



## PROJECT REPORT

**Report of the second session of the CORDEX Science Advisory Team  
(CORDEX-SAT)**

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**SMHI, Norrköping, Sweden**

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**Apologies:** Boram Lee, Bruce Hewitson

## Presentations

In the text of this report there are hyperlinks to the relevant presentations; however; you can also find the presentations for all sessions [here](#) under the relevant session number.

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## **1 Welcome & introductions**

### **1.1 Welcome from SMHI General Director and Head of Rossby Centre**

The General Director of SMHI, Rolf Brennerfelt, welcomed all CORDEX-SAT2 participants to the meeting, SMHI, Norrköping and Sweden and expressed thanks to everyone for making the, in many cases, long journeys to be at the meeting. He then described the wide ranging responsibilities and activities of SMHI, of which many are highly relevant to CORDEX.

Erik Kjellström, Head of the Rossby Centre, also welcomed all members of the SAT to SMHI. He briefly described the long standing role the Rossby Centre has had in CORDEX and how SMHI, as host institute of the newly established International Project Office for CORDEX (IPOC), looks forward to helping drive the project forward.

### **1.2 Logistics**

Eleanor O'Rourke, Director of IPOC, shortly explained some logistical details for the meeting and highlighted the documents and maps the meeting participants could find in their meeting pack.

### **1.3 Co-chair introduction**

Bill Gutowski, CORDEX SAT co-chair, also welcomed everyone to the meeting and suggested a round table of introductions as there were a number of new members. Each participant introduced her/himself and provided a short description of their background and skills.

Bill then highlighted how this was a key meeting to help drive CORDEX forward at a time when there is a background of increasing interest from various bodies such as the VIA community, IPCC and EU.

## **2 Session 1: Updates from the CORDEX domains**

SAT members were requested to provide updates on the following topics: Recent meetings; Science highlights; Funding status; and future plans and opportunities. These issues are therefore covered in the individual presentations that are linked below, further points of interest are shown in bullet lists and actions are highlighted in *italic*. All domains were represented, with Bill and Grigory providing the updates for those domains without a representative SAT member.

### **2.1 CORDEX-South East Asia (Fredolin Tangang)**

[See presentation](#)

- Fredolin provided details of this new domain in his presentation.
- Originally the Tibetan Plateau had been included but this caused some difficulties so the domain now starts just below.
- Simulations in this domain were initiated at 25km rather than the more standard 50km.
- A number of workshops have been held and during the 2nd workshop there was strong interaction with end users and this highlighted the need for a pilot project on impact assessment for RICE.
- Vietnam and Thailand are progressing well while the Philippines and Indonesia are just starting their activities.
- Australia has said they will only run the projection, no baseline, as they feel there is very little benefit.
- All groups are running the same RegCM configuration at RCP4.5 and 8.5 except Australia who are using only RCP8.5 and a reduced timeframe.

## 2.2 CORDEX South Asia (Krishnan Raghavan)

[See presentation](#)

- RegCM and LMDZ are run in-house at CCCR-IITM.
- Selected variables are now available on the portal and users have started to utilise them.
- Simulation matrix should be completed in around a year.
- Rainfall and temperature are most requested for impact assessment.
- Desire to ensure the CORDEX and CMIP6 activities are somewhat coordinated – now registered as one of CMIP6 models.
- Michel was glad to hear of focus on circulation as an additional and important metric on top of temperature and precipitation

## 2.3 CORDEX- Arctic & Antarctic (Bill Gutowski)

[See presentation](#)

- Annette Rinke is POC for Arctic CORDEX and is also a member of the WGRC and heavily involved in CliC.
- John Cassano, the other POC, is working on a larger domain that includes the full CORDEX Arctic domain.
- There are a number of high resolution runs that have completed within the Arctic region and these should be kept in mind for the flagship pilot studies.
- Much lower level of activity in Antarctic domain.
- KNMI and NMT have completed simulations with five others planning to participate plus some others for some process-based studies.
- Process-based studies may be problematic due to lack of observational data; John Cassano is a good contact for this.

## 2.4 CORDEX North America (Bill Gutowski)

[See presentation](#)

- Difficulties in accessing funding but there are a number of groups who have completed runs.
- A common grid and bias correction for all output is an aim.
- Lots of discussion with Chris Weaver of the US GCRP but no direction for regional scale within Federal agencies so the situation is very uncertain,
- Working with Robert Ferraro and Duane Waliser at NASA on simulations at various resolutions, with an eye toward added value of high resolution simulations. Satellite observation datasets perhaps not as good as imagined. NASA project could potentially be good start for a pilot study; they are focusing on atmospheric rivers in western US, East Coast storms and convective storms in middle of US.
- Only two from North America on ESGF but rest must be contacted.

**ACTION:** *Bill to maintain discussion with Chris Weaver (US GCRP) concerning funding.*

**ACTION:** *Groups not on the ESGF should be contacted to encourage them to upload their data to ESGF.*

## 2.5 CORDEX Central America (Tannecia Stephenson)

[See presentation](#)

- Requested SAT input and support for getting data uploaded to the ESGF and for the associated training.
- Promoting getting more journal articles from the region.

- Website now available.
- PEER is a grants programme that provides an opportunity to support scientists in developing countries who work with principal investigators at US institutions. A pre-proposal has been submitted to the PEER programme to support research over Northeast and Southeast Mexico.

**ACTION:** Grigory and Eleanor to follow up with Tannecia concerning additional support for ESGF upload and to potentially find funding for a training workshop in the region.

## 2.6 CORDEX South America (Silvina Solman)

[See presentation](#)

- Not too much activity over the last year.
- Feel there is not a lot of interaction from South American institutions but rather from the European centres.
- No coordination within the region and no funding or regional scale projects.
- Institutions may be running simulations (potentially CORDEX) but the exact position is unclear.
- ALCUENET project between northern South American countries and Europe (mainly France) focused on climate change impact on biodiversity in northern South America with a workshop planned for late May/June 2015. Steering group is currently being organised but requires a CORDEX representative from Europe.
- No website – IPOC to provide support here.
- Follow up from the workshops – need to try and find some way of harnessing the enthusiasm.
- Need to first determine the strategy in the region before seeking specific funding.
- Most people asking for the output are coming from the impact community.
- There is potential for more activity on the analysis side from institutions in the region which could be organised in some kind of coherent fashion.
- Funding is a crucial stumbling block; PEER programme may be a potential option for funding.
- Some analysis support perhaps through other avenues such as national level funding; IPOC will follow up on potential support for a scoping workshop.
- CORDEX Africa activities are an example that could be followed by CORDEX South America

**ACTION:** Silvina to determine the stumbling blocks to participation for South American institutions.

**ACTION:** IPOC to investigate and provide support for locating potential funders such as PEER and START.

**ACTION:** Eleanor to attend ALCUENET- CORDEX South America meeting as European CORDEX representative.

**ACTION:** IPOC to help in setting up a domain website.

**ACTION:** IPOC to determine possibility of Swedish based funding (SSEESS) for an analysis scoping workshop.

## 2.7 MENA-CORDEX (Grigory Nikulin)

[See presentation](#) (both MENA & Central Asia)

- ESCWA was one of the main drivers for MENA but there is also now good support from the Cyprus Institute.
- There is good participation in the region even for those institutes in very difficult circumstances.

- A critical mass has been achieved, website is under construction and some information is available.
- Post processing is problematic for all groups.
- ESCWA-RICCAR planned a regional knowledge hub (RKH) with funding for a regional data portal which now might be an ESGF data node.
- A proposal was sent to ISSI last year (unsuccessful) but as they offer no travel support it was not felt worthwhile to submit a proposal this year.

