

Welcome to the July 2014 edition of the CORDEX Community Newsletter. This is a time for progress and new opportunities for CORDEX as we move into Phase II. In our last newsletter the call for invitations to host the new International Project Office for CORDEX (IPOC) was released and on p2 you can find out which institution has been successful and how the decision was reached.

The CORDEX Scientific Advisory Team (SAT) met in May to discuss in detail how CORDEX should proceed in its second phase and build upon the outcome of the International Conference on Regional Climate – CORDEX 2013 in November last year; you can find a summary of their discussions on p3.

On p4 our second 'In focus' article provides a description and overview of the Working Group on Regional Climate (WGRC) and their recent activities.

The recent workshops of both CORDEX South-East Asia and MED-CORDEX can be found on pages 5 and 6 with editorials from Fredolin Tangang and Samuel Somot respectively. On p7, CORDEX SAT member responsible for data management, Grigory Nikulin, describes CORDEX archiving and the wealth of CORDEX data already available. Finally, on p8, you can find a summary of the recent '3rd Regional Climate Modelling Workshop' and a call for abstracts for a special session at UGM.

For more information on CORDEX please see our [website](#) or contact the relevant individuals who are listed on p9.

The CORDEX team would like to wish you all a happy and relaxing summer period.

Newsletter Contents

- p2** Latest news: host of CORDEX office has been selected
- P3** In focus: CORDEX Scientific Advisory Team meeting report
- p4** In focus: Working Group on Regional Climate
- P5-6** News from the CORDEX community
- p7** Data management: CORDEX archiving
- p8** Events of Interest
- p9** Contact information

SMHI chosen as host of new CORDEX office

The International Conference on Regional Climate – CORDEX 2013 illustrated the tremendous growth of, and interest in CORDEX. It was clear that CORDEX now requires even stronger global coordination with the appropriate administrative, scientific and technical support to respond to expanding activities worldwide therefore justifying the establishment of a dedicated International Project Office for CORDEX (IPOC).

A [call](#) to host such an office was issued in December 2013, with the initial 1st April deadline extended until 30th April 2014 when three offers were received.

A selection board was established by the WCRP Joint Planning Staff (JPS), in close consultation with the CORDEX Science Advisory Team (SAT) and with due consideration of CORDEX governance, expertise in regional climate science and application, and geographical and gender balance.

The review process was conducted in two phases:

- 1) an independent evaluation based on the two main criteria as set out in the call (the strength of the offer and the ability to fulfill the responsibilities of the office), which was carried out during the week 2th-6th June; and
- 2) a conference call on 10th June to discuss scores and comments so as to provide a recommendation to the new Director of WCRP, David Carlson, who joined us on 13th June.

The selection board reached a consensus in strongly recommending the Swedish Meteorological and Hydrological Institute (SMHI) as the institution to host the International Project Office for CORDEX. This recommendation has now been approved by our Director and we will move ahead in formally establishing the office at SMHI.

The board also made the following recommendations for the office:

- Keep and further develop a global perspective and role beyond the EU realm;
- Leverage existing institutional strengths and resources across the community to enhance training and capacity building activities (for example ICTP and centres in Asia and Latin America) and data management support (DMI and other CORDEX data nodes);
- Support resource mobilization for CORDEX regions, especially in developing countries;
- Ensure close liaison with both the CORDEX Scientific Advisory Team (SAT) and the Working Group on Regional Climate (WGRC) to define both the office and CORDEX scope of activities and linkages with user communities.

WCRP is truly grateful to all applicants for putting forward very strong offers and for their continued engagement in WCRP, and is now looking forward to establishing the International Project Office for CORDEX at SMHI during late 2014.



CORDEX SAT Meeting Report

Contact: [Michel Rixen \(WCRP JPS\)](#)

Last year, in order to provide a permanent structure to CORDEX and climate activities oriented toward users of climate information, the WCRP established the Working Group on Regional Climate (see the WGRC article in this issue) and the CORDEX Science Advisory Team (SAT). The SAT takes over purview of CORDEX from the provisional Task Force on Regional Climate Downscaling. The SAT held its first formal meeting (SAT1) 16th-17th May at the International Centre for Theoretical Physics (ICTP), in Trieste, Italy.

