

World Climate Research Programme

Science for Understanding
Science for Impact

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WCRP Strategic Plan 2019-2029

Processes and Feedbacks to Close the Energy, Water and Carbon Cycles

Improving Predictions and Quantifying Uncertainties

Constraining Projections and Identifying Sensitivities

Connecting Climate Science to Decisions

Objectives



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WCRP Strategic Plan 2019-2029

Processes and Feedbacks to Close the Energy, Water and Carbon Cycles

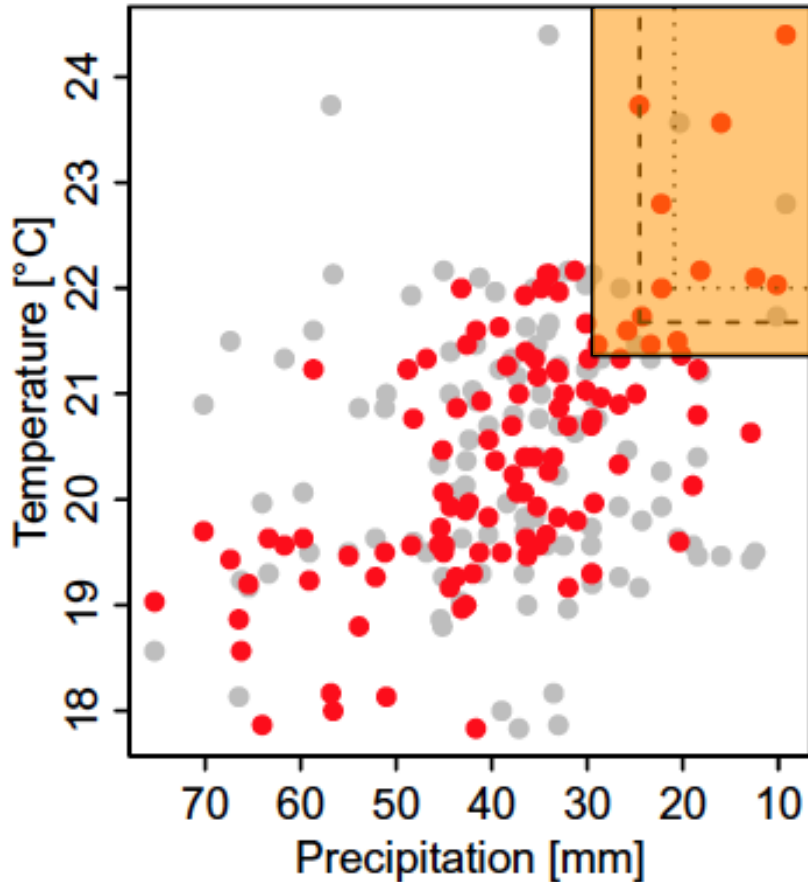
Improving
Quantifying

Fundamental Understanding of Geophysical System

Routine and Novel Observations, Targeted Field Campaigns, Data Analyses and Syntheses, Model Enhancement and Development

