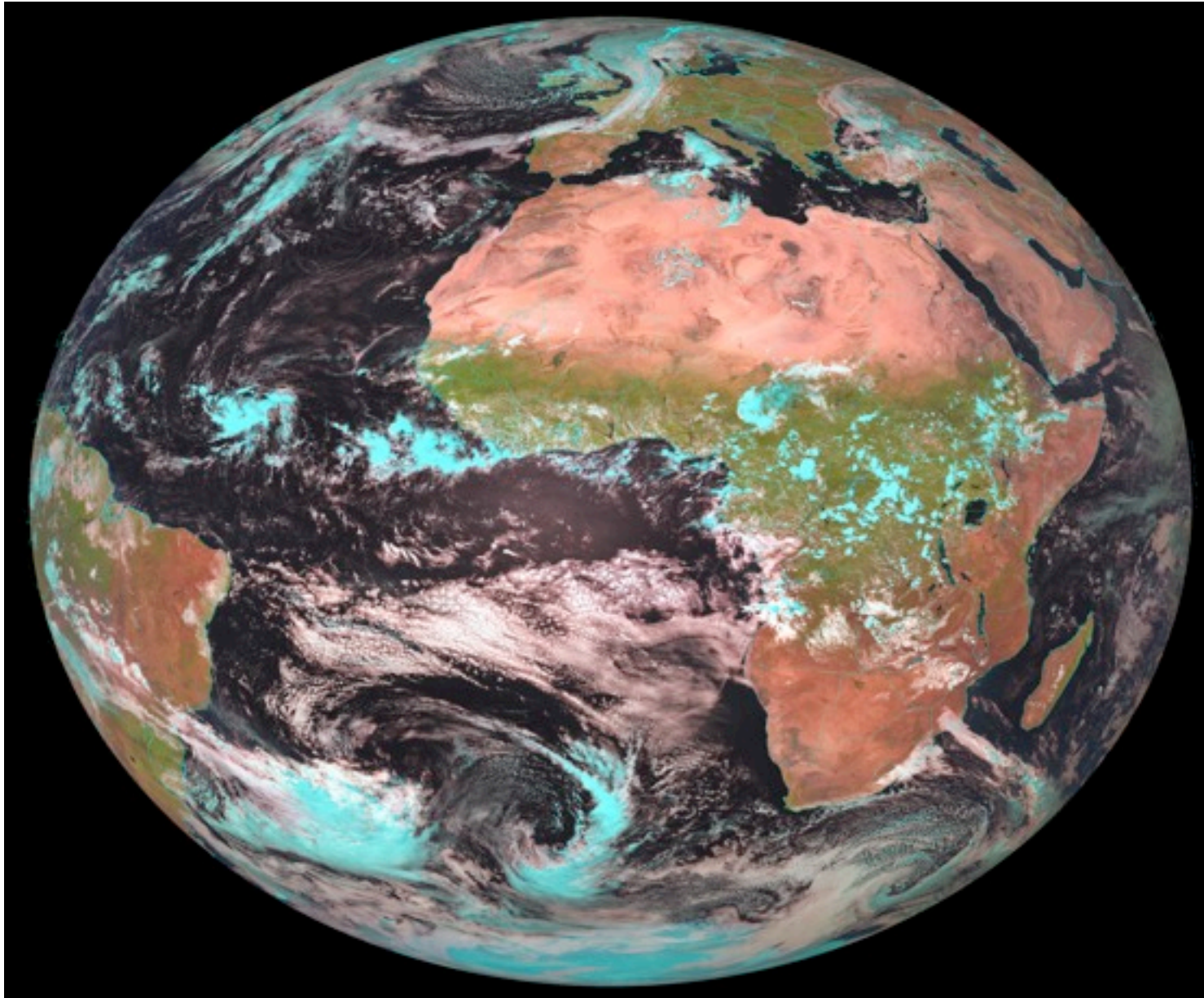


Co-Ordinated Regional Downscaling Experiment

C O R D E X - Africa

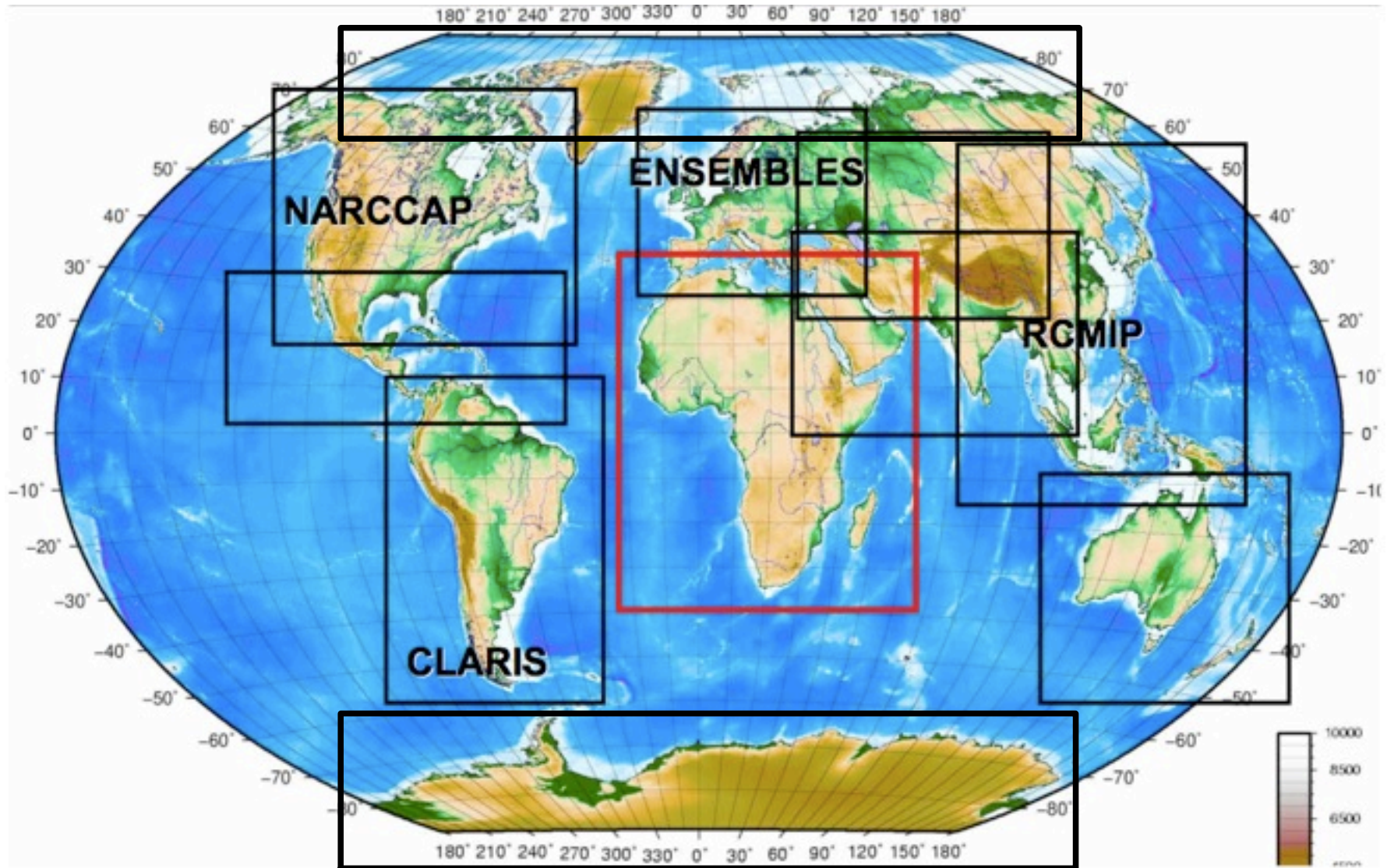


Chris
Lennard



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Cordex regions



CORDEX Phase I experiment design

Model Evaluation Framework

Multiple regions (Initial focus on Africa)
50 km grid spacing

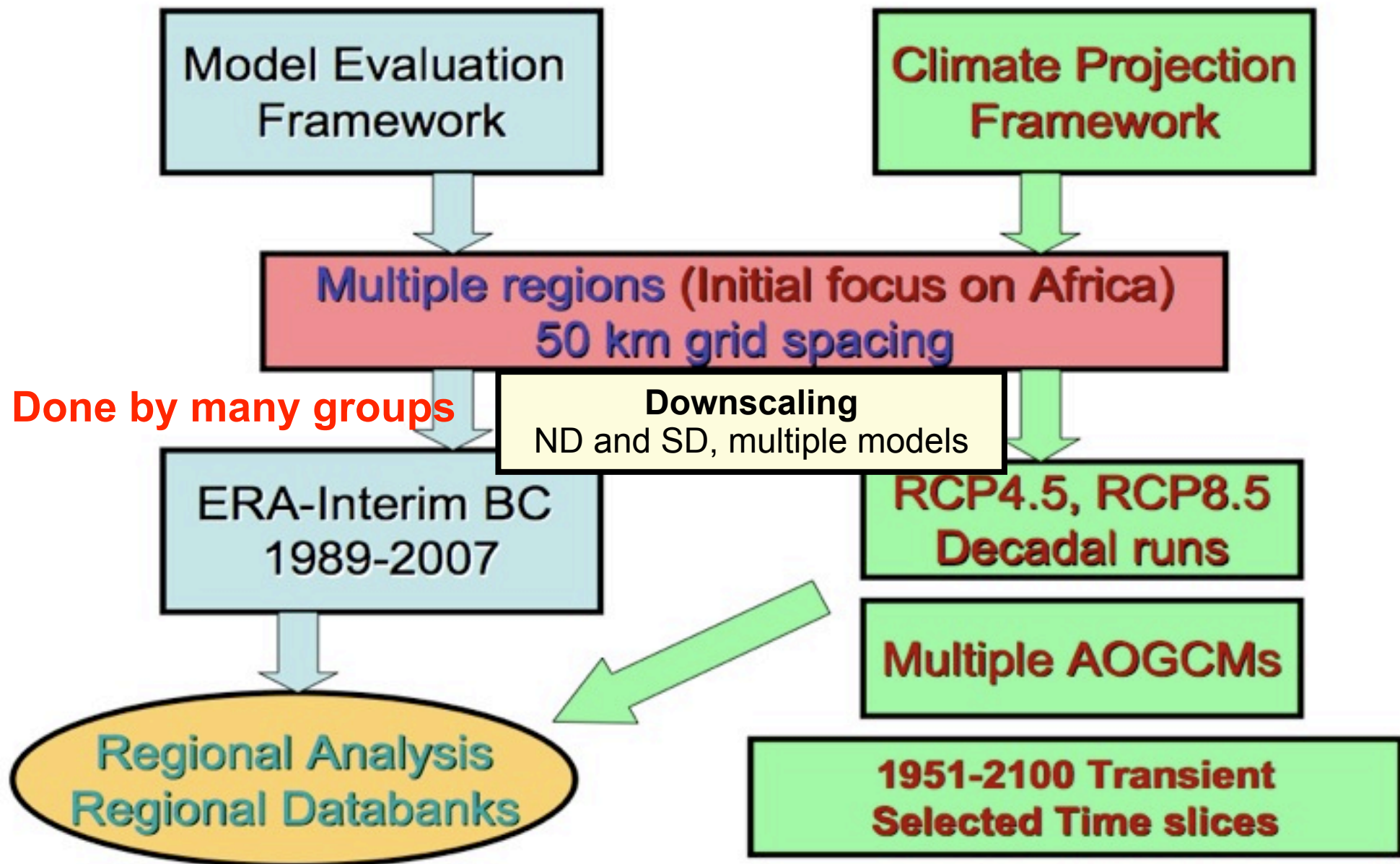
Done by many groups

Downscaling
ND and SD, multiple models

ERA-Interim BC
1989-2007

Regional Analysis
Regional Databanks

CORDEX Phase I experiment design



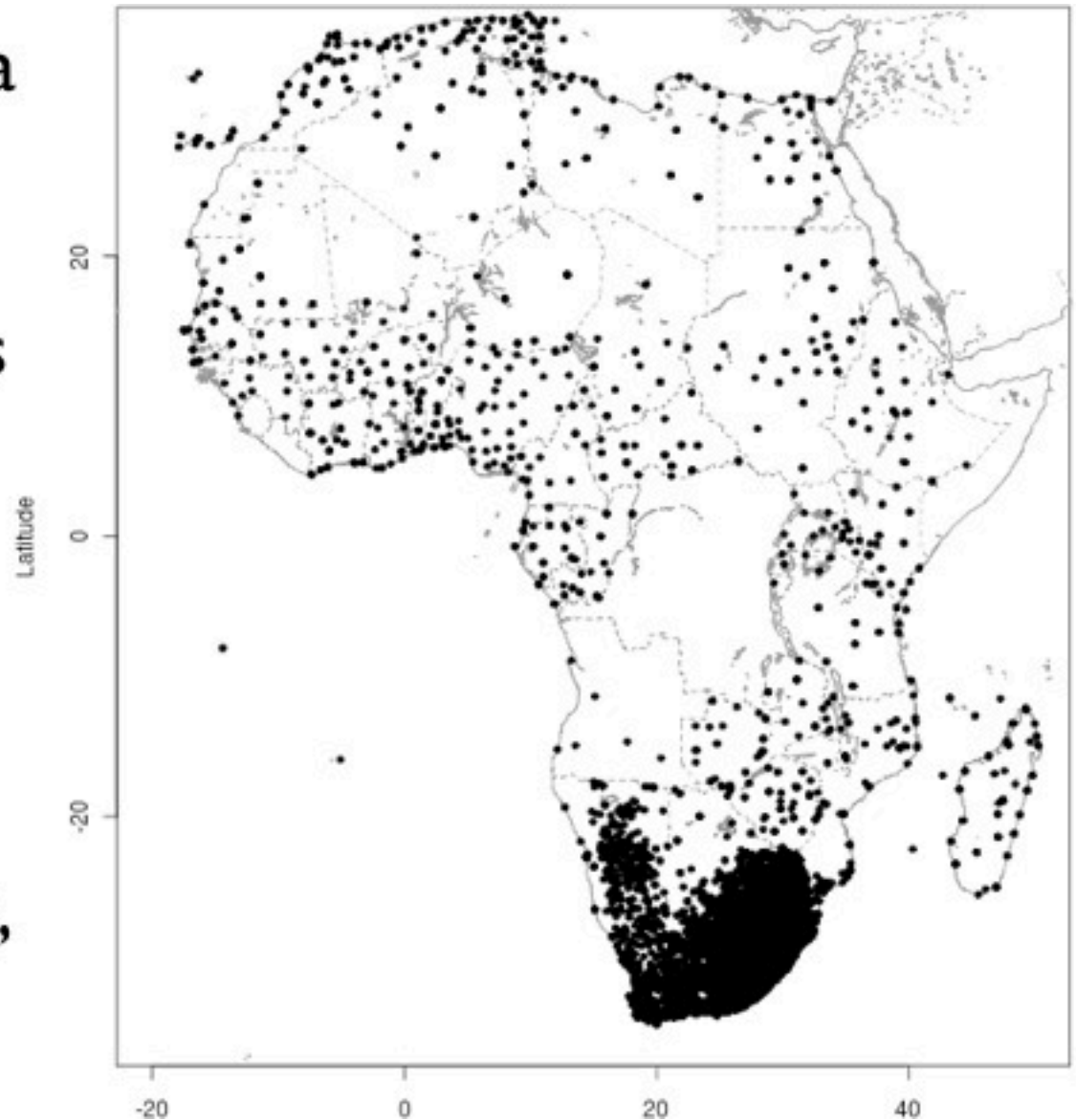
Cordex – Africa Analysis

Our observational data
problem

Some of these stations
are private/restricted
(e.g. Ghana)

or have closed down

These are ppt stations,
temperature fewer



Cordex - Africa

Downscaling Groups

- SMHI
- ICTP
- UKMO
- DMI
- Univ. Cantabria (Spain)
- EU Joint Research Centre
- ISU
- IPSL
- KNMI
- CNRM
- MPI
- UQAM
- CSAG** – Univ. Cape Town
 - Precis model
 - WRF model (3 yrs to go)
 - Statistical downscaling (end 2012)
- CSIR** – Pretoria
 - CCAM global model



Cordex – Africa Analysis

Ethos:

A – Analysis; Developing methods and tools to analyze atmospheric processes over Africa and how these may change into the future

F – Foci; Addressing key meteorological and impacts knowledge gaps

R – Regional messages; Presenting information for key regions of the continent

I – Integrated approach; Bringing together climate and vulnerability-impact-adaptation scientists to identify and address key climate vulnerabilities

C – Capacity development; Long-term collaboration between African scientists and key global institutions for career development

A – Application and Adaptation; Bridging the science-society divide through transforming climate data into actionable information

