AAUN AUSTRALIA AFRICA UNIVERSITIES NETWORK

Agriculture and Food and Nutrition Security: Climate Risk and challenges

Making Useful Climate information Available for ALL

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Climate-related disasters (including droughts, floods and storms) are among the main drivers of food insecurity.

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Climate Variability Considerations

- Cycles of wet and dry/warm and cool
- Seasonal shifts
- Dry spells
- Global forcings - El Niño /La Niña
- Extremes - Droughts and floods
- Pests/ Diseases
- Market/price fluctuations
- Vulnerability depends on resilience, resilience depends on infrastructure and capacity

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Climate Change Considerations

- Climate variability has a direct influence on food production…drought/flood/heat waves
- Increased temperatures are virtually certain
- Changes in rainfall patterns/seasonal shifts, intensity, and increasing variability
- Vulnerability depends on resilience, resilience depends on infrastructure and capacity
- Climate change increases uncertainty and exposure to risk

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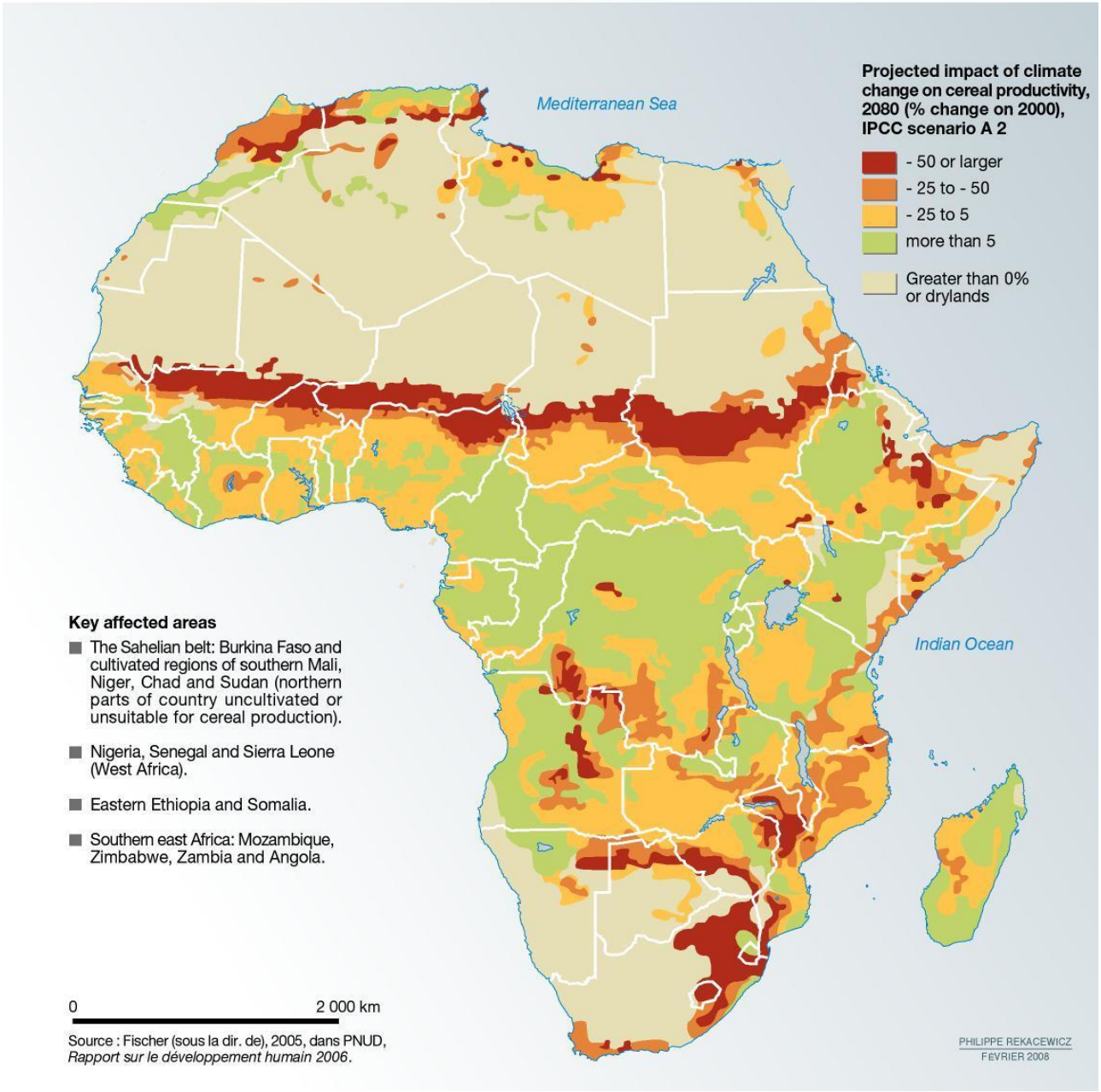
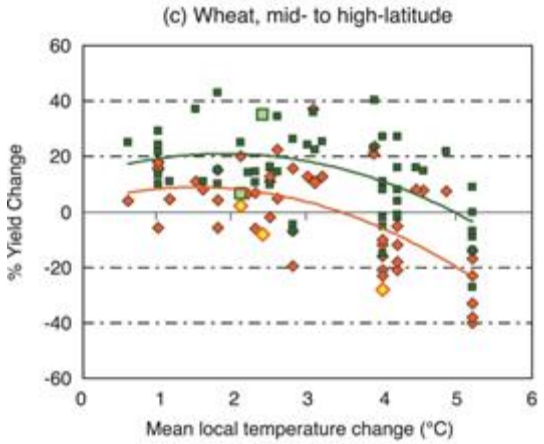
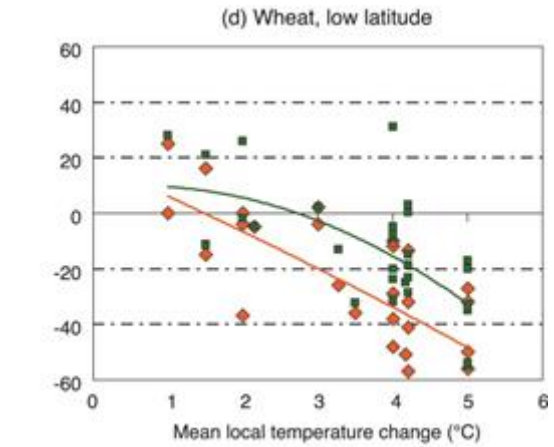
Cereal Production

