

# Climate information needs in developing countries



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# **Q1: What are the information needs in developing countries**

*(Sub-question: are the developed nation adaptation needs any different from those of developing nations?)*

**A1:** The need is for the scientific community to become better educated about the realities of the user needs.

**A2:** The need for information (more than data) that meets as best as possible a lowest common denominator from which the unique formulations of the envelope of response for each user sector may be derived.

A (typical) recent request for information.

**Please supply information for our location on the following, in terms of the occurrence/risk**

**Ranked as H = High, M = Medium, L = Low for the periods 1960-2006 and 2030-2060**

- Floods
- Cyclones
- Fires
- Rainfall variability
- Max temp increase

### **A bit of lateral thinking:**

*Q: In seeking to respond to climate change, in a multi-stressor context:*

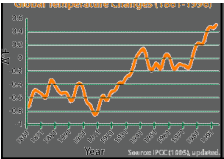
- Do you know the relevant variables you need? (Probably)
- Are they the variables you can get? (Probably not)
- Where will you go for the information? (Google? Nat. Met. Service?)
- Do you know the baseline climate? (Maybe)
- What are the historical trends and variability? (Unsure, or perceptual)
- What are the future projections? (Ask the IPCC?)
- Is there high or low uncertainty? (What's that?)
- What are the thresholds of vulnerability? (e.g. number of days below Y°C)
- Are you already adapted to current climate variability? (Maybe)

**What to do when the information is inaccessible, not available, too uncertain, misunderstood, inappropriately applied ...**

## Relevance of information requires a context: Idealism and pragmatism

In a multi-stressor environment with many activity and society sectors living close to thresholds of viability, there is a need for a progressive assessment of robustness for delivered climate change products:

- a) Credible** – it's believably a representation of Earth and not Venus
- b) Defensible** – the projected change has a physical process-based foundation
- c) Actionable** – You (or someone) would be willing to spend \$X million informed by this information



## Regional climate change – what is a region?

**Vulnerability** = (exposure) x (**magnitude**) – (capacity to respond)

- a) Information of change needs to match exposure and response
- b) Many sectors are yet to adapt to current variability
- c) Climate models are least skillful at the (user-defined) regional scale





# Relatively easy to access user resources:

(assuming internet bandwidth, data handling capacity, and contextual understanding!)

The screenshot displays the official website of the Intergovernmental Panel on Climate Change (IPCC). The header features the WMO and UNEP logos, the text 'INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE', and the acronym 'IPCC'. A navigation menu on the left lists various resources, with 'IPCC Reports' highlighted. The main content area is titled 'IPCC Reports' and features a green banner for the 'IPCC FOURTH ASSESSMENT REPORT: CLIMATE CHANGE 2007'. Below this banner, four report covers are displayed: the Synthesis Report, the Working Group I Report 'The Physical Science Basis', the Working Group II Report 'Impacts, Adaptation and Vulnerability', and the Working Group III Report 'Mitigation of Climate Change'. Each report cover is accompanied by a descriptive link.

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WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

UNEP

IPCC

Languages

IPCC web sites

IPCC Reports

Home

About IPCC

Meetings and Documentation

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Assessment Reports

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Methodology Reports

Supporting material

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Information for the press

IPCC FOURTH ASSESSMENT REPORT: CLIMATE CHANGE 2007

CLIMATE CHANGE 2007  
SYNTHESIS REPORT

CLIMATE CHANGE 2007  
THE PHYSICAL SCIENCE BASIS

CLIMATE CHANGE 2007  
IMPACTS, ADAPTATION AND VULNERABILITY

CLIMATE CHANGE 2007  
MITIGATION OF CLIMATE CHANGE

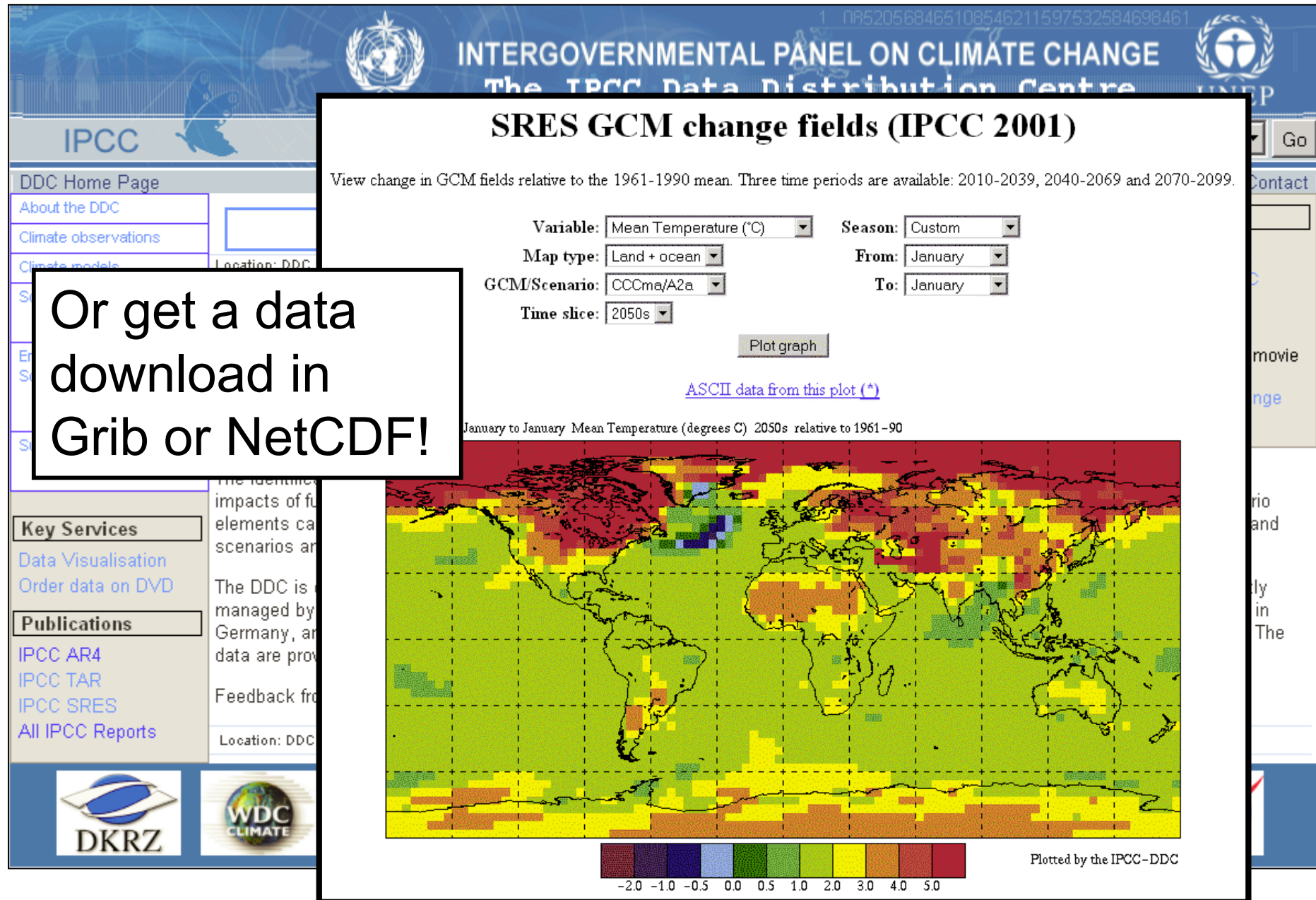
[The AR4 Synthesis Report](#)

[Working Group I Report  
"The Physical Science  
Basis"](#)

[Working Group II Report  
"Impacts, Adaptation and  
Vulnerability"](#)

[Working Group III Report  
"Mitigation of Climate  
Change"](#)


# The current relatively easy resources can be problematic



Or get a data  
download in  
Grib or NetCDF!