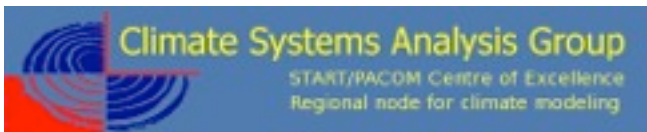
Cordex - Africa

Putting the 'CO' in CORDEX - Series of 4(5) Workshops



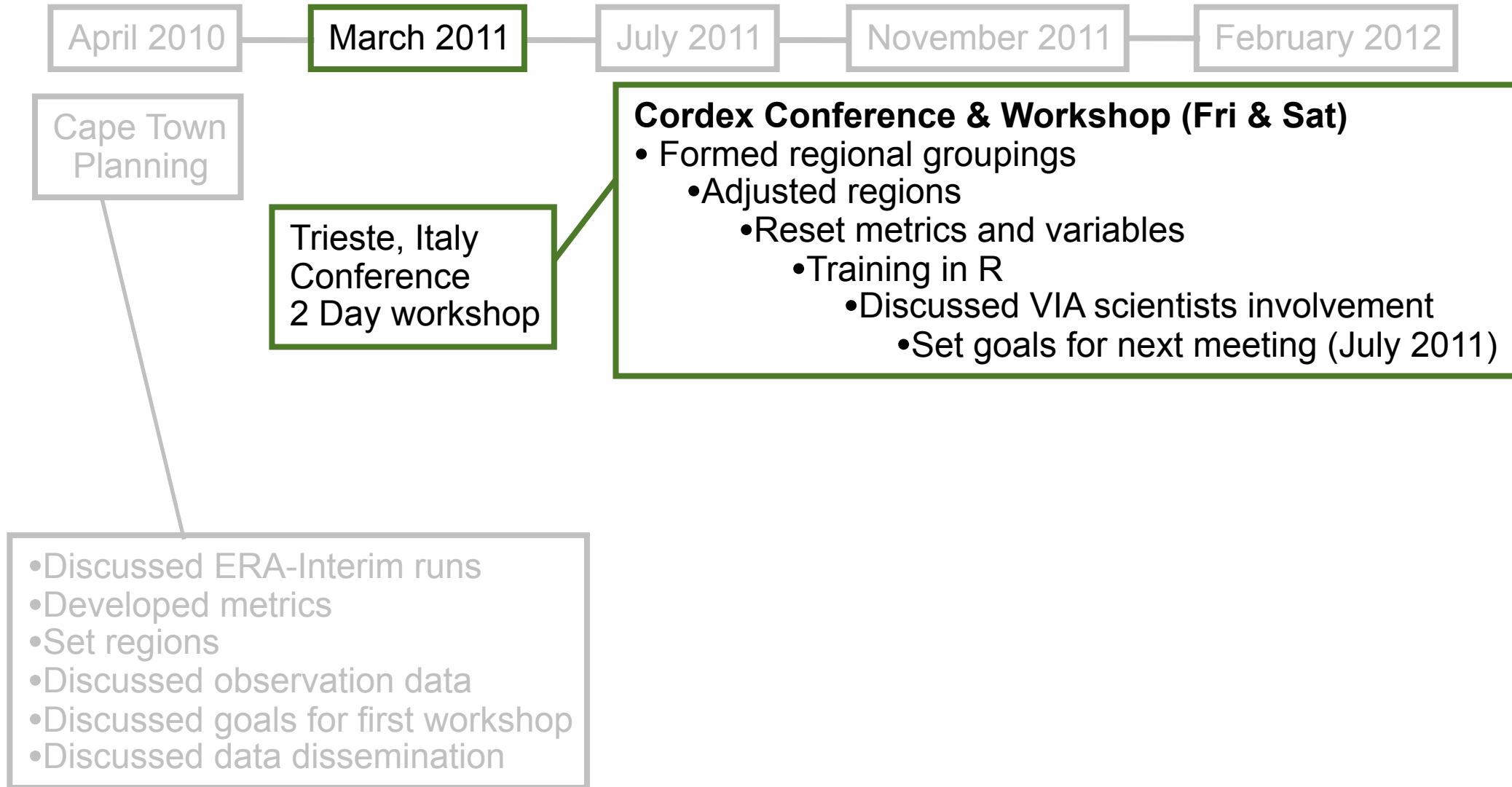
Cape Town
Planning

- Discussed ERA-Interim runs
- Developed metrics
- Set regions
- Discussed observation data
- Discussed goals for first workshop
- Discussed data dissemination



