

## Future plans of CORDEX

**44th Session of the WCRP Joint Scientific Committee**

**Co-chairs: Silvina A. Solman and Daniela Jacob**

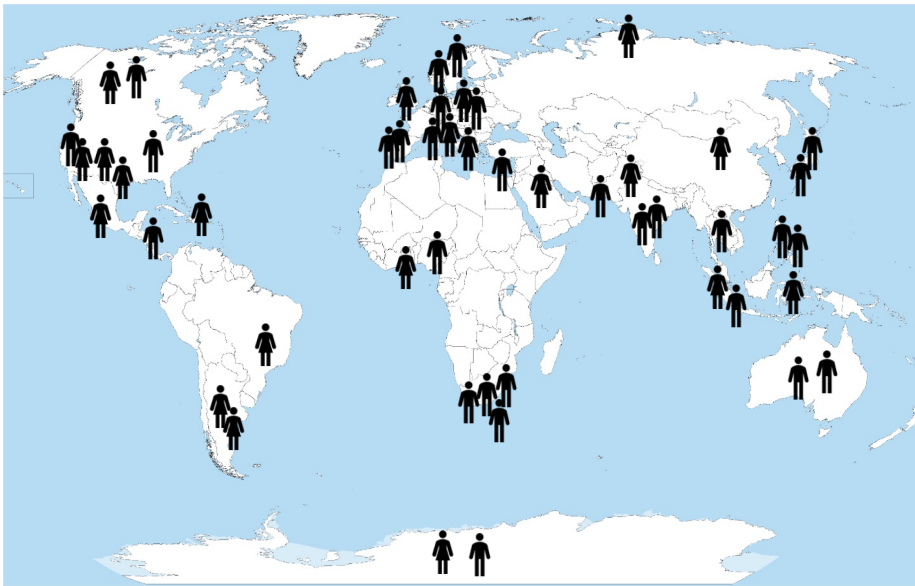
**IPO: Iréne Lake**

*Silvina A. Solman*

*May 2023*

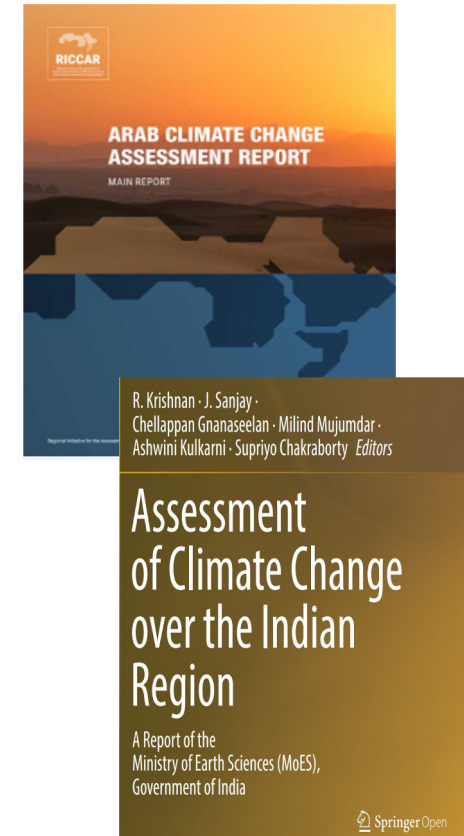
**Climate Center, Brussels, Belgium**

## CORDEX SAT members & POCs



- Global collaboration
- Regional/local climate phenomena and variability
- Coordinated, easy to use, climate information for regions
- Understanding/knowledge transfer/capacity development
- Informed decisions

**Platform/facilitator for coordination and cooperation**



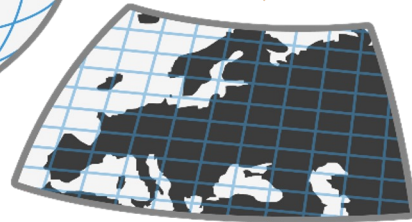
# CORDEX for Vulnerability, Impact and Adaptation

## The chain from global to local

- from data to knowledge to societal benefit -



Global Climate Model (GCM)