# The current relatively easy resources can be problematic



## SCHOOL OF GE AND THE ENVIR

Home News Research Staff Undergraduate Honour School I


Location: Home / Research / Climate Systems and Policy / U

### Contents

- Country Index
- How to use the UNDP Climate Change Country Profiles
- Further Information

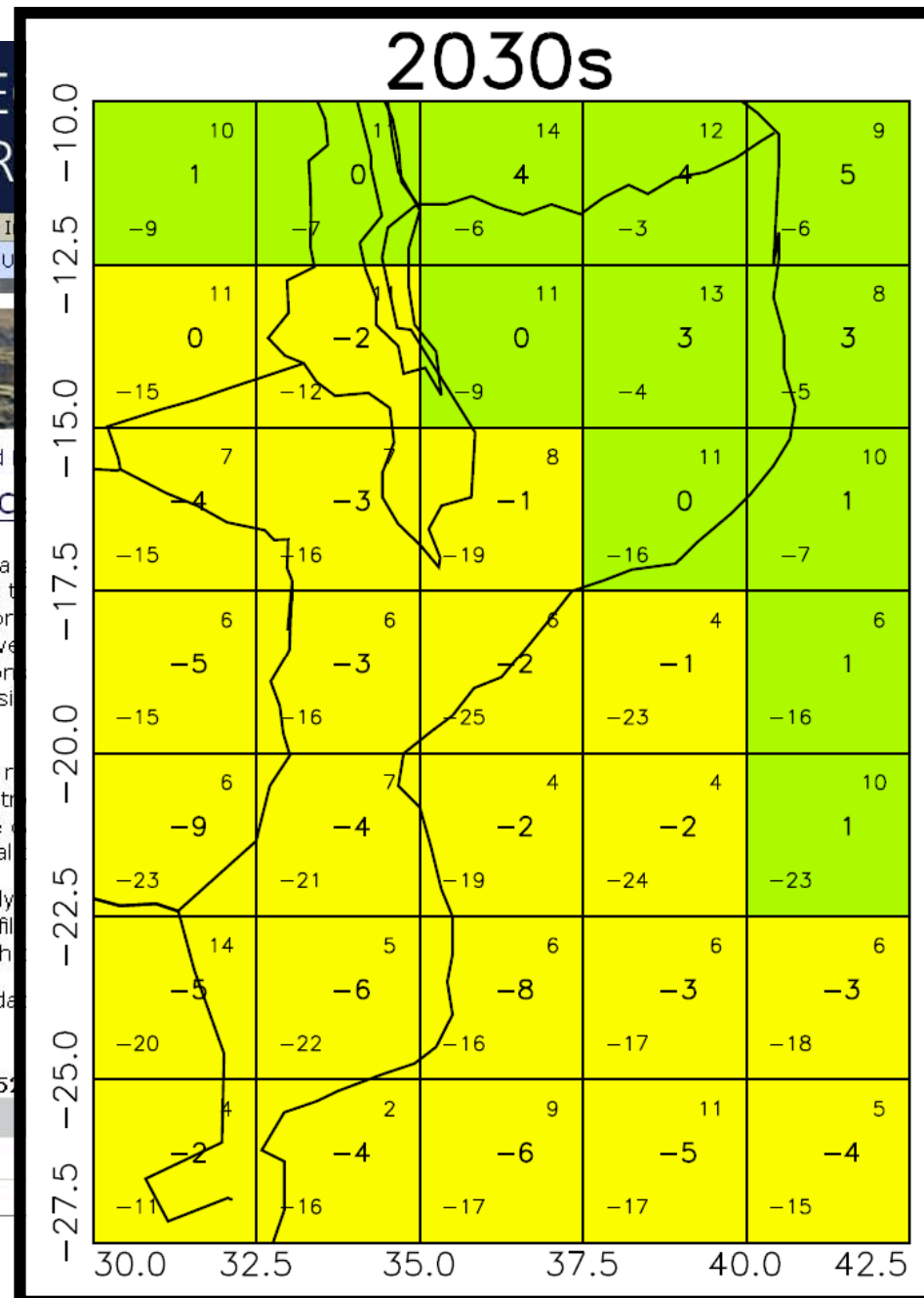
### Go to

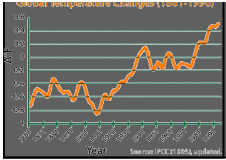
- Climate Systems and Policy research cluster
- Research
- Home



