issues of water stress, desertification, biodiversity decline and extreme climate events such as floods and droughts. Climate change will most probably worsen these problems, causing significant human and economic losses.

As climate change impacts and adaptation would be one of the major issues for sustainable development progresses Plan Bleu has been participating in several projects in order to support Mediterranean countries in their effort to define and implement climate change adaptation policies.

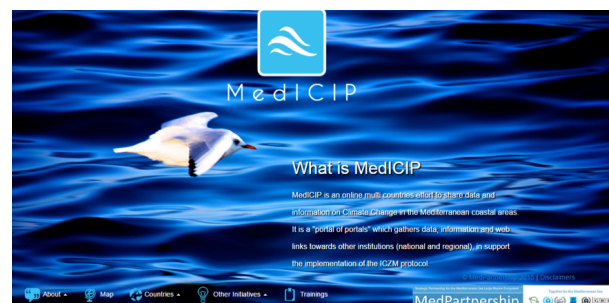
Beyond projects, Plan Bleu highly contributes to the works on the adaptation to climate change in the Barcelona Convention's framework. It is involved in the drafting of the revised Mediterranean Strategy for Sustainable Development (MSSD), recently adopted in February 2016 in Athens. Objective 4 of this strategy concerns climate change.

Thematic Areas of Structure of the Mediterranean Strategy for Sustainable Development (MSSD):

- > Seas and Coasts
- > Natural Resources, Rural Development and Food
- > Climate Change
- > Sustainable Cities
- > Transition Towards a Green Economy
- > Governance

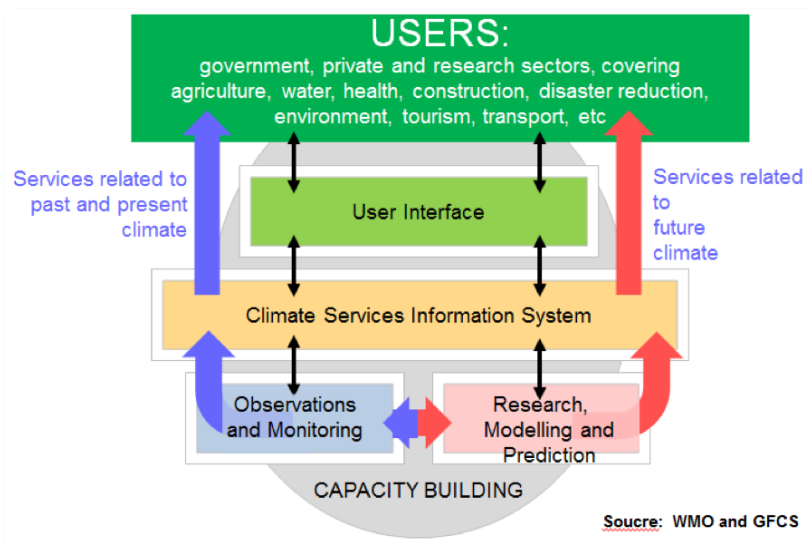
A Regional Framework for Adaptation to Climate Change for Coastal and Marine zones has been endorsed by contracting parties of the Barcelona Convention during the same conference in Athens. Within this framework, Plan Bleu develops tools to support decision making process. Last year, it developed with Acclimatise and MedSea foundation a coastal risk index at regional level and for the Tetouan region in Morocco.

Another example of a tool that Plan Bleu has developed with UNEP/GRID in Geneva is the Mediterranean Integrated Climate Integrated Platform (MedICIP).



MedICIP is an online multi-countries effort to share data and information on climate change in Mediterranean coastal areas. It is a "portal of portals" which gathers data, information and web links towards other institutions (national and regional), in support the implementation of the Integrated Coastal Zone Management protocol.

For more information see [here](#).



Title: Components of the Global Framework for Climate Services (GFCS): to inform on adaptation

Climate Services Ethics: Invitation for case studies for the CSP

Climate Service Partnership

The CSP Working Group on Climate Services Ethics is soliciting case studies on ethical quandaries or dilemmas that you or your organization have or may have faced with regards to the production or use of climate information. Case studies can be short, and will contribute to a review of current challenges and practice in the community. For more information, or to contribute, please contact Cathy Vaughan at cvaughan@iri.columbia.edu.



**European Research Area
for Climate Services**

Launch of the European ERA4CS Joint Call on Researching and Advancing Climate Services Development

JPI Climate

The ERA-NET Consortium "European Research Area for Climate Services", so-called ERA4CS, is an initiative of [JPI Climate](#). After two years of preparation with 45 European partners building this large scale consortium the call opened on 1st March.

The overall objective of this call is to enhance user adoption of, and satisfaction with, climate services (including adaptation services). Improving the quality of climate services is also within the scope of this call. At the same time ERA4CS aims to improve the scientific expertise on climate change risks and adaptation options, and to connect that knowledge with decision-making.

In order to research the overall objective, the aim is to research and advance climate service development by supporting scientific research for developing better tools, methods and standards on how to produce, transfer, communicate and use reliable climate information to cope with current and future climate variability and change across national boundaries

The present joint call will be funded by ERA4CS partners from 18 countries, contributing either by cash funding or by in-kind resources, alongside co-funding by the European Commission.

A total budget of about €72million has been provisionally allocated for this call to support three years of research projects.

Proposals should address only one of the following Topic (A or B), if compliant with eligibility:

- > **Topic A**- Advanced co-development with users, supported in cash by 13 national Research Funding Organisations (RFOs)
- > **Topic B** - Institutional integration between 30 predetermined Research Performing Organisations (RPOs)

More information can be found [here](#).