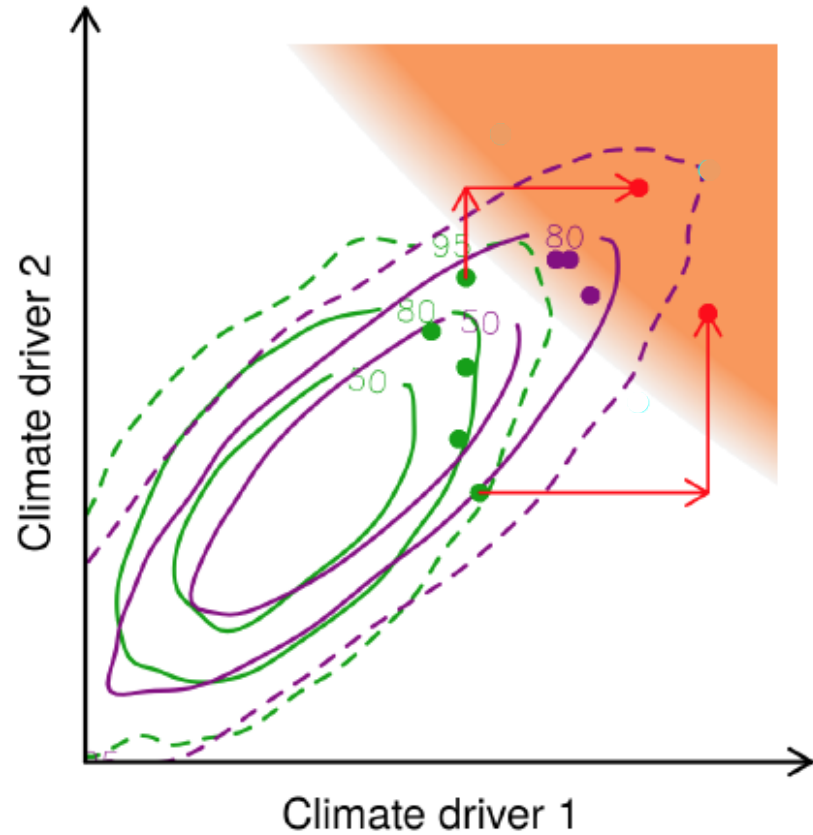
For example...compound extremes

Present climate 1901-2013



8 year compound return period

Generalized picture

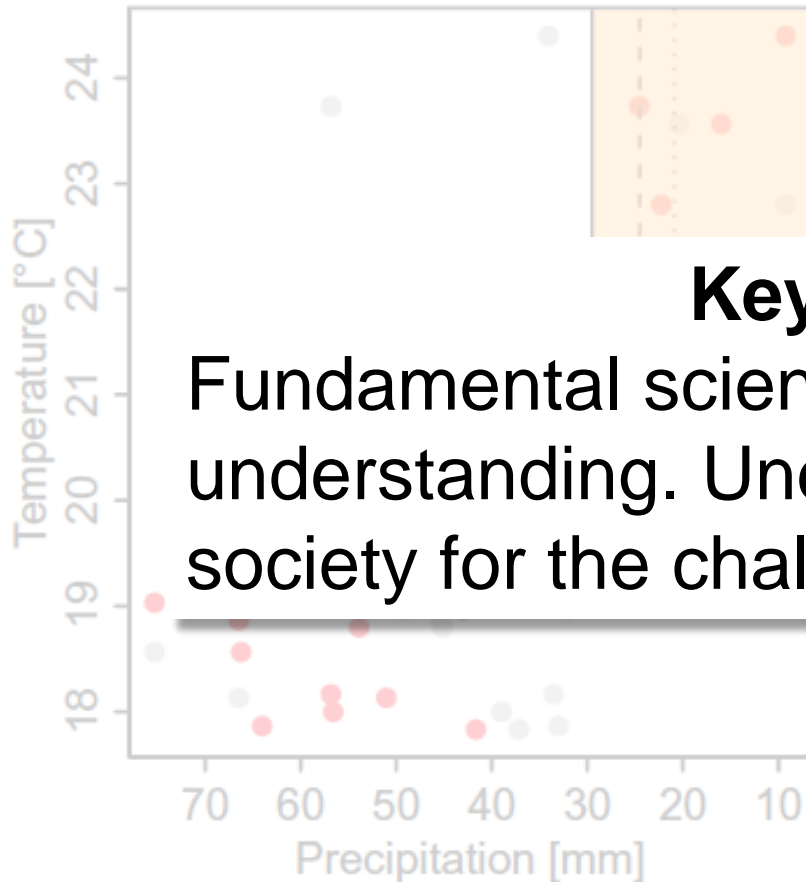


Present climate envelope

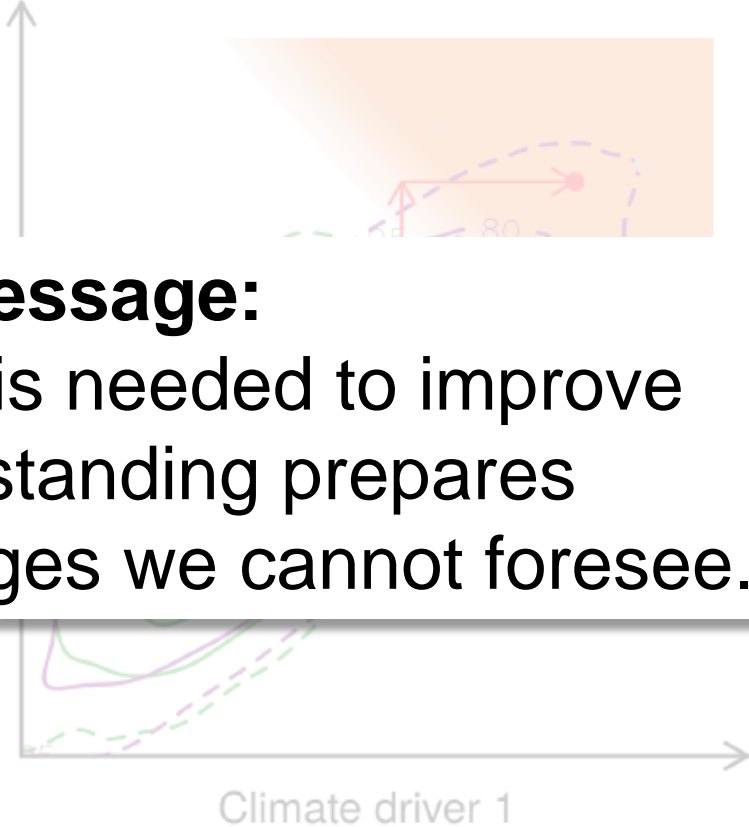
Future climate scenarios

For example...compound extremes

Present climate 1901-2013



Generalized picture



Key message:

Fundamental science is needed to improve understanding. Understanding prepares society for the challenges we cannot foresee.

8 year compound return period

Present climate envelope

Future climate scenarios

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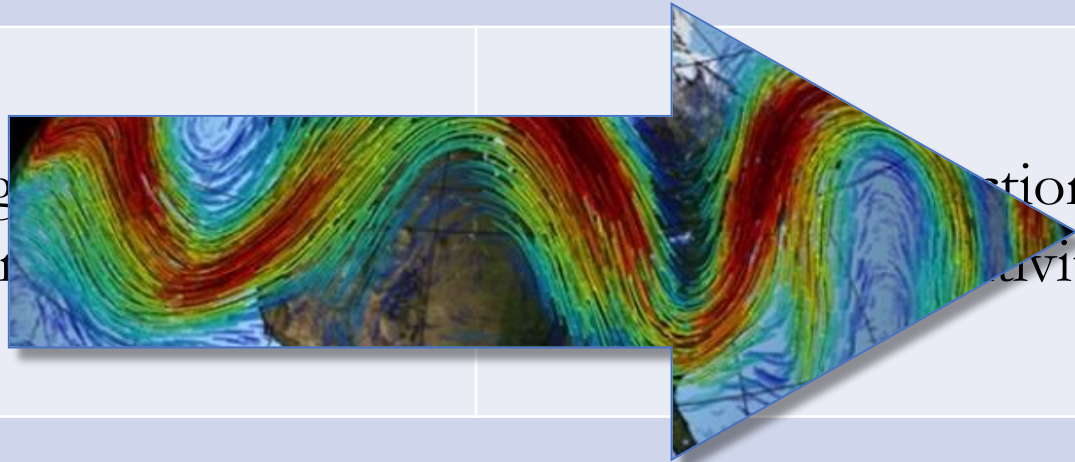
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Processes and Feedbacks to Close the Energy, Water and Carbon Cycles