Information is available for 52

Country
Afghanistan
Angola





## Regional climate projections : communities apart

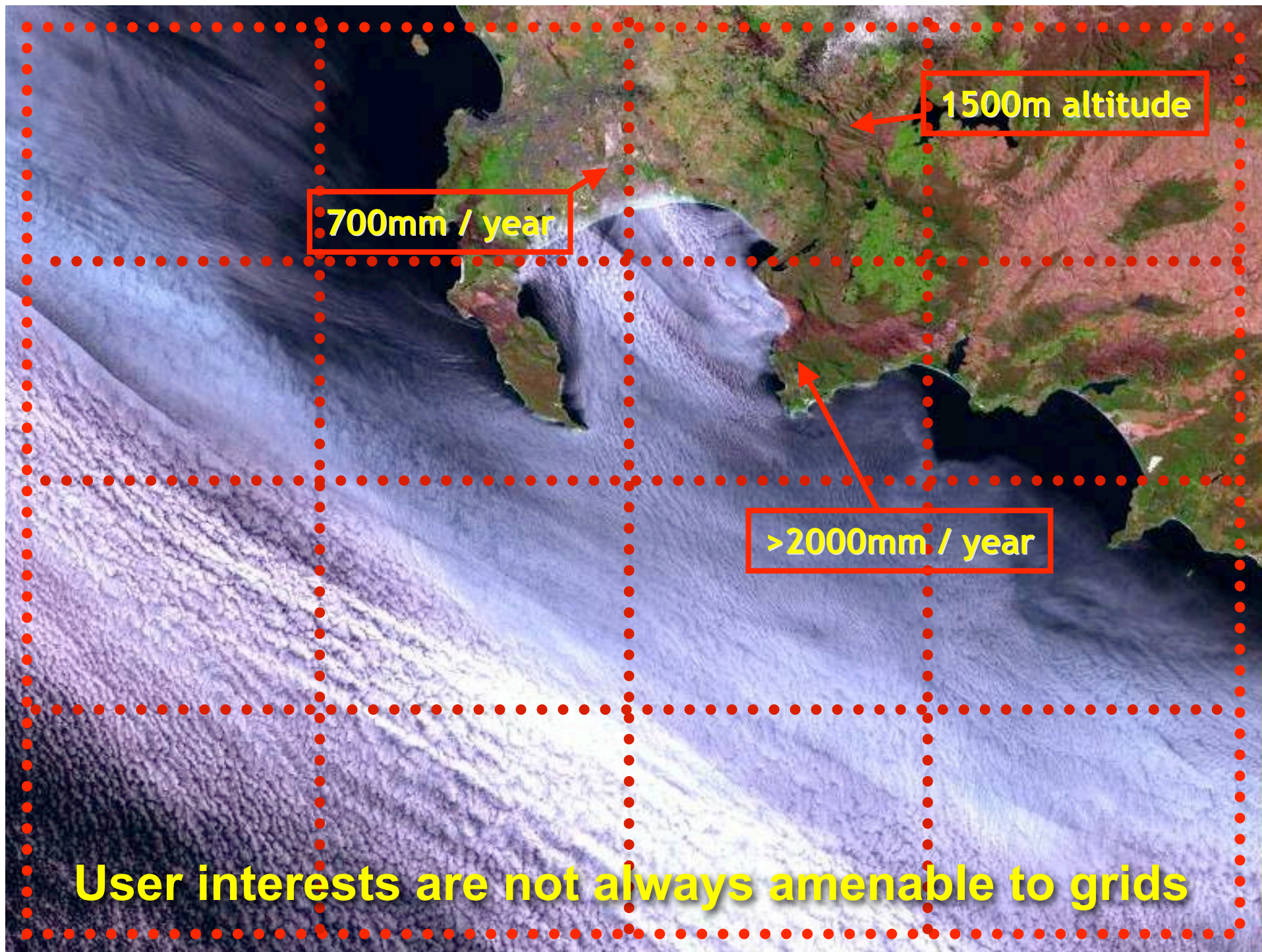
Users need information that is good enough

What is good enough?

For who?

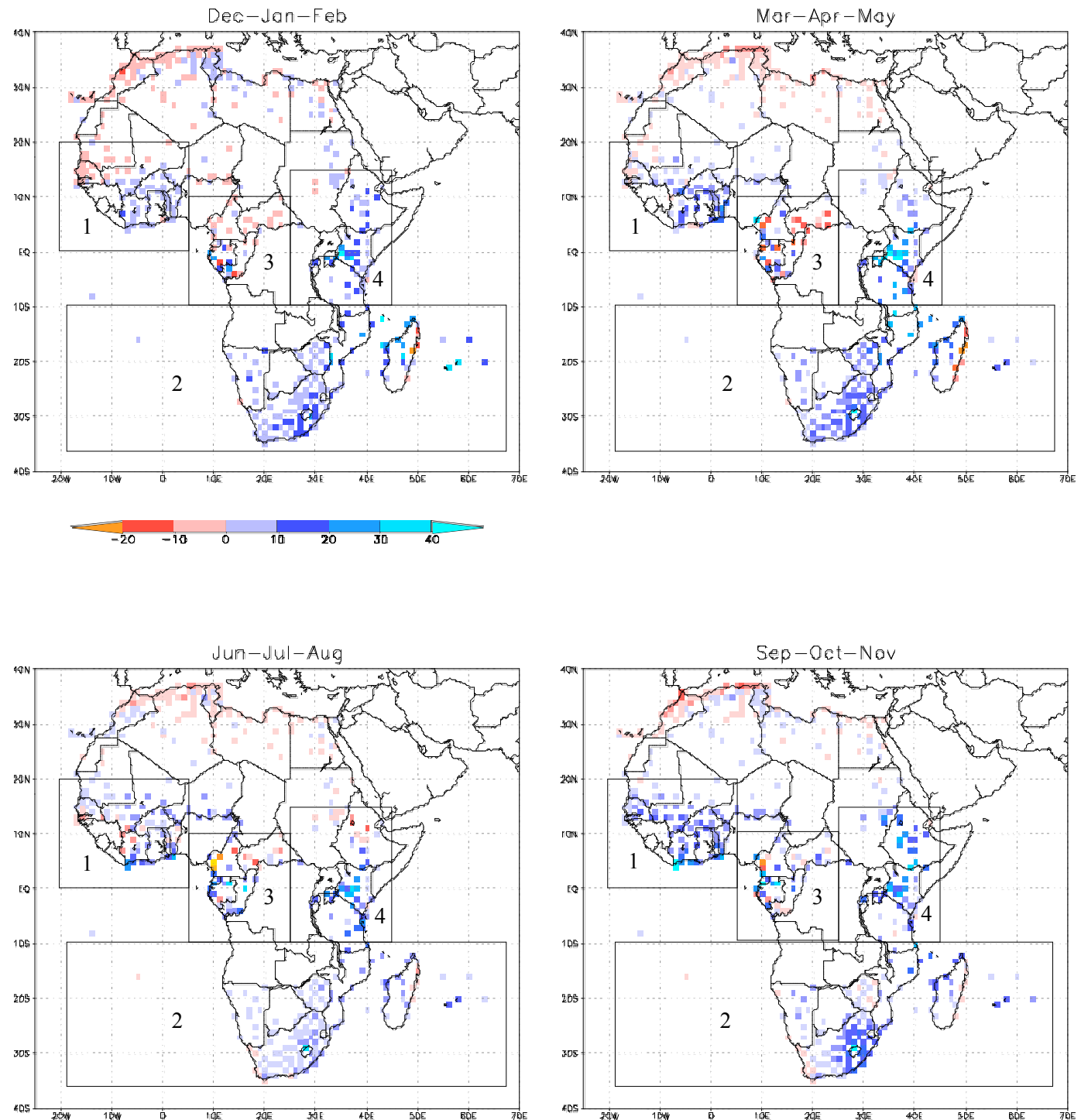
On what grounds is it good enough?