Regional Climate Model (RCM)  
12-25 km, CORDEX standard

Empirical Statistical  
Downscaling

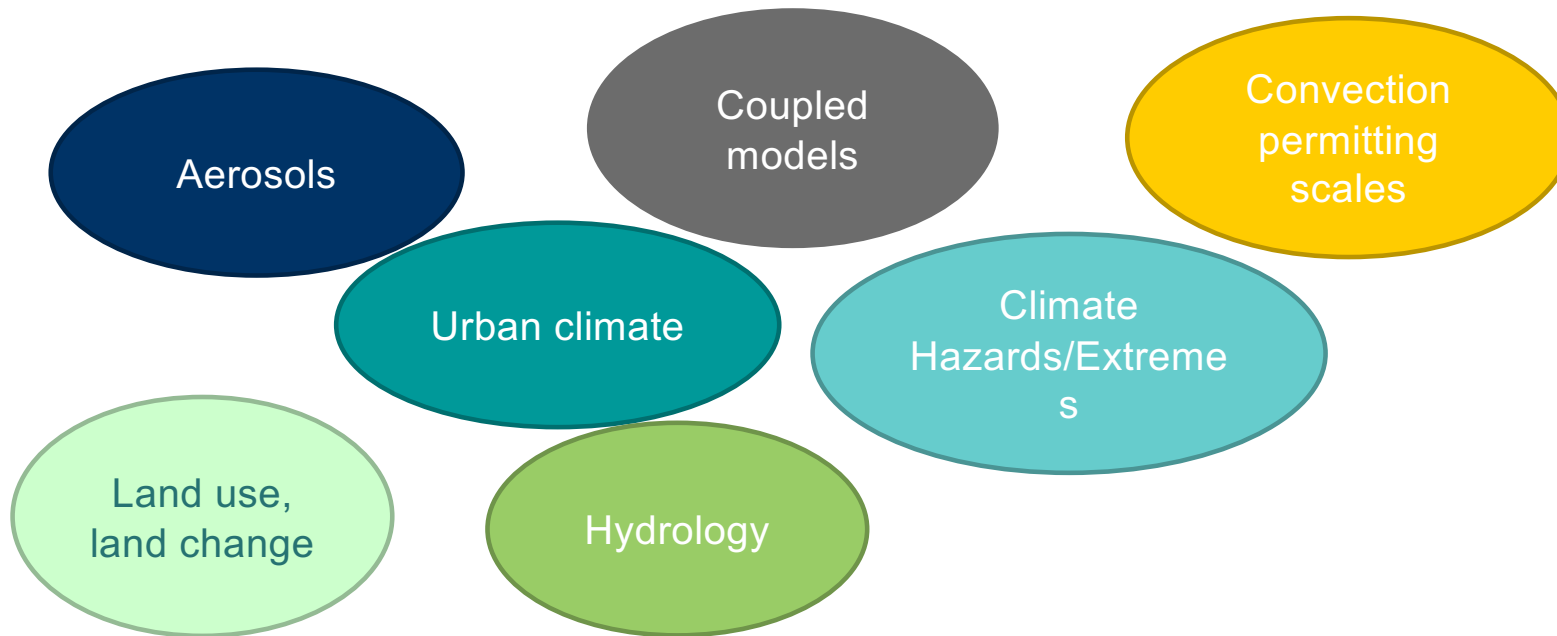
Very High Resolution Convection  
Permitting Model (CPRCM), 1-3 km



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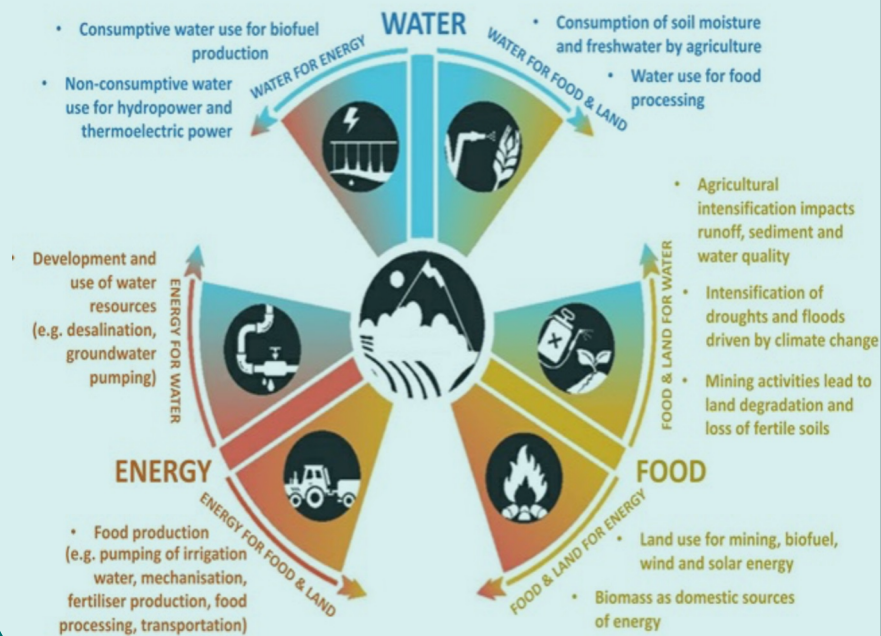