Improving
Quantifying



Projections and
Activities

Pushing the envelope of
predictive skill

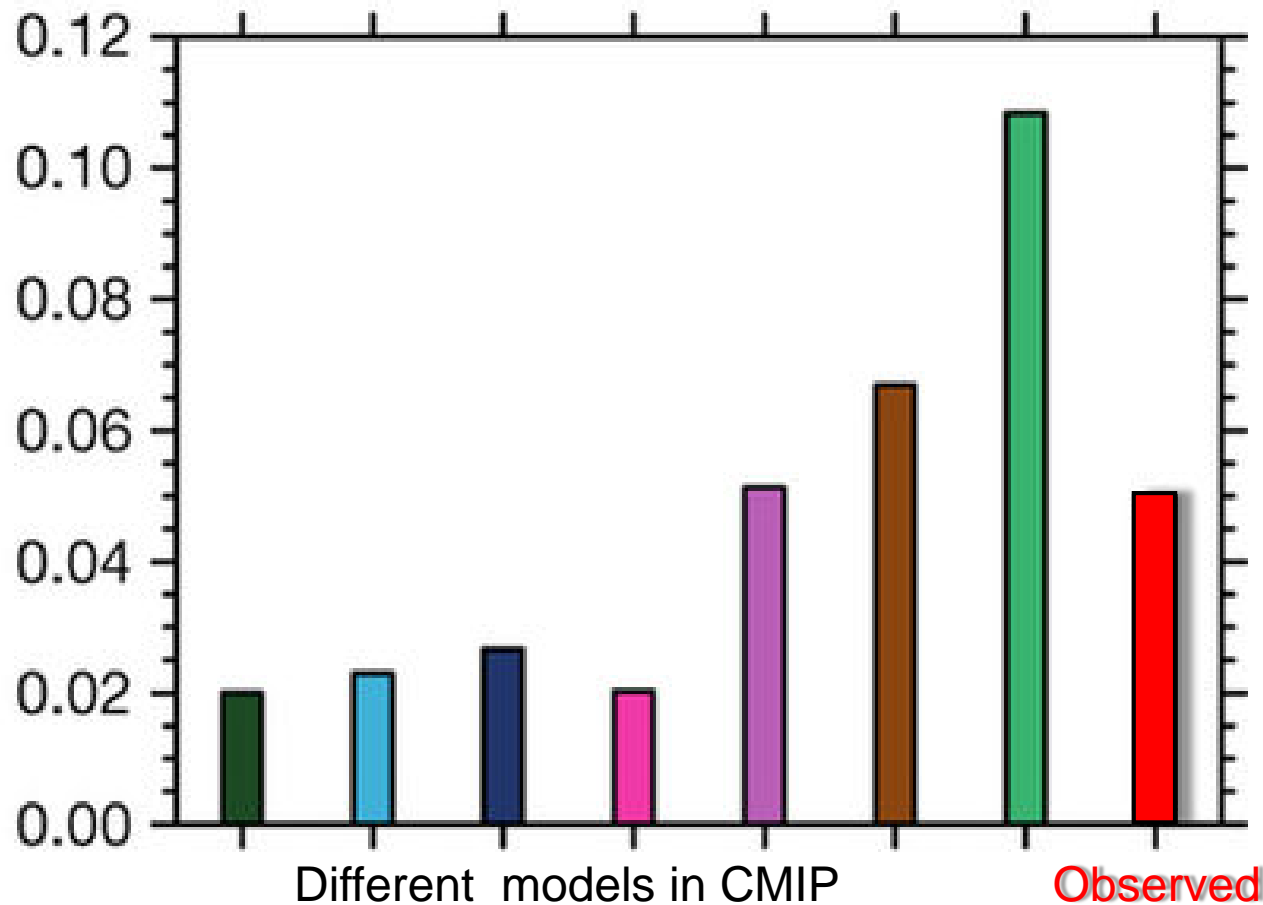
Enhance capacities for
emergency planning and
preparedness

Emergent constraints for
future projections

Quantify and reduce
uncertainties for resilience
and adaptation

For example...improve projections of ecosystems

What can the current relationship between the CO₂ seasonal cycle and the CO₂ fertilization effect tell us about how well models represent future ecosystem function?



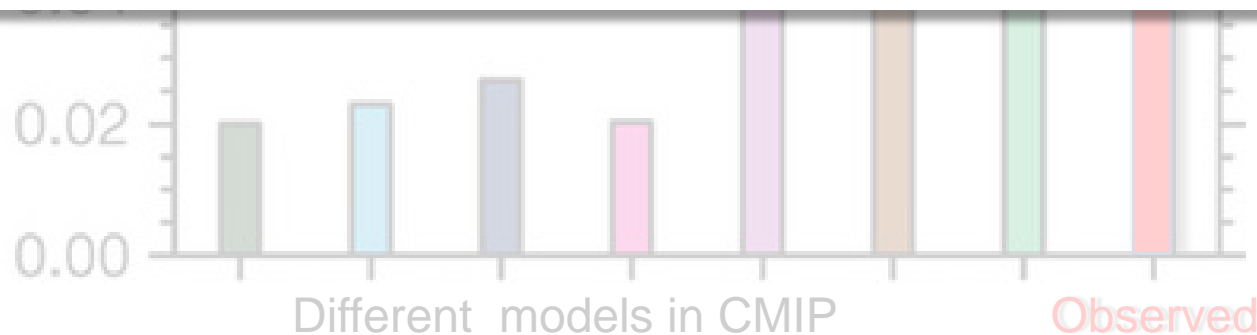
For example...improve projections of ecosystems

What can the current relationship between the CO₂ seasonal cycle and the CO₂ fertilization effect tell us about how well models represent future ecosystem function?

Key message:

Scientific partnerships are critical for model deployment from seconds to centuries.

- Collaboration across science communities
- Capacity *and* infrastructure development
- Consistent support for critical work e.g. CMIP