Coordinator of ERA4CS, Patrick Monfray (ANR) at the kick-off meeting in Paris on January 2016

Towards a Lightning Early Warning System in northern South America

Center for Scientific Modeling (University of Zulia) and the International Research Institute for Climate and Society (Columbia University)

A research team from the Center for Scientific Modeling (CMC, University of Zulia) and the International Research Institute for Climate and Society (IRI, Columbia University) recently showed that lightning activity can be skillfully forecasted at seasonal scale, up to a few months in advance. The Catatumbo region, in northern South America, is the place in the world with the highest number of lightning events per area per year. It has been estimated that it is about three times more probable for a person to be struck by a lightning discharge in Catatumbo than in the continental United States. Besides the obvious implications for human safety, lightning discharges also impact important economic activities in the region: Such as the death or injury cattle in one of the most productive regions of Venezuela in terms of meat and dairy, or delaying or interrupting oil and natural gas exploitation in a country that holds the world's largest proven oil reserves (~20% of global reserves).

The research, published in January, sets the basis for the Sistema de Vigilancia y Pronóstico de la Cuenca del Lago de Maracaibo, or SIVIGILA, a recently proposed lightning early warning system in northern South America, the first of its kind. More information can be found in Spanish [here](#). The corresponding research paper can be found (in English) [here](#).

Updates from the Red Cross/Red Crescent Climate Centre

Red Cross Red Crescent

German-supported Forecast-based Financing (FbF), for which the Climate Centre provides technical assistance, was top of the agenda at a two-day meeting in Brussels March 3–4 of the EU's top humanitarian policy forum: the 'Council Working Party on Humanitarian Aid and Food Aid' (COHAFA).

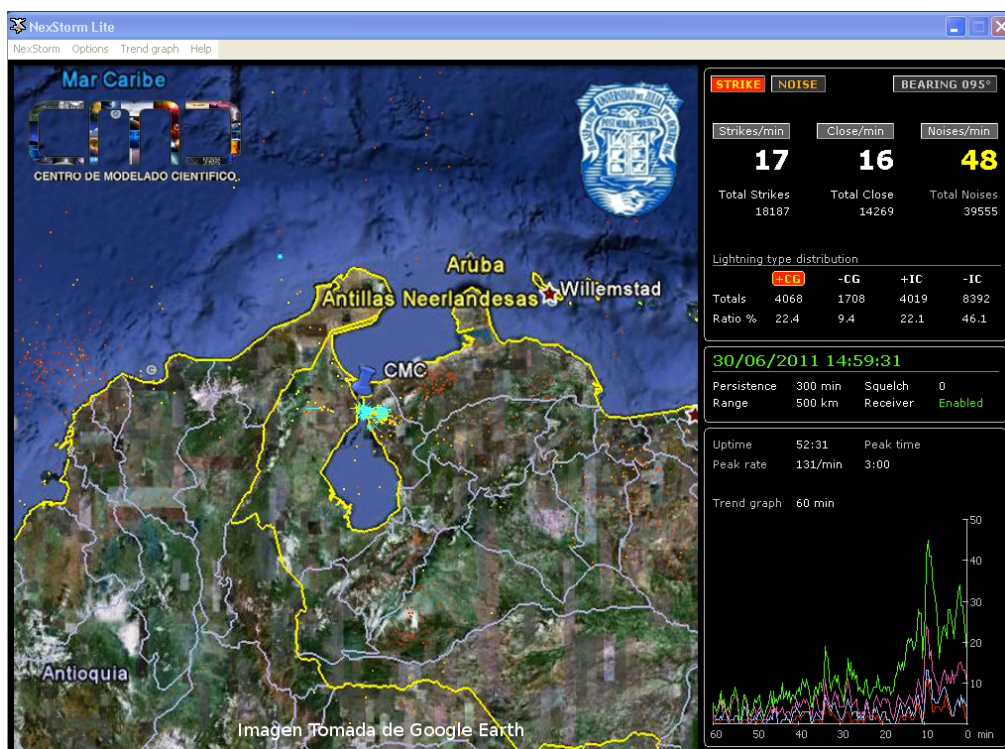
German Red Cross specialists were for the first time introducing the FbF operational model to representatives of all 28 EU member states at COHAFA, which meets monthly and is the main arena for debate on humanitarian issues between them and the European Commission.

FbF has now been rolled out by the Red Cross in the field in response to forecast triggers in Uganda and Peru, and elsewhere by the World Food Programme as part of its Food Security Climate Resilience Facility.

"We all know that humanitarian funding is often available when a disaster strikes and suffering is almost guaranteed," their presentation said. "The opportunity is that many humanitarian actions could be implemented in the window between a forecast and a disaster.

"Our answer regarding an anticipatory humanitarian system: Forecast-based Financing."

In Peru most recently, the Red Cross assisted 2,000 families as part of its own FbF programme as heavy rain and flash floods blamed on El Niño swept across more than half the country's administrative regions. The Red Cross FbF work is being piloted in vulnerable areas of northern Piura and Lambayeque regions.



Seasonal forecasts at the end of 2015 and more recent short-term forecasts triggered humanitarian actions that included potable water, fumigation against the mosquitoes that carry dengue fever, hygiene kits and drainage. A special FbF training workshop and field exercise on emergency shelter was held in late February by the Red Cross branch in the Lambayeque capital, Chiclayo.

Image: from "Towards a Lightning Early Warning System in northern South America"

At the end of last year, meanwhile, after a storm swept across the UK and set a national 24-hour rainfall record in North-West England, a real-time analysis by scientists working with the World Weather Attribution (WWA) program, coordinated by Climate Central, found that global warming had boosted the odds of the extreme-rainfall event by some 40 per cent. The study didn't address factors that influence flooding, however, such as homes built on flood plains and infrastructure like paved surfaces that cause run-off. "Extreme-event attribution can provide valuable information to decision-makers faced with tough questions about changing risks," said Maarten van Aalst, the director of the Climate Centre – a WWA partner along with the Universities of Oxford and Melbourne and the Royal Netherlands Meteorological Institute.