# Typical statistical downscaling products at the time of the AR4, for Africa





**Given a heterogeneous user community, what then are the climate change information needs:**

**→ downscaled information that meets the lowest common denominator from which tailored products may be derived:**

- *Event-relevant temporal and spatial scales*
  - *Daily*
  - *Point scale to user-regions*
- *Principally rainfall and temperature, and then a growing list of other variables*
- *Common formats (GIS-amenable especially)*

***From this one can get, for example, dry spell duration, user defined threshold exceedence, seasonal onset, etc.***

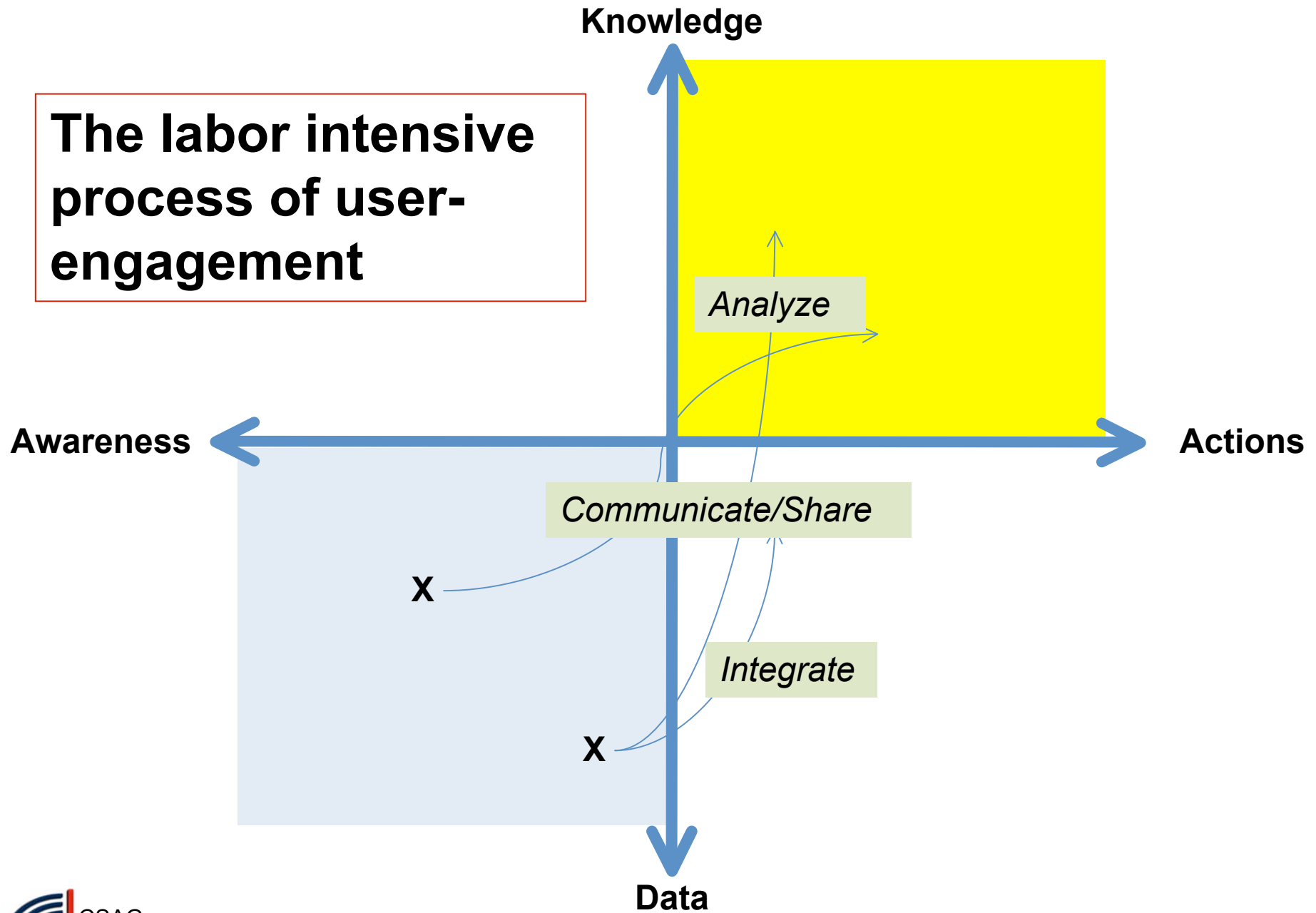
**In a heterogeneous user community, what are the matching non-future projection information needs:**

**→ observed historical information comparable in form to the projection data and including**

- *Trend*
- *Variability (including decadal)*

***From this one can assess the degree to which a sector is already adapted, and the relevance of the magnitude of projected changes to the current context***

# The labor intensive process of user-engagement



# Examples of moving from data/awareness to knowledge/action

*GoogleEarth Workshop 9/2/09*

*Facilitator' worksheet for network/knowledge mapping exercises*

**Main research question:**

**How can we improve the knowledge sharing aspects of our work?**

Focusing on:

Who provides information on climate adaptation and how can we improve access to this information?

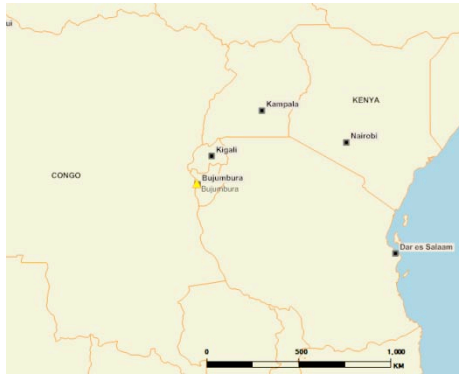
Define goals (e.g. what kinds of knowledge are different actors interested in?)

Identify whether sectoral knowledge (agriculture, health, water, ecosystems), development oriented, environmentally, or policy focused.