Cereal productivity in Sub-Saharan Africa under a scenario of the IPCC that shows CO_2 atmospheric concentrations a level at 520-640 ppm by 2050







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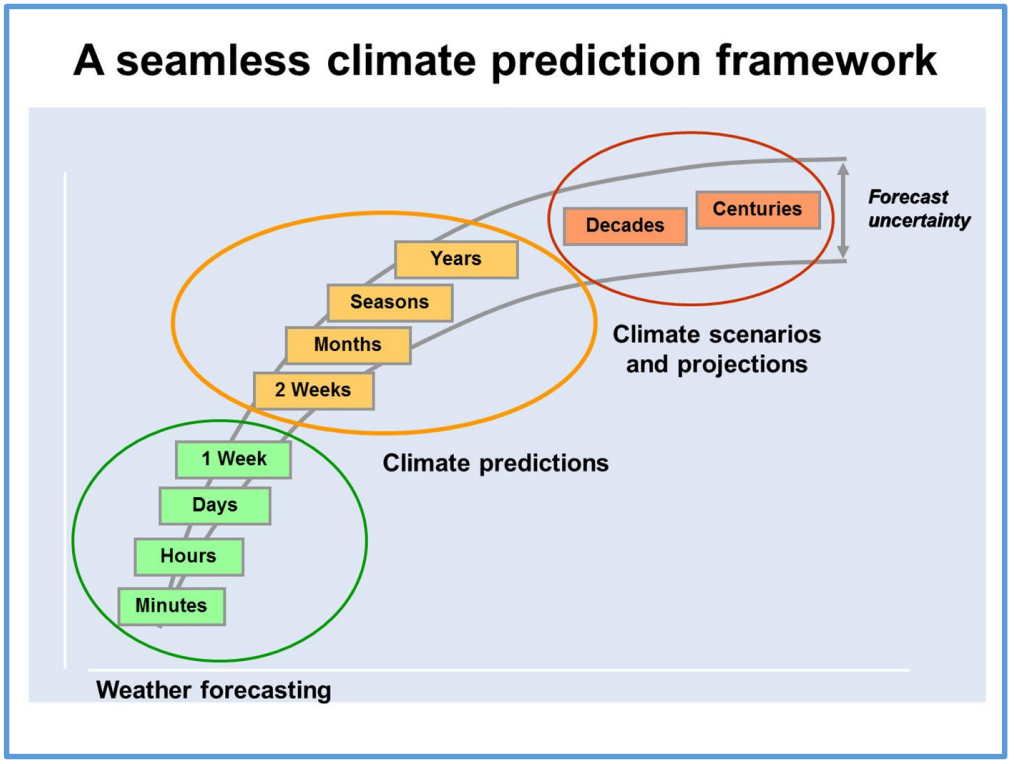
Climate Information can help, but….data is scarce…

- Weather forecasts
- Seasonal rainfall and temperature forecasts
- Drought warnings
- Crop forecasts
- Long term forecasts
- Onset/cessation?
- Historical data



Climate data/information….

What is the story?

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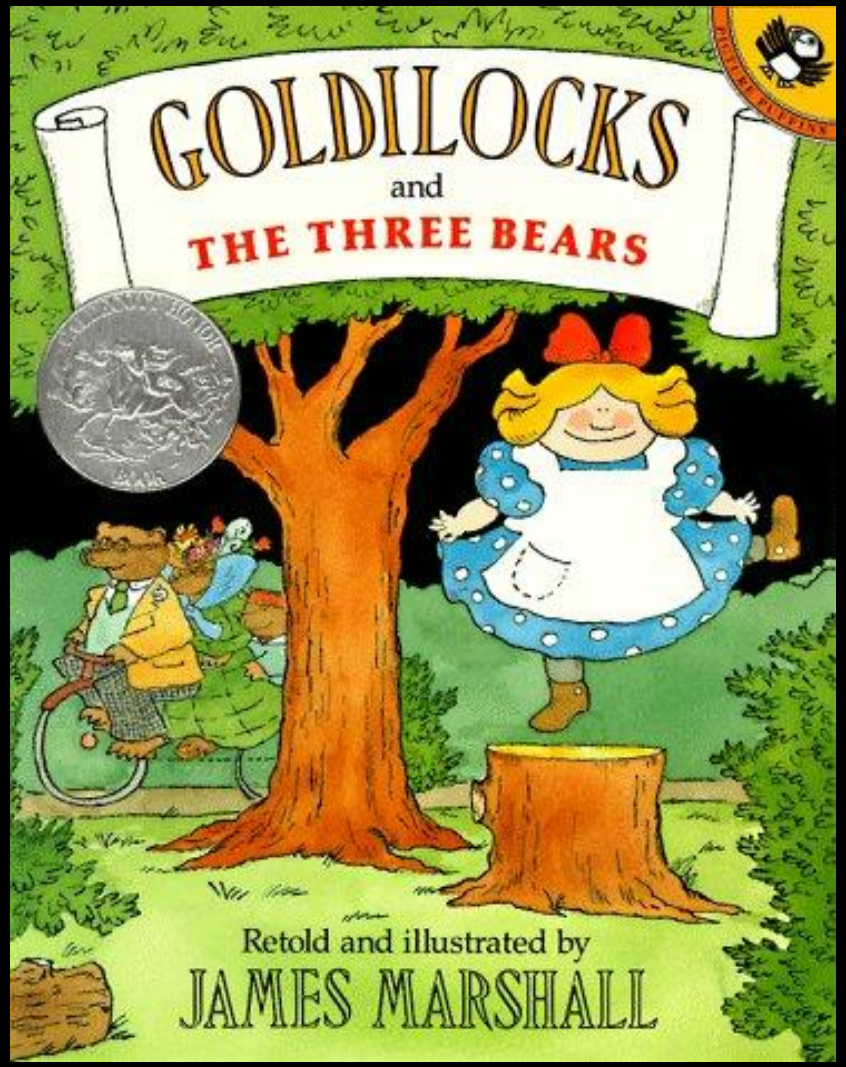
The Power of Stories

Once upon a time, there was a little girl named Goldilocks. She went for a walk in the forest. Pretty soon, she came upon a house. She knocked and, when no one answered, she walked right in. At the table in the kitchen, there were three bowls of porridge. Goldilocks was hungry. She tasted the porridge from the first bowl.