Developing climate services in China Climate Science for Service Partnership China

China and the United Kingdom are jointly working together to develop China's climate services through the Climate Science for Service Partnership China (CSSP) programme. CSSP is comprised of five separate work packages that together build the basis for services to support climate and weather resilient economic development and social welfare in China, and support the China Framework for Climate Service.

The Translational Science for Developing Climate Services in China (TSDCS-China) is Work Package 5 and aims to bridge gaps and communications between diverse sets of users and providers. Information providers do not often communicate with users from different sectors, and as a result, do not understand users' needs, information preferences or priorities and decision contexts. Users are often unaware of the existence and value of current information products and/or may not be able to access or interpret them as presented. Translational science is

needed to turn the development and communication of information products into ethical climate services that are more co-developed and user-driven than traditional forms of information provision.

TSDCS-China will do this by engaging a diverse set of stakeholders to analyse what information providers understand about different users, and what users across different sectors - agriculture, water, energy and urban areas - want and need in terms of weather and climate information. It will provide recommendations to the other work package areas of CSSP to support the evolution of China's climate services.

TSDCS-China is run by the INTASAVE-CARIBSAVE Group. It is supported by the UK Newton Fund, of which the UK Met Office has been selected as a delivery partner. Under the Newton Fund, the UK Met Office is leading the five-year CSSP programme in partnership with the Chinese Meteorological Administration and the Institute of Atmospheric Physics at the Chinese Academy of Science.

More information can be found [here](#).

El Niño Conference Report Released International Research Institute for Climate and Society

The El Niño 2015 Conference Report is now available. Since early 2015, experts have monitored the development of one of the largest El Niño events of the last 50 years, and notably, the largest since the 1997-98 El Niño that shocked global food, water, health, energy and disaster-response systems and erased years of development gains. In November 2015, the International Research Institute for Climate and Society at Columbia University, in collaboration with the World Meteorological Organization, the U.S. Agency for International Development and the U.S. National Oceanic and Atmospheric Administration convened the El Niño 2015 Conference.

The event brought together physical scientists, social scientists, forecasters, development professionals and journalists from governments, academia, humanitarian agencies and the private sector to share perspectives on the transformation of climate forecasts to climate services in the past two decades. The two-day gathering provided a platform for strategic dialogue to evaluate the big picture and ask questions related to El Niño, extreme events and variability on multiple time scales, including long-term climate change. In addition to recordings and summaries of the talks and panels, the conference report features participant interviews, social media interactions and conference feedback. An online version of the report is available [here](#). More information on the conference, including a printable PDF version of the report, is found [here](#).

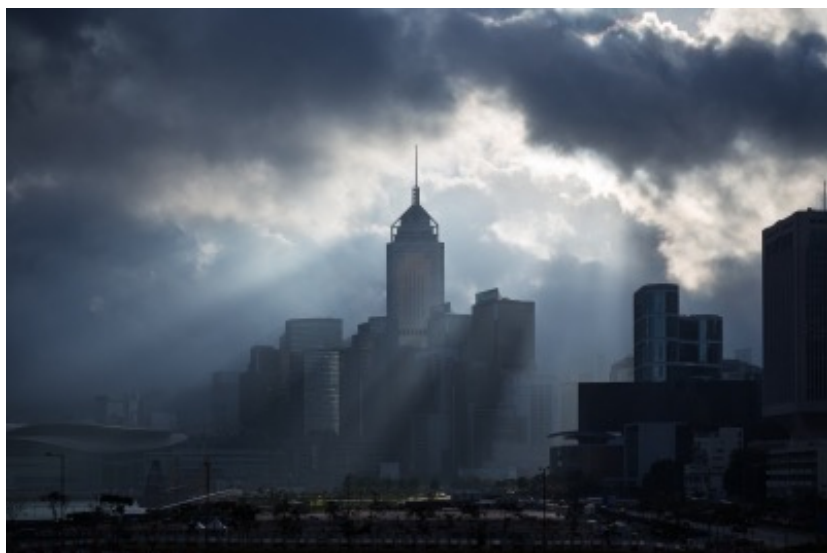


Photo: Tuomas_Lehtinen (FreeDigitalPhotos.net)

El Niño related climate services benefit from regional observations in ICA&D

World Meteorological Organization

Regional climate observations are indispensable for developing climate services in response to the effects of the El Niño. Past events illustrate the specific signature of the El Niño on sectors such as water management, agriculture and health, as can be seen [here](#). These regional observations help to assess the significance and timing of the anomalies as illustrated in the example for western South America below. The observations available in the International Climate Assessment & Dataset (ICA&D) are used to put the recent the El Niño event in a historical perspective. For central Chile the maximum monthly precipitation during the current the El Niño occurred later in the year compared to previous the El Niño events and the amount of precipitation was lower (see figure), indicating that for this region the 2015/2016 the El Niño was not as severely wet as previous ones.

ICA&D systems currently exist in Europe (based at KNMI, the Netherlands, with > 10.000 stations), Southeast Asia (based at BMKG, Indonesia, with > 3800 stations) and Latin America (based at CIIFEN, Ecuador, with > 1200 stations). These web-based information systems contain long-term daily time series of basic climate observations provided by the participating National Meteorological Institutes in the region, and include series for precipitation, temperature, etc. Also, user-relevant climate indices are provided which are derived from the daily data, focusing on droughts, heat waves, and heavy rainfall events. Users have access to plots of time series and maps of climate indices, trends, or deviations from climatology. All information and part of the underlying daily data can be downloaded for non-commercial research and educational purposes and is updated on a regular basis.