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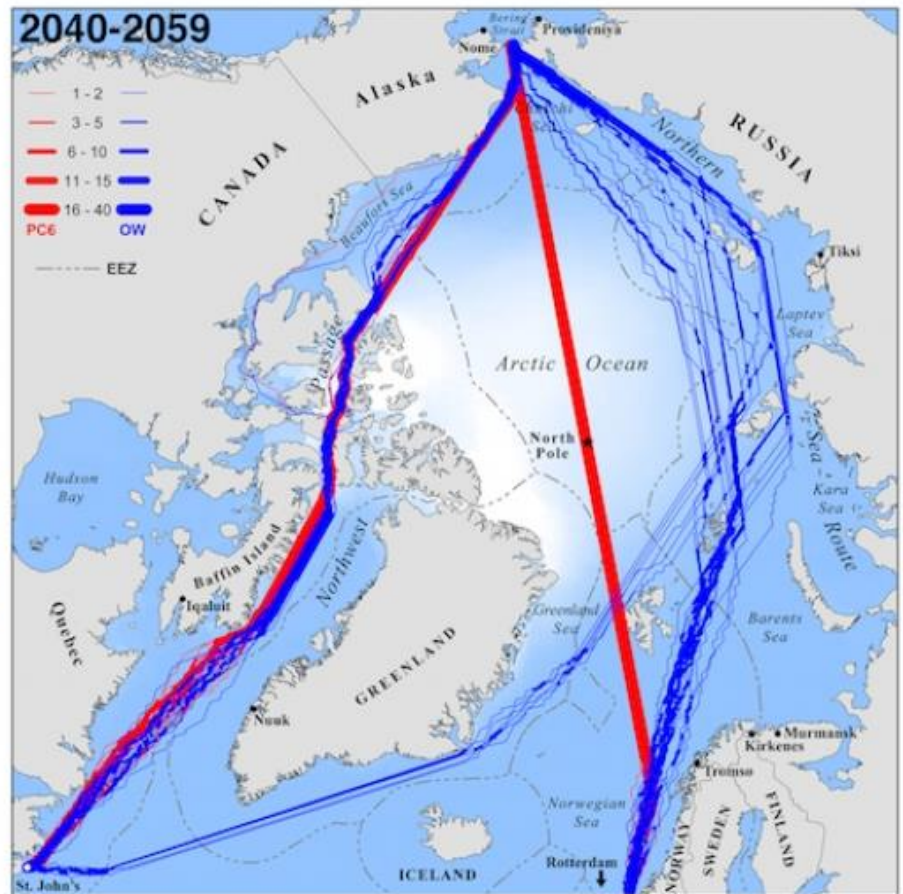
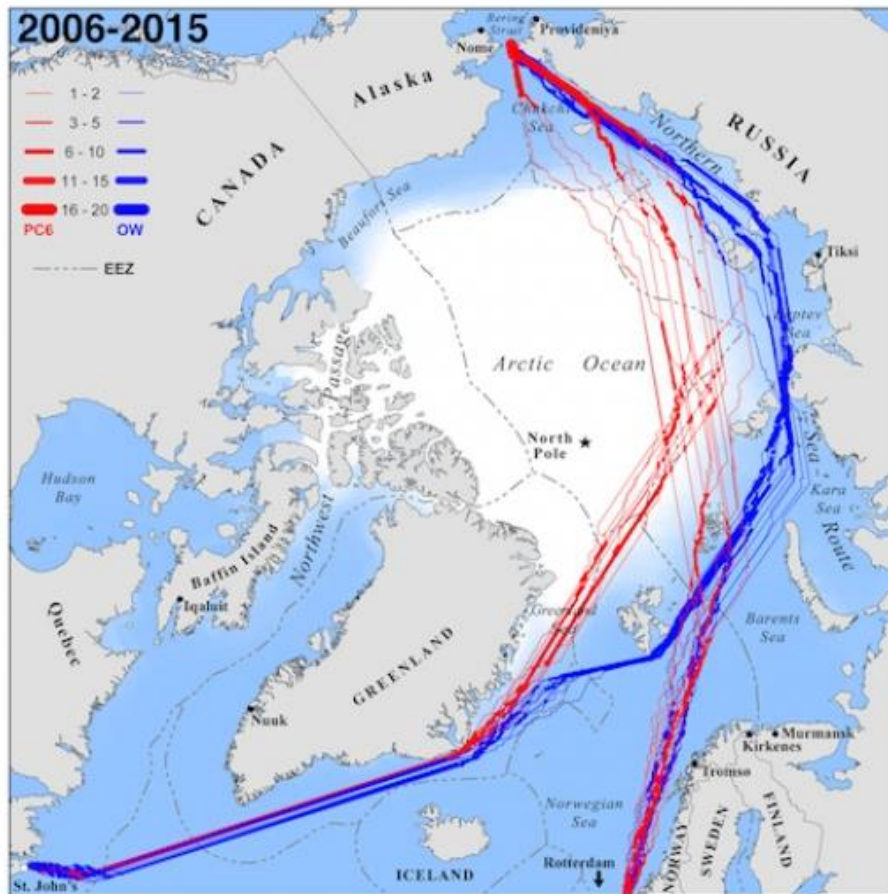


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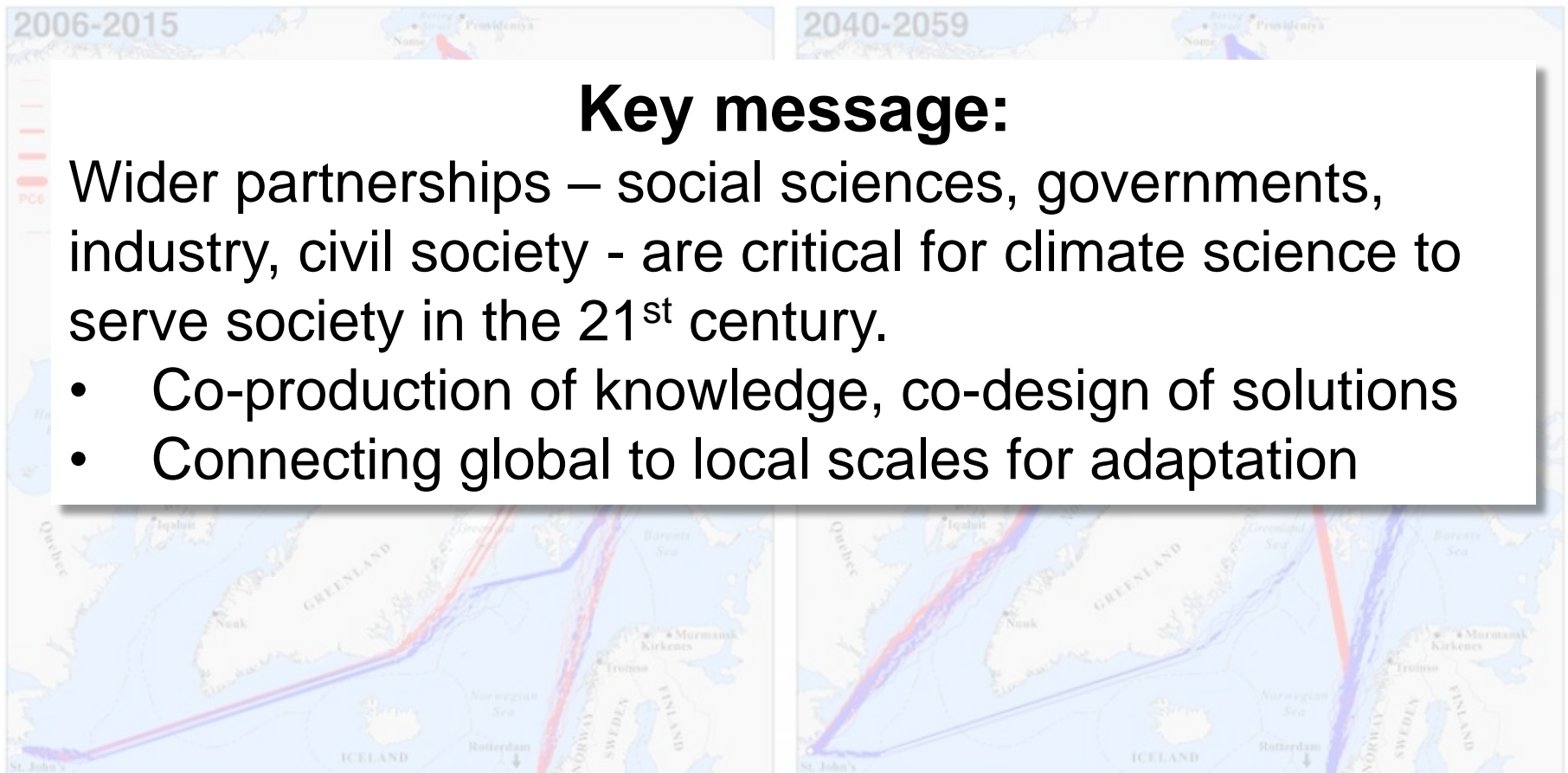
For example...

