IMPACTS OF CLIMATE EXTREMES IN BRAZIL: THE DEVELOPMENT OF A WEB PLATFORM FOR UNDERSTANDING LONG-TERM SUSTAINABILITY OF ECOSYSTEMS AND HUMAN HEALTH IN AMAZONIA (PULSE-BRAZIL)

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São José dos Campos, 05/April/ 2016


climate change
global warming
Earth
drought
solar radiation
radiation
dry
danger
biotic process
atmosphere
greenhouse
observations
disaster
planet
arid
tectonics
measurement
barren
cause
environmental
extreme
variation
weather pattern
agriculture
problems
solar
process
biotic
environment
heat
destruction
tropical
warming
cracked
emissions
science
dirty
natural
weather
meteorology
flood
change
global
nature
pollution
climate
hot
power
temperature
crack
conditions
crisis
extreme conditions
issues
desert
erosion
season
volcanic
plate
sun
doom
pattern
dehydrated
volcanic eruptions
warmness
problem
climatology
plate tectonics
risk
fossil

MOTIVATION

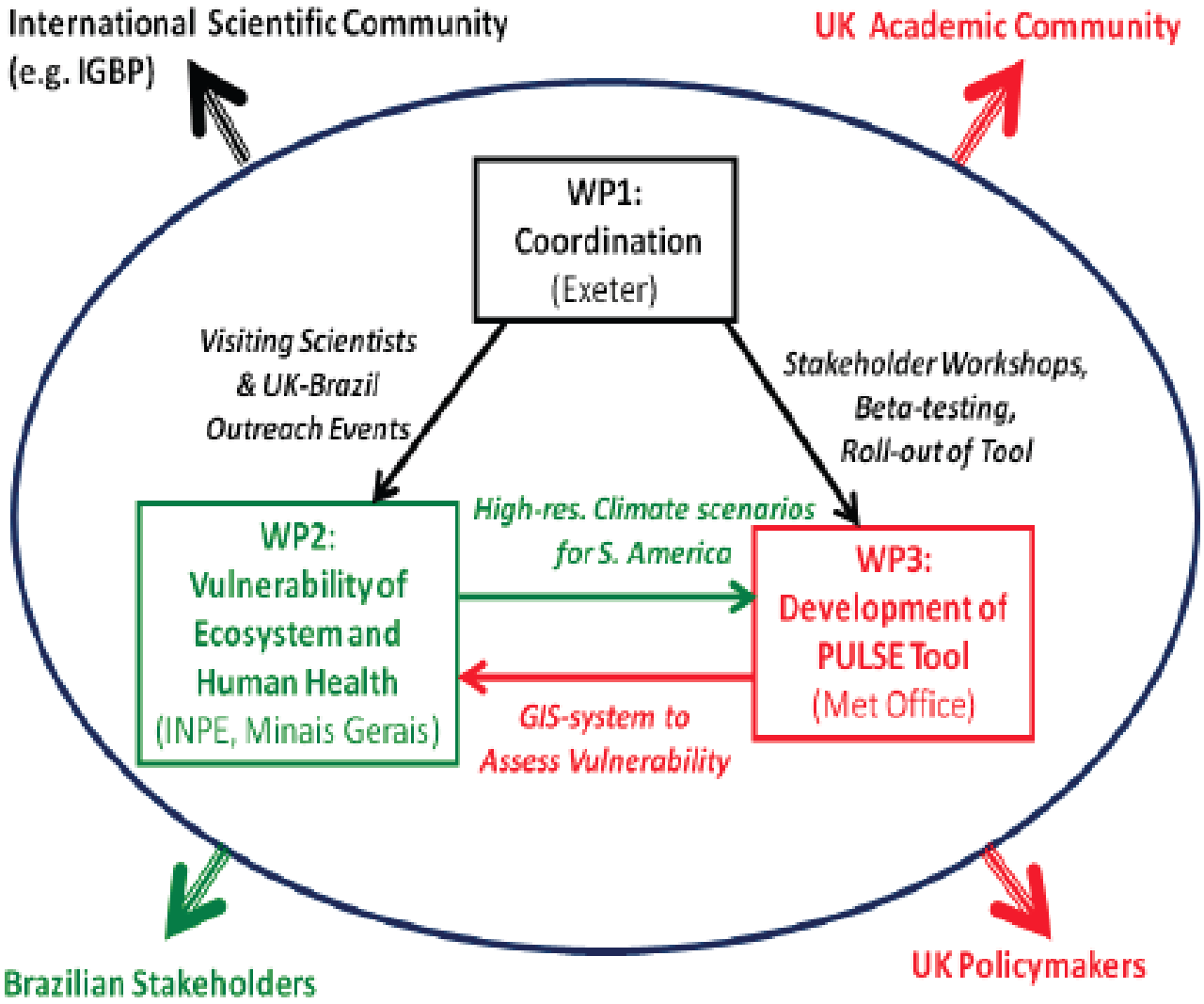
PULSE is an international research exchange initiative between the UK and Brazil which aims at the development of a climate impact tool, designed for supporting decision-makers on climate adaptation policies in Brazil.