**ACTION:** Grigory and IPOC to support post processing in the region.

**ACTION:** IPOC to maintain contact with ESCWA-RICCAR concerning further future support for MENA.

## 2.8 Central Asia CORDEX (Grigory Nikulin)

- Only one group in Turkey but they have run a number of simulations.
- Post processing is again problematic – Grigory is trying to initiate these activities.
- May also run RCA4 but situation unsure.
- Daniela feels this domain is important for regional phenomena that are partly cut off in all other domains and link to the other domains – potential for domain overlap papers. Worth trying to stimulate some more interest.
- Question to maybe make Central Asia a little smaller but this is a rather tricky area. Combination with MENA would be difficult. Former Soviet republics are interested in the data but have no capacity for simulations.
- Turkey is in 5 domains.
- EU outreach into this region (Eastern Europe to Central Asia) from a H2020 climate service point of view.
- Only one group in Russia running RCM simulations – no interest in this domain, only Arctic.

**ACTION:** Grigory to continue support for post processing in the region.

**ACTION:** Grigory and IPOC to follow up on stimulating greater interest in the region.

**ACTION:** IPOC to follow up on potential for EU funding, through H2020 climate services calls, for the region.

## 2.9 CORDEX Australasia (Bertrand Timbal)

[See presentation](#)

- All funding is project driven, CORDEX relevant but hard to coordinate and maintain infrastructure.
- Most important activities for many scientists involved in CORDEX related activities have been interactions with VIA groups.
- Need to coordinate variety of websites generated by various projects; issue with progressing the Australasia CORDEX website.
- One example of such a project driven web site is the National Projections web site for NRM regions. This website offers different levels of access (dependent on the skills of the users). It will be online the end of March 2015 using the CSIRO Climate Futures tool to map future projections uncertainties; it will include application ready dataset down to a 5km resolution – some is interpolation of GCM direct output to a 5km grid but also some statistical and dynamical downscaling output. This project does not cover the entire Australasia domain but the entire Australian continent.
- Some Pacific Island Nations are interested in accessing CORDEX simulations but may not be in the Australasia domain (e.g. French Polynesia).
- All highlighted in update are standard CORDEX on the ESGF compatible grid.

- Many studies are run at higher resolution than CORDEX recommended ones: Physical reasons to push resolution (catchments etc) are behind these.
- There are no CORDEX simulations for the Pacific. Users had to run their own simulations. It was found in a pilot study (PhD student) that 12km (CSIRO came to similar conclusion across many PICs with simulations down to 8km) is not enough for Pacific, much higher resolution is required. Feeling that going down to 5km is where some good results would be found; the PhD student identified by Bertrand could be a POC for this area? Improvement in the reproduction of the ITCZ and SPCZ could be a good driver to help generate interest in running CORDEX Pacific simulations.
- Running regional climate models in Tahiti (University of French Polynesia) with help from Meteo France
- Pacific Nations have a big focus on ocean and wave modelling.
- Can ESD play an important role in this region? Many areas (such as Fiji, Cook Islands) observational data is constraint.
- SIDS have a strong profile here and possibility of UNDP helping to support a CORDEX effort here.

**ACTION:** IPOC to support creation of CORDEX Australasia website.

**ACTION:** IPOC and Bertrand to investigate potential to set up some CORDEX activities for the Pacific region; IPOC to investigate potential funding from SIDS and UNDP.

## 2.10 CORDEX-Africa (Chris Lennard)

[See presentation](#)

- Richard Anyah, new POC for the region, is a very good link for accessing US funding (NSF) as he is based there.
- A new workshop series is in planning: initial planning workshop; three analysis workshops; and a final 'writeshop'.
- Aim to produce 5 or 6 papers from these.
- Currently determining funding and a proposal for the first workshop has been submitted to SSEESS with the outcome expected in early March.
- Three more papers published in 2014/5 through the existing CORDEX-Africa teams.

## 2.11 CORDEX East Asia (Hyun-Suk Kang)

[See presentation](#)

- For the Phase 1, mostly Korean groups were active participants, and one group from Japan joined later.
- Domain was reconfigured for the Phase II, in which the southern boundary is somewhat marginal for tropical cyclone activity. The new domain was decided based on consensus through the discussion by EA groups at CORDEX-EA workshop in Jeju, Korea (August, 2014)
- China is now very enthusiastic in being involved in Phase II.
- Japan is more focused on disaster prevention using very high resolution, not within CORDEX framework. But a few groups will join the Phase II experiments.
- KMA plans to host an ESGF node for East Asia, and MAIRS-IPO in China makes an effort to organize ESGF-based network for Asia community.
- Some of EA groups plan to follow the design of the flagship pilot studies for Phase II.
- Russia is not interested in East Asia domain.

## 2.12 EURO-CORDEX

[See presentation](#)

- Andreas Gobiet is no longer a POC and has been replaced by Stefan Sobolowski of UNI Bergen and Eleni Katragkou of Aristotle University of Thessaloniki.
- Evaluation data is available from EURO-CORDEX. Currently on different grid levels and almost all at least daily, some sub-daily with information on the website showing on which grid etc. No central storage but contact details available to access the data.
- No dedicated funding for EURO-CORDEX but national funding is available.
- Daniela highlighted it is very important to package the initiative carefully to access funding; this has been successful in Germany (€2.5 million project).
- Users want a EURO-CORDEX stamp for guidelines – Daniela to provide list of previous contradicting guidelines.
- More national activities than regional workshops.
- Next 2 years focusing on 12km scale but also aiming for some pilot regions at around 1km at the moment.
- Funding opportunity within Copernicus expected in Q3 (September/October) of this year. Some modelling centres expressed interest for this tender and Daniela has started to draft the proposal; a workshop on this will take place on the 20<sup>th</sup> April at ECMWF to discuss the procedure.

## 2.13 MED-CORDEX

[See presentation](#)

- MED-CORDEX is more focused on coupled ocean-atmosphere system with an aim towards a full Earth System model for the Mediterranean (there are 8 coupled models); this coupling is the difference from EURO-CORDEX.
- Samuel now single POC.
- No funding although HyMEX provides some money.
- MED-CORDEX is very scientifically driven but meets user needs. EURO-CORDEX was driven by the ensembles required by the users.
- All regional modelling calls are now production driven for impacts users.
- Simulations are funded by project funding, institutional funding etc.
- Could MED-CORDEX help the other CORDEX domains for coupled modelling? Comes back to science or operational driven CORDEX? Many regions where climate change signal will not be seen unless coupling is happening. Fredolin suggested that CORDEX South East Asia would be keen to learn from the coupling experience of MED-CORDEX.

**ACTION:** IPOC to facilitate discussion between MED-CORDEX and CORDEX South East Asia concerning potential for coupling knowledge transfer.

### **3 Session 2: Wider updates & CORDEX scope**

#### **3.1 WCRP/CORDEX Update (Michel Rixen)**

[See presentation](#)

- WCRP's mandate is focused on research rather than service and slightly uncomfortable within the applications' realm; strategic partnerships may best address this area rather than expanding the WCRP scope.
- WCRP leadership considers for CORDEX to become one of the core projects and this will be discussed at the JSC meeting in April 2015.
- Boram Lee is new point of contact for both CORDEX and WGRC.
- Phase II needs to be ready for upcoming calls (H2020 for example).
- Michel highlighted that it is imperative to get the community excited by innovative science efforts
- WCRP have a growing focus on coastal megacities and therefore suggests this may be a potential area for flagship pilot studies.