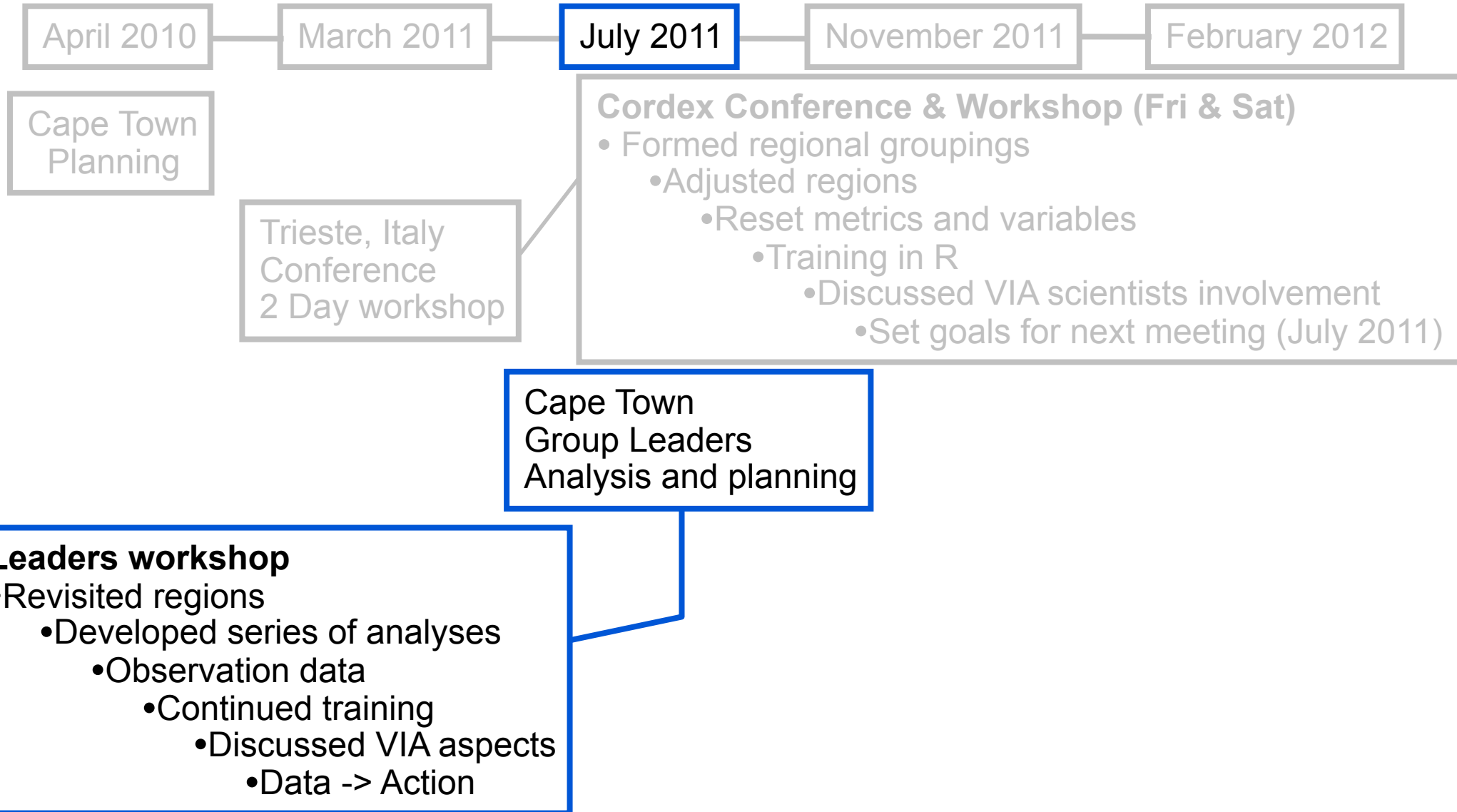
Cordex - Africa

Putting the 'CO' in CORDEX - Series of 4(5) Workshops



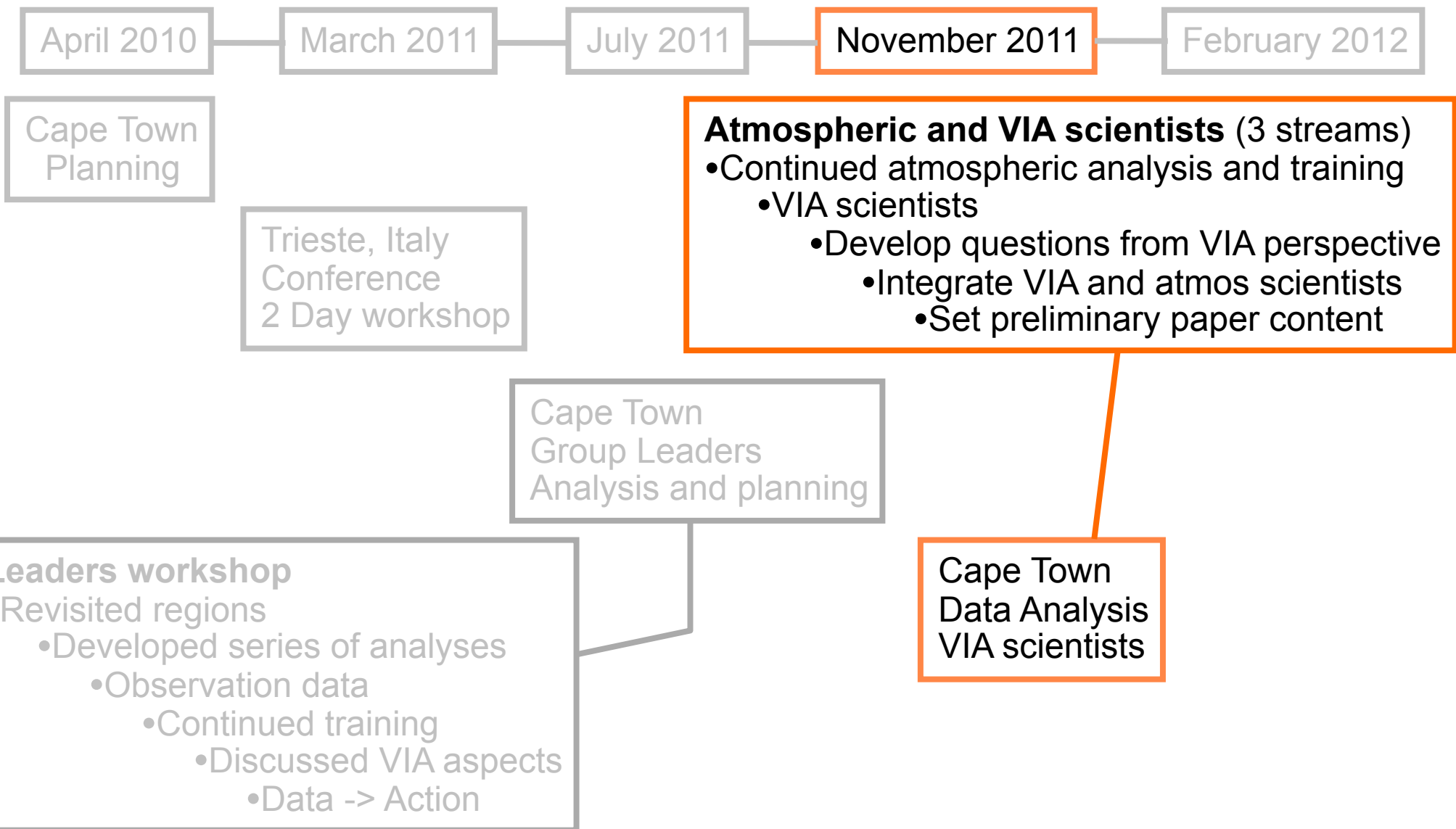
Cordex - Africa

Putting the 'CO' in CORDEX - Series of 4(5) Workshops



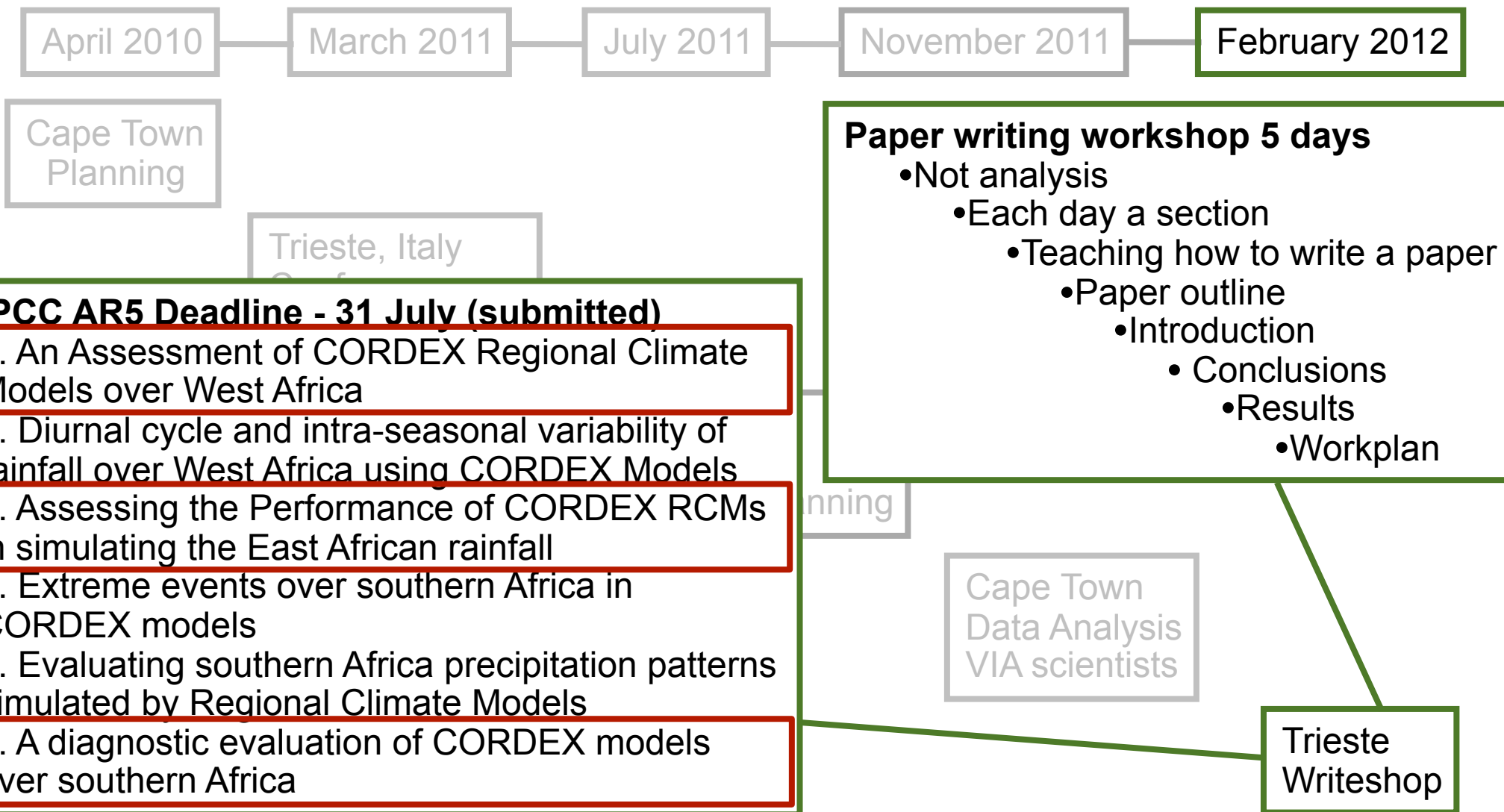
Cordex - Africa

Putting the 'CO' in CORDEX - Series of 4(5) Workshops