PULSE is Platform for Understanding Long-term Sustainability of Ecosystems for analyzing, visualizing and understanding the interactions between climate, ecosystems and human health in Amazonia.

PULSE-Brazil will enable stakeholders to explore the consequences of different policy options for adaptation and mitigation of environmental change in the Brazilian Amazon.

Specifically, one of the objectives of PULSE-BRAZIL is to: Develop a user-friendly GIS-based tool capable of integrating information of recent extremes and their impacts on ecosystems and human health with relevant physical climate variables and metrics from future climate projections, supporting.

CONCEPTUAL MODEL OF PULSE BRAZIL PROJECT



CONCEPTUAL MODEL OF PULSE BRAZIL PROJECT

Title

SCIENCE

Understanding Past Climate

Climate Observations & Modelling

UK

Climate Science

Data Visualization Platform

Regional Modelling

Brazil

ETA

Met Office

ENGAGEMENT

Activities

- Project Meetings
- Stakeholder Engagement Meetings
- Local Workshops
- Project Permanence in Acre

Taylored Tool for the needs of end-users

Project Meeting Team, INPE 2012 (Top-left), Signature of MoU, Secretary of the Environment of Acre (Top-right) and all signatories (bottom), Acre 2013

Capacity Building

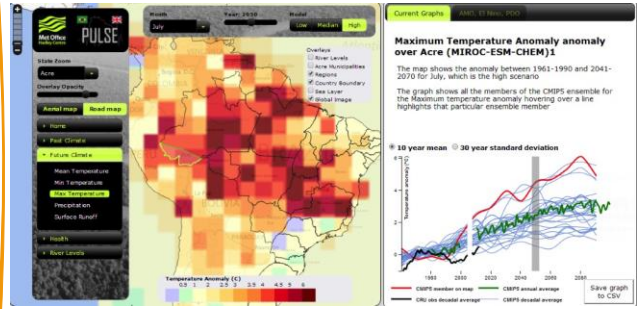
POLICY

- Reciprocal Learning process between scientists and decision-makers
- Building the foundations for science-policy collaboration on Climate Change Extreme Events
- Building understanding of Extreme Climate events and their multiple impacts

Visualisating Impacts

Informing decisions

PULSE PLATFORM



Ecosystem Modelling

Brazil

Fire Modelling

Land Surface Modelling

Analysing Impacts on Carbon Stocks

UK

JULES

Brazil

INLAND

Analysing Carbon Fluxes and Stocks

Effects on Respiratory Health

Environmental Risk Management

State Environmental Risk Management Comission (CEGdRA)

Climate Change Adaptation Policy

Secretary of State for the Environment (SEMA)

Health Surveillance and Epidemiological Control Policy

Secretary of State of Health (SESACRE)

