



Climate Services in the frame of CORDEX

Daniela Jacob and Claas Teichmann

■ Goals

- Stimulate the dialogue between the communities of CORDEX and climate services and related communities
- Assess whether CORDEX activities and Climate Service needs and expectations can be matched
- Exchange experiences of climate services in different CORDEX regions and discuss their transferability

■ Structure

First part from 14h to 14:35h

1. **Introduction** by Daniela Jacob and Claas Teichmann
2. **From CORDEX data to climate service products** by Geert Jan van Oldenburgh

Second part from 14:35h to 15:30h

3. **Introduction** to the World café
4. **World café** with three stations (**blue, red, yellow**)

Short Coffee break (15 minutes)

Third part from 15:45 to 16:30h

- **A climate services viewpoint on regional climate modeling's place in assessing future impacts of climate change** by Travis Logan
- **From Climate Services to Climate Adaptation Decisions** by Chantal Donnelly
- **Climate in Norway 2100** by Stephanie Mayer
- **Development of a Regional Climate Projections Consortium and Data Facility in Asia and the Pacific** by Jack Katzfey

Summaries of the discussion round by the moderators

■ Introduction and keynote

- What can CORDEX provide for climate services? Data needs of the adaptation community in practice (Daniela Jacob / Claas Teichmann)
- From CORDEX data to climate service products (Geert Jan van Oldenburgh)

■ World café around key questions

- Do you think CORDEX data are appropriate for climate service products and what are the major challenges?

Andreas

- How can the usage of data be improved and is there a need for help or guidance concerning the data use?

Swantje

- What can be improved concerning the temporal and spatial resolution and/or the variables to fit the needs of the end-users? Juliane

→ *three people per answer*

- Yes/No Questions (Everybody gets a sticky stamp)
- What can be improved in general? Suggestions?

■ Scientific presentations

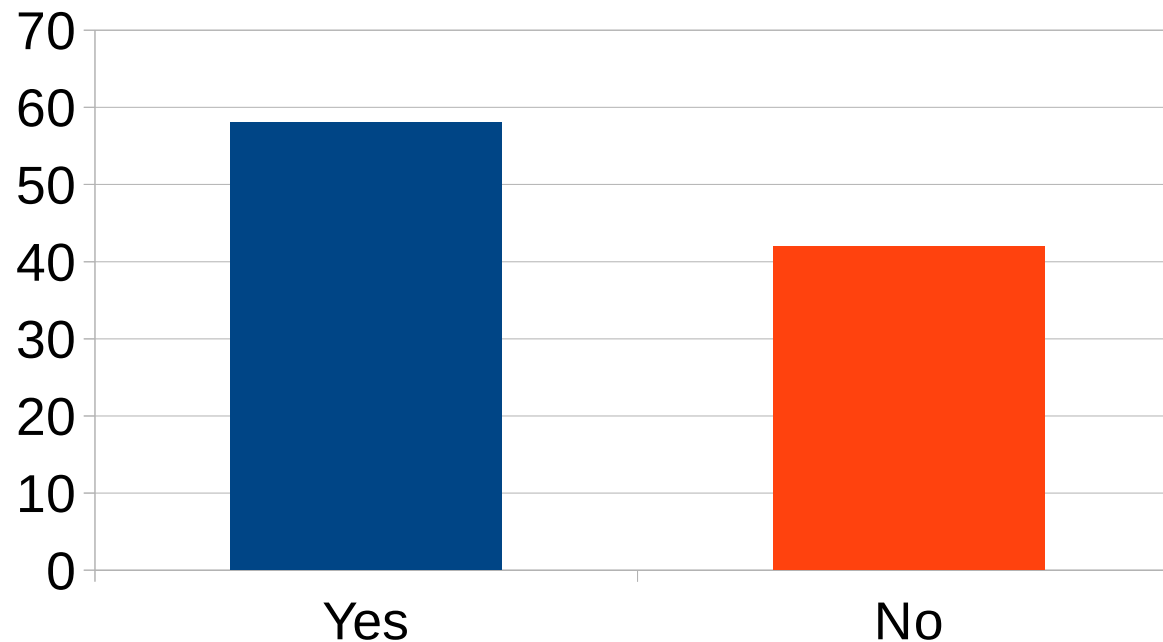
- A climate services viewpoint on regional climate modeling's place in assessing future impacts of climate change (Travis Logan)
- From Climate Services to Climate Adaptation Decisions (Chantal Donnelly)
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Summaries of the discussion round



Summaries of the discussion round

- Have you already analysed CORDEX data to provide information to end-users?