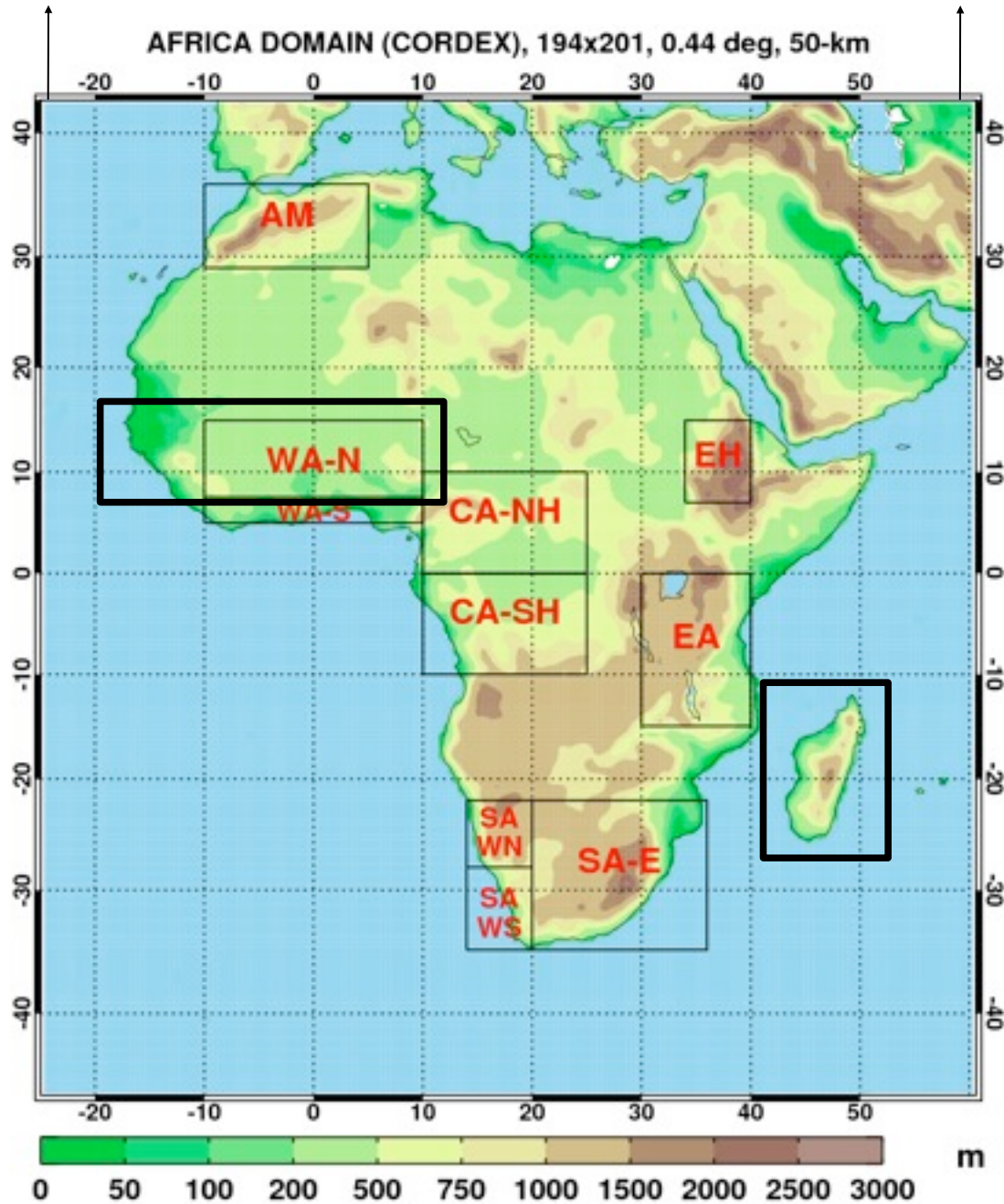


Cordex - Africa

Putting the 'CO' in CORDEX - Series of 4(5) Workshops

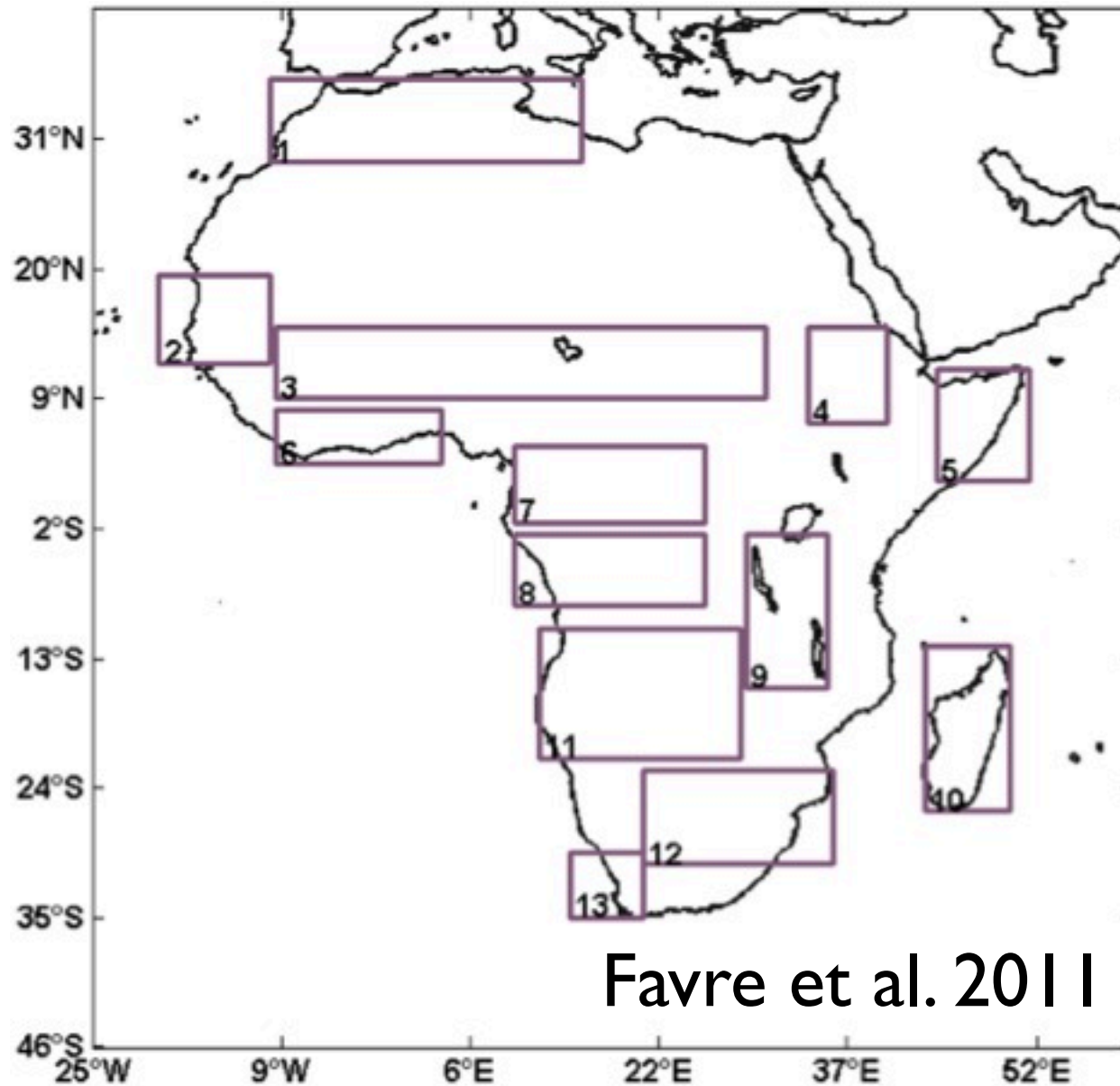


Cordex - Africa



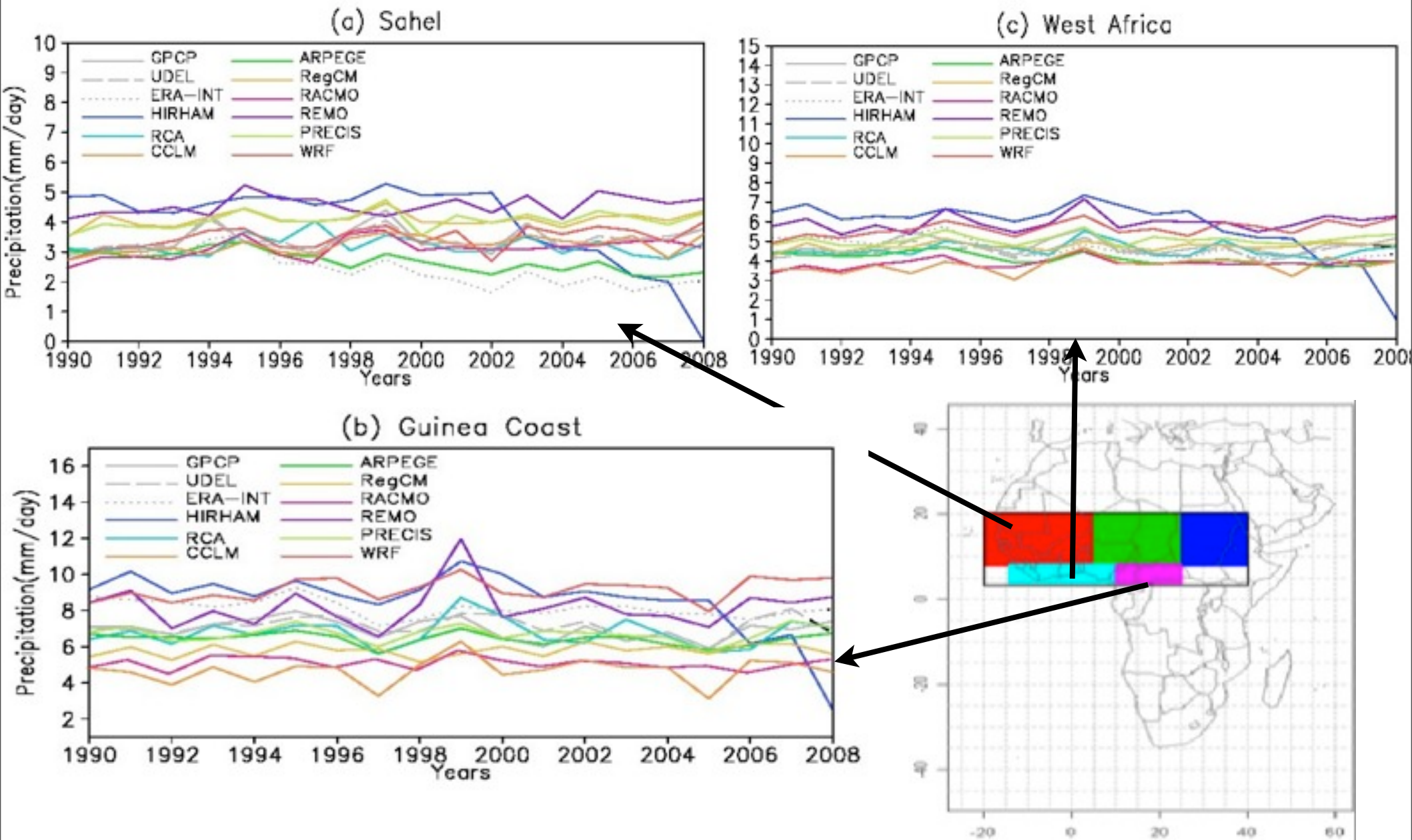
- AM Atlas Mountains
- WA-N West Africa - North
- WA-S West Africa - South
- CA-N Central Africa - North
- CA-S Central Africa-South