More information about the ICA&D can be read [here](#).

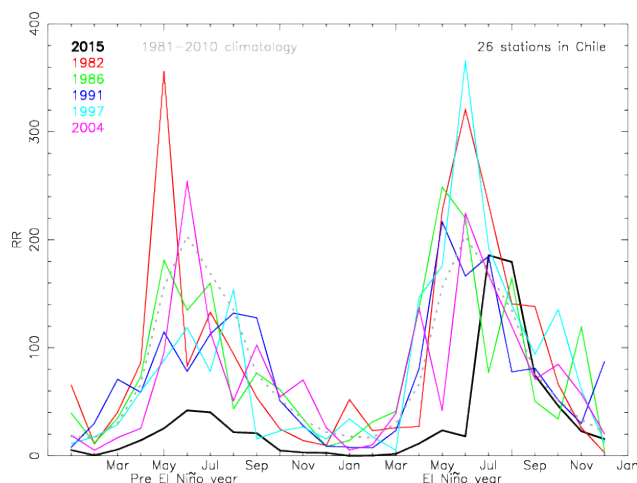


Figure: Monthly precipitation amount averaged over 26 meteorological stations in central Chile for the 2015/2016 El Niño (black) and for previous El Niño's (colours). The climatological mean is shown in grey.

14th Annual Climate Prediction Applications Science Workshop (CPASW): Summary & Outcomes

NOAA National Weather Service and the University of Vermont

On 22-24 March, 2016 the 14th Annual Climate Prediction Applications Science Workshop (CPASW) was held in Burlington, VT co-hosted by the NOAA National Weather Service and the University of Vermont (UVM), spearheaded by the Vermont State Climatologist, Dr. Lesley-Ann Dupigny-Giroux. The theme of the meeting was "Climate Services for Addressing Environmental Risks and Hazards." The goal was to bring together scientists and stakeholders working at local to global-scale scales as they make decisions related to threats to human health, environmental hazards, flooding and other hydro-meteorological hazards in urban, rural, and coastal areas.

As Mr. Filipe Lúcio, Director of the Global Framework for Climate Services of the WMO, so eloquently put it, we need to move from data to information to knowledge to wisdom.

The workshop was organised into a number of applied climate and weather-related sessions that ranged from food resilience, human health, flooding and coastal inundation to disaster risk assessment and management, to regional/local user engagement and ways of localising climate information. A number of over-arching themes emerged from the engaging presentations and stimulating discussions that took place over the three days. These included:

- > The need to engage with stakeholders in a true dialogue to better understand their decision making requirements, prior to addressing them;
- > By so doing, scientists and stakeholders will effectively shift the paradigm into the meaningful co-production of new knowledge.
- > The appreciation that many stakeholders are very conversant with probability, risk and uncertainty and that scientists should communicate our current knowns and unknowns in a clear and non-condescending way;
- > The understanding that decision making occurs locally and the challenge becomes meeting that need in the most scientifically appropriate manner;
- > That the cultural divide to the dissemination and meaningful use of climate data and information is a global challenge;
- > Our climate information and tools should be "useful, useable and used"
- > Scientists need to identify, appreciate and work to address gaps and shortfalls in existing forecasts and their skill, modeling approaches and their results, and the continuum of users who demand varying level of sophistication in the products and tools that are available;
- > The need to expand our use of indicators of climate that are available in related sectors such as fisheries, phenology and transportation infrastructure.

More information on the event can be found [here](#).

CPASW 2017 will be held in Anchorage, Alaska. We hope to see you there to continue the dialogue started in Vermont!

recent publications

the latest publications from the CSP community

Title: Evaluation of an early-warning system for heat wave-related mortality in Europe: implications for sub-seasonal to seasonal forecasting and climate services

Author(s): Lowe, R., García-Díez, M., et al.

Summary: Heat waves have been responsible for more fatalities in Europe over the past decades than any other extreme weather event. However, temperature-related illnesses and deaths are largely preventable. Reliable sub-seasonal-to-seasonal (S2S) climate forecasts of extreme temperatures could allow for better short-to-medium-term resource management within heat-health action plans, to protect vulnerable populations and ensure access to preventive measures well in advance. In this study, an assessment was carried out on the extent to which S2S climate forecasts could be incorporated into heat-health action plans, to support timely public health decision-making ahead of imminent heat wave events in Europe. Forecasts of apparent temperature at different lead times (e.g., 1 day, 4 days, 8 days, up to 3 months) were used in a mortality model to produce probabilistic mortality forecasts up to several months ahead of the 2003 heat wave event in Europe. Results were compared to mortality predictions, inferred using observed apparent temperature data in the mortality model.

In general, it a decreasing transition in skill was found between excellent predictions when using observed temperature, to predictions with no skill when using forecast temperature with lead times greater than one week. However, even at lead-times up to three months, there were some regions in Spain and the United Kingdom where excess mortality was detected with some certainty.

Link: <http://www.mdpi.com/1660-4601/13/2/206>

Title: Selecting climate simulations for impact studies based on multivariate patterns of climate change

Author(s): Mendlik, T. & Gobiet, A.