Next steps for CORDEX

A major goal of SAT1 was to build upon the world-wide energy and intellectual ferment displayed at the International Conference on Regional Climate—CORDEX 2013 last November in Brussels. Several issues emerged from the conference that SAT1 addressed. Chief among them were the future directions for CORDEX as it coordinates programs around the world looking into regional climate information and the needs of many for credible, useful climate change information. The detailed future strategy of CORDEX will require input from the larger community, but the SAT has identified two broad directions: moving to a baseline resolution of 25 km and development of fine-resolution “pilot regions”. The 25km resolution strikes a balance between computational capabilities of many participating countries and the need to downscale GCM output that is becoming available at higher resolutions than previously.

Pilot studies

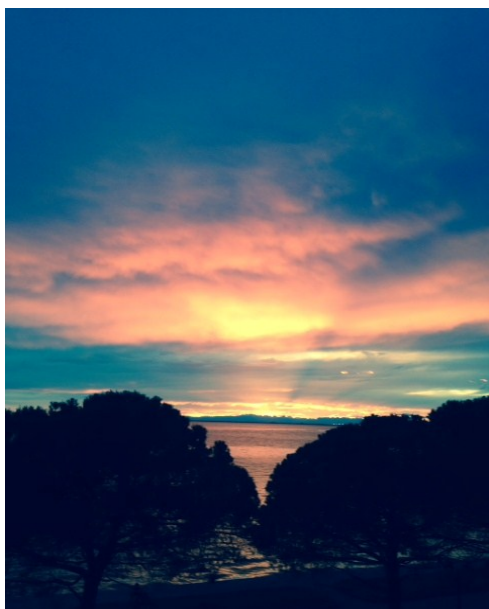
The pilot regions would be subset domains in some of the main CORDEX regions where cloud-permitting (few km) resolution may be important for simulating the region’s climate and where suitable observations exist for model evaluation. The goal in developing the pilot regions is to coordinate efforts already or soon to be occurring in some places to explore regional simulation at these scales. The pilot regions would provide focus for both dynamical downscaling and the emerging statistical downscaling activity in CORDEX.

Other challenges

Additional discussion at SAT1 reviewed progress and challenges in the various CORDEX regions around the world. As part of the review, it was recognized that a stronger physically based foundation for each of the regions is desirable, especially keeping in mind the plans for pilot regions. A key question would be: what are the mesoscale and finer processes that a region should target? In addition, there was discussion about more clearly defining the relationship between the CORDEX SAT and the WGRC. There was some concern that some might view any activity of the WGRC as a CORDEX activity, a mission creep that could undermine the focus of CORDEX. It was recognized that CORDEX is a science-focused program that should link with programs aimed at supplying climate information and addressing user needs, but that such programs should be activities separate from CORDEX.



The CORDEX SAT meeting participants (from left): T. Stephenson, J. Sanjay, F. Tangang, M. Rixen (WCRP JPS), H.-S. Kang, W. Gutowski (co-chair), G. Nikulin, B. Timbal, F. Giorgi (co-chair), C. Lennard, S. Solman



Framing Regional Climate Information in a decision making context

by Bruce Hewitson and Clare Goodess, co-chairs of the WCRP Working Group on Regional Climate Information

To further the engagement with communities on the issues associated with regional climate research and the delivery of regional climate information, the WCRP Working Group on Regional Climate (WGRC) has been proactive on both ends of the community spectrum; first with the Impact Adaptation Vulnerability (IAV) community at the 3rd International Climate Change Adaptation Conference in Fortaleza, Brazil, in May 2014 and then at the 3rd International Lund Regional-scale Climate Modelling Workshop in Lund, Sweden, in June 2014.

In Fortaleza the focus was on raising key issues with the IAV and user communities about the robustness of regional information for adaptation. Bruce Hewitson, WGRC Co-chair, was invited to give a plenary keynote talk on “The climate data distillation dilemma” and the contributions that the WGRC can bring to this challenge. This was followed by an additional presentation on the emerging issues posed by the ethical problem in climate services, and how climate services providers need to struggle with the complex aspects of responsibility and accountability in communicating climate products that reflect ongoing and evolving research. At the workshop in Lund the focus was on the providers of the climate data and again Bruce Hewitson gave an invited keynote presentation colloquially titled “If an informed user did your model evaluation ...” which was framed by a hypothetical user’s question of “How do I know what credence your data product has for my decision context?”