#### **3.2 WGRC Update & Grand Challenges (Clare Goodess)**

[See presentation](#)

- WGRC is the activity within WCRP which is reaching out to users and decision makers to the greatest extent.
- There is some blurring of the boundaries between CORDEX and WGRC.
- Of the six Grand Challenges Regional Climate Information is clearly the most relevant to CORDEX; however, a number of the others also have relevance to the activities.
- The Regional Laboratories idea proposed by WGRC seemed to be very interesting to WCRP.
- Bruce is currently working on the report from the distillation workshop so it should be available soon.
- Cross community activity is being encouraged but complimentary to existing activities.
- Some of the Grand Challenges have remained focused but others have diverged to a greater extent and streamlining required.
- Some tensions over potentially moving to seamless prediction.
- Time of uncertainty and there is a need to pull the strands together – this will possibly occur during brainstorming at Paris meeting in March.
- WCRP and JSC leadership do seem supportive of CORDEX but there appears to be some alternative views on the JSC.
- WGRC should find its niche relative to CORDEX activities – should science be conducted within WGRC? Some members of the SAT suggested that it should not.
- There is more confusion the other way as to how much capacity building etc should be carried out within CORDEX.
- CORDEX is a downscaling experiment, like CMIP is a GCM experiment, so WGRC should distill in the same way as WGCM.
- There is potential for CORDEX to collaborate with other activities under WGRC.

#### **3.3 CORDEX Scope (Bill Gutowski)**

[See presentation](#)

- There are two parallel goals for CORDEX moving forward; Phase II, and a longer term strategic planning.
- CORDEX should retain a focus on what it is trying to achieve and be careful to not be distracted by activities which fall outside of its realm.

- The mission of CORDEX is very different from CMIP and this must be recognised.
- Aim to develop a five-year strategy plan to drive CORDEX forward; a SWOT (Strengths, Weaknesses, Opportunities and Threats) Analysis could be a useful initial step.

### 3.3.1 What defines CORDEX?

- There is some impression amongst the wider community that CORDEX is only providing datasets; the science goals seem to have been somewhat lost.
- Some discussion on whether observations and impacts are outside the scope of CORDEX but concerns that lack of involvement in either may result in losing vital information. However, this problem could be addressed if close collaborations were initiated or developed with these communities to ensure effective two-way dialogue.
- There are clear science questions sitting in the modelling and processes areas.
- Bill and Bruce (WGRC co-chair) have expressed concern that if CORDEX does not provide phenomenon analysis then end-user trust cannot be taken for granted and this should be addressed.

### 3.3.2 VIA interaction

- Some direct interaction between the modelling and VIA community is ongoing, mainly in the large modelling centres that have resources to allow separate science and communication specialities but this cannot be expected to be the case in developing regions.
- WCRP should draw on best practice of national activities.
- Regional Climate Grand Challenge is aiming to encompass all timescales.
- Climate scientists want to be involved in driving the VIA interaction; VIA applications is clearly where the funding will come from in the future.
- Daniela highlighted the importance of partnering with Future Earth – the science stays in WCRP but there must be a close linkage into Future Earth and other relevant programmes.
- Within GFCS there is an overlap in climate processes and observations areas – Future Earth is potential mediator in the relationship with GFCS.

### 3.3.3 Timescales

- The question of timescales was raised; should CORDEX cover seasonal and decadal also? At one point there was discussion of decadal prediction with 30-year runs.
- It was concluded that it should not be a requirement for the CORDEX community but for those who are interested they should not be dissuaded.
- The question should be kept in mind but not within the central core of activities.

### 3.3.4 Revision of CORDEX goals

The SAT members reviewed the existing goals on the CORDEX website and felt that they did not adequately represent the project. After further discussion the following key goals were identified:

1. To better understand relevant regional/local climate phenomena, their variability and changes, through downscaling.
2. To evaluate and improve regional climate downscaling models and techniques
3. To produce coordinated sets of regional downscaled projections worldwide
4. To foster communication and knowledge exchange with users of regional climate information.

Michel also suggested to develop a one liner vision statement for CORDEX, which after some discussion, was decided as the following:

**‘The CORDEX vision is to advance and coordinate the science and application of regional climate downscaling through global partnerships.’**

**ACTION:** Eleanor to add the new vision and goals to CORDEX website.

## 4 Session 3: CORDEX Issues

### 4.1 Data policy (Grigory Nikulin)

[See presentation](#)

- The long term goal is for all groups to move to ESGF but this takes time
- There is no data portal for Australasia at the moment.
- Extra data access method through sending discs (of downloaded ESGF data) to institutes with poor internet access (Africa, Cuba for example) should be highlighted as an alternative method for accessing CORDEX data.

**ACTION:** Grigory and Bertrand to work on establishing an Australasia data portal.

**ACTION:** Eleanor to add physical discs of ESGF downloaded data option to 'Data access' option on the CORDEX website, and determine a relevant contact for this option.

#### 4.1.1 Terms of Use issues

- All data on regional data portals are 'non-commercial' in comparison to ESGF where the individual groups decide on 'unrestricted' or 'non-commercial'
- Almost all CMIP5 data are apparently now completely open to both commercial and non-commercial use but a couple of groups still have 'non-commercial'. CORDEX simulations are not necessarily available for commercial use; however, we must be cautious to ensure ToU are very explicit.
- Many groups automatically choose 'non-commercial' out of ease rather than requirement; a discussion needs to happen concerning this for the regional portals.
- Must be aware of national differences, which may restrict open data; for example Government of India institutes cannot open data for commercial use.
- Recommendation that all ESGF data is openly available should be emphasised within the CORDEX community.

**ACTION:** Eleanor to discuss terms of use with regional data portals; reasons for restriction on data should then be made available on the website.

**ACTION:** Table showing terms of use for each model to be created and uploaded to website (Grigory)

#### 4.1.2 Bias corrected data issues

- With bias corrected datasets on their way to ESGF the EOBS restriction of non-commercial may be problematic for any products aimed at the commercial market.
- The question of whether bias corrected data should have a CORDEX stamp is a very controversial issue (manipulated data) but there is an activity - the Bias Correction Intercomparison Project (BCIP). The main driver for initiating the BCIP was a need in Euro-CORDEX and in a number of European Union projects (FP 6 and 7) to provide bias-adjusted simulations for impact modelling together with information about bias-adjustment-related uncertainties and limitations. Grigory suggested waiting until the first results of the BCIP become available before having CORDEX bias corrected simulations on ESGF.
- Need to ensure there is no confusion between bias corrected and non-bias corrected CORDEX data.
- SMHI and DKRZ have developed a first approach for how to present the bias corrected data alongside the standard data.

- SMHI have completed bias correction for EUR-11, EUR-44 and AFR-44 and plan to make this data available first within projects. The EUR-44 and EUR-11 simulations have been bias adjusted by different methods to demonstrate the difference (same reference data and calibration period). A number of groups in Europe are running similar bias adjustment.
- It has been decided to publish bias-adjusted CORDEX simulations on ESGF under a new project 'CORDEX-adjust' in order to clear separated bias-adjusted CORDEX data from the original CORDEX simulations.
- SMHI aim to complete bias correction for all available runs but this is reliant on reference observations.
- There are ongoing discussions about establishing new activities like - Regional Observations for Model Intercomparison Projects (RegObs4MIPs) and regional Reanalysis for MIPs (RegAna4MIPs). Whenever important decisions are taken there should be liaison with the global counterparts Obs4MIPs and ana4MIPs.

**ACTION:** Grigory to keep the IPOC and SAT up to date on progress with BCIP and make contact with POCs as becomes relevant.

#### 4.1.3 Issue of resources for data upload

- Several runs are not available as groups do not have the resources to upload the data. Significant resources may be required; ICTP had to hire someone for 6 months for this task but the quality checker is now in place for RegCM and can be available to other groups.
- Still have problems for some groups who have run simulations but do not have the time to upload despite the availability of information; Silvina (South America) and Fredolin (South East Asia) indicated this as a barrier and Tannecia re-iterated that there is also a training requirement in her region (Central America).
- DKRZ is working on developing a CORDEX-CMOR for REMO, CCLM and PROMES and they can provide this CMOR for the CORDEX community
- Quality checker from DKRZ is available to download but installation might be tricky.
- For WRF there a website with set of post-processing scripts but still not finalised
- SMHI, DKRZ and DMI offer their datanodes for uploading.
- Ocean outputs are still outside of the standard CORDEX procedures.