Summary: In climate change impact research it is crucial to carefully select the meteorological input for impact models. A method for model selection was presented that enables the user to shrink the ensemble to a few representative members, conserving the model spread and accounting for model similarity. This is done in three steps: First, using principal component analysis for a multitude of meteorological parameters, to find common patterns of climate change within the multi-model ensemble. Second, detecting model similarities with regard to these multivariate patterns using cluster analysis. And third, sampling models from each cluster, to generate a subset of representative simulations. We present an application based on the ENSEMBLES regional multi-model ensemble with the aim to provide input for a variety of climate impact studies. It was found that the two most dominant patterns of climate change relate to temperature and humidity patterns. The ensemble can be reduced from 25 to 5 simulations while still maintaining its essential characteristics. Having such a representative subset of simulations reduces computational costs for climate impact

modeling and enhances the quality of the ensemble at the same time, as it prevents double-counting of dependent simulations that would lead to biased statistics.

Link: <http://link.springer.com/article/10.1007%2Fs10584-015-1582-0>

Title: Integrating top-down and bottom-up approaches to design global change adaptation at the river basin scale

Author(s): Girard, G., Pulido-Velazquez, M., et al.

Summary: This article proposes a "bottom-up meets top-down" integrated approach to support the selection of adaptation measures at the river basin level by comprehensively integrating the goals of economic efficiency, social acceptability, environmental sustainability and adaptation robustness. The top-down approach relies on the use of a chain of models to assess the impact of global change on water resource systems and its management over a range of climate projections. Future demand scenarios and locally prioritised adaptation measures are identified following a bottom-up approach through a participatory process with the relevant stakeholders and experts. The optimal combinations of adaptation measures are then selected using a hydro-economic model at basin scale for each climate projection. The method has been developed and implemented in a local case study in the south of France, the Orb River basin, through a collaboration between the French geological survey (BRGM), the French National Agency for Water and Aquatic Environment (ONEMA) and the Technical University of Valencia (UPV), Spain.

Link: <http://www.sciencedirect.com/science/article/pii/S0959378015300091>

Title: The ENACTS Approach: Transforming Climate Services in Africa One Country at a Time

Author(s): Dinku, T., Cousin, R., et al.

Summary: 10.2 million people in Ethiopia are considered food insecure due to the onset of drought in 2015. From Lesotho to the Sahel, African countries are grappling with the medium- and long-term impacts that climate change will have on their people, economies, and politics. However, even as they grapple with such issues, too many governments lack the basic data necessary to make informed predictions and plans to mitigate risk for the next generation.

Stepping in to address the issues of climate data availability is a team from [International Research Institute for Climate and Society](http://www.iri.columbia.edu/) (IRI) at Columbia University's Earth Institute. Led by Dr. Tufa Dinku, Research Scientist in Climate and Environmental Monitoring IRI, they have developed an initiative to improve climate data collection and distribution in low resource areas. ENACTS combines data from proxies, such as digital elevation models, to provide accurate and spatially complete climate conditions even where reporting stations do not exist. This paper from World Policy Institute's [Program for African Thought](http://www.wpi.edu/) and IRI paper unravels the challenges of climate monitoring in Africa, how previously unavailable climate data could be used by federal and local government to address climate-related risks through

policy, and the foreseen impacts of new information products on sectors from health care to agriculture. Drawing on information in this report, governments in The Gambia, Mali, Ghana, Ethiopia, Rwanda, Tanzania, Madagascar, Zambia, Kenya, and soon Uganda will have ENACTS as a crucial tool at their disposal.

Link: bit.ly/1PFiKuK

Title: Cross sectoral impacts on water availability at +2 °C and +3 °C for east Mediterranean island states: The case of Crete

Author(s): Koutroulis, A. G., Grillakis, M. G, et al.

Summary: Ensemble pan-European projections under a 2 °C global warming relative to the preindustrial period reveal a more intense warming in south Eastern Europe by up to +3 °C, thus indicating that impacts of climate change will be disproportionately high for certain regions. The Mediterranean is projected as one of the most vulnerable areas to climatic and anthropogenic changes with decreasing rainfall trends and a continuous gradual warming causing a progressive decline of average stream flow. Here a generalised cross-sectoral framework was used to assess the impact of climatic and socioeconomic futures on the water resources of an Eastern Mediterranean island. A set of representative regional climate models simulations from the EURO-CORDEX initiative driven by different RCP2.6, RCP4.5, and RCP8.5 GCMs are used to form a comparable set of results and a useful basis for the assessment of uncertainties related to impacts of 2° warming and above. A generalised framework of a cross-sectoral water resources analysis was developed in collaboration with the local water authority exploring and costing adaptation measures associated with a set of socioeconomic pathways (SSPs). Transient hydrological modeling was performed to describe the projected hydro-climatological regime and water availability for each warming level. The robust signal of less precipitation and higher temperatures that is projected by climate simulations results to a severe decrease of local water resources which can be mitigated by a number of actions.

Link: <http://www.sciencedirect.com/science/article/pii/S0022169415008914>

Title: Evaluating probabilistic dengue risk forecasts from a prototype early warning system for Brazil

Author(s): Lowe, R., Coelho, C. A. S., et al.

Summary: Dengue is a viral infection spread by mosquitoes and is widespread in tropical and sub-tropical regions. Dengue epidemics in Brazil often occur without warning, and can overwhelm the public health services. Forecasts of seasonal climates combined with early data from a dengue surveillance system could help public health services anticipate dengue outbreaks several months in advance. However, this information has not been previously exploited to predict dengue epidemics in a practical real-life framework. Recently, a group of researchers developed a prototype of a dengue early warning system based on 13 years worth of data, and used it to predict the risk of dengue three months

ahead of the 2014 FIFA World Cup in Brazil. Now Rachel Lowe et al. – including most of the researchers involved in the earlier work – have evaluated the prototype against the actual reported cases of dengue during the event. Brazil is divided into over 550 'microregions', and the forecasts correctly predicted high risk of dengue for 57% of the microregions reporting high levels of dengue during the games. Forecasts based on seasonal dengue averages would have only detected high risk in 33% of these microregions. However, the prototype failed to predict the high risk in both São Paulo and Brasília. Lowe et al. speculate that this may have been due to changes in how water was stored in these cities (standing water is a breeding site for mosquitoes) and the circulation of a new strain of the dengue virus.