In both meetings the WGRC strived to facilitate the debate among communities around added-value in regional climate data products, the threats inherent in their selective use or possible over-interpretation, as well as the substantial difficulties faced in assessing the robust message embedded in the plethora of multi-model and multi-method research outputs. The feedback was strongly positive, with active question time after the talks and numerous subsequent follow-on discussions. Moreover, these presentations helped expand the WGRC’s engagement in discussions on the ethics of regional scale climate service practices.

This discussion across these communities further highlights the importance of focusing the debate on these central issues and guides the WGRC in fostering the research agenda around the WCRP regional climate information grand challenge. In addition the urgency of these reinforces the WGRC’s motivation to hold the “WGRC Distillation Expert Meeting” later in 2014. This meeting will address the imperative to advance our capacity in delivering valid and robust regional-scale information.

While CORDEX-RCM - the dynamical regional model downscaling - is active on all continents to reach a comprehensive coverage for a multi-model matrix of climate change simulations, CORDEX-ESD, the Empirical Statistical Downscaling counterpart, is catching up. With the support of an NSF-funded series of workshops, the ESD community is engaging in a systematic approach to ESD within a common framework which facilitates the ESD-RCM comparison. The second of these CORDEX-ESD workshops will take place in Buenos Aires in Argentina, in July 2014, where initial downscaling results from a number of methods will be reviewed with a view to understanding strengths and weaknesses of different approaches, and also to pilot further advances in the multi-method downscaling activities.

The newly constituted CORDEX Scientific Advisory Team (SAT), which includes new members from the ESD community, is supporting these activities. The SAT has further developed a new experiment approach to take the CORDEX RCM activities to higher resolution through pilot studies in selected regions, also to achieve greater coherence with the ESD activities and so facilitate a better multi-model multi-method downscaling assessment. WGRC pointed out that a “CORDEX-Analysis” activity – to comprehensively assess the CORDEX outputs from a user’s perspective – is something that is much needed, and is engaging the community to explore ways to facilitate this.

CORDEX Southeast Asia Workshop

Contact: [Fredolin Tangang](#)



Participants of the 2nd Southeast Asia Regional Climate Downscaling SEACLID/CORDEX Southeast Asia Workshop

The 2nd workshop of the Southeast Asia Regional Climate Downscaling (SEACLID) / CORDEX Southeast Asia Project was held on 9-10th June 2014 in Bangkok, hosted by Ramkhamhaeng University, Thailand Research Fund and Chulalongkorn University. The National University of Malaysia, MAIRS and APN were co-organisers. The workshop was attended by 106 participants from countries including Thailand, Vietnam, the Philippines, Cambodia, Lao PDR, Malaysia, Indonesia, Australia, Republic of Korea, Singapore and New Zealand. Dr Michel Rixen of WCRP, Dr Ailikun of MAIRS and Dr R Krishnan of CORDEX South Asia, participated via remote Skype video conference from Geneva, Beijing and Pune, respectively.

During the opening ceremony Asst. Prof. Wutisak Lapcharoensap, the President of Ramkhamhaeng University and Prof. Suthipun Jitphimolmard, the Director of Thailand Research Center, gave their strong support to SEACLID/CORDEX Southeast Asia. Following the opening, Dr Michel Rixen of WCRP delivered his keynote paper on Opportunities for CORDEX initiatives in Asia. The first day continued with two sessions; the first highlighting recent IPCC WGI & WGII AR5 reports and their relevance to the region and the second highlighted regional climate downscaling activities in Asia including SEACLID/CORDEX Southeast Asia.

The second day of the workshop started with a session of presentations on climate change impact assessment and data requirements from the 7 countries including New Zealand followed by a discussion session. In the second session, the results of sensitivity runs were presented by 5 countries (Vietnam, Thailand, Malaysia, Indonesia and the Philippines) followed by a discussion of the results and ways forward for CORDEX Southeast Asia.