**ACTION:** IPOC, through contact with POCs, to collect information on all groups who have simulations but unable to upload and experiencing other problems.

**ACTION:** IPOC and Grigory to collect all the available information on post processing and quality control tool or provide links and upload to the CORDEX website and provide clear contact details for those having difficulties.

**ACTION:** IPOC to look into the facilitation of ESGF upload; approach relevant funding agencies (such as APN in Asia, IAI in Americas) and investigate potential for visiting experts running training workshops.

#### 4.2 Statistical downscaling update (Bertrand)

[See presentation](#) and [ESD position paper](#)

- The position paper is to ensure ESD is included in CORDEX as its contribution is currently rather unclear and the current CORDEX objectives are rather RCM dominated.
- Some ESD techniques may be very difficult to integrate into the CORDEX framework.
- It may be impossible for most ESD methods to work in current CORDEX domains, due to the very large domains used and insufficient observations. The move to sub domains will facilitate a more seamless approach as RCM resolution can be pushed further in the vicinity of the resolution for which ESD using gridded observations can deliver outputs (the

constraint here is the resolution of the available gridded observations) and by joining together CORDEX can start to target more ambitious science questions.

- One goal is the comparison between ESD and RCM but should also be aware of the special capabilities of ESD. Currently it may be hard to motivate comparisons for ESD practitioner with current RCM resolution representing an upscale of the outputs generated and hence it is hard to see the value of such exercise for ESD practitioners.
- There needs to be scientific questions rather merely a technique comparison – this would be more motivating. This can fit well into the planned flagship pilot studies; opportunity to match science questions, RCM and ESD, and end-user driving.
- In the previous ESD workshops there has been a lot of discussion on somewhat ‘engineering issues’ due to the sheer variety of techniques, not the case with RCMs; there is a wealth of information available from the variety of techniques.

#### 4.2.1 Current progress

- Not waiting for flagship pilot studies - sub region studies in S America and Africa are underway and this will be discussed at the 3<sup>rd</sup> ESD workshop.
- Experiment protocol now available on CORDEX website
- First steps towards comparison being taken.
- ESD community is aware of the need to catch up with RCM community and is therefore working strongly towards making results available as soon as possible.

#### 4.2.2 Next steps

- 3<sup>rd</sup> ESD workshop will take place 1st-3rd June in Cape Town.
- Discussion with the RCM community should be established; this has been initiated within EURO-CORDEX but should be expanded.
- Initiate some joint activities/pilot projects for really comparing side-by-side – defined around a region, resolution and scientific questions. Plenty of areas where there may already been things happening.

**ACTION:** *Bill, Bertand and Tannecia to drive forward discussion with the RCM community and update the SAT and IPOC with progress as relevant.*

### 4.3 Domains, updates and selection criteria (Bill Gutowski)

[See presentation](#) and [draft selection criteria document](#)

#### 4.3.1 Current domains

- Existing regions were not always chosen with clear scientific goals; it may be useful to evaluate how existing domains fit into the new criteria (in document drafted by Bill and Grisha).
- SAT will take the final decision on all updates or new domain requests
- Filippo felt it was important to maintain the basic large domains even if ensemble size is small (as is the case for Central Asia) as interest is more likely to be sparked if domain is operational.
- Retain a core set for constant framework that are largely unchanged to ensure consistency; exception for existing where there is clear scientific motivation (Central America)
- Too many domains could cause an issue with overlapping domains as the climate change signal differs. Too many domains diffuse the CORDEX program and limits ensemble size in each region. Also want to avoid groups requesting a domain simply for purposes of stature.
- IPCC has a clear future focus on regional information so the larger CORDEX domains are likely to be used and this also perhaps motivates limiting number of new domains.

- Smaller, well reasoned domains may be initiated but can be established with clear limits on their lifetime – specific regions for specific time.
- A potential new domain is the Baltic region, the area under the BALTEX/Baltic Earth consortium; 8 groups running coupled models over the Baltic Sea.

#### 4.3.2 Key questions

- Ask the community (through POCs) whether the current large domains remain valid; motivation for changing or keeping status quo must come from the community.
- Requests for modifications must be clearly motivated by scientific reasons.
- Likely future resolution should be made clear – Filippo feels it should be kept in line with GCMs' increasing resolution (This suggests 25km for CORDEX large domains).
- May be most appropriate to align any changes with the introduction of CMIP6.
- A global perspective should be retained.

**ACTION:** Eleanor to send the draft criteria to all SAT members for comment with a 3 week deadline.

**ACTION:** After SAT review, Eleanor will distribute the selection criteria to wider community through POC) and request they review their own domain in light of this.

## 5 Session 4: The Future of CORDEX

### 5.1 Flagship Pilot Studies (Filippo Giorgi)

[See presentation](#)

#### 5.1.1 The benefits of FPS for CORDEX community

- Should be seen as an additional activity to the core work of CORDEX, analogous of the MIPs to CMIP.
- There are already projects operating at 4-5km ad hoc around the world so CORDEX would aim to provide a structure to these activities; should be a 'bottom-up' rather than 'top-down' approach.
- An example could be a North American monsoon FPS – lots of interest, no coordination, but with considerable potential and falls very much under CORDEX.
- CORDEX would provide a basic protocol; this is the added value – what processes, analysis, experiments etc. If there is something in place then people will use it as a reference and groups will be attracted.
- Benefit of CORDEX/WGRC for these types of activities would be linking bottom up approaches to the wider linkages, such as to newly established MIPs.
- Would offer high resolution outside the 1<sup>st</sup> world context; high resolution is available in US/Europe/Japan but not in most developing regions.
- Good to use consistent boundaries – from CORDEX big domains.
- This resolution is not within reach of increasing GCM resolution; impact studies have already moved away from 50km resolution.
- FPS will form part of the 5 year strategy; looking where regional downscaling is going, trying to understand and setting the field.

#### 5.1.2 How it would work

- Start with one pilot study per domain and see how it works – covering different regions, different problems.
- Timescales are an important question – should they be similar to the larger domains? Timeslices?
- New simulations will be required.
- There MUST be downscaling, and there MUST be an application/goal.
- Interaction of CORDEX FPS with other bodies (MIPs) – whoever proposes is responsible for this –making consistent with GCM modelling.
- Each region may have a differing approach - high resolution is not an absolute necessity but there must be some added value.

#### 5.1.3 Contribution of WGRC

- Each pilot study would have an advisory team bringing in the wider community. WGRC could facilitate this and would therefore have to be involved in selection process etc.
- Discussion on wider issue of studies being 'demand driven' – should be equal status to the scientific motivating questions.

#### 5.1.4 Next steps and timeline

- Majority of SAT members are in favour of moving forward with FPS.
- A smaller focus group to discuss more on how to frame FPS was established consisting of Filippo, Daniela, Bill, Bertrand and Silvina.

The following timeline for the establishment of CORDEX FPS was decided as follows:

**ACTION:** Deadline for focus group short proposal to be provided to POCs - end of April 2015.

**ACTION:** Deadline for consultation with CORDEX community through POCs - end of June 2015.

**ACTION:** FPS teleconference for SAT members –mid July 2015.

**ACTION:** Deadline for full proposal to be circulated to WGRC for discussion/endorsement – end of 2015.

**ACTION:** Presented to the JSC 2016 meeting – Q2 2016

### 5.1.5 Additional points

- Activities can be started outside of CORDEX with knowledge of the FPS proposal – interested parties can be informed of the process and can start with acknowledgement that JSC agreement has not yet been met.
- FPS should be presented as part of the wider CORDEX strategy planning taking into account CMIP6 and the Grand Challenges.
- When presenting to the JSC in 2016 we should aim for not just the final proposal but some test projects in action.
- During JSC 2015 meeting, they can be informed that FPS plans are underway but not looking for official endorsement at this time.