The implementation of seasonal climate forecasts and early reports of dengue cases into an early warning system is now a priority for public health authorities, to help them to prepare for and minimize epidemics of dengue and other diseases.

Link: <http://elifesciences.org/content/5/e11285v1/article-metrics>

Title: Climate services: a decision support tool for adaptation

Author(s): Rousset, N., Dubois, G. et al.

Summary: The Mediterranean region is expected to be one of the most prominent climate change "hot spot". In order to promote climate risk management and adaptation to climate variability and change, decision-makers need to rely on tailored and directly usable climate information and tools. Addressing the climate information needs of users is one of the aim of the several climate services initiatives that have recently been established. The development of climate services in the Mediterranean basin is of major importance for the promotion of sustainable development in this region

Links:

English: http://planbleu.org/sites/default/files/publications/notes27_cc_en_web.pdf

French: http://planbleu.org/sites/default/files/publications/notes27_cc_fr_web.pdf

Additional info: <http://medicip.grid.unep.ch/>

Title: Sharing skills and needs between providers and users of climate information to create climate services: lessons from the Northern Adriatic case study

Author(s): Giannini, V., Bellucci, A., & Torresan, S.

Summary: The need to cope with the expected impacts of climate change on socio-ecological systems calls for a closer dialogue between climate scientists and the community of climate information users. This paper describes an interactive process designed to bridge this gap by establishing a two-way communication, based on mutual learning. The need of climate information for the integrated assessment of climate change impacts on the coastal zone of the Northern Adriatic Sea is analysed, which is considered to be particularly vulnerable to several climate-related phenomena, e.g. heavy rainfall events, pluvial flood, and sea level rise, causing potentially high damage to coastal ecosystems and urban areas (e.g. acqua alta in the Venice Lagoon). A participatory process was designed engaging representatives from both the scientific and local stakeholders communities, and facilitated by a boundary organization, embodied by the Euro-Mediterranean Center on Climate Change.

Three climate products were developed to address these needs: (1) short-term projections of sea level rise; (2) seasonal predictions of extreme rainfall events; (3) long-term regional projections of climate extremes (including heat waves, dry spells and heavy rainfall events). Additionally, two risk products were developed: 4) sea level rise inundation risk maps for the low-lying coastal areas of Veneto and Friuli-Venezia Giulia regions; and 5) pluvial flood risk maps for the urban territory of the municipality of Venice.

Link: <http://earth-perspectives.springeropen.com/articles/10.1186/s40322-016-0033-z>

Title: Evaluation of adaptation practices in the agriculture sector of Bangladesh: an ecosystem based assessment

Author(s): Arfanuzzaman, Md., Mamnun, N., et al.

Summary: Climate changes imposed differential impacts on Bangladesh in the form of sea level rise, extreme events, and variability, which has enormous economic, environmental and social cost. Such impacts are assorted across the ecosystems of the Southwest, Northwest and Central region of the country. Among the different sectors, agriculture is comparatively more vulnerable to climate change impacts. In order to reduce the climate change induced loss and damage, a series of adaptation options have been being practiced by the people at the local level for many years, but the effectiveness, profitability, and sustainability of such adaptation options are still not too well investigated or understood. From this backdrop, the study intended to identify, prioritise and evaluate the adaptation options in the agriculture of different ecosystems of Bangladesh. It was found that the economic gain of adopting rice prawn farming, replantation of rice, and saline tolerant and short duration rice varieties are much higher than the other adaption options. Through investing \$10 in such adaptation options, \$22, \$4, \$2 and \$2 net return will be provided,

respectively. Unavailability and less affordability are impeding the promotion of some effective adaption options, which require more attention from policy makers, while further research, demonstration and capacity building of the farmers will reduce vulnerability and build resilience.

Link: <http://www.mdpi.com/2225-1154/4/1/11/html>

Title: International Climate Assessment & Dataset: Climate Services across Borders

Author(s): van den Besselaar, E. J. M., Klein Tank, A. M. G., et al.

Summary: The International Climate Assessment & Dataset (ICA&D) concept provides climate services on a regional scale for users in participating countries and the broader scientific community. It builds on the expertise gained in Europe, where national meteorological services collaborate by sharing climate data in order to produce regional climate assessments. Universities and data-rescue initiatives have joined this collaboration. The result is a web-based information system that combines quality-controlled daily station data with derived climate indices. Indices are provided for mean and extreme climate conditions including droughts, heat waves, and heavy rainfall events. ICA&D systems currently exist in Europe and in three regions of the world vulnerable to climate change: Southeast Asia, Latin America, and West Africa. Historical perspectives on climate variability and change are integrated with the monitoring of current climate evolution through regular updates of the data series obtained from meteorological observing stations. Web users have access to plots and maps of climate indices, showing time series, trends, or deviations from climatology. All information can be downloaded for noncommercial research and educational purposes, except for a part of the daily data that the data provider does not want to share.

Link: <http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-13-00249.1>

Title: Towards a multi-scale coastal risk index for the Mediterranean

Author(s): Firth, J. ; Lafitte, A. et al.

Summary: The Mediterranean region is a climate change "hot-spot". Investigating the role of climate and non-climate drivers on coastal zones is vital to understand the underlying risks and identify appropriate response measures. The multi-scale coastal risk index methodology proposed allows a scientifically sound detection of the coastal hot-spots.