The key outcomes and conclusions of the workshop are summarized below:

1. The 2nd workshop provided an opportunity to raise the profile of SEACLID/CORDEX Southeast Asia and reach a much wider audience in Thailand and the Southeast Asia region and beyond.
2. For the first time, participants from Cambodia and Lao PDR participated providing an opportunity for further direct discussion on how these two countries can become more involved. Their future participation would be through: i) a pilot project on climate change impact assessment (see item 5); and ii) Students from these countries pursuing an MSc degree under Prof. Fredolin Tangang's group in which funding would be provided by the National University of Malaysia.
3. The successful completion of RegCM4 sensitivity runs of 20 years using ERA-Interim boundary conditions for selection of best physics options (18 runs all together) by five core countries (Thailand, Vietnam, the Philippines, Malaysia and Indonesia) indicated the capability of the group in carrying out regional climate downscaling for this region. The presentations of the sensitivity runs results narrowed down the best physics options to 2-3 combinations. Further experiments will be carried out in the next 1-2 months before a final decision is to be made and actual simulation is initiated.
4. The workshop concluded that the results of the sensitivity runs should be written up as scientific publications. To facilitate this a dedicated manuscript-writing workshop will be held in near future; the National University of Malaysia was proposed to host this workshop sometime in August this year.
5. The issues of domain and resolution were also discussed. The final decision after taking consideration of needs, capability, scientific relevance was for resolution at 25 km x 25 km with a domain: 15S-27N, 90E – 145E.
6. The presence of the VIA community provided a strong link on how CORDEX Southeast Asia would engage the community and ensure the relevance of its downscaled data products. The workshop concluded that a pilot project on climate change impact assessment would be established focused on the impact on rice; Dr Jerasorn Santisirisomboon (Ramkhamhaeng University) and Prof. Attachai Jintrawet (Chiang Mai University) will lead this initiative and a workshop to develop the pilot project proposal will be organized in the near future. Once completed, the proposal can be submitted to funding agencies (TRF, APN, etc). Once established, this pilot project and SEACLID/CORDEX Southeast Asia will provide a leading example of the relevance of regional climate downscaling in the region.
7. The data management issue has not been resolved. Ramkhamhaeng University has indicated an interest to build up a capacity to become a data centre for CORDEX Southeast Asia. This issue will be further explored with WCRP, CORDEX EA and CORDEX SA.

Med-CORDEX

Contact: [Samuel Somot](#)

Following on from successful workshops in 2009 and 2012, the 3rd International Workshop of Med-CORDEX took place in May 2014 in Palaiseau (France) at the Ecole Polytechnique (local organisers: LMD, LATMOS) under the umbrella of HyMeX, CORDEX and MED-CLIVAR and with the financial support of the French INSU-MISTRALS and ANR-REMEMBER projects. Thirty-five participants from France, Germany, Italy, Spain and Tunisia were present for a 3-day workshop. Representatives from Med-CLIVAR (P. Lionello), from the Charmex modelling workpackage (M. Mallet) and one of the co-leaders of HyMeX (Ph. Drobinski) were there as well as the co-coordinators of Med-CORDEX (P. Ruti, S. Somot).

Thirty scientific talks were given focusing on the analysis of all the components of the Mediterranean regional climate system (atmosphere, ocean, land, river, aerosol) in coupled or uncoupled mode, in evaluation and scenario mode. In addition, roundtable discussions were organised on the following topics:

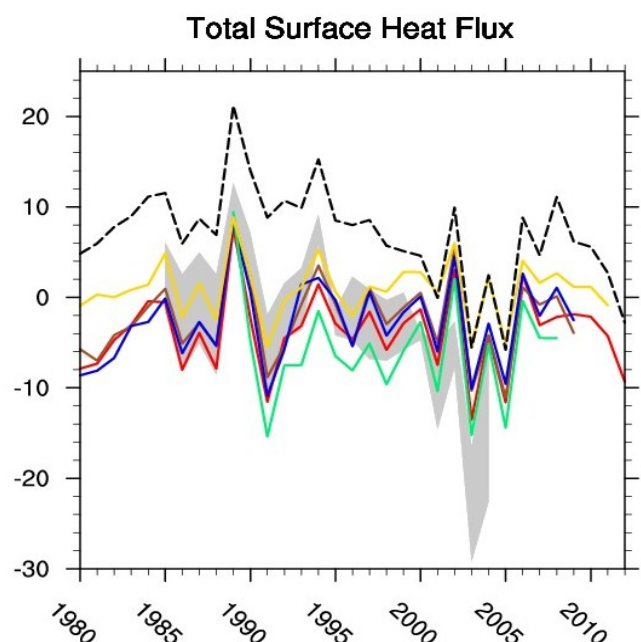
- Status of the Med-CORDEX modelling platforms and runs (95% of the models are working, 90% of the planned runs are completed and 50% are archived in the Med-CORDEX database)
- Links between Med-CORDEX and the Mediterranean Climate Services
- Statistical downscaling within Med-CORDEX
- How to make the Med-CORDEX database more user-friendly outside the modelling community
- Coordination of the model evaluation and multi-model intercomparisons (see Figure 1 below)
- Financial, organisation and communication issues
- Our common ambitions for Med-CORDEX-2