"This porridge is too hot!" she exclaimed...



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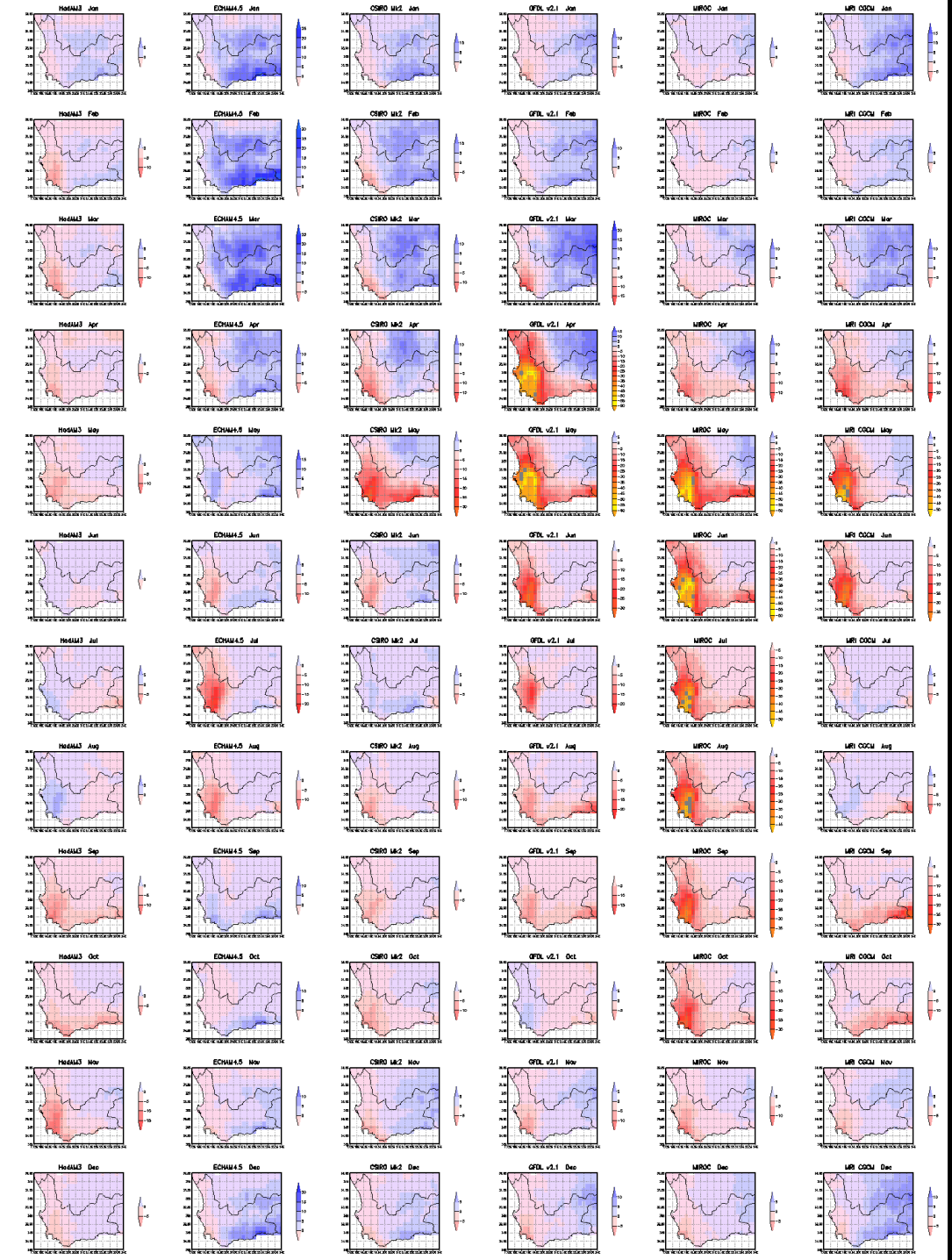
Now that’s a great story

But how do most climate scientists tell it….?

Like this…

Name	Species	Hair/Fur	Age	Appetite Level	Size	Preliminary Porridge Assessment	Preliminary Mattress Assessment
Goldilocks	Human	Blonde	8	Moderate	Petite	N/A	N/A
Papa	Bear	Brown	12	High	Big	Too Hot	Too Hard
Mama	Bear	Tawny	11	Moderate	Medium	Too Cold	Too Soft
Baby	Bear	Red-Brown	3	Low	Small	Just Right	Just Right



The Western Cape:

Projected changes in rainfall pattern and magnitude

Monthly Total

Downscaling to a 0.1° precipitation grid:

6 GCMs

SRES A2 forcing

Future – Control anomaly

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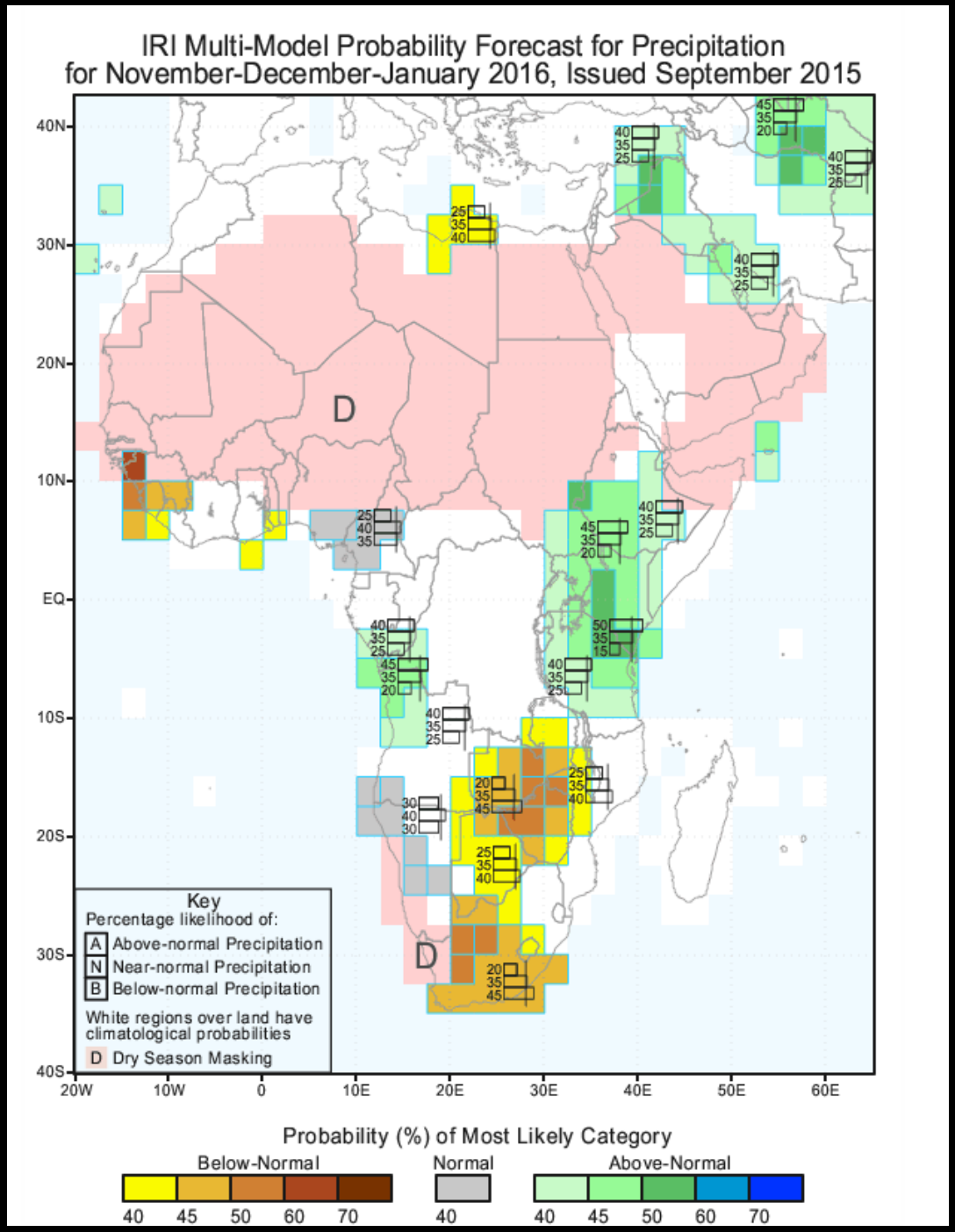
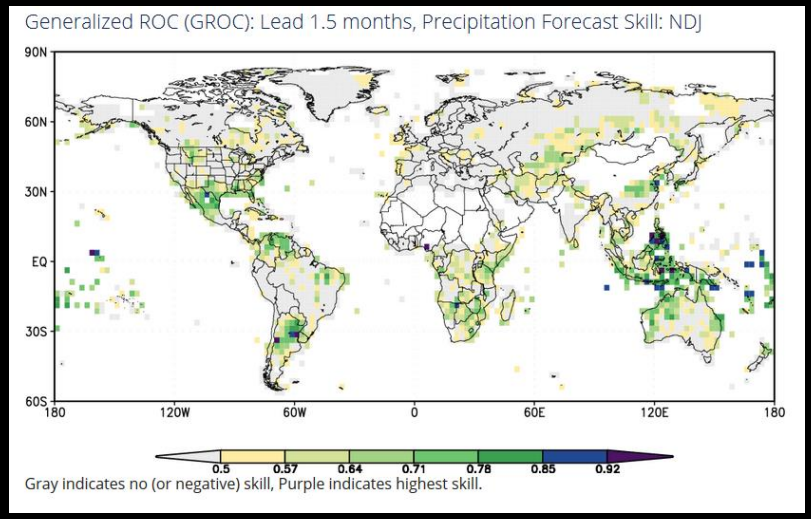
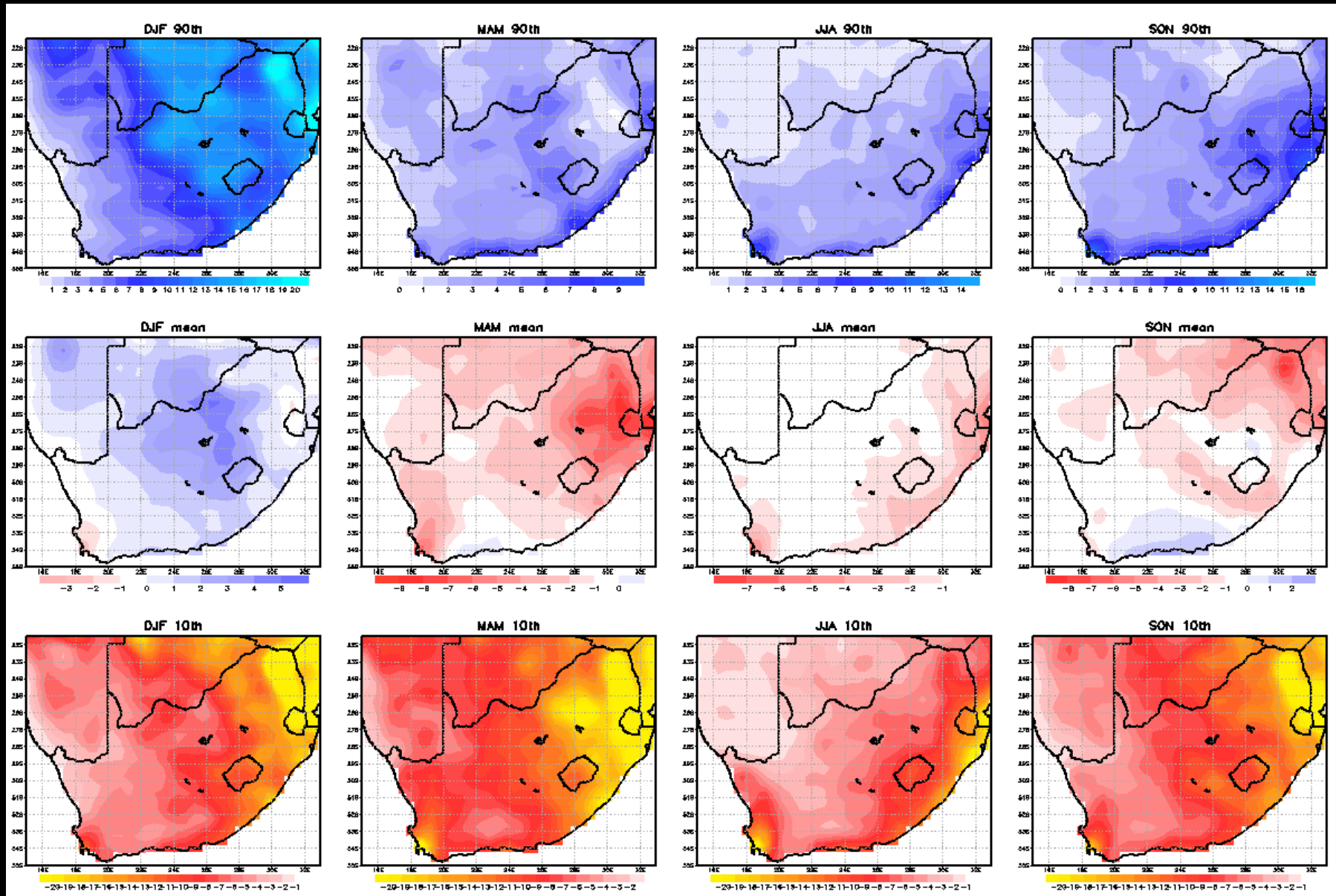