“Economic story-lines weave together choices regarding future discount rates, decisions on bunker fuels, reliability of forecasts, and the marginal costs of sea ice variability.”

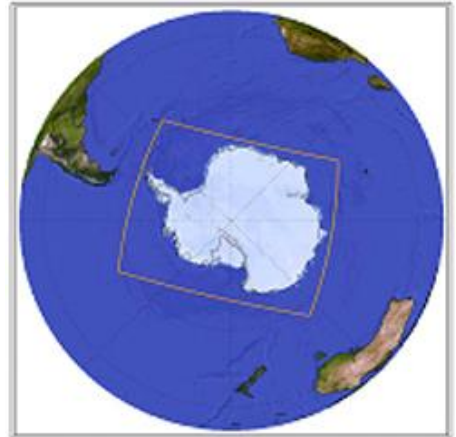
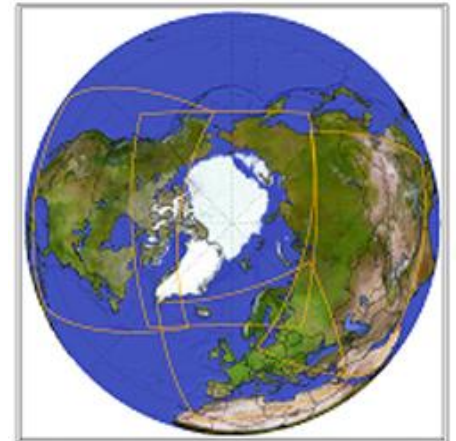
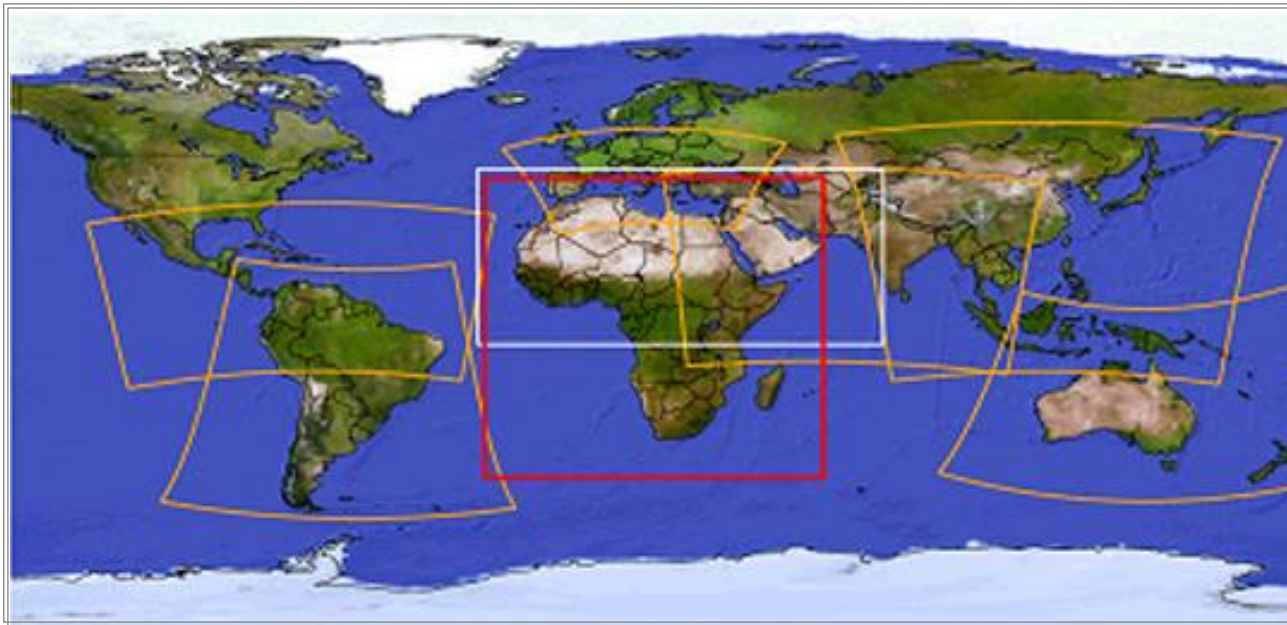


For example...

“Economic story-lines weave together choices regarding future discount rates, decisions on bunker fuels, reliability of forecasts, and the marginal costs of sea ice variability.”