Andreas

■ Summaries of the discussion round

- Do you think CORDEX data are appropriate for climate service products and what are the major challenges?

Andreas

Do you think CORDEX data are appropriate for climate service products and what are the major challenges?

Yes, but...

No

1. Yes
2. Challenge to make the output more usable on a good example with information on "model's" models etc., which information is ready to be used? is complete, need high data

YES: USEFULL
NO: STILL LIMITED FOR DIFFERENT USERS & SINCE ADDITIONAL DOWNSCALING NEEDED, MORE DATA NEEDED ALSO

⊕ yes.
⊖ Choice of data is difficult

Straight & box = no other case elaboration of user + inclusion of data (application specific) = yes

No but it may become
- Yes but it should be improved.

+ NO, not appropriate with out processing, context (Home Dimension),
2) Communication & Education →

USEFUL: YES. ~~NO~~
→ in combination with acts and physical understanding BUT: - additional uncertainty is a problem and model bias handling.

Not yet appropriate:
- higher resolution
- bias correction needed
- more ensemble members for some regions

No, we need higher resolution e.g. for floods
- need to have model data

- Need better resolution/ensemble resolving
- Needs to be formulated to read into GIS for user community (user case)
- Best to have raw - need to use when & available

- Needs to be bias-corrected for Clim. Serv.
- SMALL OR NO DATA SAMPLE - SMALL SAMPLES OF VARIATION PROBLEM
- NEED GCM/RCM MATRIX

No. Need for a way to share and agree on postproc. methodology. Need for larger ensemble some regions

Limited runs (esp. A & Australia) Australia runs not centrally located Finding info on model verification Going beyond temp & precip e.g. wind, soil, humidity Temperature suitable for certain applic

- Need for finer spatial + temporal resolution for specific use studies
- Need to include better orga structure to capture urban sites

What can be improved? Additional suggestions

Major Challenge

Method

Guidance

What about the consistency of biased corrected data

Depends. The end user need the information which questions it is appropriate

MAJOR CHALLENGE
- Make sure we account for the region-specific forcings and feedbacks

- time series
- need of bias correction vs. model
- communication of uncertainties
- data availability

We should improve the dialog with stakeholders/decision makers for the design of the projects and data projection

DATA + SD
Major Challenges
- Bias correction doesn't solve all issues
- Are all models "good enough"

CC signal vs. non-variability
Model bias & selection of bias-correction technique
Linked information to model outputs (info on presence of lakes for example)

Outlook!

CORDEX 2 data will be for some much more appropriate for climate services. However, new VAR are necessary to fill the gap on the coast.

■ Two clusters of answers...

- Yes, but only with:
 - appropriate user specific postprocessing (bias correction, inclusion of human dimension)
 - with communication and education understanding of physical understanding and GCMs
- No, because:
 - Higher spatial and temporal resolution is needed
 - Ensemble is (for some regions) too small
 - Need to include a more systemic approach (e.g. include urban area structures)

■ Major challenges:

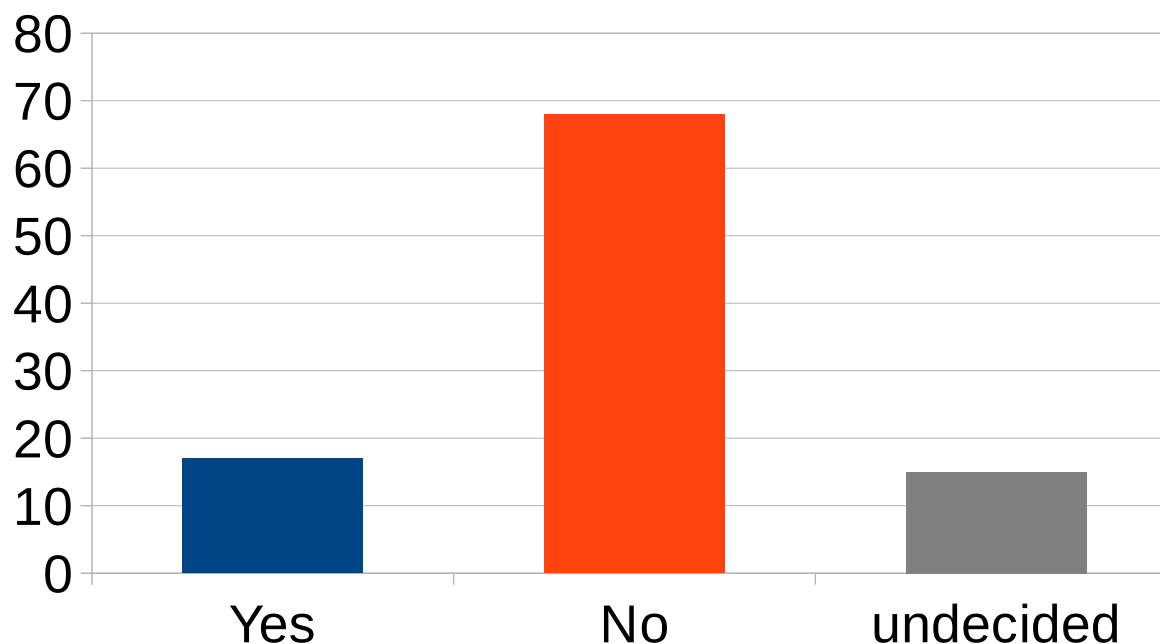
- Methodology
 - Need to agree on a post processing methodology
 - Consistency of bias corrected data
 - Bias correction does not solve all issues
 - Combine RCMS and SD
 - Model selection
 - Go beyond temperature and precipitation; include the human dimension
 - Guidance
 - Improve dialog with end/users for design of climate change projection matrix.
 - Communicate the limitations to the end-users

■ Outlook:

- CORDEX2 will be much more appropriate for CS, however data output has to be adapted

Summaries of the discussion round

- Does the standard CORDEX output (variables, temporal and spatial resolution) match the needs for climate service products?



Juliane

What can be improved concerning the temporal and spatial resolution and/or the variables to fit the needs of the end-users?

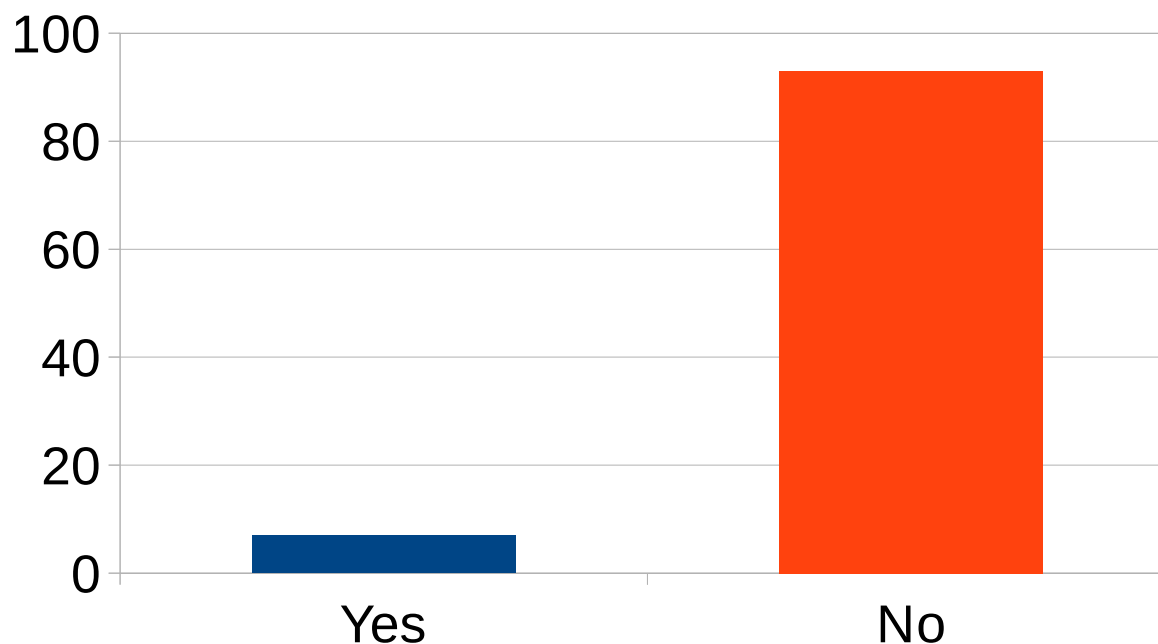
- 😊: 2 groups reported that CORDEX data provision is sufficient
- **simulations**: including land-use scenarios
- **variables**: many asked for additional variables:
 - e.g. CAPE, combined parameters as temp/humidity, 3D fields, or even high resolution CORDEX models input data, or asked at least for methods how to derive diagnostic variable
- **resolution**: some reported a need for higher spatial res, e.g. 2-5 km, and temporal resolution: hourly data, but one said: only if the outcome is robust