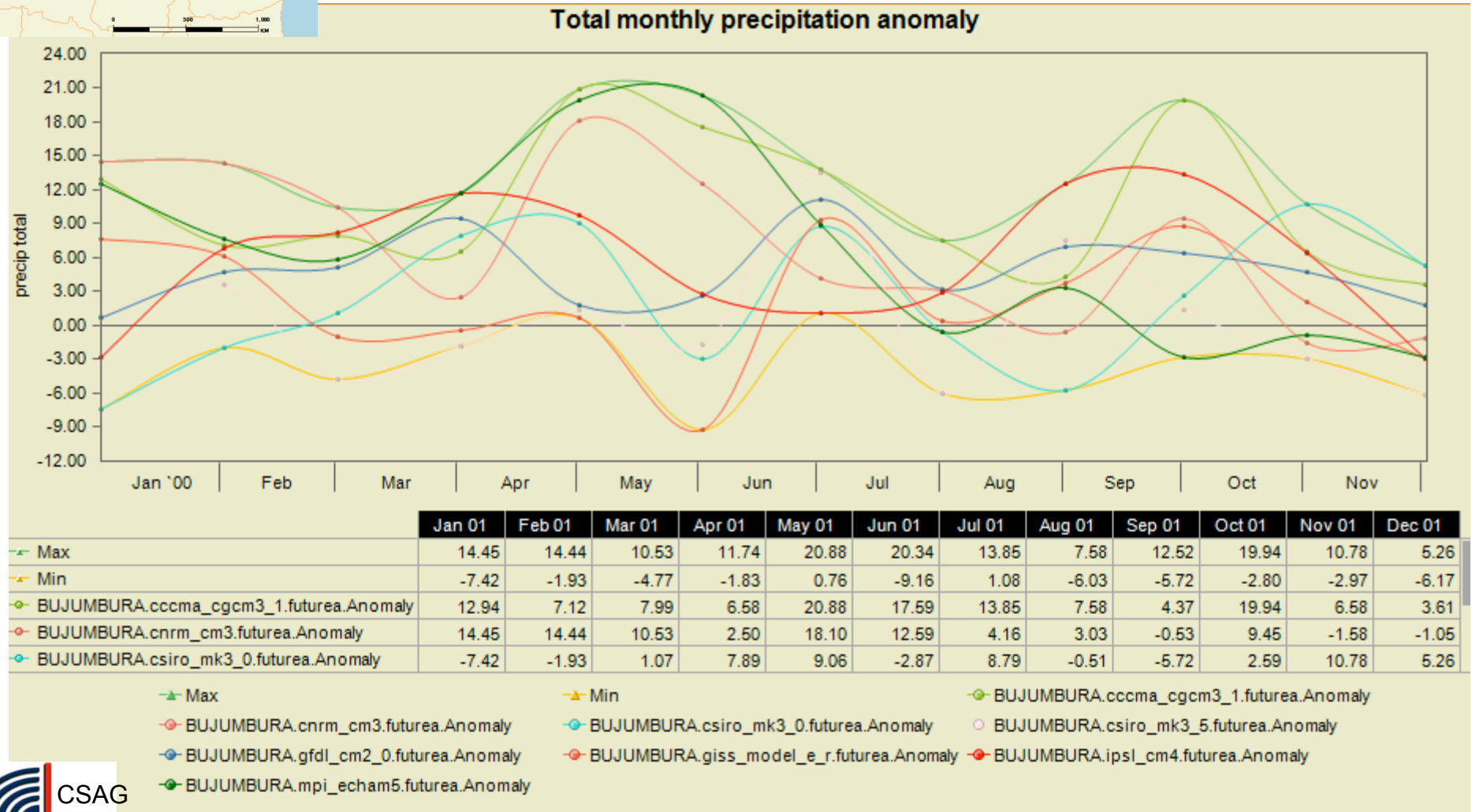
Fernanda Zermoglio

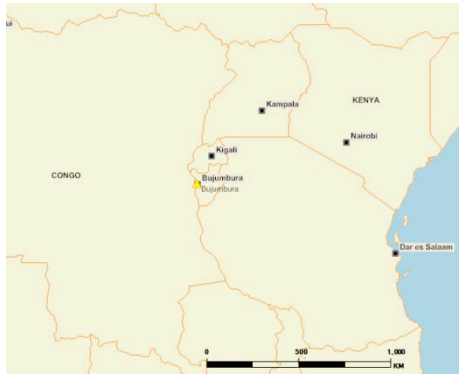




Bujumbura – 21<sup>st</sup> century change in rainfall

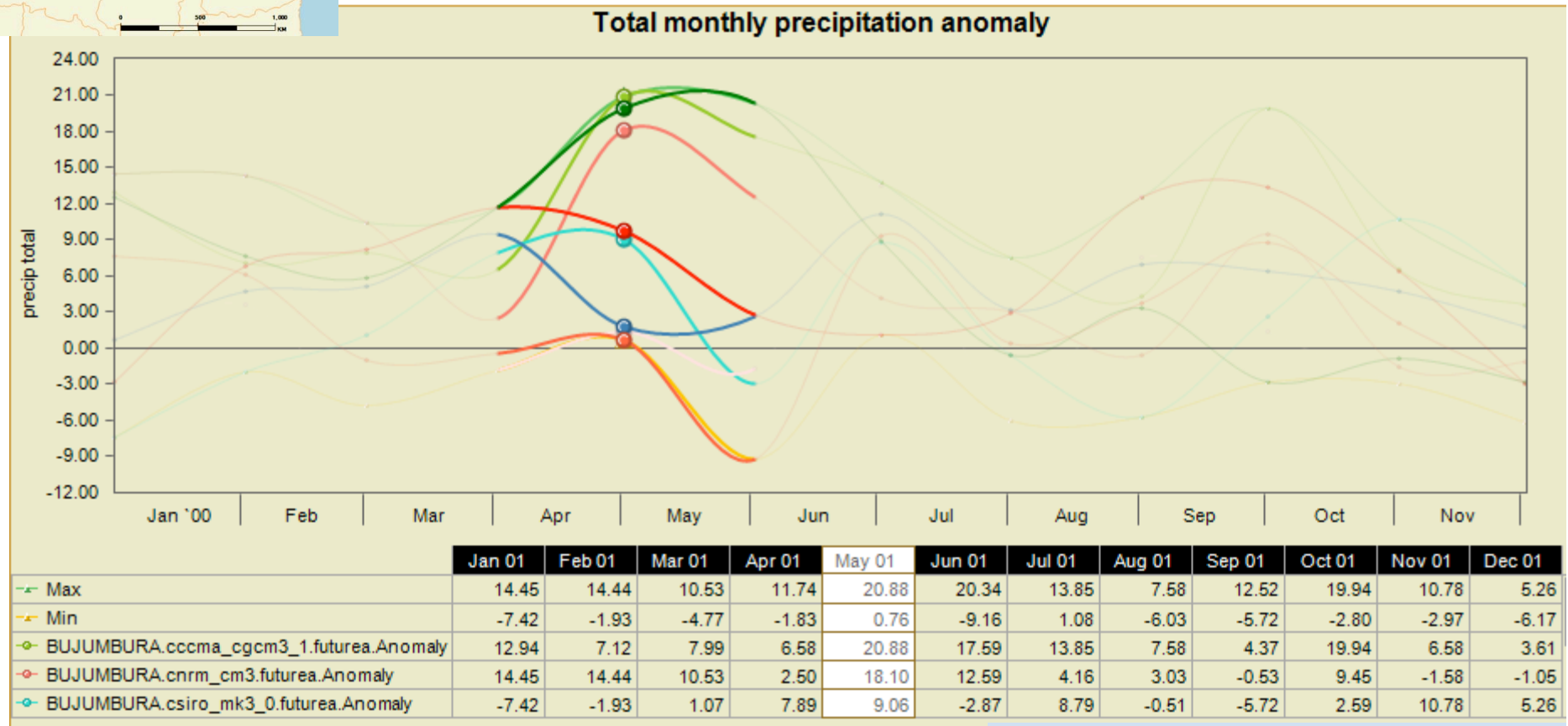
## The need to communicate envelopes



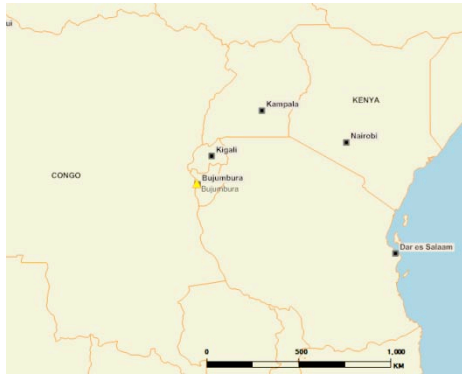


Bujumbura – 21<sup>st</sup> century change in rainfall

## The need to communicate envelopes

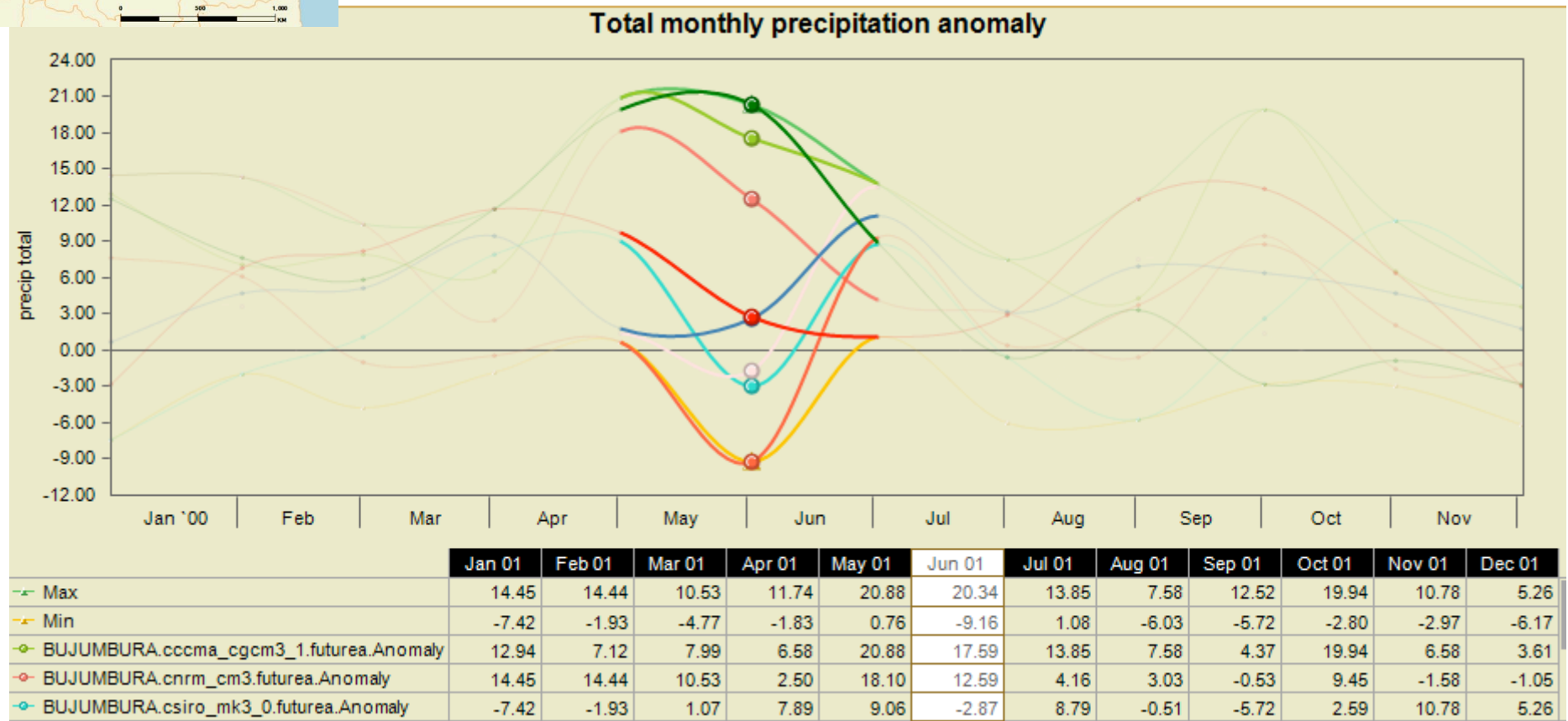