Local/regional challenges with large socioeconomic impacts  
➡ Actionable Climate Information



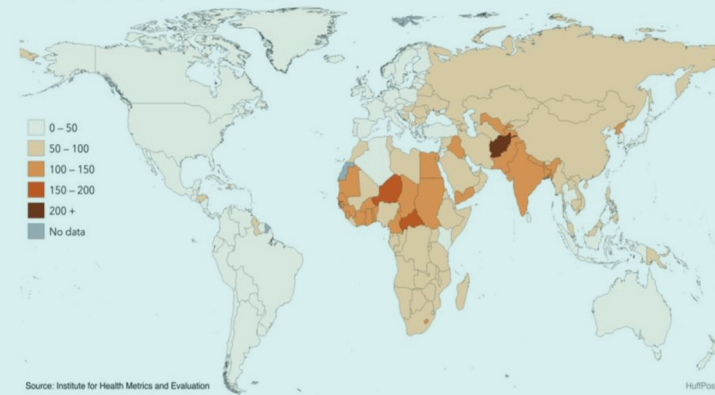
# How CORDEX data has been used for impact assessment?

## WEF Nexus in Mekong River Basin, Central Asia Dryland: Water supply, hydropower and use planning



## Air-climate-health in Asia - Policy air quality, limitation of climate changes, health

**Air pollution death rates around the world**  
Deaths per 100,000 people from ambient air pollution in 2016



## Impact of future climate change on malaria in West Africa

Ibrahima Diouf<sup>1,2</sup> · Abiodun M. Adeola<sup>3,4,5</sup> · Gbenga J. Abiodun<sup>6</sup> · Christopher Lennard<sup>7</sup> · Joyce M. Shirinde<sup>8,9</sup> · Pascal Yaka<sup>10</sup> · Jacques-André Ndione<sup>11</sup> · Emiola O. Gbobaniyi<sup>12</sup>

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## Health

Longer Monsoon > wetter, warmer

- ❓ Respiratory illnesses
- ❓ Waterborne diseases – cholera etc
- ❓ Mosquitos > dengue fever
- ❓ Depression and anxiety



## Crops

Investigating the potential impact of 1.5, 2 and 3 °C global warming levels on crop suitability and planting season over West Africa

Temitope Samuel Egbebiyi<sup>1</sup>, Olivier Crespo<sup>1</sup>, Christopher Lennard<sup>1</sup>, Modathir Zaroug<sup>1,5,6</sup>, Grigory Nikulin<sup>2</sup>, Ian Harris<sup>3</sup>, Jeff Price<sup>4</sup>, Nicole Forstehäusler<sup>4</sup> and Rachel Warren<sup>4</sup>



## Water

Impact of climate change on hydropower potential of the Lagdo dam, Benue River Basin, Northern Cameroon

Rodric M. Nonki<sup>1</sup>, André Lenouo<sup>2</sup>, Clément Tchawoua<sup>3</sup>, Christopher J. Lennard<sup>4</sup>, and Ernest Amoussou<sup>5</sup>

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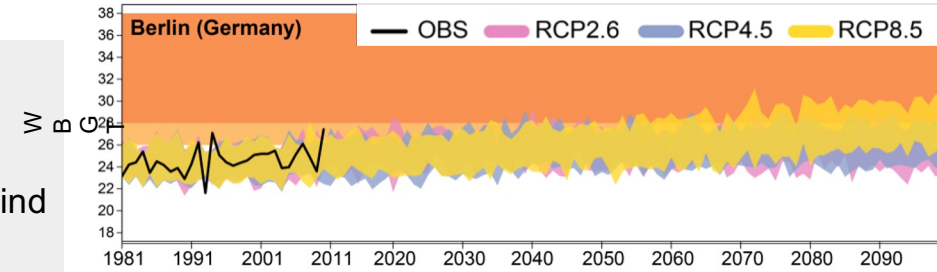