## 5.2 Strategic Development of CORDEX (Bill Gutowski)

[See presentation](#)

### 5.2.1 Science questions

Core activities are to:

1. Finish CMIP5 analysis.
  2. Work towards CMIP6.
  3. Towards higher resolution – FPS
  4. Look at issues such as land use change.
- Some overarching questions but with some region specific questions as well (for example monsoon).
  - Develop a set of CORDEX Challenges, against the background of any change in the WCRP landscape. WCRP are coming to the end of their 2005-2015 strategic plan and Dave Carlson is working on the next document.
  - Should keep a practical approach to funding potential – user engagement and user driving is important here.
  - This will therefore provide guidance to the kind of science questions we need to address.
  - In Europe the situation is quite good for regional activities; H2020 are science for climate services while ESA are more focused on climate service itself. This is not the case for other regions which have to be more application focused.

### 5.2.2 CORDEX Regional Challenges

All the below are leading up to Regional Earth System Models (10 years), will provide guidance to the CORDEX community, provide evidence of strategic planning to the JSC and also provide an outline for ICRC: CORDEX 2016.

**Challenge 1: Added value (Responsible: Grisha, Bill, Tannecia)**

- Internal variability as function of scale
- Added value as a function of scale
- ESD
- Bias correction uncertainties and consistency

**Challenge 2: Human element (Responsible: Filippo, Bertrand, Chris)**

- High resolution coupling of regional climate and coastal megacities
- Bridging activity with urban parameterisation community
- Land use change

**Challenge 3: Coordination of regional coupled modelling (Responsible: Daniela, Grisha, Anne)**

- Ocean-ice-atmosphere
- Lakes
- Dynamic land surface
- Natural fires
- Atmospheric chemistry
- Carbon cycle
- Aerosols
- Marine biogeochemistry

**Challenge 4: Precipitation (Responsible: Fred, Krishnan, Hyun-Suk)**

- Convective systems
- Coastal storm systems
- MJO/Monsoon

**Challenge 5: Local wind systems (Responsible: Chris, Silvina, Bill)**

- Wind storms
- Strong regional winds
- Wind energy

**Cross cutting themes**

- *Water resources/hydrological cycle*
- *Development of process based metrics*
- *Water-energy nexus*
- *Extremes*

**5.2.3 Timeline for Challenge development**

**ACTION:** *Science questions for each CORDEX challenge to be drafted (focus groups) - end of September 2015.*

**ACTION:** *SAT feedback - October 2015*

**ACTION:** *POC and community engagement – November to March 2016*

**ACTION:** *Challenges launched at CORDEX 2016 - May 2016*

- WGRG to provide the link to other programmes,
- The timeline above should fit well with the planned IPCC Regional Workshop that will take place in August/September 2015 in either Brazil or Netherlands; both Filippo and Fredolin are involved in this.

### 5.3 Transfer of CORDEX knowledge to GCM community (Bill Gutowski)

- CORDEX could feedback into GCMs to improve parameterisation; potentially a good opportunity to demonstrate through some kind of pilot activity especially at the start of CMIP6.
- For this type of collaborative activity a top down initiation is required.
- There is now greater opportunity for collaboration with higher resolution, convective resolving GCMs.
- How can we promote this interaction? Linking more directly to Grand Challenges? SAT members feel this should be carried out on the Working Group level, perhaps to be discussed at Grand Challenge Workshop.
- There may be NSF funding for a workshop between GCM and RCM communities.
- Potentially working with CRESCENDO and PRIMAVERA (new H2020 projects starting in September 2015) in terms of regional link.

**ACTION:** WGRC (Clare, Bruce) to take initiative and work with Grand Challenges leaders towards a potential dedicated pilot activity – end of June 2015.

**ACTION:** Eleanor to follow up on potential funding for a workshop between the GCM and RCM communities – end of March 2015.

- Raises issue of how CORDEX feeds into other relevant Grand Challenges (outside of Regional Climate Information) - Clare queries how this interaction can take place.
- How communication between the Grand Challenges, Working Groups, Core Projects and CORDEX works is not clear.
- Contact for the responsibilities at WCRP Joint Planning Staff (JPS) is also not clear at the moment due to the recent high turnover in staff.

**ACTION:** Boram to provide guidance to SAT and WGRC on the relevant communication pathways – mid April 2015.

### 5.4 ICRC: CORDEX 2016 (Eleanor O'Rourke)

[See presentation](#)

- Reason for the conference:
  - To demonstrate success both scientific and through case studies ('CORDEX in Action')
  - To facilitate cross-domain collaboration around CORDEX Challenges (see s5.2.2) with potential for keynote speakers speaking on a broader sense about the respective challenge.
  - To launch, discuss and develop future plans (including FPS).
- VIA interaction should be integrated within the science programme and not as separate sessions.
- SAT agree it would be prudent to sync with the Lund Regional Climate Conference and involve their conference leading organisers (Markku Rummakainen).
- Vital to develop resource mobilisation as soon as possible; potential sponsors include Future Earth, Swedish research funding agencies (VR, FORMAS), APN for supporting developing country scientists, SEI etc
- Regional domain side meetings were useful at ICRC: CORDEX 2013 and should be included.
- Should aim for the programme content having a balance between RCM and ESD.

#### 5.4.1 Committees

- Executive Committee (organising) – Bill, Filippo (CHAIR), Silvina, Someone from Lund (Markku), Bruce.
- Scientific Committee (review) – Bill, Filippo, representatives from all domains (SAT plus).

- Organising committee – Eleanor, Karin Jonsell (Bolin Centre), Boram, Future Earth representative potentially,
- VIA organising committee – Clare, Bruce, PROVIA representative potentially (Richard Klein?)
- ECS' should be included within the committee structure
- Need to determine Catherine's availability to provide web support.

**ACTION:** First conference announcement to be released (Executive Committee) and simple website launched (Eleanor) - end of March 2015

**ACTION:** Session framework (topics decided) - end of May 2015

**ACTION:** Call for abstracts out – September 2015

**ACTION:** Eleanor to contact those on potential Committee list to confirm involvement – 6<sup>th</sup> March 2015.

**ACTION:** Eleanor to contact Markku Rummakainen concerning synchronising ICRC: CORDEX 2016 with Lund conference – 6<sup>th</sup> March 2015.

**ACTION:** Resource mobilisation such as EC (through WCRP), Future Earth, APN, ESA, EUMETSAT and other potential sponsors (Eleanor) - as soon as possible.

## 5.5 Communication

[See presentation](#)

### 5.5.1 Website

- SAT feel it would be advantageous to move to a cordex.org website and maillists managed through the IPOC.
- If not already operational a CORDEX calendar should be added.
- Google Analytics usage data would be useful to see the numbers visiting the website and how this changes.
- Change the colour of the website background to something lighter.
- ESD point of contact for each domain should be added to the website where they are available.
- Would be interesting to have a list of projects which explicitly mention CORDEX on the website.

**ACTION:** All SAT members and POCs to look at the website and provide suggestions to Eleanor – mid March 2015.

**ACTION:** Bill to provide ESD points of contact for each domain where they are available – end of March 2015.

**ACTION:** Eleanor to initiate move to cordex.org and mailing lists to IPOC – end of April 2015.

**ACTION:** Eleanor to create list of projects where CORDEX is implicitly mentioned and upload to website – end of April 2015.

### 5.5.2 Newsletter

- Some feeling among the SAT that a more dynamic and regularly updated website with email notifications is preferable to the current newsletter format.
- Suggestion was news of the month on the website – every month a different domain with email notification.
- Something from every domain at least once a year and can be more.
- Decision from SAT was to trial this during 2015.

**ACTION:** Eleanor to initiate a request for domains to provide news for the website (timetable for contributions) – end of March 2015.