Understanding Future Projections

Eliminate Misconceptions

Health

Brazil

Ministério da Saúde

FIOCRUZ Fundação Oswaldo Cruz

Climate Variability and Disease Outbreaks

- Dengue
- Malaria
- Leptospirosis
- Infant Diarrhea
- Respiratory Diseases

Modelling Disease Patterns

Direct contact with observational data

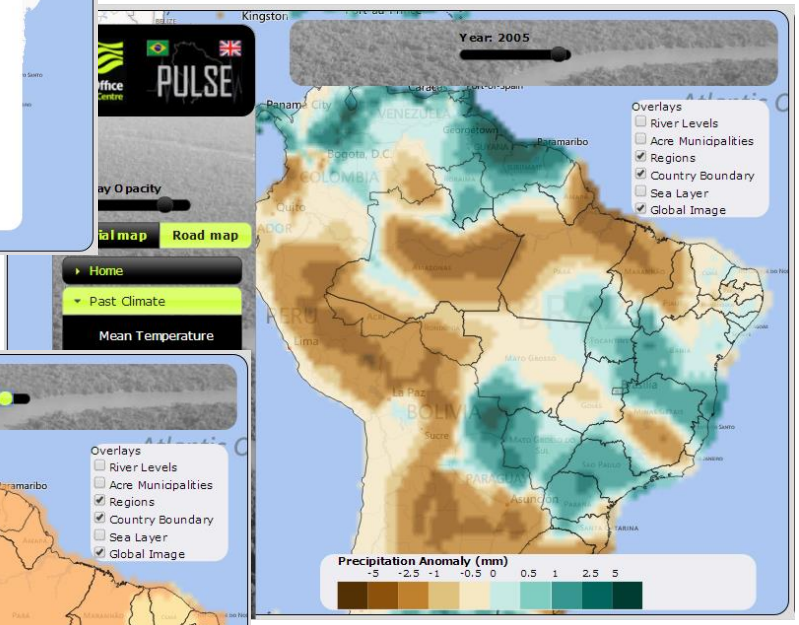
Facilitate visualisation of recent changes in climate patterns

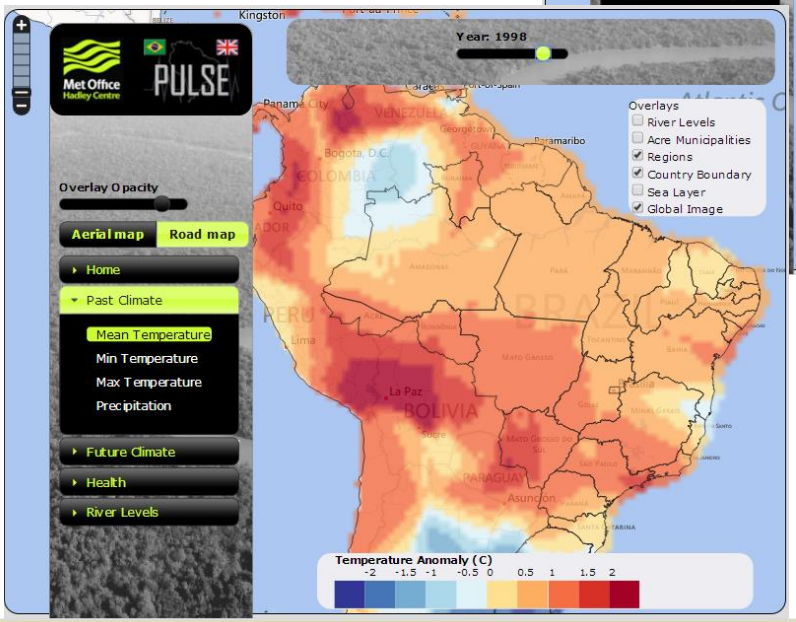
Dissemination of the tool

Collaboration with local Universities:

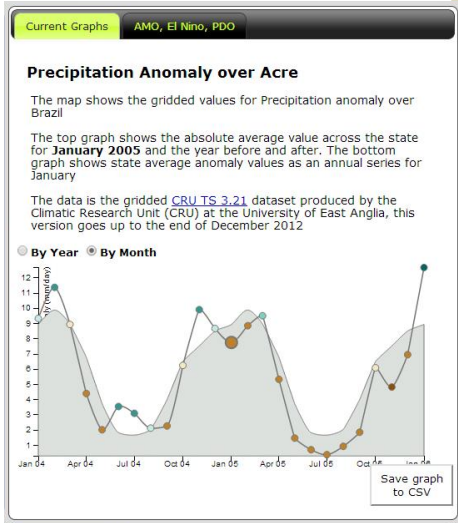
- Brazilian Society for the Progress of Science (SBPC) 4-8 UFAC July 2014

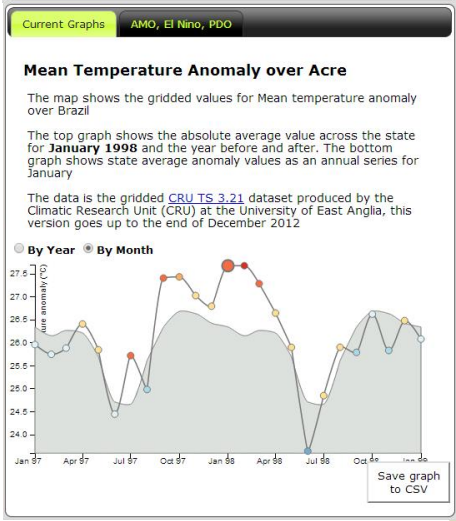
A Web Platform





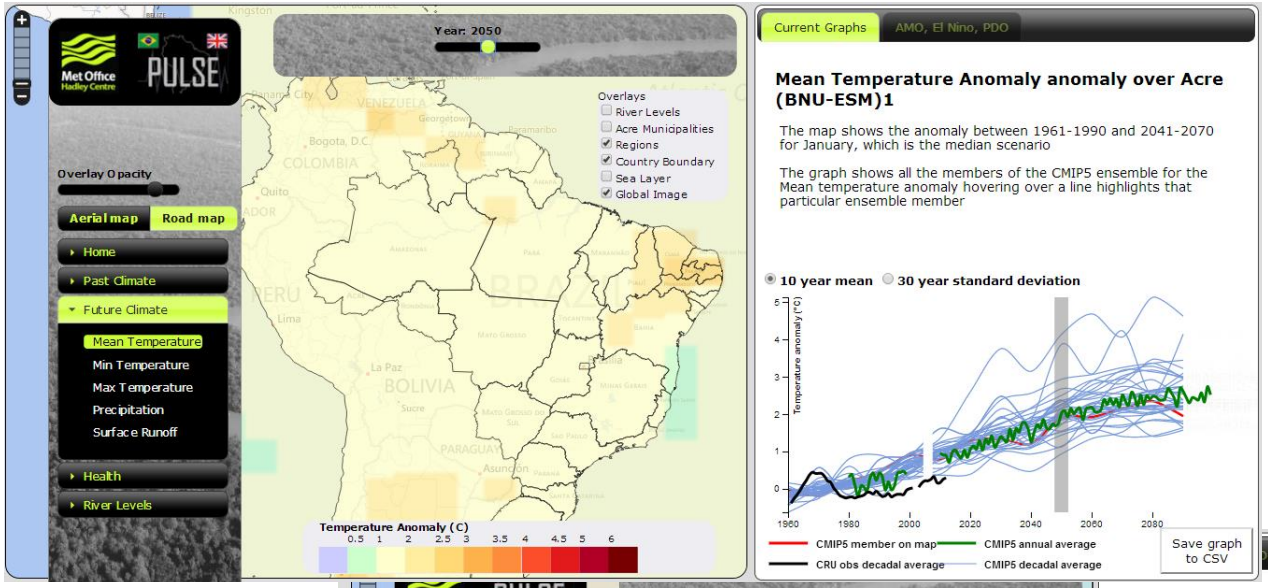
- **Present-day Climate**