- EH Ethiopian Highlands
- EA East Africa
- SA-E South Africa East
- SA-WN South Africa West-North
- SA-WE South Africa West- South
- MAD Madagascar

Cordex - Africa

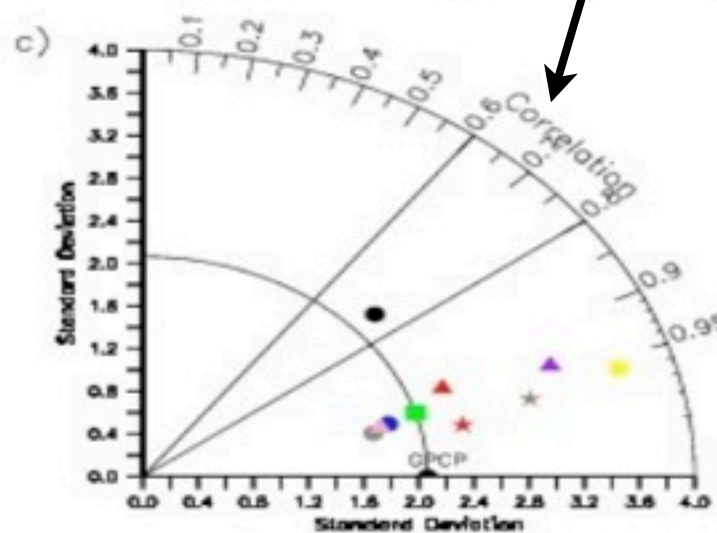
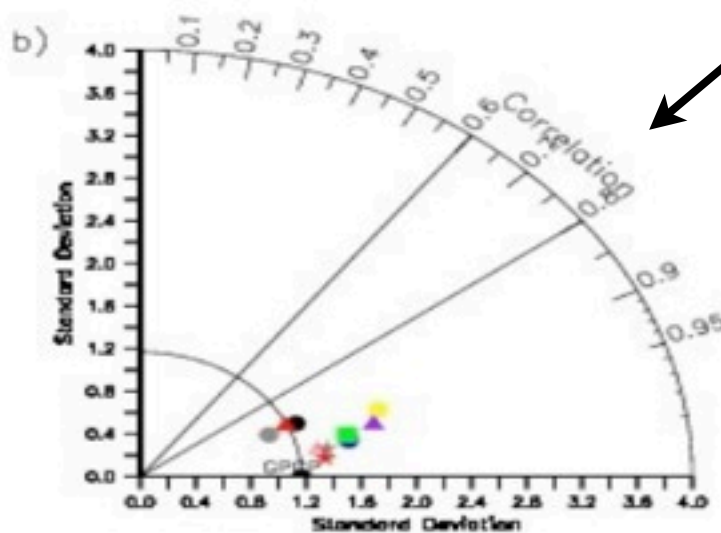
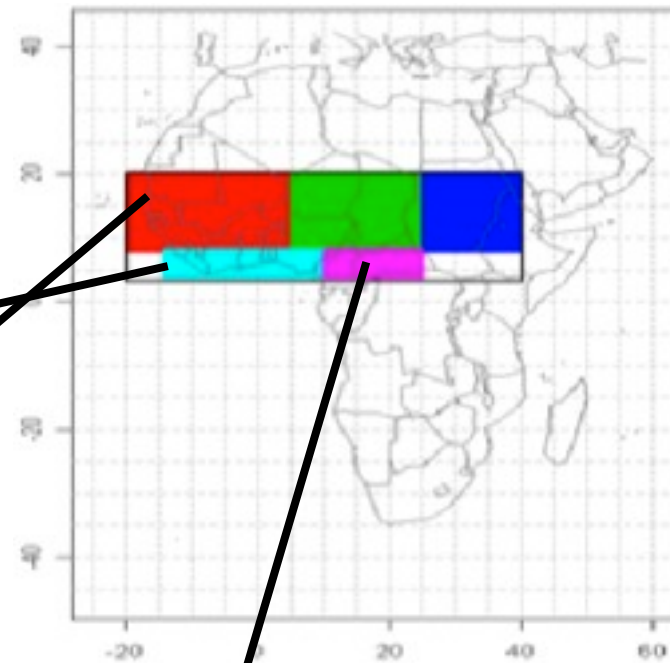
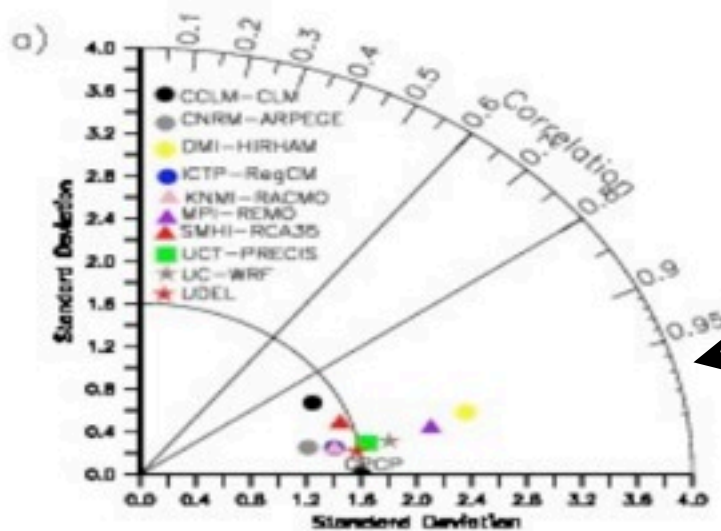


