ELVIC: Climate Extremes in the Lake Victoria Basin
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One of world’s convectively most active regions: very vulnerable to heavy precipitation, heat waves, severe droughts and wind storms

Coordinate ensemble climate projections at the Convection-Permitting scale

• Assess added value of Convection-Permitting
• Project evolution of future climate extremes
• Provide information to impact community

More information
https://ees.kuleuven.be/elvic/
jonas.vandewalle@kuleuven.be & nicole.vanlipzig@kuleuven.be
ELVIC: main protocols

- Evaluation simulation: 2005-2016
- Driver: ERA-Interim (ERA5 optional)
- Nesting: global – 12 km – 2.8 km
- Lake model coupled
- https://ees.kuleuven.be/elvic/protocols/
Evaluation of precipitation – Preliminary Analysis

CPM for 2006-2009

Observations

Models
Report on MedCORDEX FPS-Aerosol

Samuel Somot (météo-France), Fabien Solmon (LA), Marc Mallet (Météo-France) and the FPS-Aerosol team

Special thanks to: Claudia Gutierrez (UCLM) and Julien Boé (CERFACS)
**Med-CORDEX FPS-Aerosol**

17 participating modelling groups

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**Protocol 1: External Aerosol Forcing**  
(Prescribed Aerosol Climatologies)

1.A: Hindcast runs
1.B: Historical + Scenarios including or not aerosol trends

**Status 1.A:**
- CNRM-RCSM4 (done)
- RegCM4 (in prep)

... 

**Status 1.B:** most advanced, analysis going on
- CNRM-ALADIN63 (done)
- WRF-AUTH (done)
- REMO2015 (done)
- COSMO-CLM (done)
- RegCM4 (finishing)
- RACMO22E (running)

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**Protocol 2: Fully Interactive Aerosol**  
(On line approach)

2.A: Case studies (3 month test cases)
2.B: Hindcast runs
2.C: Historical + Scenarios including emission evolutions

**Status 2.A:** ADRIMED – Analysis going on
- CNRM-RCSM (done)
- MOCAGE (done)
- CHIMERE (done)
- WRF-Chem (done)
- RegCM4 (done)
- COSMO-GMXe (done)
- MesoNH (done)
- IFS (done)

**Status 2B-2C:**
- CNRM-RCSM (done)
- RegCM4 (new batch in prep)

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For more info:  
https://www.hymex.org/cordexfps-aerosol/wiki/

Contact: fabien.solmon@aero.obs-mip.fr  
marc.mallet@meteo.fr  
cordexfps-aerosol@hymex.org
Missing evolving aerosol forcing in RCMs is (very) likely responsible for a (large) part of the inconsistency between GCM and RCM - at least on SSW and surface T - climate change signal.

Theses issues and others will be presented and discussed in detail during the:

6th Med-CORDEX workshop, Météo France, Toulouse, November 25-29, 2019


!! REGISTRATION STILL OPEN !!
Coupled regional modelling of land-atmosphere-ocean interactions over western-southern Africa under climate change

CORDEX FLAGSHIP Study

Francois Engelbrecht and collaborators
Francois.Engelbrecht@wits.ac.za
Key research questions

• How will **Benguela** upwelling on the west coast of southern Africa change in a changing climate, and what are the feedbacks to climate?

• How will **tree-grass-fire dynamics** change in the savannahs of western southern Africa under climate change, and what are the feedbacks to climate?

• How do **biomass burning** from the southern African savannahs interact with the Sc cloud deck of the southeast Atlantic, and what are the implications for climate sensitivity?

• Can **high-resolution coupled regional modelling** help to reduce the CMIP5 & CMIP6 SST biases along the west coast of southern Africa?

• What are the **implications of climate change in the coupled regional Earth System** of western southern Africa to agriculture, live-stock production, water security and west-coast fisheries?
CORDEX Flagship Study: the coupled climate system of southern Africa and the Atlantic

- Domain size: 2000 x 2000 km²;
- Model resolution ideally 8 km in the horizontal or finer; any simulations with resolution higher than 50 km in the horizontal (i.e. higher than in CORDEX Africa) are welcome.
- Participating models should simulate at least one aspect of the coupled system in addition to standard atmosphere-only simulations.
- Examples are coupled ocean-atmosphere, coupled land-atmosphere and coupled ocean-atmosphere-land simulations
- The use of DGVMs, dynamic fire and dynamic ocean models in coupled regional climate/Earth System models are novel for this domain and welcomed.

Figure: CCAM 8 km resolution stretched-grid covering western-southern Africa

Tier 1 experiments:
- Reanalysis downscalings centred over Walvisbay in Namibia; 1979-2018

Tier 2 experiments:
- CMIP5/CMIP6 downscalings for 1961-2100 (continuous or for CMIP6 time-slabs of near, mid and far future + present-day)