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

14 CORDEX Domains covering all land areas + the Arctic



Coordinated Regional Climate Downscaling Experiment





WCRP Programme with the Joint Scientific Committee (JSC) and Joint Planning Staff (JPS)

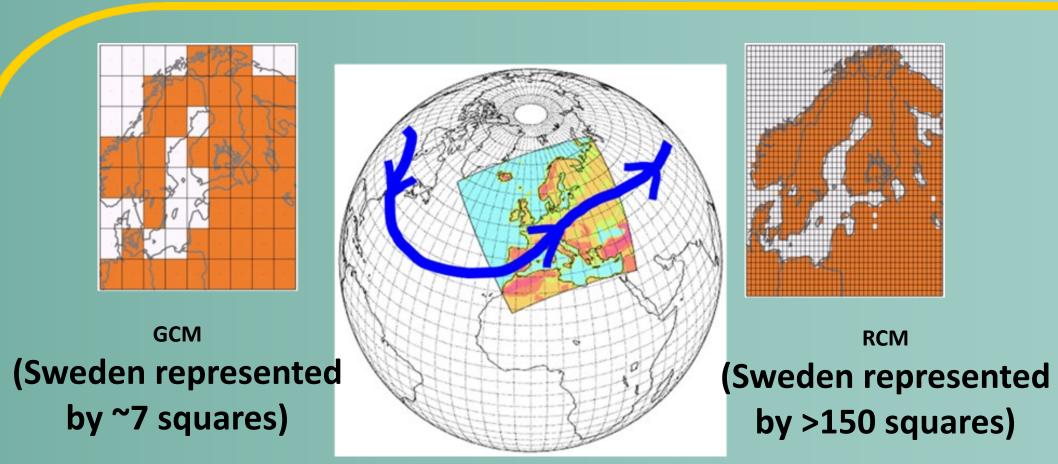
CORDEX Science Advisory Team (SAT	•)
with two co-chairs	

- International Project Office for CORDEX (IPOC) coordination, communication cooperation all domains
- . 14 domains with Points of Contact (POCs) -

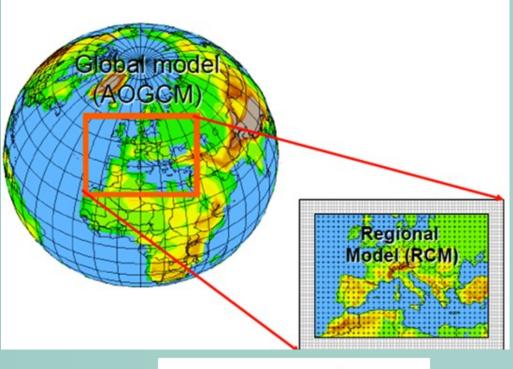
coordination, communication, cooperation within the domain and with SAT/IPOC

Climate inform	ation for regions LEG Foundational Clima (Curiosity-driven k Fundamental re	aiming to mechanis causes of variability are science nowledge /	ndamental science ounderstand sms of climate and its y/change, and to regional climate steps: Leg 3: identify user requirements and
Leg 2: research to gain the integrated knowledge or understanding necessary to inform actions and decisions	Application-inspired Climate Science (Research for 'actionable' knowledge) LEG 2	Trans-disciplinary Engagement	needs that may guide research directions, and to determine the implication and relevance of climate knowledge derived from Legs 1 and 2 to applications/services.





Regional climate models or empirical statistical downscaling; greater detail at local and regional scales. Vital to improved vulnerability, impact and adaptation planning - extreme events etc.



Courtesy; Justin Glisan

CORDEX Scientific Challenges

Six key challenges to help drive CORDEX forward, five cross cutting themes to focus activities across the CORDEX domains, promote cross domain interaction, and allow for close interaction with users

CORDEX Flagship Pilot Studies (FPS)

To implement the Scientific Challenges

	Criteria	Essential	Highly recommended	Africa: Coupled regional modelling of land-atmosphere-ocean interactions over
1	Targeting fine scale processes and clear	 Not addressed by GCMs or coarser resolution 	 Can be usefully approached by both dynamical and statistical downscaling 	western-southern Africa under climate change
	scientific questions of interest (e.g. see list above)	 downscaling Have potential to demonstrate the added value of downscaling 	methods, so as to allow an intercomparison of the approaches Investigate regional processes, circulations and forcings of interest.	Contact person Francois Engelbrecht <u>FEngelbrecht@csir.co.az</u>
		Not addressed within the		Africa: ELVIC - Climate Extremes in the Lake Victoria Basin, Nicole van Lipzig
		existing standard CORDEX framework.		Contact person Nicole van Lipzig nicole.vanlipzig@kuleuven.be
2	Use of observational data including not	 Studies should be based upon data of sufficient 	The observation data should enable the capability to:	
	only meteorological but also derived data (e.g. soil moisture,	quality to support the objectives.	 Investigate regional processes Validate dynamical models down to convection permitting resolutions an 	South America: Extreme precipitation events in Southeastern South America: a proposal for a better understanding and modeling
	streamflow etc.)		 sub-daily scales Provide information suitable to calibrate and validate statistical downscaling tools 	Contact person Maria Bettolli <u>bettolli@at.fcen.uba.ar</u>
			 Enable cross analysis and validation o multiple variables, processes, feedbacks and interactions across climate system components 	Europe+ Mediterranean; Convective phenomena at high resolution over Europe and the Mediterranean
3	End-to-end	Impact of the study from	 Stakeholder needs determined by the 	Contact person Erika Coppola <u>coppolae@ictp.it</u> or Stefan
	perspective and potential to support	the physical science and/or VIA viewpoints	interactions with VIA community or existing literature on the topic.	Sobolowski <u>stefan.sobolowski@uni.no</u>
	demonstrated local/regional needs	(whether near or long term) should be evident.	 Potential to generate funding support Potential to produce actionable climate information 	Europe; Impact of land use changes on climate in Europe across spatial and
4	Applicant group	 Multiple participants must be involved in the study. 	 Transnational and multidisciplinary applicant groups are encouraged. 	temporal scales Contact person Diana Rechid <u>diana.rechid@hzg.de</u>