Favre et al. 2011

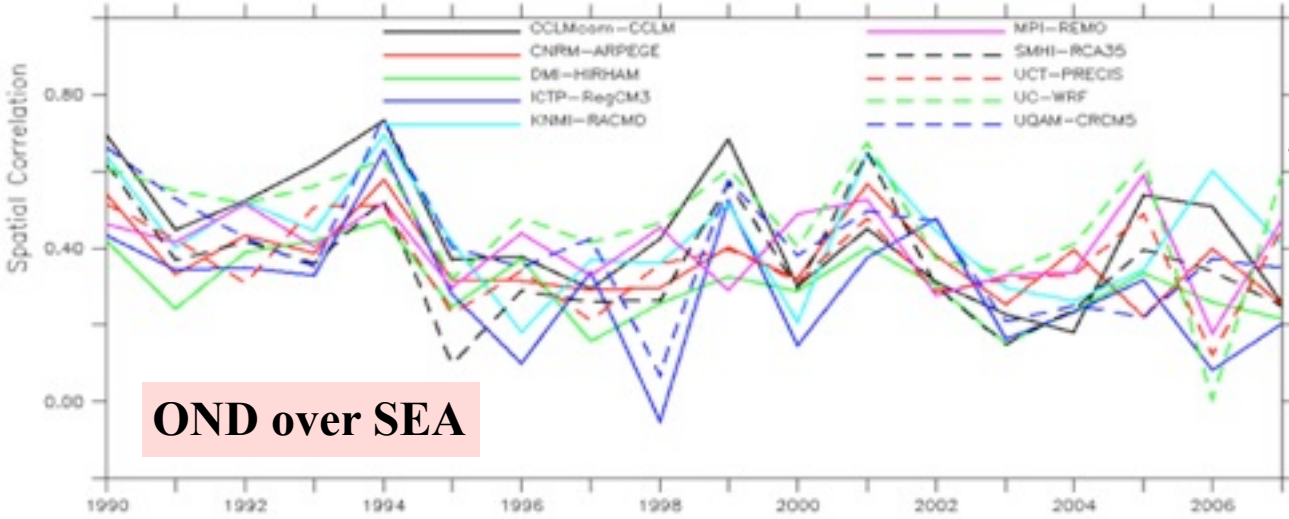
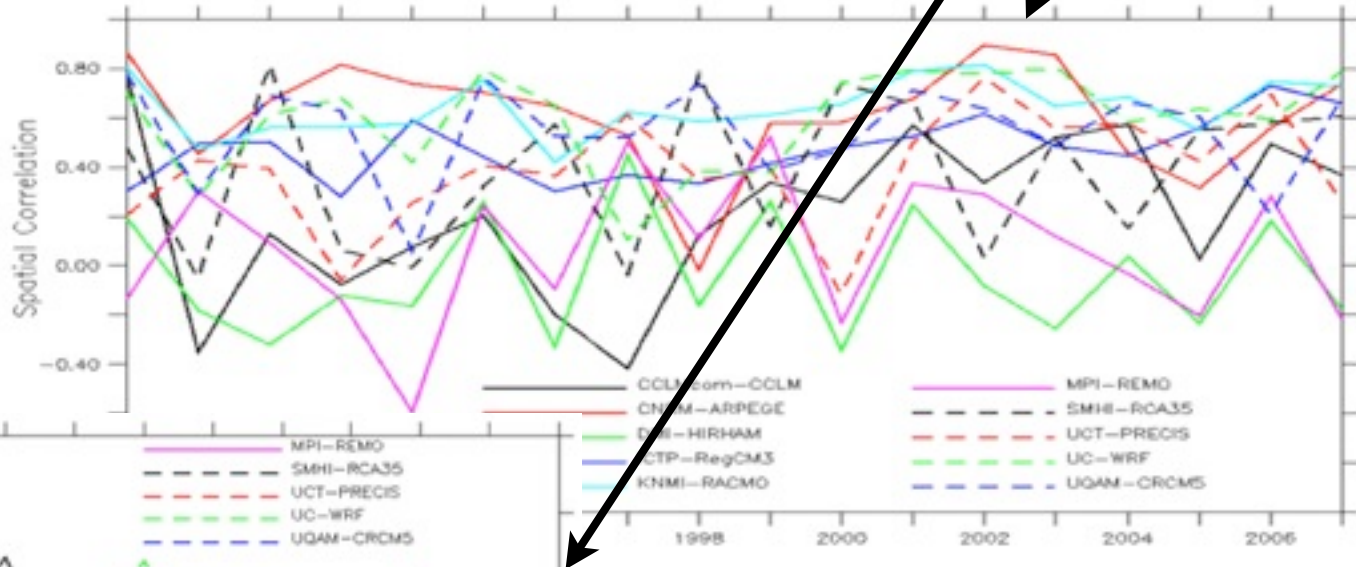
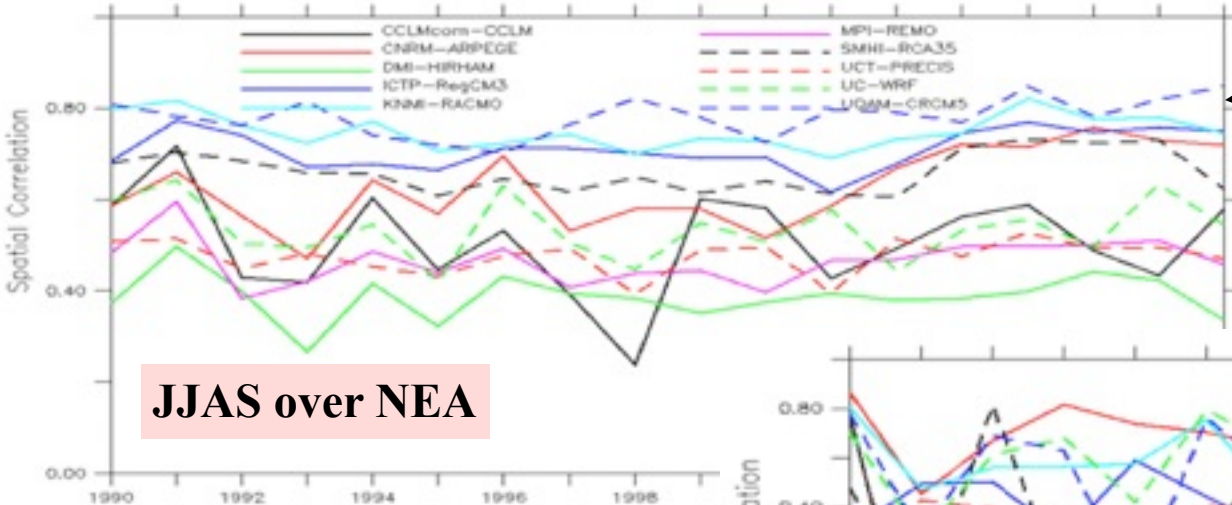
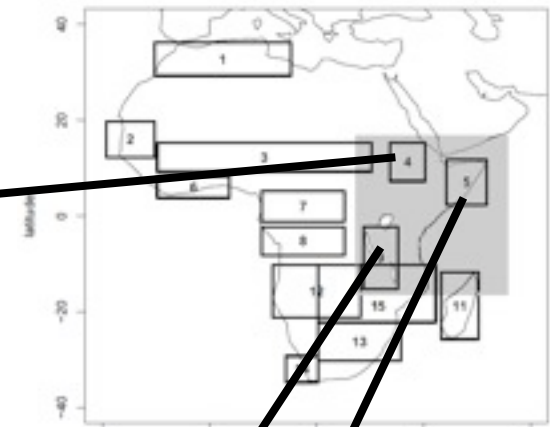
Cordex West Africa