IRI Multi-Model Probability Forecast for Precipitation
for November-December-January 2016, Issued September 2015
Key
Percentage likelihood of:
A Above-normal Precipitation
N Near-normal Precipitation
B Below-normal Precipitation
White regions over land have climatological probabilities
D Dry Season Masking
Probability (%) of Most Likely Category
Below-Normal
Normal
Above-Normal
40 45 50 60 70
40
40 45 50 60 70

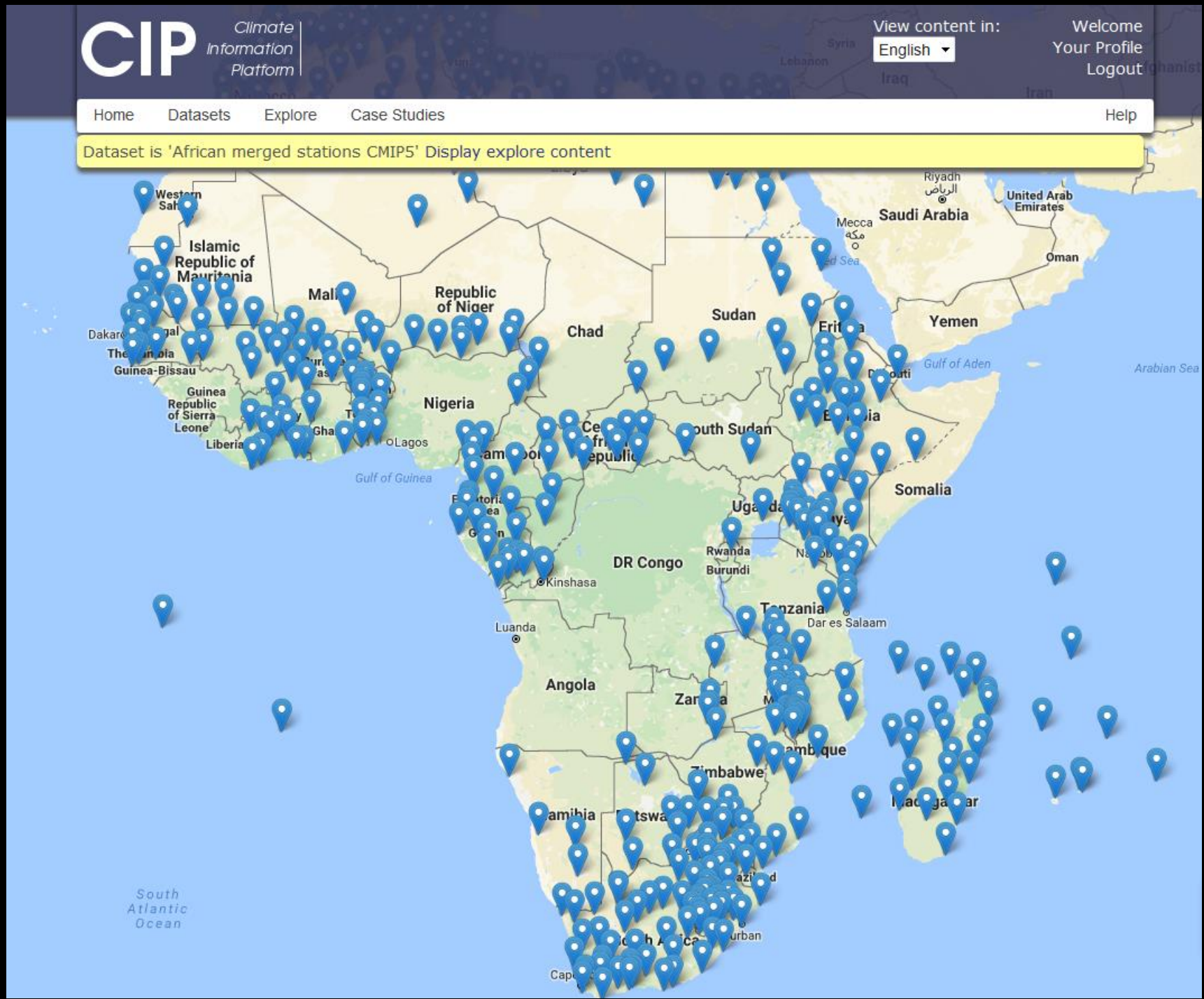

Generalized ROC (GROC): Lead 1.5 months, Precipitation Forecast Skill: NDJ
0.5 0.57 0.64 0.71 0.78 0.85 0.92
Gray indicates no (or negative) skill, Purple indicates highest skill.

The useful message

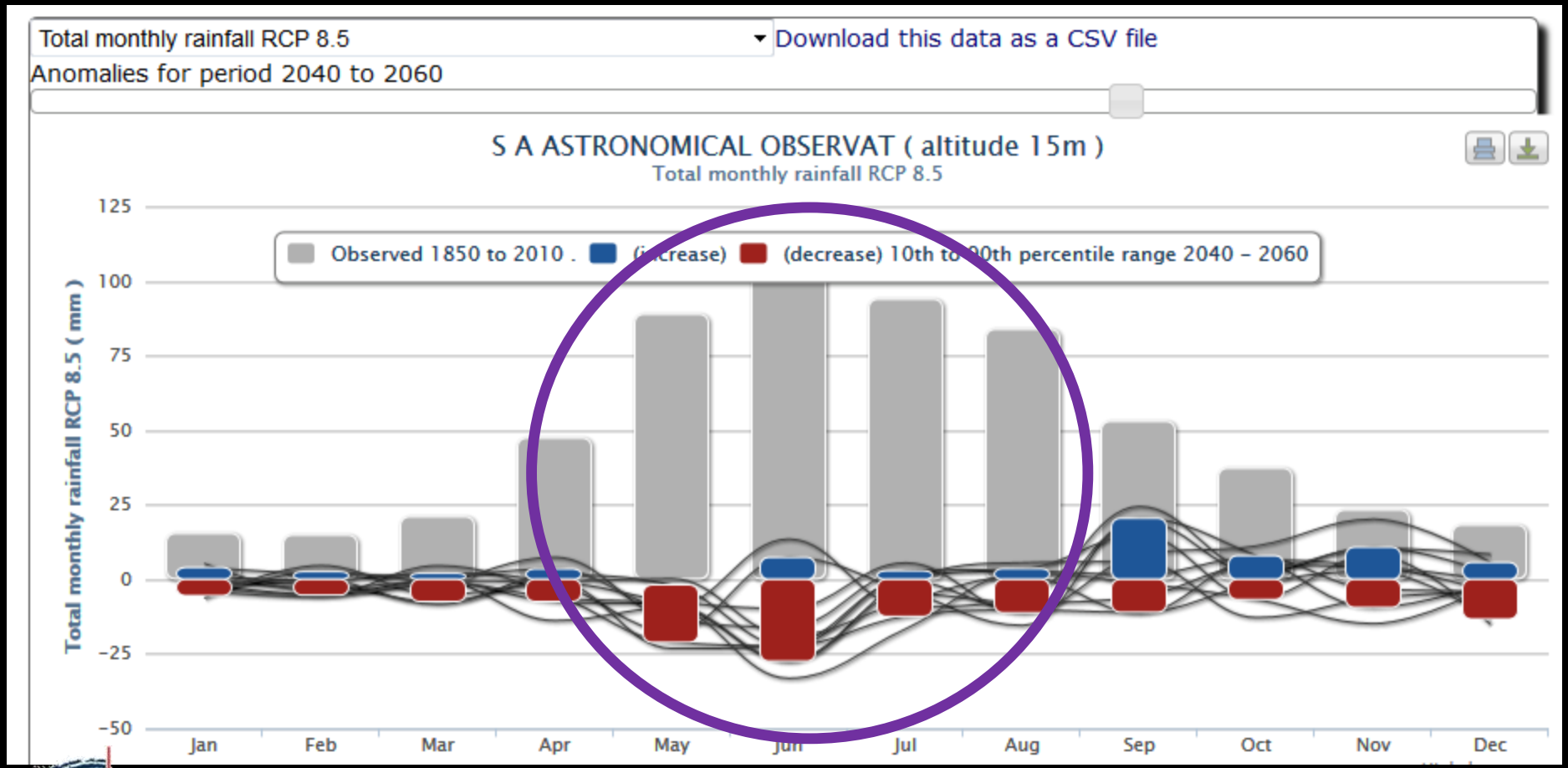
- Production of skilful forecasts
- Wide dissemination of the products
- Training in interpretation and application

Rainfall anomalies 2040-2060 (mm per month)




CIP
Climate Information Platform
View content in:
English
Welcome
Your Profile
Logout
Home
Datasets
Explore
Case Studies
Help
Dataset is 'African merged stations CMIP5' Display explore content
Islamic Republic of Mauritania
Mali
Republic of Niger
Chad
Sudan
Nigeria
Guinea-Bissau
Guinea
Republic of Sierra Leone
Liberia
Lagos
Gulf of Guinea
Saudi Arabia
Riyadh
Mecca
United Arab Emirates
Oman
Yemen
Gulf of Aden
Arabian Sea
Somalia
South Sudan
DR Congo
Kinshasa
Rwanda
Burundi
Tanzania
Dar es Salaam
Luanda
Angola
Zimbabwe
South Atlantic Ocean