Discussions on the last point will continue in collaboration with the CORDEX SAT, HyMeX and Med-CLIVAR. However, the proposed main objectives for Med-CORDEX-2 were:

1. Promote, develop, evaluate and exploit Mediterranean Regional Earth System Models (RESM)
2. Contribute to characterize the impacts of the Mediterranean climate variability and change, and contribute to develop actionable Mediterranean climate services.
3. Improve, study and understand the variability and change of the Mediterranean regional climate phenomena in climate models.

Details on the 3rd Med-CORDEX workshop can be found [here](#) and for more information on the Med-CORDEX activities, including the database, visit the [website](#).

Figure 1: Interannual variability of the Mediterranean Sea surface net heat budget (W/m^2). Grey shaded zone is the observed reference, black dashed line is ERA-Interim and colored lines are 6 Med-CORDEX fully-coupled RCSM simulations forced by ERA-Interim (CNRM, ENEA, LMD, IPSL, GUF, INSTM) (Figure courtesy of C. Dubois, CNRM).

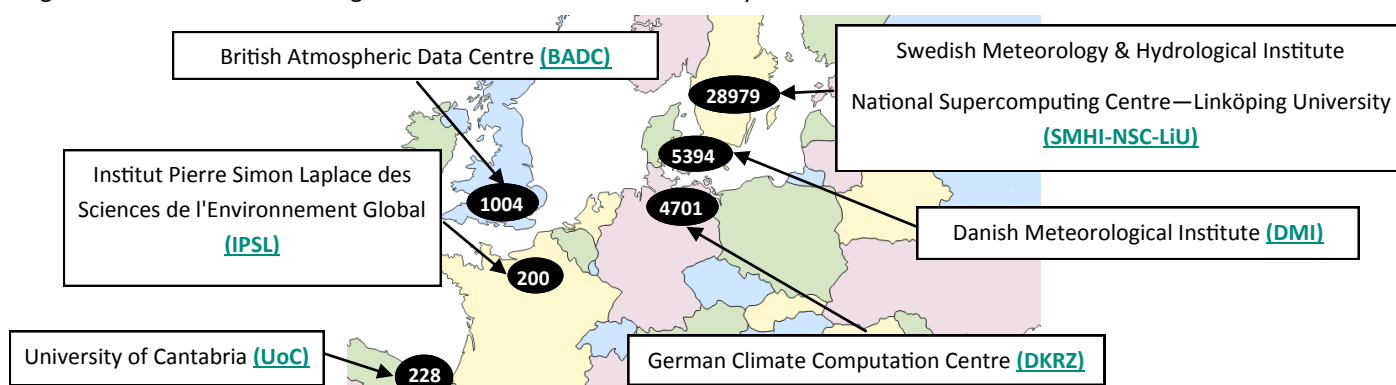


CORDEX Archiving

Contact: [Grigory Nikulin](#)

This article provides a short overview on the CORDEX archiving progress for RCMs and provides information on how CORDEX RCM results can be accessed. Empirical Statistical Downscaling (ESD) is also part of the CORDEX activities but the first ESD results are not openly available and therefore not covered here.