1 group: "**We don't care about resolution, we care about realism and robustness.**"

- some reported only the need for metadata, more guidance for data interpretation, and including user feedback

Summaries of the discussion round

- Is there enough guidance (meta-data, contact points, guidelines, etc.) concerning the use of CORDEX data for the provision of Climate Services?



Swantje

■ Summaries of the discussion round

- How can the usage of data be improved and is there a need for help or guidance concerning the data use?

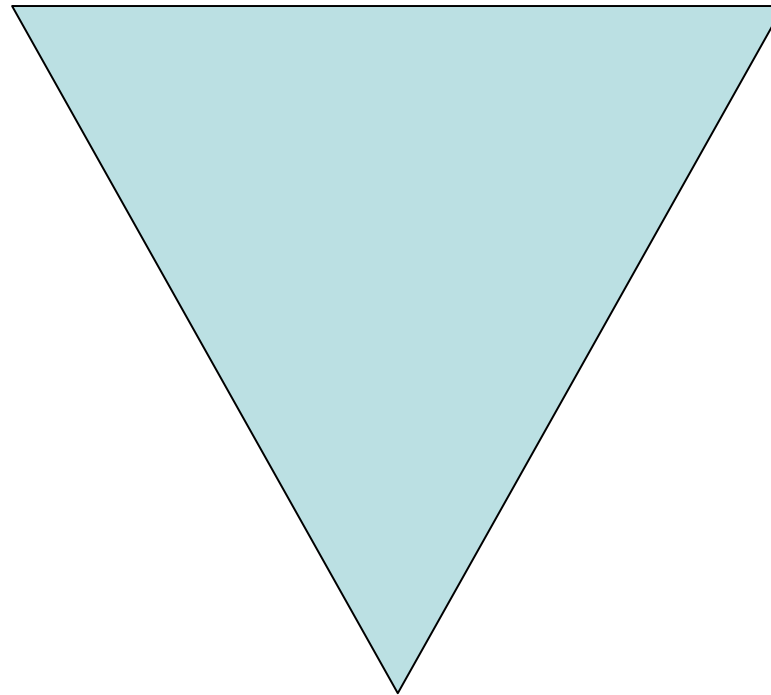
Swantje



How can the use and usage of data be improved? Is there a need for help or guidance concerning the data use?

Technical guidance
on data

Climate Service



Scientific basis



Written document

Online information

Human interaction

Tool

Climate Service

Written document

- Documentation of model performance
- Best practice examples
- Guideline on limitations
- Documentation of uncertainties

Online information

Human interaction

- Helpdesk/ national contact point
- Twoway training workshop
- Codesign of user tailored products

Tool

- Methods to adress uncertainty
- Documentation of uncertainties

Example Technical guidance on data

Written document

Online information

- Forum FAQ
- Cordex-Pedia

Human interaction

- Helpdesk
- training workshop

Tool

- Processing portals
- Interpolation on common grid
- Conversion to user friendly formats
- Data/intermediate results sharepoint

Scientific basis

Written document

- Improved knowledge on data limitation
- Improved model evaluation on physical processes
- Documentation of uncertainties

Online information

Human interaction

- discussions

Tool

- Methods to assess uncertainty
- Methods for using ensembles

■ Discussion and wrap-up

■ Thank you for your attention and your contribution!

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