## 5.6 Fundraising

[See WCRP presentation](#)

[See IPOC presentation](#)

### 5.6.1 Future Earth

- Future Earth is principally financed by interagency cooperation; WCRP will be a strategic partner of Future Earth and continue to report to WMO and IOC.
- NSF has redirected funds from WCRP to Future Earth.
- Future Earth issued calls for proposals around 100k but success rate well below 10%. Some smaller amounts available for workshops etc.
- WCRP are somewhat puzzled about how to tap into the funding resources.
- IOC funding has dropped out, ICSU are no longer providing funding so now based on 20-30 national contributions which are somewhat decreasing.
- CORDEX must play on its outreach activities in discussion with Future Earth.
- IPOC should coordinate with WCRP when approaching Future Earth.

### 5.6.2 Other potential sponsors

- ICSU Regional Offices.
- IPOC should work closely with ICTP on capacity building/development proposals.
- Some potential EU funding available for activities outside Europe.
- Asian Development Bank supported Bogor workshop – they should be kept in mind whenever important events are occurring as potentially big funding.
- GFCS grant available for Arctic and also African activities.
- Ideally CORDEX would have a direct link to update climate indicators in World Bank portal – not the case currently but would be great way to distribute CORDEX results. Could work with PROVIA here – CORDEX clearly has something to offer.
- Must ensure coordination when approaching sponsors; if CORDEX is explicitly named in a proposal this should be communicated to the IPOC.

**ACTION:** Eleanor to contact POCs regarding current and potential funders/sponsors in their region – mid March 2015.

## 6 Session 5: SAT Business

### 6.1 Internal communication (Filippo Giorgi)

- EURO-CORDEX feel there was a lack of communication between the SAT and the POCs particularly regarding the development of the CORDEX MIP and also that the relationship between WGRC and CORDEX-SAT is unclear and there seems to be some discussions which community is exempt from.
- There is a danger of losing the enthusiasm of the community as CORDEX is unfunded
- The role of POC is essential as representative of community and there should be a relatively close relationship between the SAT and POCs.
- Decisions with long term impacts must be communicated to POCs.
- The IPOC will ensure effective communication pathways.
- SAT has appointed to make decisions but want to ensure two way information flows.
- Sometimes time restraints mean wider consultation is difficult – answer may be to ask the POCs but with clear deadlines for feedback that may, in some circumstances, be rather short.

**ACTION:** Eleanor to establish a POC mailing list to facilitate more effective communication – end of March 2015.

### 6.2 Other issues

Filippo invited the group to raise any issues that had not already been addressed in the previous discussions.

#### 6.2.1 Issue of resolution (Michel Rixen)

Michel raised the issue of how CORDEX should deal with the strategic risk of increasing GCM resolution, if the added value of CORDEX is not actively communicated.

- By time of CMIP6 availability we should move to the next resolution, 25km or 50, 25, 12.5km for the large domains.
- Hi-res MIP will run AMIP simulations with minimum 25-50 km resolution at mid-latitudes. Indeed this could offer the potential for a collaboration comparison project at 25km.
- There should be some physical reasoning for higher resolution – analyse where we have 50km and 25km and determine where there is added value and benefit to the stakeholder. The range can then be dependent on the region and the group requirements.
- The current large domains run with the range of standard resolution with FPS for very high resolution; the resolution for FPS needs to be discussed by the focus groups.
- For next two years 50km is still very valid for downscaling of CMIP5 results with emphasis on increasing ensemble members over domains; Filippo emphasised that by the time of the next IPCC CORDEX need to have sizeable ensembles for most of the domains.
- 50km is mandatory but if resources are available then certainly encouraged to run to 25km and lower – this is already in the experiment design. Only need to highlight if we are changing the baseline.
- In order to highlight the added value an analysis effort grounded on scientific questions is vital and also makes the most of the CORDEX downscaling of CMIP5 GCMs work through production of papers (Africa is a good example).
- It is perhaps mostly an issue of communication – the current range of resolution needs to be re-emphasised and the plans for higher resolution to be highlighted.
- IPCC workshop would be a good venue for this communication effort as the IPCC is becoming more focused on regional climate; Fred and Filippo are in the organising committee and IPOC can support communication efforts here.

## 6.2.2 Interaction with CMIP and RCP selection

- There will only be minor changes to the RCPs, some equivalence to SSPs and RCP8.5 will stay very similar in CMIP6; Daniela does not expect new scenarios unless the ScenarioMIP aim for this, which is not clear (neither is the TGICA document)
- Clare suggested ScenarioMIP will need some support – WGRC can help here to ensure CORDEX have some influence on the boundary conditions.
- There will now be a Climate4ServiceMIP that Daniela has just submitted.
- Some big modelling centres are not using new model versions for CMIP6 – they may use RCP6.0 and may go to RCP2.6; some will have model development.
- In current drafts RCP8.5, 6.0 and 2.6 are in Tier 1 while RCP4.5 is in Tier 2.
- The RCP scenario question needs to be communicated from co-chairs to CMIP and SCENARIO MIP to reiterate the need CORDEX has for sufficient output for downscaling.
- Some prioritisation is required as not everyone can run all scenarios.
- Feedback from impact community suggested that RCP2.6 is desirable.
- European stakeholders are most interested in intermediate scenario and also consistency. So from this point switching from 4.5 to 6.0 would result in inconsistency.
- The SAT concluded that priority is for RCP8.5 and 2.6 in Tier 1 and also RCP4.5 instead of RCP6.0 to ensure consistency.
- Grisha also suggested it may be worthwhile to contact the individual GCM centres, 17 groups in total, to determine what their CMIP6 output plans are and allow for CORDEX future planning; many SAT members are well connected to the GCM community.

**ACTION:** Bill to email POCs concerning CORDEX MIP Scenario selection - RCP2.6, 8.5 plus importance of 4.5 - Monday 2nd March.

**ACTION:** On receiving this feedback Bill should communicate with Claudia (SCENARIO MIP) and Veronika Eyring (CMIP) – Monday 9<sup>th</sup> March.

**ACTION:** Grigory to initiate contact with CMIP6 GCM groups with request for information – end of August 2015.

## 6.2.3 Full utilisation of CMIP5 and planning for CMIP6

- CORDEX should have a concentration on CMIP5 but utilise CMIP6 as and when available
- Land use and land cover change analysis has not been completed – where are the gaps and which scenarios should be used still using CMIP5.
- CORDEX could have something similar to p11 figure in [this IPCC document](#) that could illustrate the coordinated effort (also relating to the Regional Atlas with one picture for temperature, one for precipitation etc).
- Underway in some regions but there are big holes.
- The SAT decided on a strategy to fill a homogenous matrix analogous to the p11 figure – firstly this will allow for any holes to be identified.
- Looking to the future, need some kind of strategy for fast production of high resolution (25, 12.5km) to be completed after some CMIP6 models are ready – Filippo will initiate some email exchange regarding this in advance of the IPCC workshop and draft document.
- An idea would be to have 5 or 6 models committed to running a set of simulation over certain domains.
- In some centres may be possible to have GCM and RCM in parallel with small delay but it did not happen in CMIP5.
- In CMIP6 there is not a detailed protocol for CMIP6, instead it is DECK simulations which can be fed in at any time.
- We can only downscale the GCMs which have run the DECK simulations.
- Daniela highlighted the importance of looking from a VIA or service point of view.

- WGRC have been involved in survey of VIA use of CMIP5 and looking ahead to CMIP6. Survey happened over autumn and first analysis report is about to be finalised.

**ACTION:** Eleanor to bring together the complete matrix of domain simulations and distribute to SAT members- mid March 2015.

**ACTION:** Bill and Filippo to then develop a taskforce group to address the holes – end of August 2015.

**ACTION:** Filippo, Bill and Fred to draft 'Contribution of CORDEX to IPCC document' for IPCC Regional Workshop in September – end of March 2015.