**What's the message?**



Bujumbura – 21<sup>st</sup> century change in rainfall

## The need to communicate envelopes



**The need for improved approaches to evaluating and communicating messages**

## Making the link through thresholds

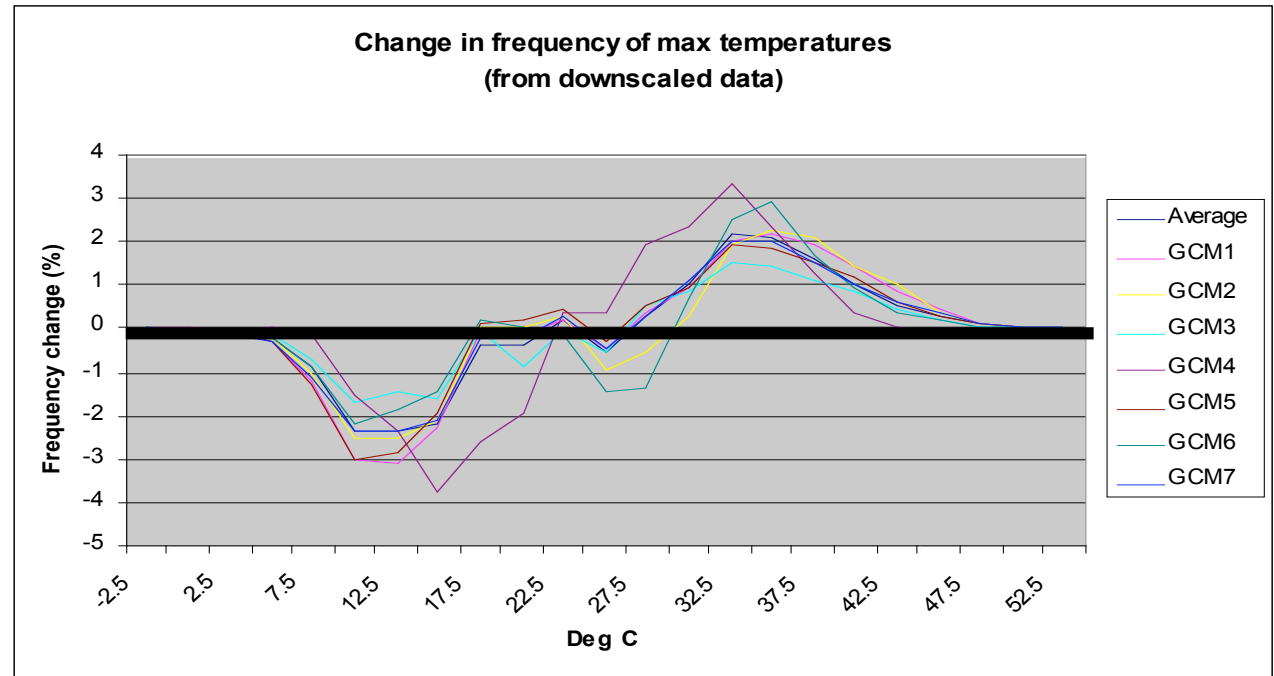
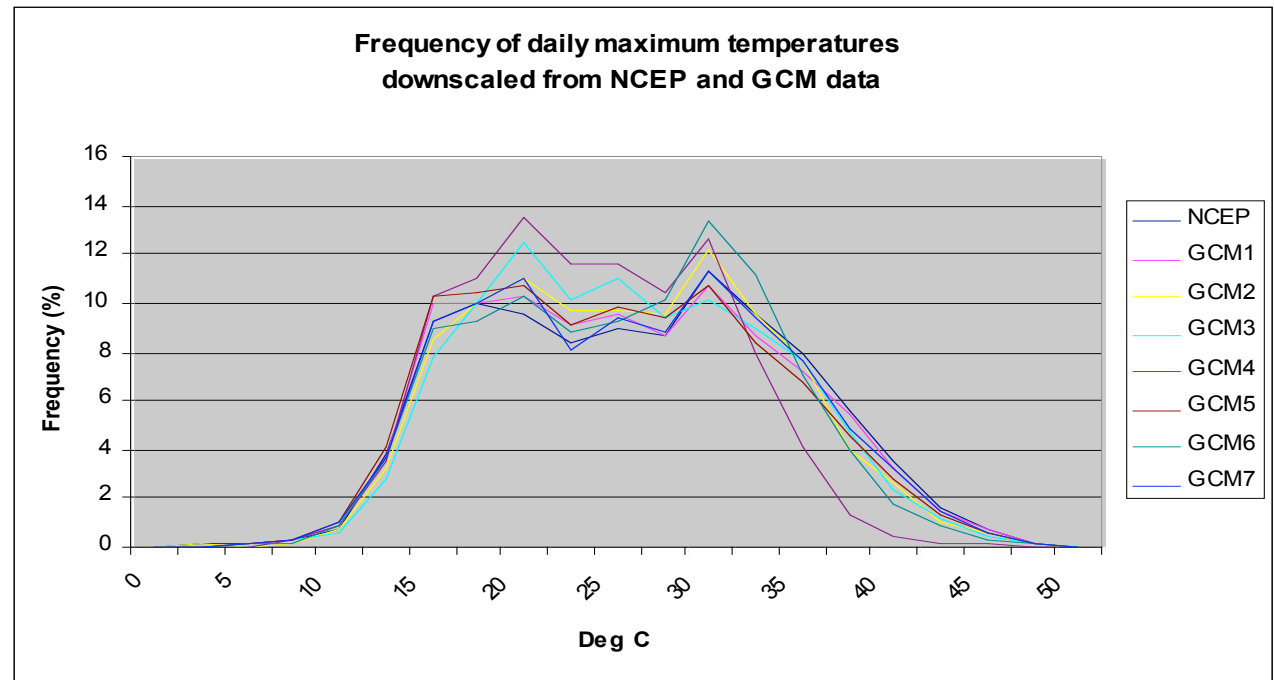
Example: Downscaled temperature at a point:

Tripoli  
WMO Station ID# 62010

Frequency histogram of  
downscaled daily  
maximum temperature

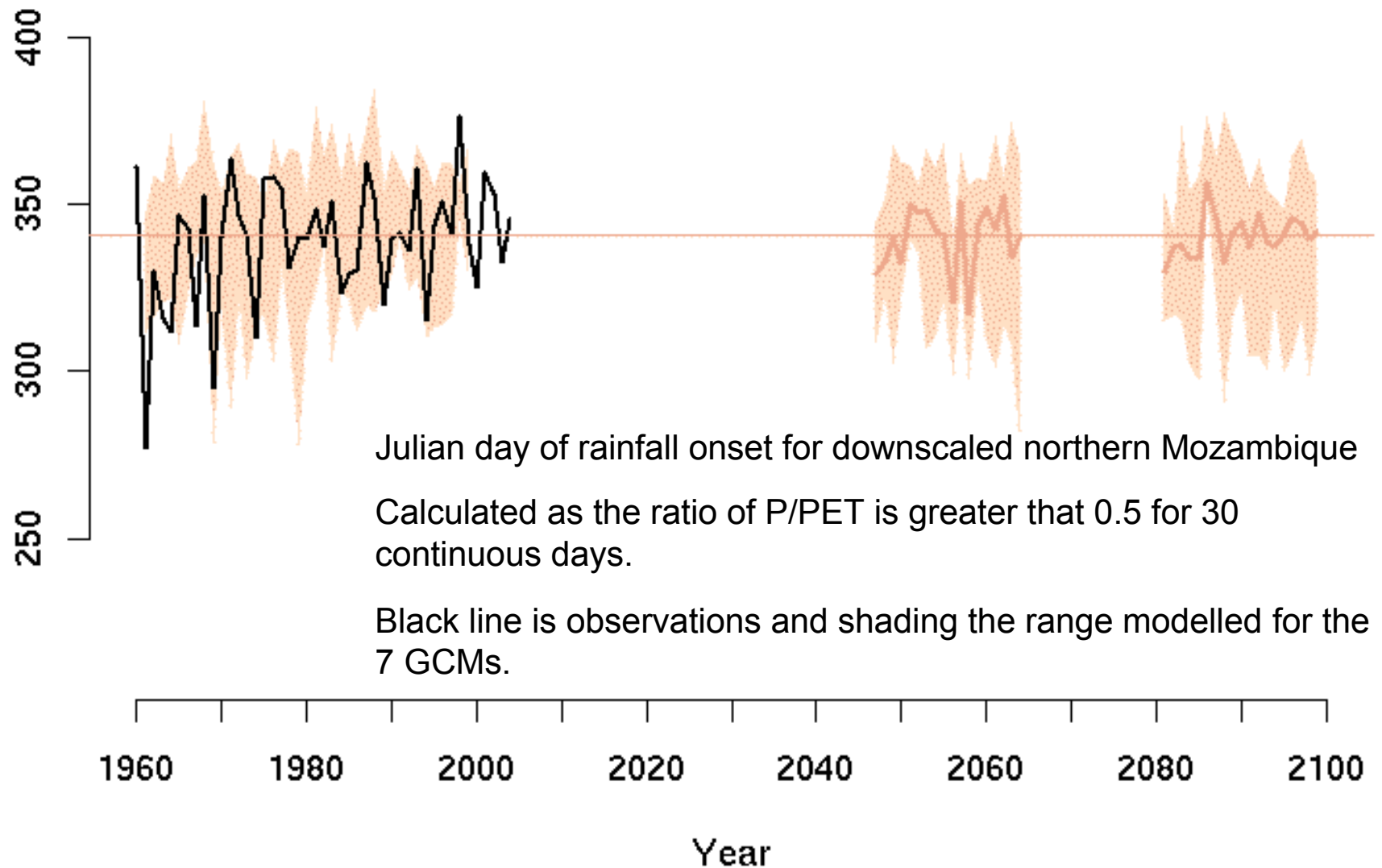
Projected frequency  
change from 7 GCMs