In context…rainfall



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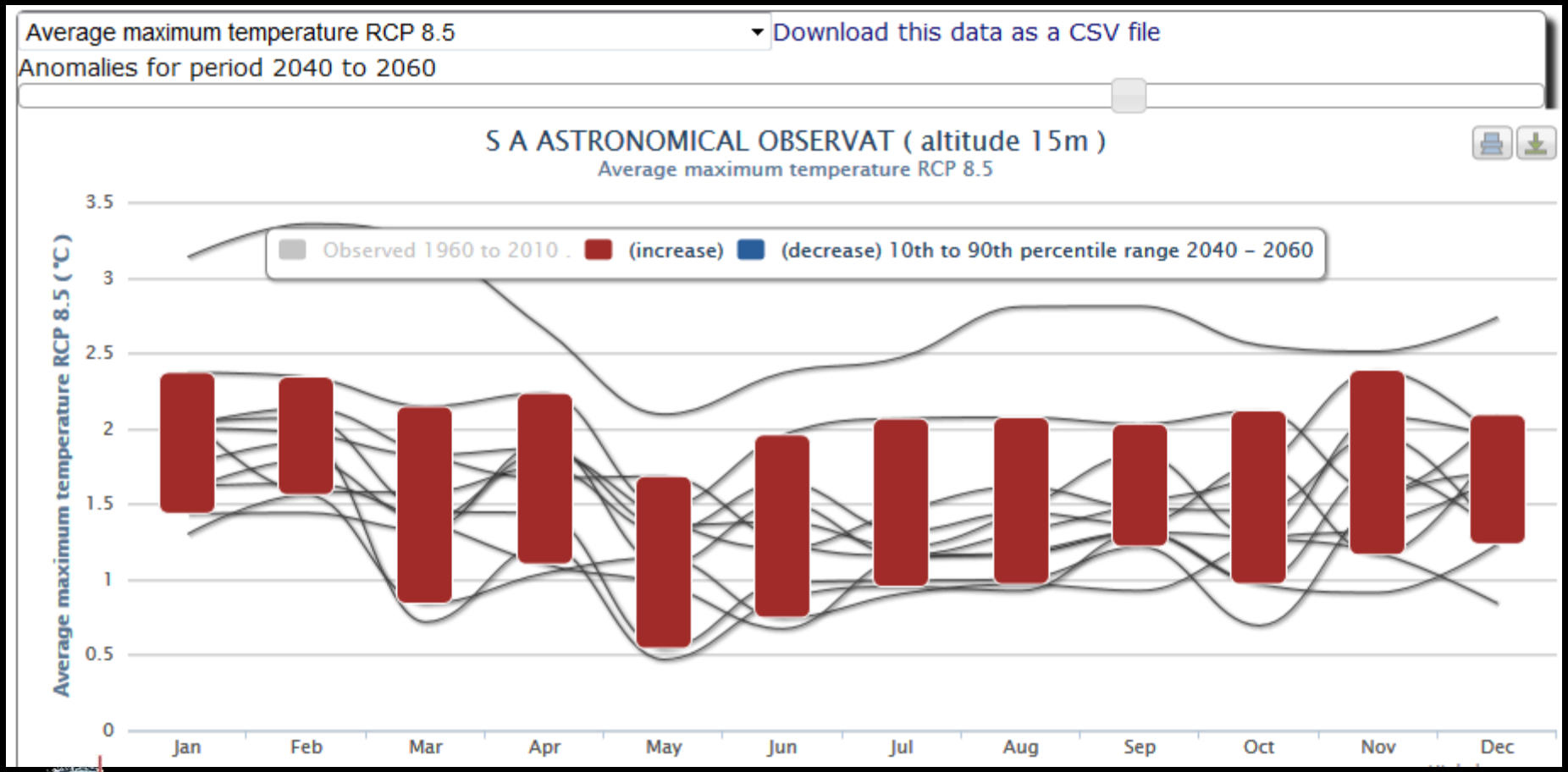
Temperature increases



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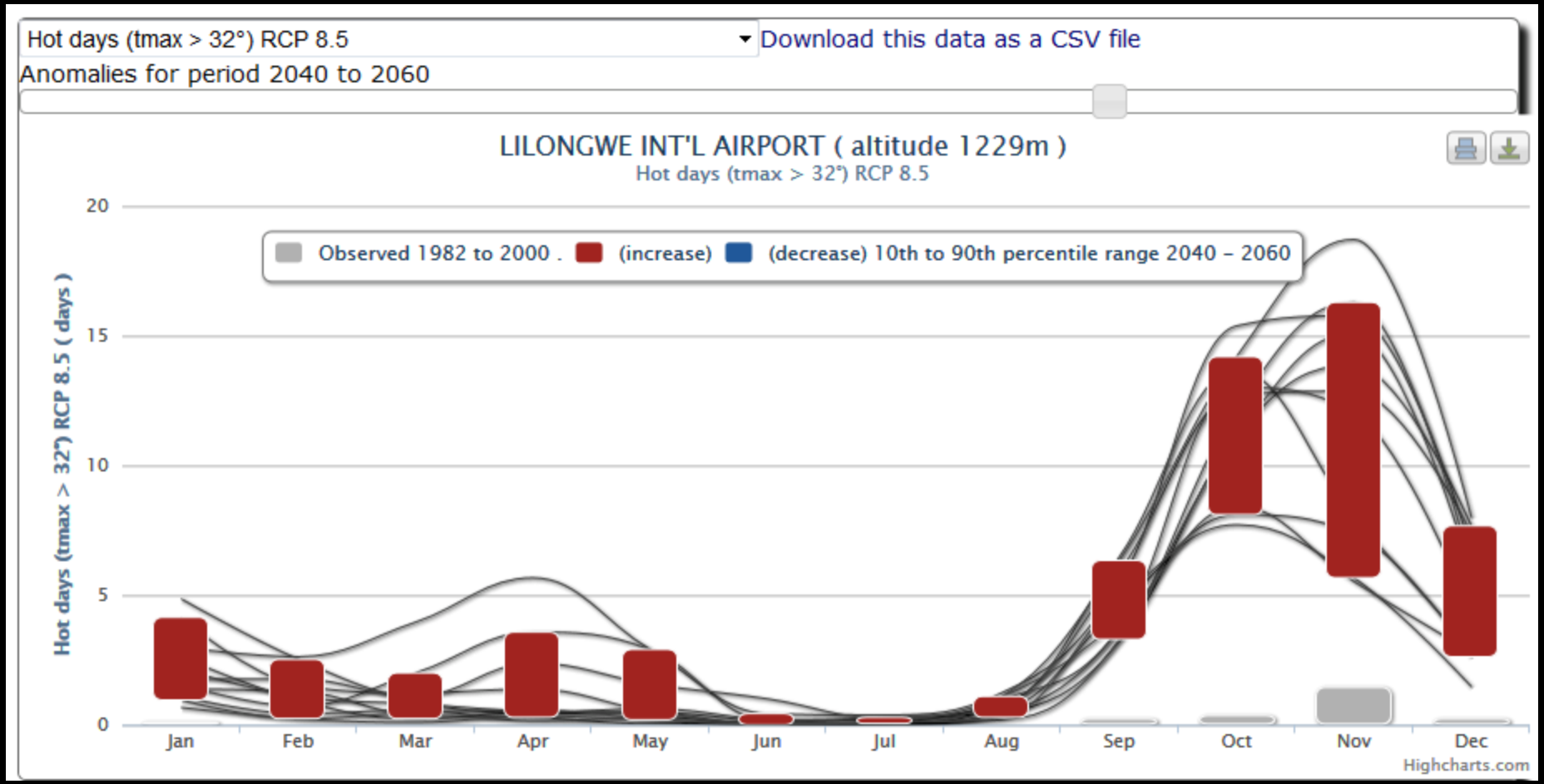
Hot days