**ACTION:** Clare to circulate first analysis report of VIA use of CMIP5 and ahead to CMIP6 survey – end of March 2015.

### **6.3 Collaborations & Membership**

[See presentation](#)

#### **6.3.1 Collaborations**

- IS-ENES2 MoU at final stage of drafting – comments have been received from Sylvie Joussaume, IS-ENES2 coordinator.
- If, when in discussion with Future Earth, a potential MoU is raised the IPOC should refer to WCRP before proceeding.

**ACTION:** Eleanor to distribute CORDEX-IS-ENES2 MoU by Friday 6<sup>th</sup> March.

#### **6.3.2 Membership**

- Current membership is stable.
- SAT feel that all required competencies are covered by current members and global representation is sufficient.
- Everyone feels the current size of SAT group is good, more may become unmanageable.

### **6.4 Review of action items**

The SAT members developed a list of [key priority actions](#) from this meeting, which are imperative to driving CORDEX forward (Appendix A).

### **6.5 Next meeting**

- Mid September teleconference (potentially half physical – half web conference aligned with IPCC regional workshop)
- Conference preparation teleconferences
- Next physical meeting at ICRC: CORDEX 2016.
- FPS teleconference – early July 2015 (ALL SAT MEMBERS)

**ACTION:** Eleanor to provide notice of upcoming meeting and circulate Doodle availability for all meetings above.

## 7 Appendix A: Key priority actions

1. Bill to email POCs concerning CORDEX MIP Scenario selection - RCP2.6, 8.5 plus importance of 4.5 (Eleanor to provide Bill with email list of POC addresses) - Monday 2nd March
2. Post processing information to be highlighted on the website (Grisha, Eleanor) - end of March 2015
3. Table showing all models and terms of use to be linked to website (Grisha) – end of June 2015
4. Facilitation of ESGF upload for those who are unable (Grisha, Eleanor) - end of June 2015
5. Set up of ‘CORDEX-adjust’ project as separate activity for bias correction (Grisha) - mid 2015
6. All SAT members to provide comment on domain criteria document (Eleanor to distribute - ALL to respond) - end of March 2015.
7. CORDEX Challenges:
  - a. Science questions for each CORDEX challenge to be drafted (focus groups) - end of September 2015.
  - b. SAT feedback during October 2015
  - c. POC and community engagement - November-March 2016
  - d. Launched at CORDEX 2016 - May 2016
8. WGRC to provide the link to other programmes, Grand Challenges and projects - excluding CMIP (Clare, Bruce) - ongoing.
9. Flagship Pilot Studies Actions:
  - a. Flagship Pilot Studies focus group short proposal (Filippo, Daniela, Bill, Bertrand, Silvina) - End of April 2015
  - b. POC deadline - end of June 2015
  - c. FPS teleconference – mid July 2015
  - d. Deadline for full proposal to be circulated to WGRC for discussion/endorsement– end of 2015.
  - e. Present to JSC 2016 meeting – Q2 2016
10. ICRC: CORDEX 2016 Actions:
  - a. First conference announcement to be released (Executive and Organising Committees) - end of March 2015
  - b. Session framework (topics decided) - end of May 2015
  - c. Call for abstracts out – September 2015
  - d. Resource mobilisation (Eleanor) - as soon as possible
11. Look at the CORDEX website and provide comments to Eleanor (All SAT members and POCs) - end of March 2015
12. Create the complete matrix of domain simulations (Eleanor) - mid March
13. Draft CORDEX contribution to IPCC document for workshop (Filippo, Bill & Fred) - end of March 2015
14. Find a way to communicate on added value of CORDEX with regard to ongoing GCM activities (Boram) - mid March 2015
15. Add vision statement and new goals to website (Eleanor) – immediate.

## 8 Appendix B: Full action list

Those action points highlighted in **bold** are linked to one of the Key Priority Items from Appendix A.

### Session 1: Updates from the CORDEX domains

#### *North America*

1. Bill to maintain discussion with Chris Weaver (US GCRP) concerning funding – ongoing.
2. Groups not on the ESGF should be contacted to encourage them to upload their data to ESGF - ongoing.

#### *Central America*

3. Grigory and Eleanor to follow up with Tannecia concerning additional support for ESGF upload and to potentially find funding for a training workshop in the region – end of June 2015.

#### *South America*

4. Silvina to determine the stumbling blocks to participation for South American institutions – end of August 2015.
5. IPOC to investigate and provide support for locating potential funders (PEER, START etc) – ongoing.
6. Eleanor to attend ALCUENET- CORDEX South America meeting as European CORDEX representative – May/June 2015.
7. IPOC to help in setting up a domain website – end of April 2015.
8. IPOC to determine possibility of Swedish based funding for an analysis scoping workshop – end of April 2015.

#### *CORDEX MENA*

9. Grigory and IPOC to support post processing in the region.
10. IPOC to maintain contact with ESCWA concerning further future support for MENA – end of March 2015.

#### *Central Asia CORDEX*

11. Grigory to continue support for post processing in the region – ongoing.
12. Grigory and IPOC to follow up on stimulating greater interest in the region – end of May 2015.
13. IPOC to follow up on potential for EU funding, through H2020 climate services calls, for the region – end of April 2015.

#### *CORDEX Australasia*

14. IPOC to support creation of CORDEX Australasia workshop.
15. IPOC and Bertrand to investigate potential to set up some CORDEX activities for the Pacific region; IPOC to investigate potential funding from SIDS and UNDP – end of April 2015.

#### *MED-CORDEX*

16. IPOC to facilitate discussion between MED-CORDEX and CORDEX South East Asia concerning potential for coupling knowledge transfer – end of March 2015.

### Session 2: Wider updates & CORDEX scope

17. Eleanor to add the new vision and goals to CORDEX website – 2<sup>nd</sup> March 2015 (Key priority item 15).

### Session 3: CORDEX Issues

#### *Data policy, archives and formatting*

18. Grigory and Bertrand to work on establishing an Australasia data portal – end of June 2015.
19. Eleanor to add physical discs of ESGF downloaded data option to 'Data access' option on the CORDEX website – end of March 2015.
20. Eleanor to discuss terms of use with regional data portals; reasons for restriction on data should then be made available on the website – end of May 2015.
- 21. Grigory and IPOC in cooperation with DKRZ to create table showing terms of use for each model and make this information available on website – end of June 2015 (Key priority item 3).**
- 22. Grigory to keep the IPOC and SAT up to date on progress with BCIP and make contact with POCs as becomes relevant – mid 2015 (Key priority item 5).**
23. IPOC, through contact with POCs, to collect information on all groups who have simulations but unable to upload and experiencing other problems – end of March 2015.
- 24. IPOC and Grigory to collect all the available information on post processing and quality control tool or provide links and upload to the CORDEX website and provide clear contact details for those having difficulties – end of March 2015 (Priority action item 2)**
- 25. IPOC to look into the facilitation of ESGF upload; approach relevant funding agencies (such as APN in Asia, IAI in Americas) and investigate potential for visiting experts running training workshops – end of June 2015 (Priority action item 4).**

#### *Statistical downscaling*

26. Bill, Bertand and Tannecia to drive forward discussion with the RCM community and update the SAT and IPOC with progress as relevant – end of September 2015.

#### *Domains, updates and selection criteria*

- 27. Eleanor to send the draft criteria to all SAT members for comment – end of March 2015 (Key priority item 6)**
28. After SAT review, Eleanor will distribute the selection criteria to wider community through (POCs) and request they review their own domain in light of this – end of April 2015.