An initial CORDEX focus was the establishment of a central CORDEX archive supplemented by regional data portals. However, it soon became clear that a geographically distributed archiving system such as the Earth System Grid Federation (ESGF) offers much greater flexibility for providing numerous CORDEX RCM simulations produced by many modelling groups in different parts of the world, analogous to the Couple Model Intercomparison Project Phase 5 (CMIP5). ESGF is an up-to date scientific infrastructure for distributing climate data (www.esgf.org) and will now become WCRP's main tool for providing global and regional climate simulations together with observations and reanalyses over the next decade.



A number of CORDEX simulations for different CORDEX domains were completed before CORDEX-ESGF archiving infrastructure was in operation and taking into account a rising demand for CORDEX results a few regional data portals have been established. They include 3 regional CORDEX data banks, namely the [Mediterranean](#), [East Asia](#) and [South Asia](#) CORDEX domains. In addition to these data portals providing domain specific simulations a number of simulations completed by one RCM for 4 CORDEX domains are also available [here](#).

The CORDEX-ESGF segment of the CORDEX archive is a joint effort of a number of European groups (see map above) coordinated by the Infrastructure for the European Network for Earth System (IS-ENES). The first CORDEX simulations were made openly available via ESGF during September 2013 and since then the number of users has consistently increased reaching 622 by 14th June 2014. CORDEX simulations are visible on all ESGF index nodes worldwide but the full support for all CORDEX search options including CORDEX-specific ones ("Domain", "Driving Model", "Downscaling Realisation") is at present provided by the ESGF index nodes shown on the map (above) which also indicates the number of datasets published on each node. All CORDEX simulations which are now accessible can be seen in Table 1 (right) and more simulations can be expected in the coming months.

A short introduction how to download CORDEX simulations can be found on the [ENES-CORDEX webpage](#). At the recent CORDEX Science Advisory Team (SAT) meeting (see p2) the CORDEX data archiving progress was discussed in detail and the SAT strongly recommended the use of ESGF as the main tool for providing CORDEX data to users.

CORDEX simulations published on ESGF can also be accessed via an impact portal www.climate4impact.eu that is becoming increasingly used and provides a user-friendly interface to the ESGF content (CORDEX and CMIP5) for users not familiar with the technical aspects of ESGF.

| CORDEX Domain | Number of simulations | | | | No. of RCM groups |
|------------------------------|-----------------------|-------|-------|-------|-------------------|
| | ERAINT | RCP26 | RCP45 | RCP85 | |
| Africa (AFR-44) | 6 | 2 | 15 | 15 | 6 |
| Europe (EUR-44) | 8 | 1 | 14 | 14 | 8 |
| Europe (EUR-11) | 4 | 1 | 10 | 11 | 6 |
| Arctic (ARC-44) | 3 | 1 | 5 | 7 | 2 |
| East Asia (EAS-44) | 6 | 5 | 5 | 5 | 5 |
| North America (NAM-44) | 3 | 1 | 4 | 4 | 3 |
| MENA (MNA-44) | 2 | 1 | 3 | 5 | 2 |
| South Asia (WAS-44) | 2 | 1 | 3 | 1 | 4 |
| South America (SAM-44) | 1 | | 1 | 1 | 1 |
| Antarctica (ANT-44) | 1 | | 1 | 1 | 1 |
| Australasia (AUS-44) | 1 | | | | 1 |
| Mediterranean (MED-44,22,11) | 17 | | 5 | 7 | 8 |

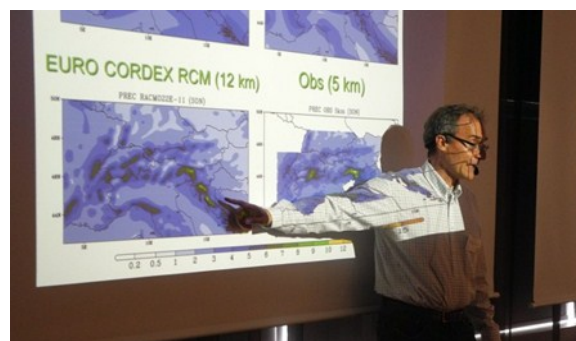
Table 1: Number of CORDEX simulations under different RCP scenarios (2.6, 4.5 and 8.5) per CORDEX domain available on ESGF and other data portals and a number of modelling groups contributed. ERAINT is an evaluation run driven by the ERA-Interim reanalysis (status as of June 2014).