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The message (CC will affect CV!)

- It's (probably) going to get drier
- Increasing temperatures increases evaporation
- More intense rainfall, longer dry spells
- More flooding
- More frequent droughts
- Relevance for Food Security:
  - Favourable conditions for Disease and Pests?
  - More extreme episodes
  - Water insecurity
  - Food insecurity (crop yield impacts)
  - Spoilage?
  - ?????

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The alarm bells

- There is a dearth of useful climate information
- Are there crop thresholds for temp/rainfall that will be breached more often?
- How will the food/population/climate nexus respond to a changing climate in terms of exposure to more serious food security problems?

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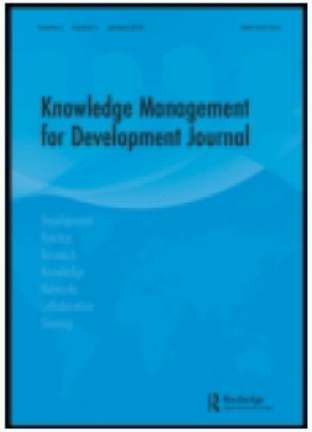

Knowledge Management for Development Journal

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rkmd20

ITIKI: bridge between African indigenous knowledge and modern science of drought prediction

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Version of reco

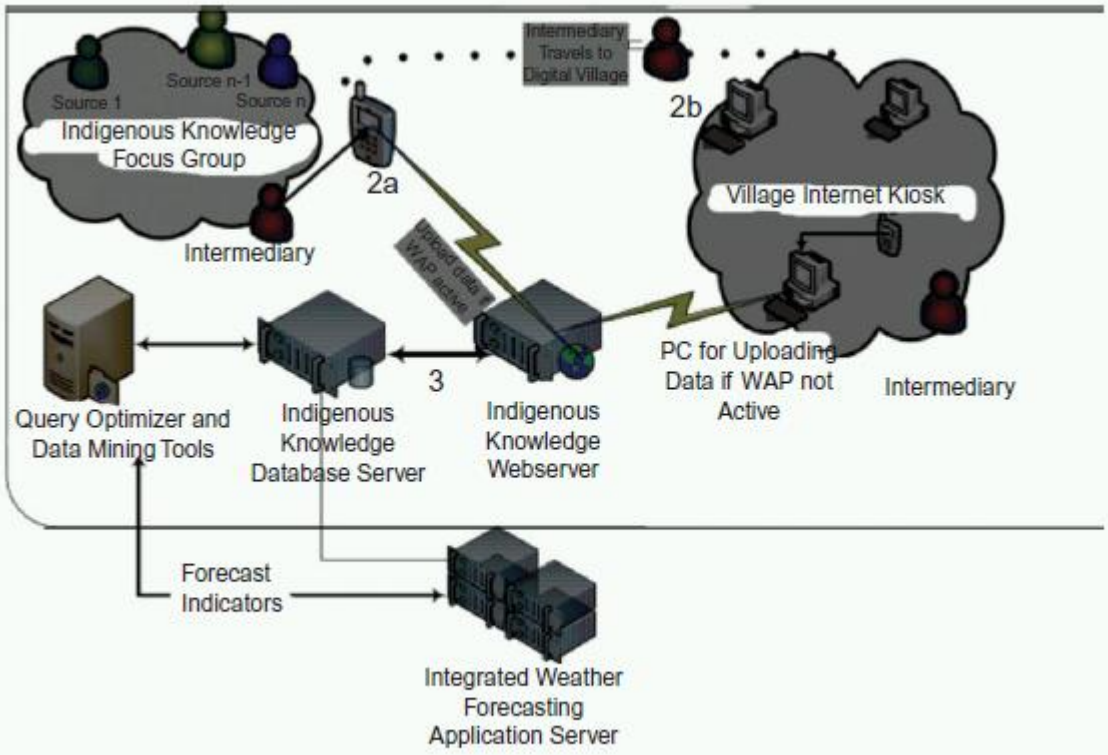

Figure 4. Framework for conserving IK on droughts.

THANK YOU
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