Lagdo Dam

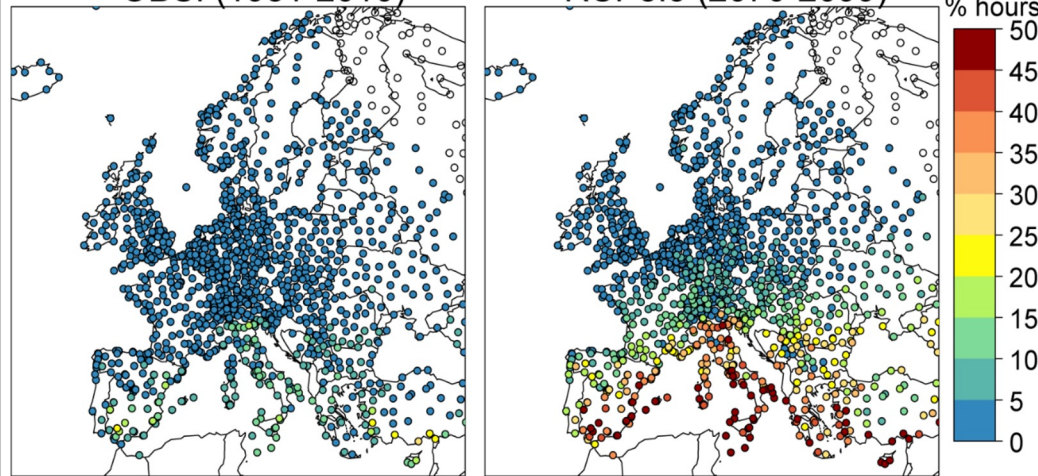


# Climate change projections of heat stress in Europe and its impacts

- **84 GCM-RCMs EURO-CORDEX** simulations, 3 RCPs
- ~1800 European stations
- Bias-corrected **transient projections of heat stress**
- Wet bulb globe temperature (WBGT: air and dew point temperatures, wind speed, solar radiation)

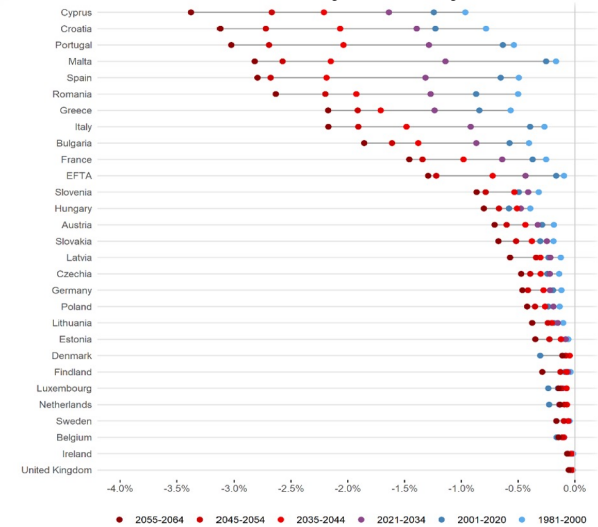


Productivity losses (% hours lost) due to heat stress in summer  
OBS. (1981-2010)      RCP8.5 (2070-2099)



Casanueva et al. 2020, Reg. Environ. Change

Economic impact (GDP losses) of heat stress by country



García-León et al. 2021, Nat. Comms.



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# Progress and achievements over the last year



‘CORDEX is very crucial for IPCC’,  
Panmao Zhai , chair IPCC WGI

## Climate Information for Decision Making

Bringing society into  
the science

RfS and CORDEX represented

November 2022  
Sharm El Sheikh, Egypt





# Future plans

## CORDEX simulations

- Publish CORDEX-CMIP6 archiving specifications
- CMIP6 standard downscalings available hopefully for all domains

## Scientific plans (CORDEX White papers – Topics to be discussed during the ICRC2023)

- Synthesize outcomes of FPSs
- Dialogue with the community to coordinate and ‘standardize’ **high resolution (convection permitting) simulations for smaller domains, including FPSs.**
- Dialogue with the community for **increasing interest on RESMs and very high-res, small area simulations, including event-based simulations for a better understanding of involved processes and to enlarge participating modeling groups.**
- Discussions with the community on how to combine statistical and dynamical downscaling products

# Future plans

## Connections with the user community

- Enhance the connections with users to shape models (urban/lake/valleys)
- Leverage the information from the workshops about the user needs to get a better understanding on the need of high-resolution /more complex models and for what purpose
- Enhance the dialogue with the Climate Service community
- Climate service data delivery and connections with other activities with non WCRP communities (e.g. COP27)

## CORDEX Events

- International Conference on Regional Climate CORDEX in Trieste, Italy and Pune, India 25-29 September 2023
  - Outcomes from CORDEX to the OSC2023
- Side events at the WCRP Open Science Conference in October 2023



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