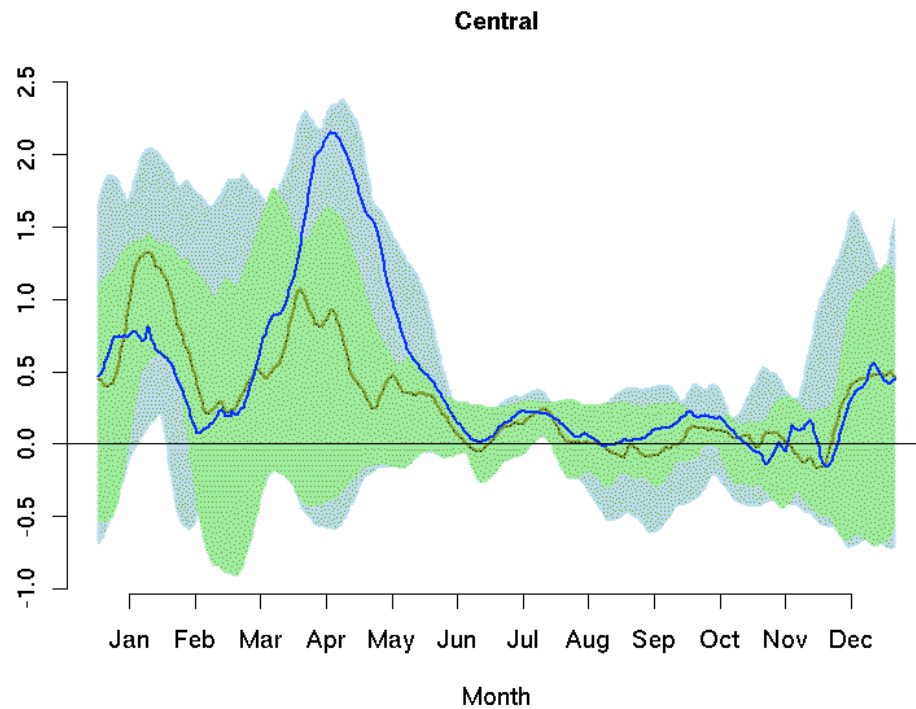
2046-2065  
versus  
1971-2000



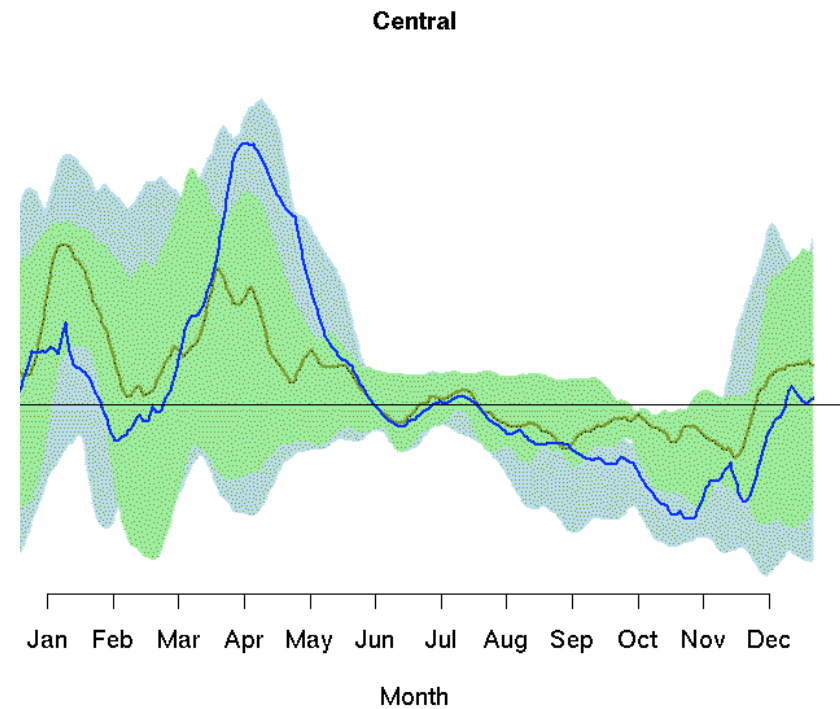


## Transforming to user parameters





*Precipitation*



*Precip – Potential evapo-transpiration*

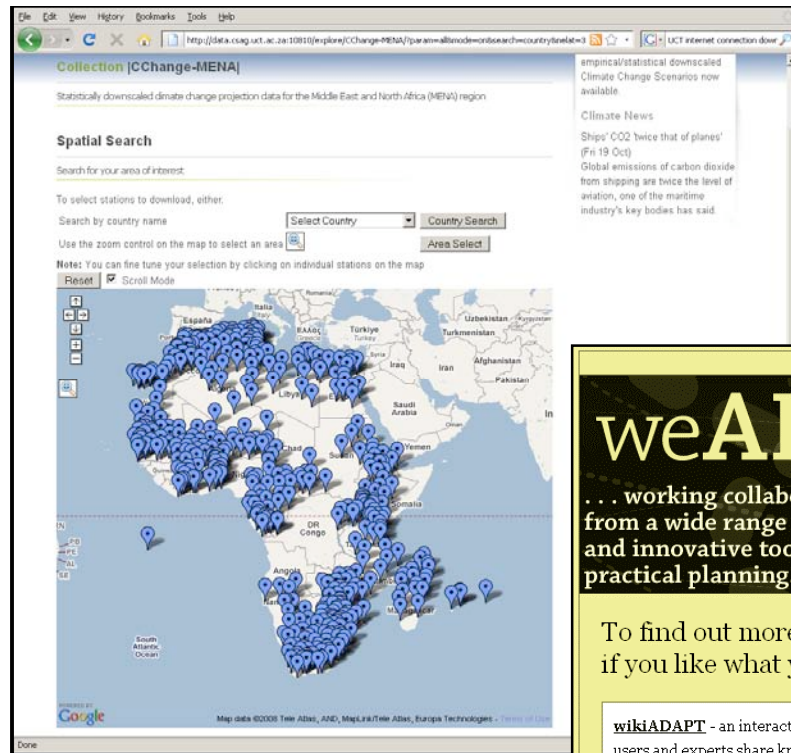
Projected anomaly (downscaled) in rainfall for 7 stations in central Mozambique

green = 2046-2065 period

blue = 2081-2100 period

shading = ranges for the 7 downscaled models

## Data portal



# Foundations to address (developing nation?) user needs

weAdapt.org community

**weADAPT** Collaborating on Climate Adaptation

... working collaboratively on climate adaptation ... pooling expertise from a wide range of organisations ... developing and distributing new and innovative tools, methods and datasets ... sharing experience on practical planning ... building capacity for professional training ...

To find out more follow the links below, have a look around, and if you like what you see then join the collaboration!

**wikiADAPT** - an interactive space where

users and experts share knowledge and experience on climate adaptation. It contains core themes on Framing Adaptation, Risk Monitoring, Screening, and Communication tools and methods, worked examples, and useful guidance to aid adaptation and implementation.

Find out more by entering wikiADAPT or request an account to get involved.

Simple Navigation Menu

Database Management Tools Including Download and Data Access

Site Mapping and Selection Tools

Variety of Analysis and Visualization Functions

Flexible Chart Selection Tools

Interpretive Help

Clear and Meaningful Charts

Access to information  
Community for dialog  
User tools for analysis

## Exploration tools