### Session 4: The Future of CORDEX

#### *Flagship pilot studies (Key priority items 9a-e)*

29. Deadline for focus group short proposal to be provided to POCs - end of April 2015.
30. Deadline for consultation with CORDEX community through POCs - end of June 2015.
31. FPS teleconference for SAT members –mid July 2015.
32. Deadline for full proposal to be circulated to WGRC for discussion/endorsement– end of 2015.
33. Presented to the JSC 2016 meeting – Q2 2016

#### *Strategic development of CORDEX (Key priority item 7a-d)*

34. Science questions for each CORDEX challenge to be drafted (focus groups) - end of September 2015.
35. SAT feedback - October 2015
36. POC and community engagement – November to March 2016
37. Challenges launched at CORDEX 2016 - May 2016

#### *Transfer of CORDEX knowledge to GCM community*

38. WGRC (Clare, Bruce) to take initiative and work with Grand Challenges leaders towards a potential dedicated pilot activity – end of June 2015 (Key priority item 8).

39. Eleanor to follow up on potential funding for a workshop between the GCM and RCM communities – end of March 2015.
40. Boram to provide guidance to SAT and WGRC on the relevant communication pathways – mid April 2015.

***ICRC: CORDEX 2016 Conference (Key priority item 10a-d)***

41. First conference announcement to be released (Executive Committee) and simple website launched (Eleanor) - end of March 2015
42. Session framework (topics decided) - end of May 2015
43. Call for abstracts out – September 2015
44. Eleanor to contact those on potential Committee list to confirm involvement – 6<sup>th</sup> March 2015.
45. Eleanor to contact Markku Rummakainen concerning synchronising ICRC: CORDEX 2016 with Lund conference – 6<sup>th</sup> March 2015.
46. Resource mobilisation such as EC (through WCRP), Future Earth, APN, ESA, EUMETSAT and other potential sponsors (Eleanor) - as soon as possible.

***Communications***

47. All SAT members and POCs to look at the website and provide suggestions to Eleanor – mid March 2015 (Key priority item 11).
48. Bill to provide ESD points of contact for each domain where they are available – end of March 2015.
49. Eleanor to initiate move to cordex.org and mailing lists to IPOC – end of April 2015.
50. Eleanor to create list of projects where CORDEX is implicitly mentioned and upload to website – end of April 2015.
51. Eleanor to initiate a request for domains to provide news for the website (timetable for contributions) – end of March 2015.

***Fundraising***

52. Eleanor to contact POCs regarding funders/sponsors in their region – mid March 2015.

**Session 5: SAT Business**

***Internal communication***

53. Eleanor to establish a POC mailing list to facilitate more effective communication – end of March 2015 (part of Key Priority item 1).

***Interaction with CMIP and RCP selection***

54. Bill to email POCs concerning CORDEX MIP Scenario selection - RCP2.6, 8.5 plus importance of 4.5 - Monday 2nd March (Key Priority item 1).
55. On receiving this feedback Bill should communicate with Claudia (SCENARIO MIP) and Veronika Eyring (CMIP) – Monday 9<sup>th</sup> March.
56. Grigory to initiate contact with CMIP6 GCM groups with request for information – end of August 2015.
57. Eleanor to bring together the complete matrix of domain simulations and distribute to SAT members- mid March 2015 (Key priority item 12).
58. Bill and Filippo to then develop a taskforce group to address the holes – end of August 2015.
59. Filippo, Bill and Fred to draft 'Contribution of CORDEX to IPCC document' for IPCC Regional Workshop in September – end of March 2015 (Key priority item 13).
60. Clare to circulate first analysis report of VIA use of CMIP5 and ahead to CMIP6 survey – end of March 2015.

***Collaborations***



61. Eleanor to distribute CORDEX-IS-ENES2 MoU - Friday 6<sup>th</sup> March.

***Next meeting***

62. Eleanor to provide notice of upcoming meeting and circulate Doodle availability for all meetings above.

## 9 List of meeting participants and contact details

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## 10 Meeting Agenda

### Day 1: Wednesday 25<sup>th</sup> February

Time	Agenda Item	Presenter
13.30	Welcome address	<i>Rolf Brennerfelt, SMHI GD</i>
13.40	Meeting arrangements/logistics	<i>Eleanor O'Rourke</i>
13.45	Introduction	<i>Co-chairs</i>
<b>Session 1: Updates from the CORDEX domains</b>		<b>Chair: Eleanor O'Rourke</b>
13.55	CORDEX South East Asia	<i>Fredolin Tangang</i>
14.05	CORDEX South Asia	<i>Krishnan Raghavan</i>
14.15	North America, Arctic and Antarctic CORDEX	<i>Bill Gutowski</i>
14.30	Central America CORDEX	<i>Tannecia Stephenson</i>
14.40	South America CORDEX	<i>Silvina Solman</i>
14.50	MENA-CORDEX and Central Asia CORDEX	<i>Grigory Nikulin</i>
15.00	Australasia CORDEX	<i>Bertrand Timbal</i>
15.10	CORDEX Africa	<i>Chris Lennard</i>
15.20	CORDEX East Asia	<i>Hyun-Suk Kang</i>
15.30	<i>Coffee</i>	
16.00	EURO-CORDEX	<i>Daniela Jacob</i>
16.10	MED-CORDEX	<i>Filippo Giorgi</i>
<b>Session 2: Wider updates and CORDEX scope</b>		<b>Chair: Bill Gutowski</b>
16.20	WCRP/CORDEX updates	<i>Michel Rixen</i>
16.35	Update on WGRC and Grand Challenges	<i>Clare Goodess</i>
16.55	IPOC – its role and goals	<i>Eleanor O'Rourke</i>
17.10	CORDEX Phase II scope	<i>Bill Gutowski</i>
18.00	Discussion	<i>All</i>
19.30	<i>Dinner at <a href="#">Lagerqvist Restaurant</a></i>	

**Day 2: Thursday 26<sup>th</sup> February**

Time	Agenda Item	Presenter
<b>Session 3: CORDEX Issues</b>		<b>Chair: Eleanor O'Rourke</b>
09.00	Data policy, formats and archives	<i>Grigory Nikulin</i>
09.30	Statistical downscaling	<i>Bertrand Timbal</i>
10.00	Domains, updates, selection criteria and acceptance protocol	<i>Bill Gutowski</i>
10.30	Discussion	<i>All</i>
11.00	<i>Coffee</i>	
<b>Session 4: The Future of CORDEX</b>		<b>Chair: Bill Gutowski</b>
11.30	Flagship pilot studies including discussion	<i>Filippo Giorgi</i>
13.00	<i>Lunch</i>	
14.00	Discussion of strategic development of CORDEX towards Phase II protocol within the changing WCRP landscape	<i>Bill Gutowski</i>
15.30	CORDEX MIP Discussion and how to transfer CORDEX knowledge to the Global Modelling community	<i>Bill Gutowski</i>
16.00	<i>Coffee</i>	
16.30	Second CORDEX Conference – Stockholm, June 2016	<i>Eleanor O'Rourke</i>
16.45	Outreach and communication (website and newsletter)	<i>Eleanor O'Rourke</i>
17.30	Current status of fundraising and future prospects	<i>Michel Rixen</i> <i>Eleanor O'Rourke</i>
18.00	General discussion on CORDEX Phase II	<i>All</i>
19.30	<i>Dinner at <a href="#">Enoteket Restaurant</a> (at own cost)</i>	

**Day 3: Friday 27<sup>th</sup> February**

Time	Agenda Item	Presenter
<b>Session 5: SAT Business</b>		<b>Chair: Filippo Giorgi</b>
09.00	Decision making process, internal communication & interaction with the IPOC	<i>Filippo Giorgi</i>
09.30	Interactions with WGRC and end users	<i>Bill Gutowski</i>

10.00	Agreements/Partnerships with relevant projects and initiatives (IS-ENES2, PROVIA etc)	<i>Eleanor O'Rourke</i>
10.15	Membership issues	<i>Eleanor O'Rourke</i>
10.30	Review of action items	<i>Co-chairs</i>
11.00	Next meeting and closing discussion	<i>Filippo Giorgi</i>
12.00	<i>End of meeting</i>	