Links:

English: http://planbleu.org/sites/default/files/publications/notes28_en.pdf

French: http://planbleu.org/sites/default/files/publications/notes28_fr.pdf

Title: Climate change impacts on the power generation potential of a European mid-century wind farms scenario

Author(s): Tobin, I., Jerez, S., et al.

To investigate the impacts of climate change on future European wind power generation potential, a multi-model ensemble of the most recent EURO-CORDEX regional climate simulations at the 12 km grid resolution was analysed. A mid-century wind power plant scenario was developed to focus the impact assessment on relevant locations for future wind power industry. It was found that under two greenhouse gas concentration scenarios, changes in the annual energy yield of the future European wind farms fleet as a whole will remain within $\pm 5\%$ across the 21st century. At country to local scales, wind farm yields will undergo changes up to 15% in magnitude, according to the large majority of models, but smaller than 5% in magnitude for most regions and models. The southern fleets such as the Iberian and Italian fleets are likely to be the most affected. With regard to variability, changes are essentially small or poorly significant from subdaily to interannual time scales.

Link: <http://iopscience.iop.org/article/10.1088/1748-9326/11/3/034013/meta;jsessionid=022657E4520980FF6E8BA5E55DB80F5D.c4.iopscience.cld.iop.org>

upcoming events in the climate and climate services community

European Geosciences Union General Assembly 2016

Date: 17–22 April 2016

Lead organisation(s): European Geosciences Union

Location: Vienna, Austria

About: The EGU General Assembly 2016 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 geoscience.

Weblink: <http://egu2016.eu/home.html>

Mountains for Europe's Future

Dates: 25 April 2016 (12.00 - 18.00)

Location: Brussels, Belgium

Lead organisation(s): CH-AT (supported by ECRA)

About: Mountains for Europe's Future is an initiative leading to a Strategic Research Agenda to promote the inclusion of specific mountain topics in the Horizon 2020 Work Programmes 2018-20 or other strategic documents. Join the event to:

- » Find the mountains in Brussels as part of a short guided tour, and learn where and how mountains are present, even in Brussels
- » Discuss the Strategic Research Agenda 'Mountains for Europe's Future' and its recommended research activities with the authors and with discussants from EU institutions and relevant European organisations in a Roundtable;
- » Network with scientists, regional and national representatives, and members of authorities interested in promoting mountain research.

Weblink: <http://www.chat-mountainalliance.eu/en/events/18-events/106-mountains-for-europe-future-the-event.html>

How to respond to climate change related risks in the value chain of your business? - Side event at Adaptation Futures 2016

Dates: 9 May 2015 (12:30 – 17:00)

Location: Rotterdam, The Netherlands

Lead organisation(s): JPI Climate, supported by the Dutch Ministry of Infrastructure and Environment

About: At the occasion of the start of a large €72million project dedicated to user-oriented climate services ERA4CS, JPI Climate is organising a workshop on the potential contribution of climate science to risk management strategies in the private sector. The aim of this event is to strengthen the dialogue of business leaders with scientists and other stakeholders in the view of identifying needs for better risk management to which science can contribute.

Weblink: <http://www.jpi-climate.eu/news-events/events/10869137/Side-event-AF2016-How-to-respond-to-climate-change-related-risks-in-the-value-chain-of-your-business>

Adaptation Futures 2016

Dates: 10 -13 May 2016

Location: Rotterdam, The Netherlands

Lead organisation(s): European Commission, Government of the Netherlands, UNEP's Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA)

About: Adaptation Futures is the biennial conference of the Global Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA). In 2016 the European Commission and the Government of the Netherlands co-host the fourth edition. Adaptation Futures 2016 is where scholars, practitioners, policymakers and business people from all around the world go to connect, learn and inspire. It highlights adaptation practices and solutions for people, governments and businesses. The programme addresses all sectors and all parts of the world. Extra call for SME's - SME's providing adaptation services or otherwise being involved in climate change and adaptation are eligible for a travel grant. There are a few grants available.

Weblink: www.adaptationfutures2016.org

International Conference on Regional Climate-CORDEX 2016

Dates: 17 - 20 May 2016

Location: Stockholm, Sweden

Lead Organisation(s): CORDEX

About: The International Conference on Regional Climate-CORDEX 2016 (ICRC-CORDEX 2016), will bring together the international regional climate research community, focusing on high resolution climate information and its applications to vulnerability, impacts and adaptation and the full spectrum of potential end users of regional climate information. It will promote the CORDEX vision to advance and coordinate the science and application of regional climate downscaling through global partnerships.

There is an increasing need for reliable regional climate information that is both scientifically rigorous but also communicated in a manner to which all potential end users, from water managers in sub-Saharan Africa to city planners in Manila or forestry owners in Sweden, can utilise for effective impact and adaptation planning. The CORDEX community is working towards meeting this challenge as part of the World Climate Research Programme and in collaboration with other global change initiatives and partners across the world. A further goal of CORDEX is to build the capacity of regional climate science in developing and transition regions; great steps have been made but there is still much work to be done. ICRC-CORDEX 2016 offers a platform for further capacity development, training and knowledge exchange for developing nation scientists together with the opportunity to expand existing, or build new, collaborations.

Registration deadline: 1st May

Weblink: http://www.cordex.org/index.php?option=com_content&view=article&id=270:icrc-cordex-2016&catid=117:cordex-news&Itemid=735

Berlin Conference on Transformative Global Climate Governance

Dates: 23 - 24 May 2016

Location: Berlin, Germany

Lead organisation(s): German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) and the Environmental Policy Research Centre (FFU) at Freie Universität Berlin.

About: On 12 December 2015, the UN climate change conference in Paris adopted a new and universal global climate agreement that marks a watershed in international climate politics. Yet, how are we going to achieve its stated long-term goal of limiting global warming to “well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels”? How will the “Paris Agreement” affect the institutional landscape of global climate governance? Which substantive new priorities have emerged in the negotiation of the „Paris Agreement“ and related decisions?