3rd Regional Climate Modelling Workshop



Many members of the CORDEX community across the globe participated in the recent 3rd International Regional-Scale Climate Modelling Workshop – “21st Century Challenges in Regional Climate Modelling”, which was held in Lund, Sweden on 16-19th June 2014. The workshop was co-organised by Lund University, the Swedish Meteorological and Hydrological Institute (SMHI), the Danish Meteorological Institute (DMI), Helmholtz-Zentrum Geesthacht (HZG) and the International Baltic Earth Secretariat. The conference was further supported by the World Climate Research Programme (WCRP), the World Meteorological Organisation (WMO) and the Swedish Research Council Formas. This event followed on from the two previous workshops in 2004 and 2009 and aimed to review the present position, what has been achieved in regional climate modelling, what challenges are currently being faced, and how regional climate modelling can develop to meet future expectations and demands.

The workshop was organised around four key themes: Regional Climate and Earth System Models; Very high resolution RCMs; Challenges to RCM evaluation and application; and RCM Ensembles. Over 200 scientists took part in this successful workshop, with both oral and poster presentations, and many participants describing it as fruitful and inspiring. The workshop proceedings are available from the [workshop webpages](#) and a post event scientific summary and all presentations will shortly be provided.



UGM Special Session: Regional climate models and CORDEX

A Special Session “S02: Regional climate models and CORDEX” will take place during the upcoming Unión Geofísica Mexicana (UGM) to be held in Puerto Vallarta, Mexico, 2th - 7th November 2014.

For this session papers on the next topics are welcome:

- 1) Implementation and validation of regional climate models over different regions -- with particular emphasis on those within CORDEX framework
- 2) Applicability of regional climate models in the study of extreme events (i.e. precipitation extremes, heat waves, droughts and other phenomena)
- 3) Studies of VIA (vulnerability, impacts and adaptation) to climate change

The deadline for abstract submission is the **9th August**, and should be submitted through the [UGM site](#).

Papers in English and Spanish will be accepted. The conveners are: Ruth Cerezo-Mota (ruth.cerezomota@gmail.com) & Ramón Fuentes-Franco (rfuentes@ictp.it)

CORDEX People

The **Scientific Advisory Team (SAT)** is responsible for implementing and overseeing CORDEX to ensure it achieves its goals. The current members (*region responsibility in italics*) are;

| Filippo Giorgi (co-chair) | | | |
|---|----------------------|---------------------|---|
| William Gutowski (co-chair) - North America | | | |
| R Krishnan (<i>South Asia</i>) | Isabelle Anguelovski | Tannecia Stephenson | Grigory Nikulin (<i>MENA</i>) |
| Chris Lennard (<i>Africa</i>) | Won Tae Kwon | Bertrand Timbal | Silvina Solman (<i>South America</i>) |

In addition to the SAT members there are also additional regional contact points as following :

| Domain | Contact person | Domain | Contact person |
|-----------------|--------------------------------|-----------------|--|
| Arctic | John Cassano & Annette Rinke | MENA | Panos Hadjinicolaou |
| North America | Linda Mearns & Anne Frigon | Africa | Richard Anyah & Emiola Olabode Gbobaniyi |
| Central America | Raymond Arritt | Central Asia | Levent Kurnaz |
| South America | Raymond Arritt | South Asia | Mandira Shreshta |
| Antartica | John Cassano & Annette Rinke | East Asia | Hidetaka Sasaki & Hyun-Suk Kang & |
| EURO | Andreas Gobiet & Daniela Jacob | South East Asia | Fredolin Tangang & Gemma |
| MED | Samuel Somot & Paolo Ruti | Australasia | Jason Evans & Jack Katzfey |

All contact information for both the SAT members and the regional contact points can be found on the

[CORDEX website](#)

The WCRP Joint Planning Staff contact is [Michel Rixen](#).

The CORDEX Communication & Outreach team are responsible for the CORDEX website, communication between the domains, and promoting CORDEX to those outside the community;

[Samuel Somot](#) (CNRM) [Roberta Boscolo](#) (WCRP) [Catherine Michaut](#) (IPSL) [Eleanor O'Rourke](#) (SMHI)

CORDEX is a WCRP Project sponsored by:

