The CORDEX-Africa Impacts Atlas

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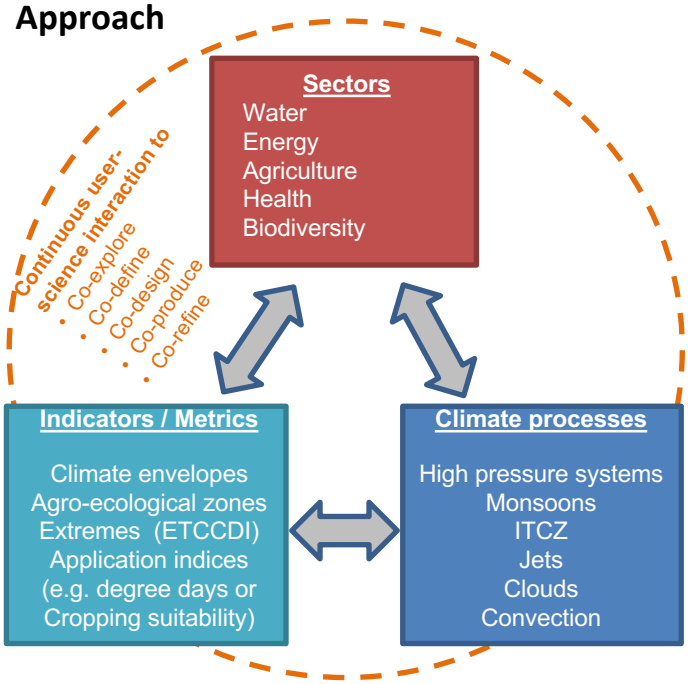
Motivation

- **Thresholds** exist in biophysical and socioeconomic systems.
- Systems are complex and operate at the **regional and local scale** with a number of dependencies.
- **Crossing thresholds** may impact the functioning of the system**.**
- Many thresholds have an **inherent climate sensitivity**
- **Africa** will experience higher rates of regional warming in space and time than the global average
- **Scale relevant climate change information** is necessary inform adaptation and mitigation actions across many sectors.

Approach



- **A co-explorative investigation** with system/sector-specific experts to develop climate-sensitive metrics using climate and sector-specific information.
- Focus on **GFCS Priority Areas** (Agriculture, DRR, Energy, Health,Water).
- Quantify the timing of climate-sensitive **threshold exceedences** under global mean temperature increases of 1.5, 2 and 4 degrees.
- Investigate the climate change impact at **relevant spatial scales** on these regional systems.
- Results will be presented as an **Impacts Atlas** with information on
  - the timing significant changes of various climate indicators and phenomena
  - the timing of threshold crossings in GFCS and other sectors/systems
  - examples of best practice using the Atlas-based information
- **Regional and trans-disciplinary expertise** is essential (CORDEX-Africa)

Strategy

- Initial smaller **proof of concept online Atlas** developed to demonstrate products potentially available, network and capacity development.
- Focused on **climate and agricultural indices** over **West Africa**
- Consist of **two components**:

1. Climate Atlas

Climate metrics
- Rainfall and temperature change from CMIP and CORDEX models

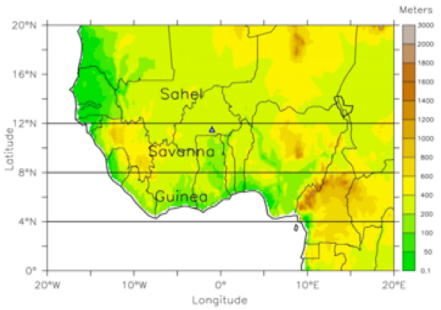
2. Impact (agriculture) Atlas

Agriculture metrics
- Crop suitability Index (EcoCrop model)

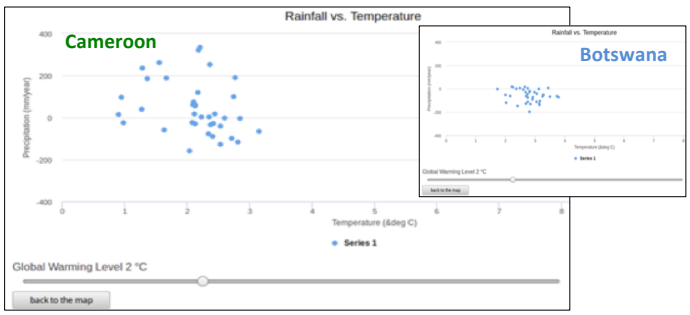
Full Atlas would include metrics for other sectors, downloadable data, best practice docs, multiple climate metrics, side-by-side scenario comparison…

Prototype Impacts Atlas over West Africa

Allow the user to explore the climate change signal over their region of interest in the Climate Atlas then apply this knowledge in the Impacts Atlas through exploring the potential impact of change at particular levels of global warming.



1. Climate change information for chosen region of interest (currently country)

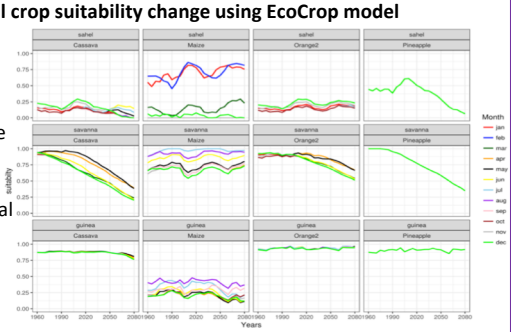


Slider controls level of warming. Figure shows changes in rainfall and temperature relative to 1861-1890 average. (Each dot is one model result).

2. Investigate regional crop suitability change using EcoCrop model

Time series view

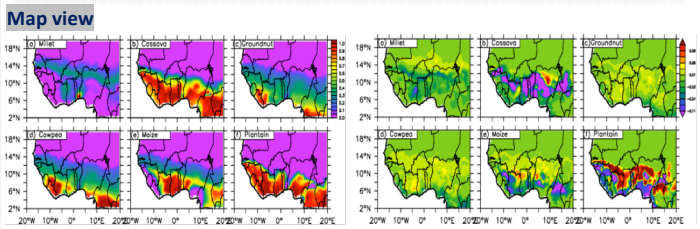
Suitability Scale…
1.0-0.8 very suitable
0.8-0.6 suitable
0.6-0.4 marginal
0.4-0.2 very marginal
0.2-0.0 not suitable



Messages

Sahel - Increasing suitability for maize growth during Jan & Feb
Savanna - Decreasing suitability for cassava, pineapple, orange
Guinea – No change

Map view



Current (left) and projected changes (right, as an anomaly) of crop suitability at 1.5 degrees of global warming under RCP8.5.

A slider controls levels of global warming and rainfall-temperature changes, graphs and maps above respond to the selected warming levels

Acknowledgements

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4-5 years worth of funding is being sought for development of full Atlas

Who to talk to…

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

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SMHI

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WCRP CORDEX

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