nd allow for close interaction with users.				
	SC			
Cities (effects of climate change, heat islands, LULC, bridging with urban parameterization community)	Added V scales, bias		<mark>0</mark>	ice-atm,
	Valu ases/	돈	V N	
Wind energy (wind-farm feedbacks, sfc winds, PBL)	0 <u></u>	Human	ectio	lake
Inland waters (large lakes) and regional seas	(variabi ncertair	fa	n-per	led M s, carl
Small Islands (island-generated climatology, storm surge	y∕ es,	r / VIA	nitting	els (
Organized convective systems (coastal storm systems, tropical storms, mesoscale convective systems)	s a funct SD, user	issues	Modellir	ocean- cle, aeros
High mountain environments (glaciers, snow)	ion o metr		BL	ols
Small Islands (island-generated climatology, storm surge Organized convective systems (coastal storm systems, tropical storms, mesoscale convective systems)	oility / as a function inties, ESD, user met	ctor / VIA i	-permitting Modellin	

- Regional/local focus, fine scale processes transferable to other regions
- . High resolution, convection permitting, distillation, regional climate change processes
- **Convey climate information/model results to users for imple**mentation (Vulnerability-Impact-Adaptation)
- **Observational basis for verification**
- . One call a year in February, seven endorsed so far <u>http://cordex.org/experiment-guidelines/flagship-pilot-</u>
 - studies/
- **One demonstrator—CORDEX Africa Impacts Atlas** systematic analysis of impacts in Africa under different **Climate Change scenarios**

tact person Gabriel Jord

Co- produce Co-explore Co-design Co-define Co-refine	science science	Sectors • Water • Energy Agricultu • Health Biodivers	re	Sectoral modeling Multi-sectoral impact modelling Economic assessment
	Climate indices Climate envelopes (agro-ecological zones) Extremes (ETCCDI) Application indices (degree days) 	\Leftrightarrow	 Mons ITCZ Jets South India 	

CORDEX CORE

CORDEX <u>Coordinated</u> <u>Output for Regional Evaluations</u> (CORE) Motivated by IPCC workshop on regional climate Sept 2015 **Central framework for CORDEX**

Standardized set of simulations for most CORDEX domains to serve as a ba-

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CORDEX simulations can be accessed on:

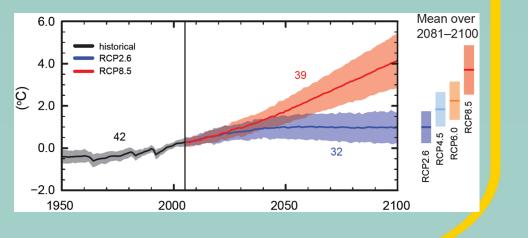
- ESGF
- **Regional Data Portals**



CORDEX Data Access and web

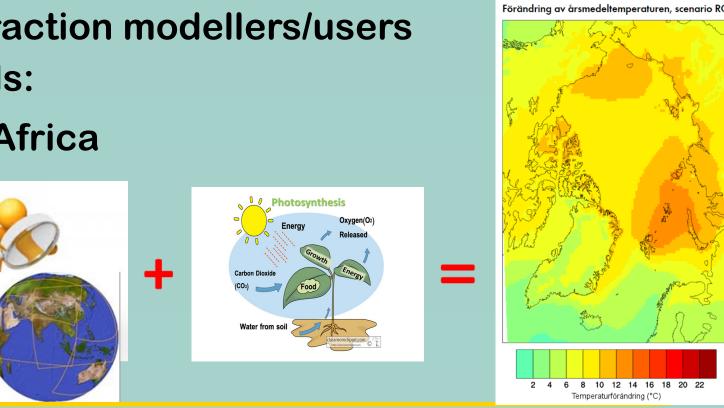
sis for further downscaling

- . CMIP5/6 downscaled for RCPs 2.6 and 8.5, CMIP5/6 1970-2100
- . Minimum 3 GCMs; high-, low- and midrange
- . Some intistutions/RCMs run globally, others regionally, ESD contribution
- . CORE Atlas based on 25 km resolution



CORDEX next phase—improve interaction modellers/users (policy, VIA) > analysis of user needs:

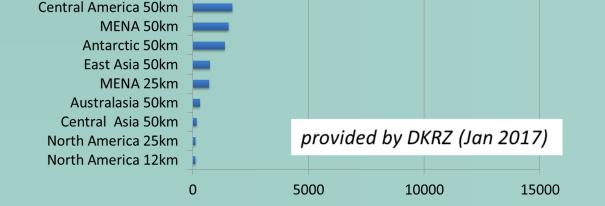
- Water managers in Sub-Saharan Africa
- **City planners in Manila**
- **Forest owners in Sweden**
- **Farmers in India**



- Impact Portals
- . Servers at individual Model Groups

New web http://www.cordex.org

Contact ipoc@cordex.org



South America 50km



Coming up in October next year: ICRC-CORDEX 2019 conference in Beijing, China