As pertinent questions revolving around global climate governance are here to stay, this conference invites scholars and practitioners to refocus their quest for answers in the light of the continuity and change that Paris will bring. It also aims to discuss international climate policy and, indeed, politics in the larger context of global governance and the challenges of a transformation towards sustainable development in a turbulent world.

Weblink: <http://www.berlinconference.org/2016/>

iEMSs 2016 - 8th International Congress on Environmental Modelling and Software

Date: 10 -14 July 2016

Location: Toulouse, France

Lead organisation(s): Environmental Modelling & Software Society

About: Every two years, iEMSs holds its international congress. The purpose of the meeting is to foster discussion and the interchange of challenges, solutions, ideas, and new methods and techniques in environmental modeling and software. The theme of the conference is environmental modelling and software for supporting a sustainable future. The iEMSs is the premier professional society on integrated environmental modeling and software and its biennial conferences are officially endorsed by the scientific journal Environmental Modelling and Software (Elsevier). These biannual conferences are the Society's opportunity to directly promote contacts among modeling and software researchers and scientists from different countries, governmental and non-governmental organisations, and academic institutions; and exchange technical information and promote cooperation between the sciences.

Weblink: <http://www.iemss.org/sites/iemss2016/index.php>

Dealing with Climate Change Impacts (Summer School)

Dates: 5 -14 September 2016

Location: Potsdam, Germany

Lead organisation(s): Potsdam Institute for Climate Impact Research (PIK)

About: Avoiding the unmanageable, managing the unavoidable – even with ambitious climate mitigation, the impacts of climate change will be felt in this century. They have been programmed into the natural system by our greenhouse gas emissions: carbon dioxide remains in the atmosphere for hundreds and even thousands of years. From global sea-level rise to extreme events like floods or droughts, the third Potsdam Summer School from 5 – 14 September 2016 will focus on long-term climate change impacts and the challenge of dealing with them.

Any kind of assessment of long-term hazards is based on knowledge of the natural processes within the climate system, quantification by computer models and scenario analysis and must be supplemented by a risk assessment to evaluate the impacts in respect of potential mitigation measures. Participants at the 2016 Potsdam Summer School will learn to assess long-term hazards and conduct risk assessments to evaluate impacts and identify potential mitigation measures for impacts ranging from Arctic warming over sea-level rise to Amazon dieback. An intense ten-day programme will address four major topics.

The issues span a multitude of natural and social science disciplines and invite stakeholders from the public and private sector to get involved. The programme will comprise lectures, various discussion formats, and interactive project activities, including hands-on demonstrations, workshops, and group projects.

The application process for the international Summer School is now open until 15 April 2016.

Weblink: <http://potsdam-summer-school.org>

16th EMS Annual Meeting & 11th European Conference on Applied Climatology (ECAC)

Dates: 12 –16 September 2016

Location: Trieste, Italy

Lead organisation(s): European Meteorological Society

About: The theme of the EMS & ECAC 2016 is *Where atmosphere, sea and land meet: bridging between sciences, applications and stakeholders*.

All components of the Earth system interact in the climate system: Sun, atmosphere, land, sea, cryosphere, and biosphere. Climate change and its impacts must therefore be studied and assessed by considering all these interacting components together. This will allow the various stakeholders, practitioners and decision makers – throughout their various levels and sectors of activities – to mitigate as far as possible future environmental change and to adapt where necessary. Historically, many major centres of economic and cultural activity have developed in coastal areas (currently nearly 50% of Europe's population live within 50 km of the coast). Therefore, safety, socio-economic impacts and infrastructure investment are particularly important in coastal areas. Key factors here are the changing atmospheric and oceanic circulation, sea level rise, floods, landslides and other extreme events.

The conference theme for 2016 explores these intertwined issues with special emphasis on sea–atmosphere–land interactions and transitions. Assessing and predicting the evolution of the environment and the related impacts will have to go hand-in-hand with improving risk assessment, preparedness and mitigation.

Abstract deadline is 21 April.

Weblink: <http://www.ems2016.eu/home.html>

Statistics, verification, uncertainty quantification and climate services involving s2s forecasts with application to water management, droughts, floods, energy and health. Participants are especially encouraged to present contributions and discuss strategies to bridge gaps between stakeholders and actionable s2s tailored products.

Abstract deadline is 21 April.

Convener: Ángel G. Muñoz

Weblink: <http://meetingorganizer.copernicus.org/EMS2016/session/22377>

AM6/NWP5: Subseasonal-to-seasonal (s2s) predictions and societal applications (Session in 16th EMS Annual Meeting & 11th European Conference on Applied Climatology (ECAC))

Dates: (somepoint between) 12 –16 September 2016

Location: Trieste, Italy

Lead organisation(s): co-organised

About: Meteorological and hydrological centres around the world are looking at ways to improve their capacity to be able to produce and deliver skilful and reliable forecasts of high-impact extreme events at sub-seasonal timescales (beyond 2 weeks). Improving sub-seasonal predictions, assessing their skill and uncertainty, and exploring ways to communicate their benefits to decision-makers are significant challenges. The [S2S WWRP/THORPEX-WCRP](#) joint project is embracing all these challenges and, to promote this research, has created a new database with a set of multi-model s2s reforecasts and forecasts freely available to the community.

The over-arching theme of the session will be the discussion of s2s sources of predictability, forecasts and socio-economic applications of high-impact climate services. Thus, this session invites contributions involving (but not only restricted to) physical mechanisms, statistical and dynamical model methodologies, cross-timescale interactions, Model Output