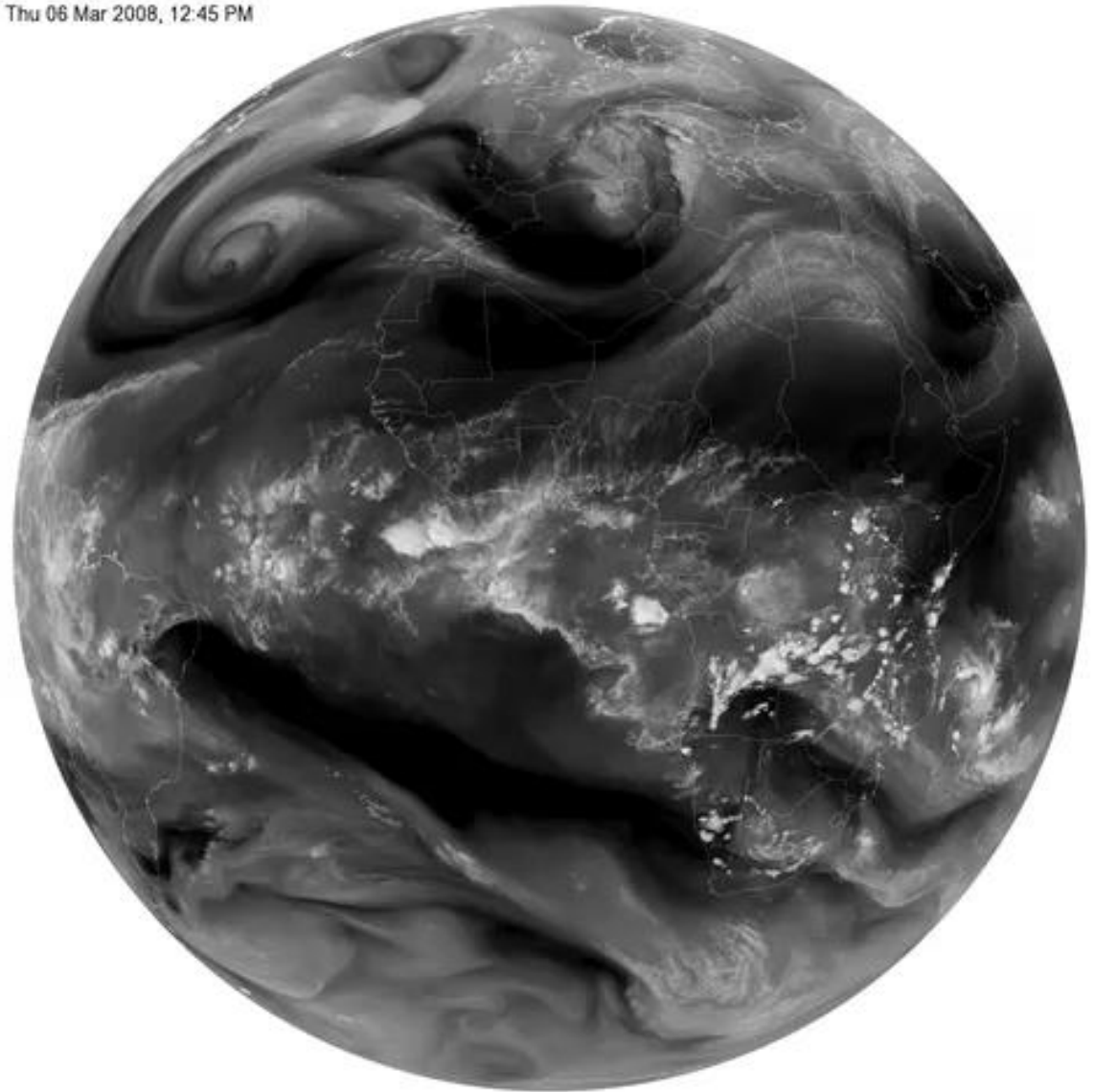


The CORDEX vision is to advance and coordinate the science and application of regional climate downscaling through global partnerships.



The CORDEX-Africa Impacts Atlas

Thu 06 Mar 2008, 12:45 PM



Christopher Lennard
Wilfran Moufouma-Okia
Grigory Nikulin
Andreas Haensler
Temitope Egbebiyi
Chris Jack

Cordex – Africa

A – Analysis; developing methods and tools to analyse 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

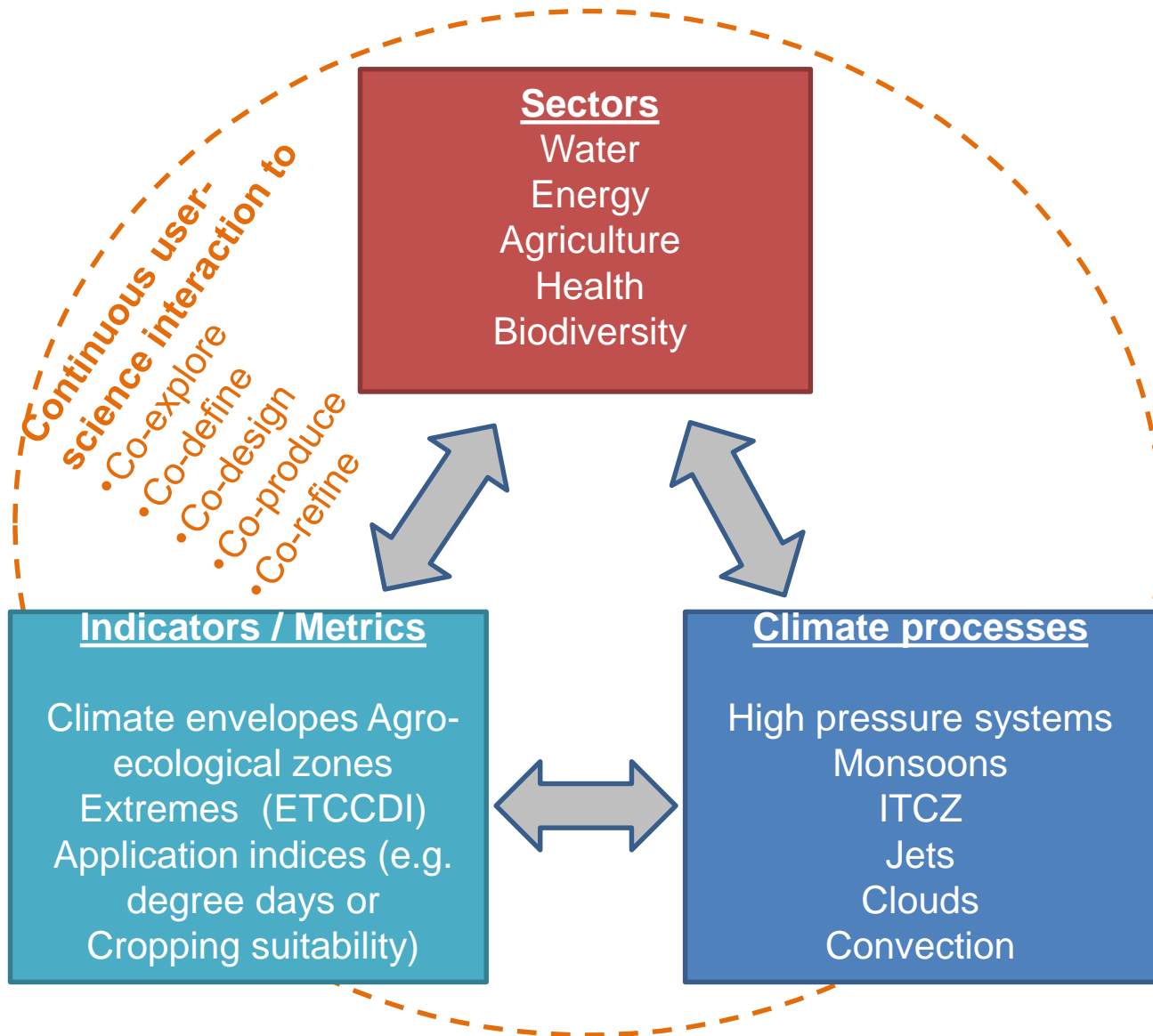
I – Integrated approach; bringing together climate and vulnerability-impact-adaptation scientists and relevant actors to identify and address key climate vulnerabilities