Cordex West Africa

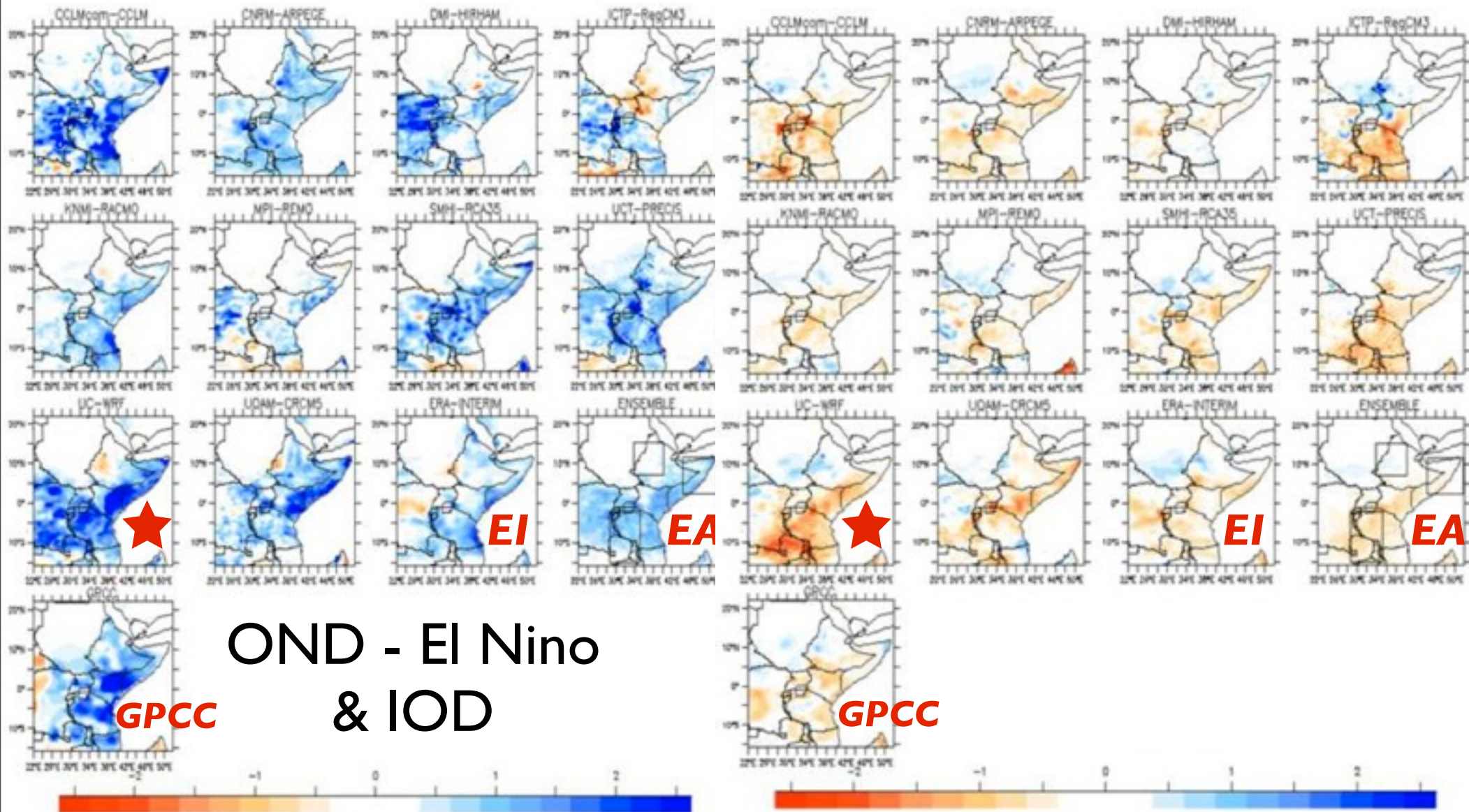


Cordex East Africa

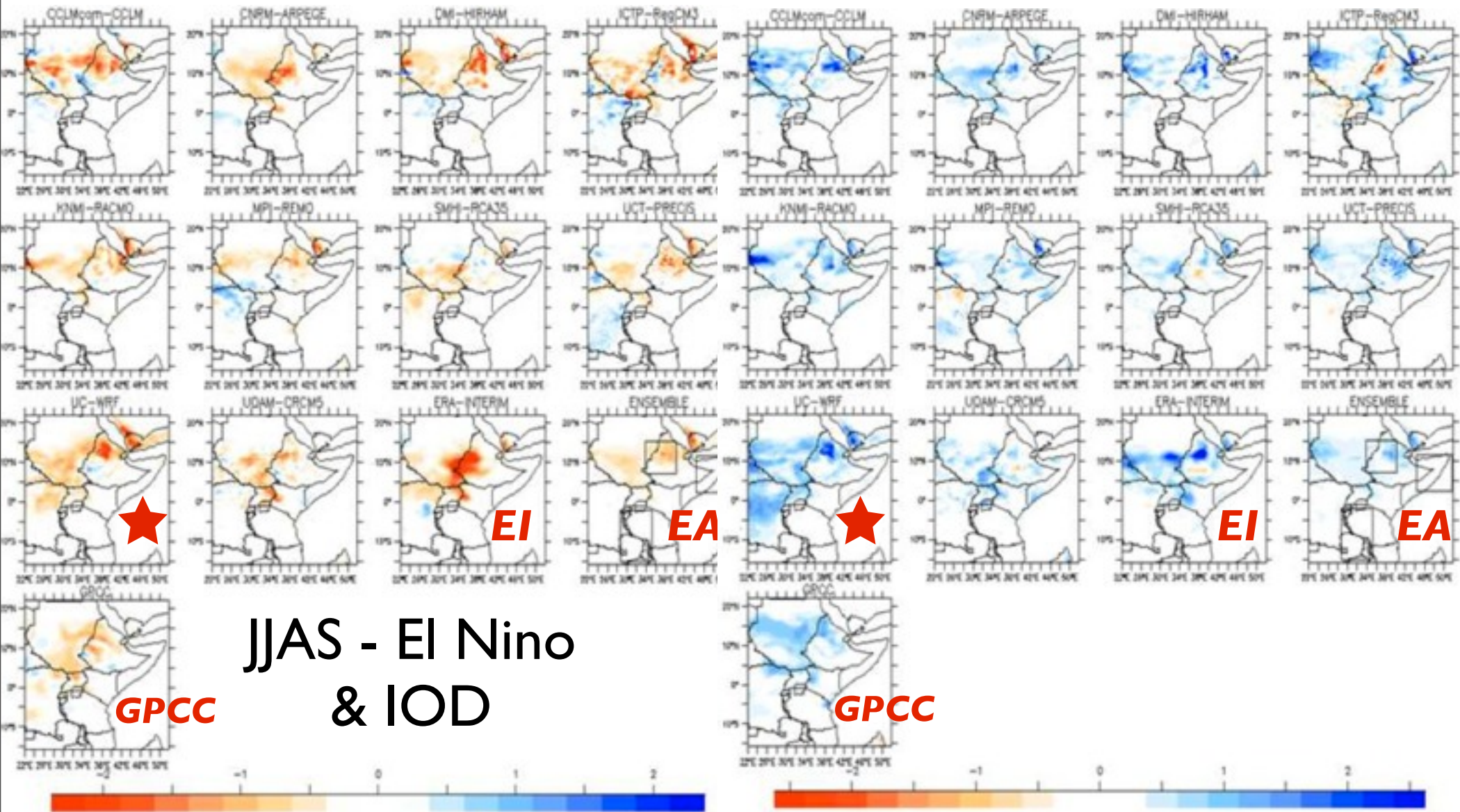


Spatial Correlations between GPCC and the CORDEX RCMs over the 3 study areas

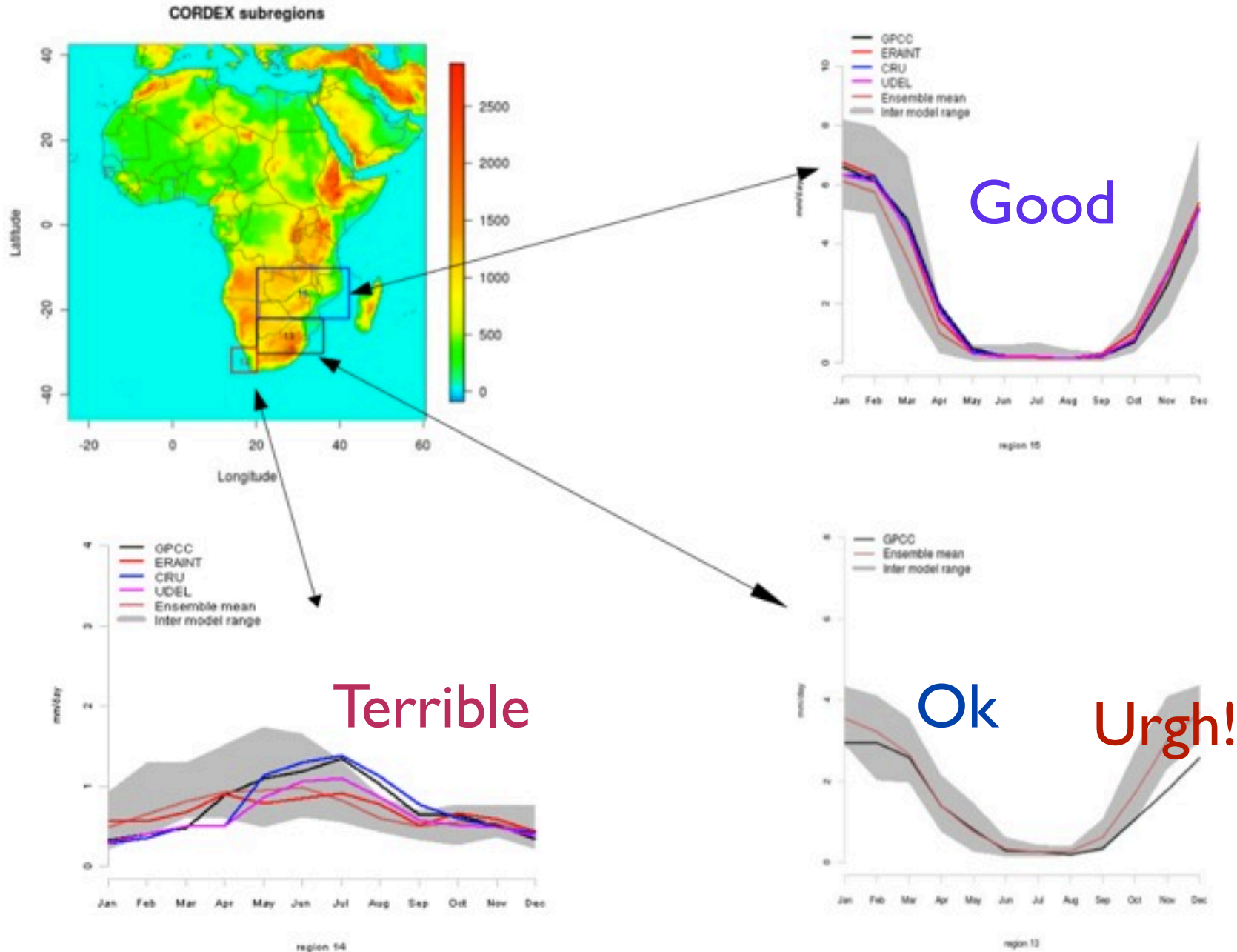
Cordex East Africa - ENSO & IOD



Cordex East Africa - ENSO & IOD

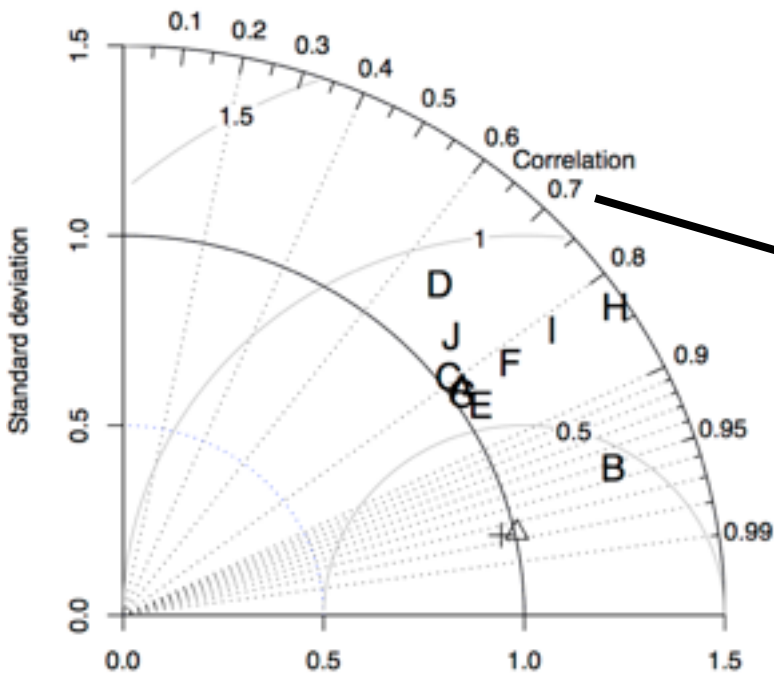


Cordex Southern Africa

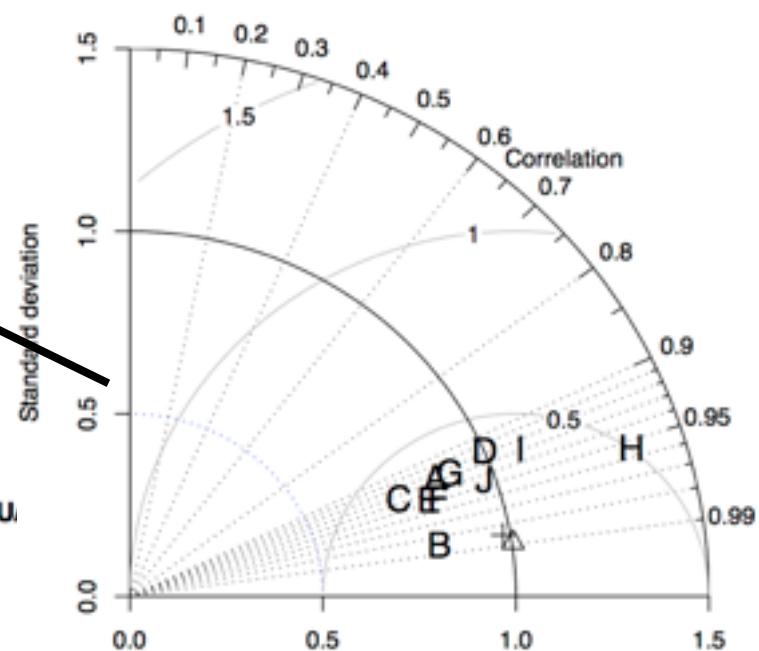


Cordex Southern Africa

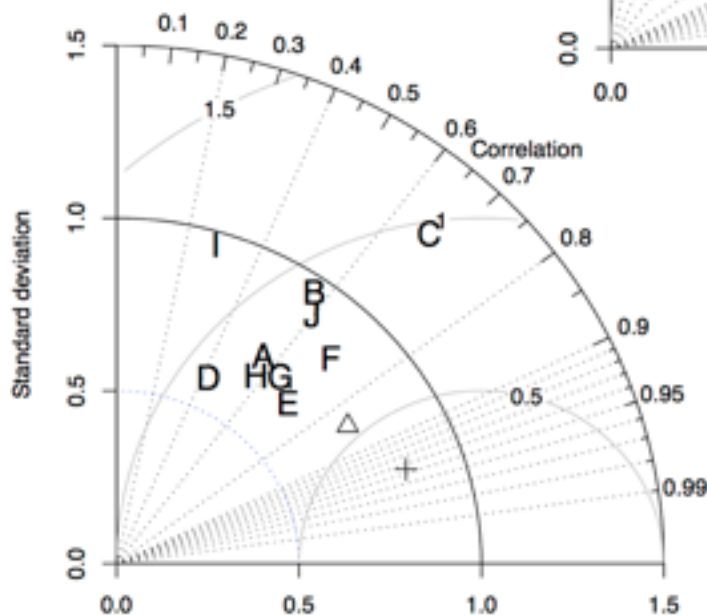
REG13_MM_1990_2006_INTER_ANNUAL_pr_NORMALISED



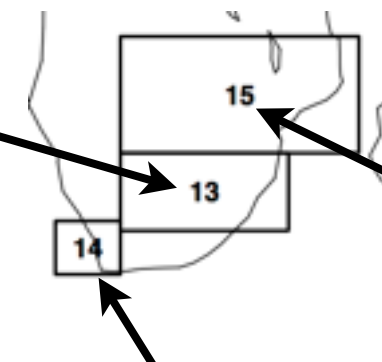
REG15_MM_1990_2006_INTER_ANNUAL_pr_NORMALISED



REG14_MM_1990_2006_INTER_ANNUAL



- GPCC
- WILLMOTT
- △ ECMWF
- + CRU
- A CCLMcom-CCLM
- B CNRM-ARPEGE51
- C DMI-HIRHAM
- D ICTP-REGCM3
- E KNMI-RACMO2.2b
- F MPI-REMO
- G SMHI-RCA35
- H UC-WRF311
- I UCT-PRECIS
- J UQAM-CRCM5



Cordex - Africa

Mixing climate and VIA communities....

**Delivered
by science**

**Bridge
THE
GAP**

**Needed
by society**

Data

Climate models, historical observations, trends, downscaling, projections, event frequency, ...



Information

Measures of vulnerability and risk, threshold exceedence, combinatory impacts, uncertainty and confidence, regional scale variations, ...



Knowledge

Assessing options, understanding consequences, evaluating responses, informing decision making, ...



A basis for action

Balance competing priorities, strategic investments in adaptation and mitigation, new research avenues, coordination of response frameworks, ...

Generated by models, analyses, downscaling... but observations?

We are not always sure when we have "information"

Comes with close coupling between science and society - relationship based!

Actions are risky, and takes place within a multi-stressor context

Cordex - Africa

Mixing climate and VIA communities....it's complicated!

April 2010

March 2011

July 2011

November 2011

February 2012

Burkina Faso: 28-30 May 2012

Health, media and climate
specialists

Many lessons learned by all
delegates

How do we communicate
uncertainty????? Not certain.

Even more lessons learned by
organizers!

Cordex – Africa Analysis

Vulnerability, Impacts, Adaptation Sector

Agriculture

Rain season characteristics including spatial variability, temperature thresholds, growing season length, scale (space and time - daily at a point?)

Ecology

Thresholds, effects on ecosystem services and productivity

Water resource management

Extreme rainfall and early warning; wind and humidity

Health

Space and time scales; communication

Policy makers

What information is need for decision making? How to package it?

Linking with other projects - maximize efficiencies through collaboration

ClimAfrica - Climate Change Prediction in sub-Saharan Africa

Cordex - Africa

What is next.....



February/March 2013

Analysis workshop

- SMHI - RCA4
 - 6 GCMs - Historical & 6 Future
- Others...?
- Re-evaluate regions
- Data dissemination
- How do we deal with so much data?
- How do we evaluate ND vs SD?
- Engagement of user communities?

June/July 2013

Writeshop

- Follow up on ERA papers
- Method papers?
- Data dissemination

**Putting the 'CO' in
CORDEX.....**

..... A LOT OF WORK!

Cordex Web Presence

The official WCRP CORDEX page

http://wcrp.ipsl.jussieu.fr/SF_RCD_CORDEX.html

CORDEX Africa

<http://www.csag.uct.ac.za/cordex>

CORDEX Europe

<http://www.eurocordex.com>

DMI Archive

<http://cordex.dmi.dk/joomla/>

ClimAfrica

<http://www.climafrika.net/>