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



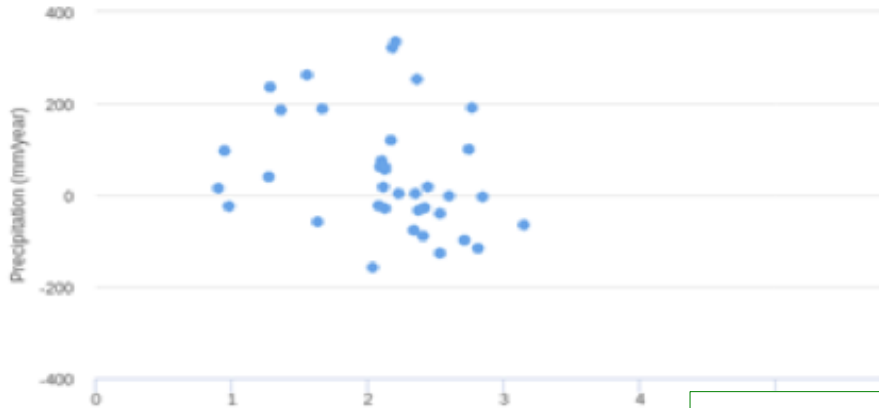
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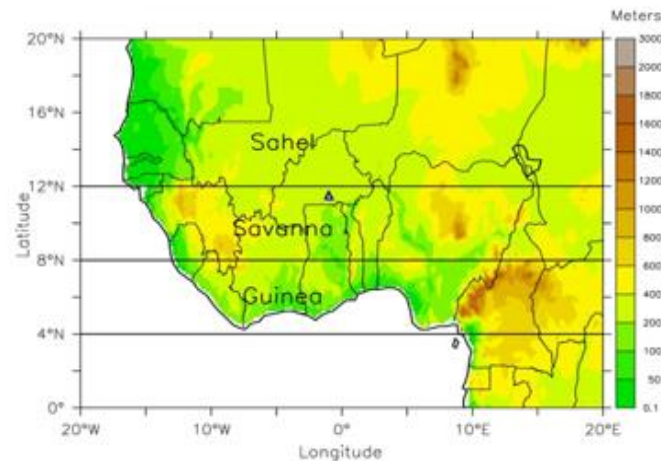
The CORDEX-Africa Impacts Atlas

Climate Information Atlas

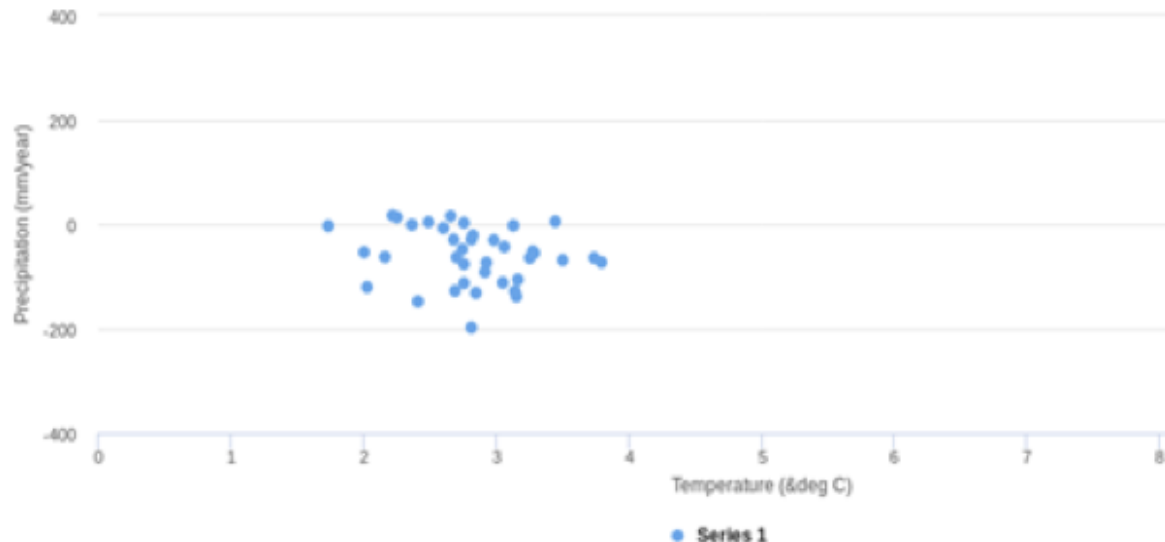
Rainfall vs. Temperature



Global Warming Level 2 °C



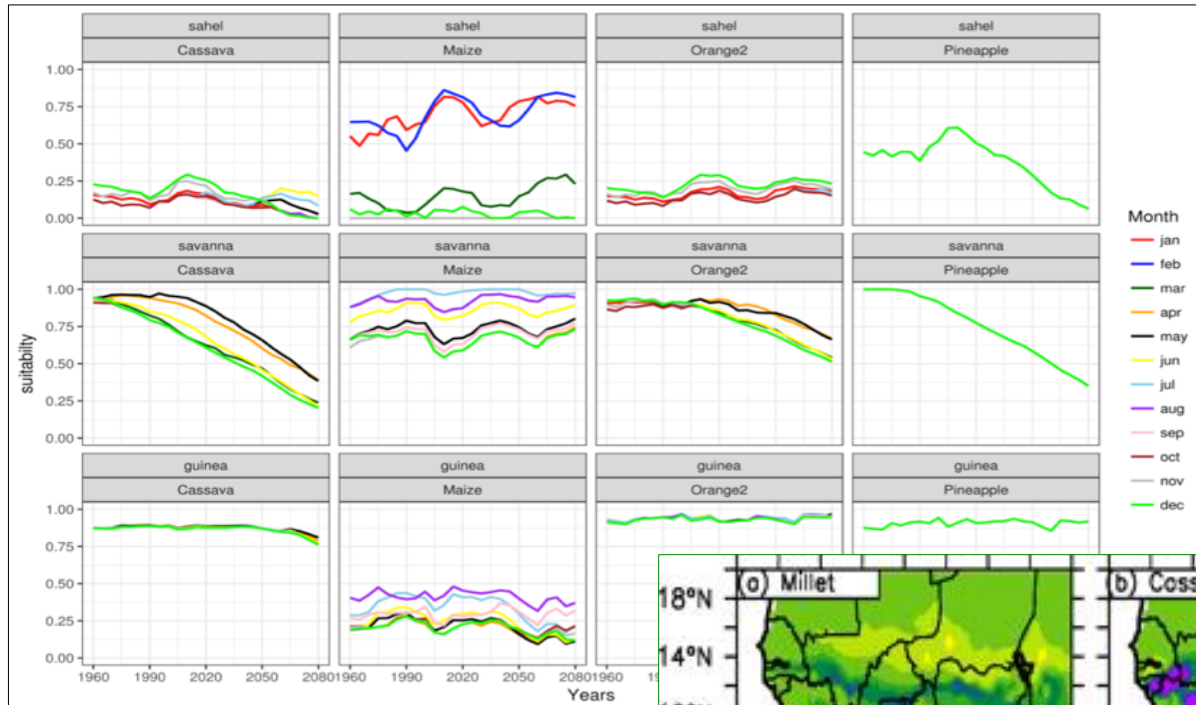
Rainfall vs. Temperature



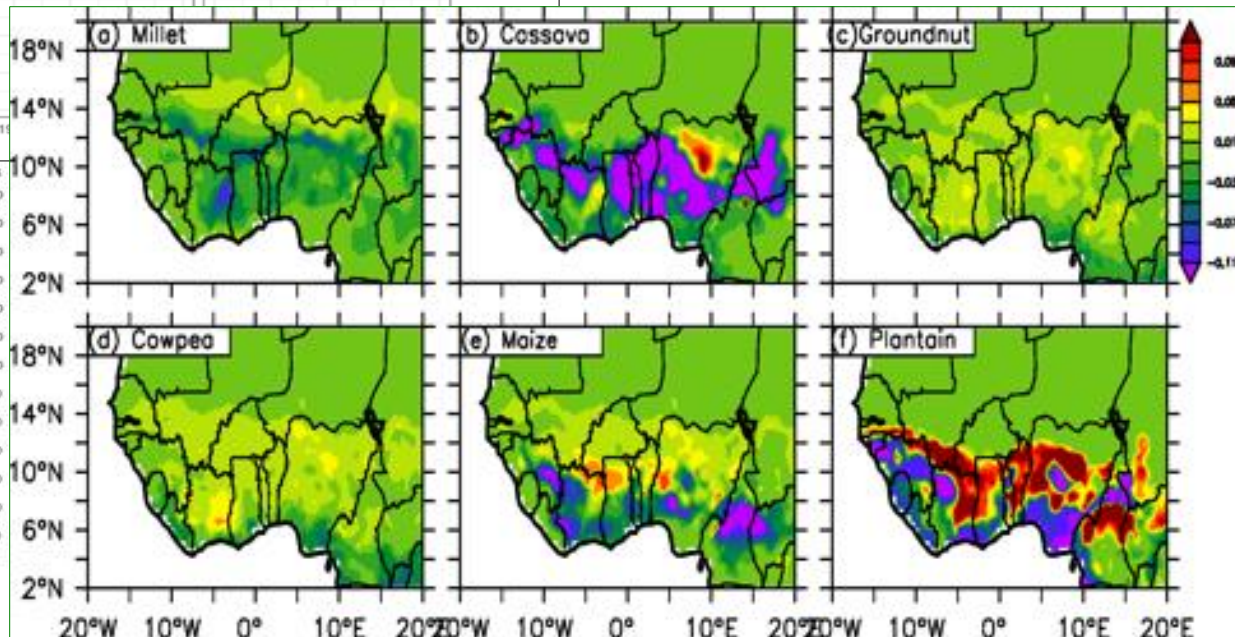
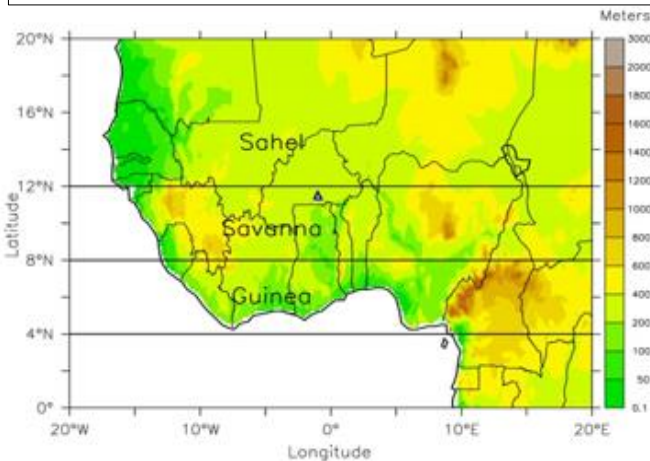
Global Warming Level 2 °C



The CORDEX-Africa Impacts Atlas



Impacts (Agri) Information Atlas



The CORDEX-Africa Impacts Atlas

<http://www.cordex.org>

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

<http://www.csag.uct.ac.za/cordex-africa/cordex-africa-impacts-atlas/>

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