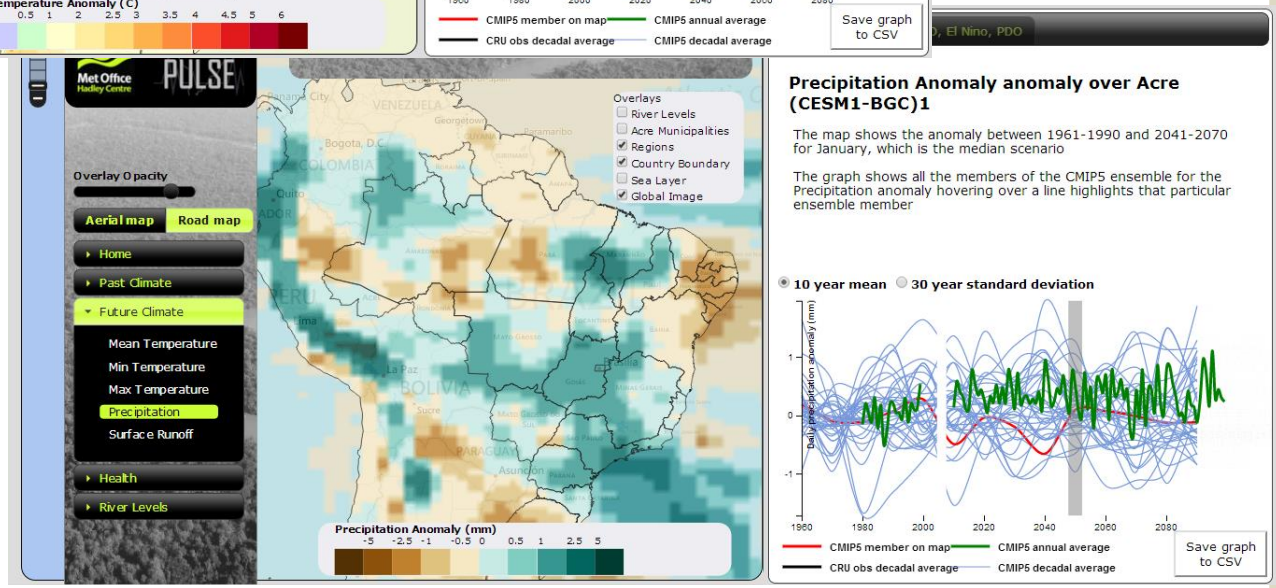




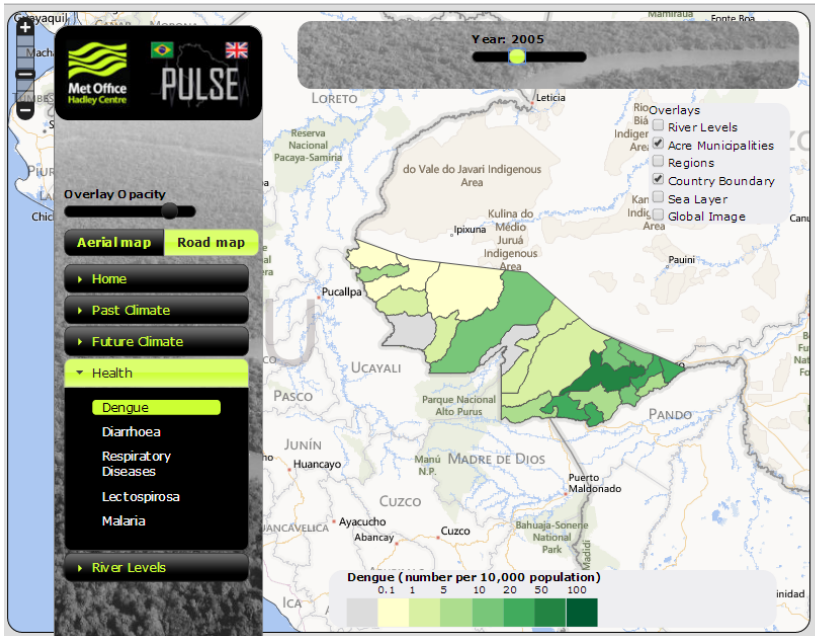
A Web Platform

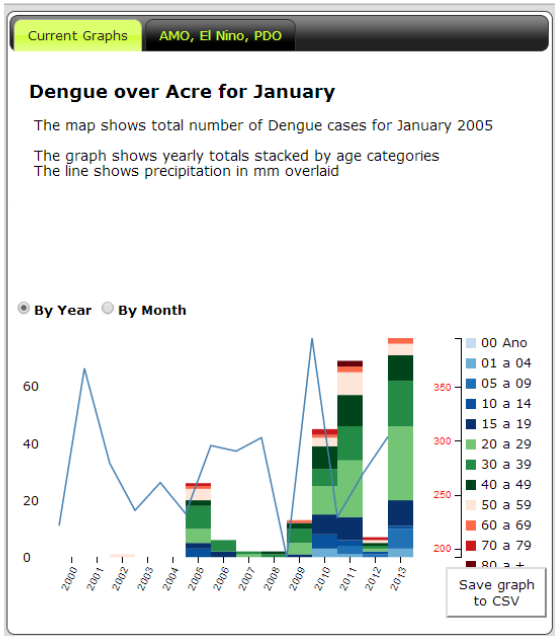
- Climate Projection

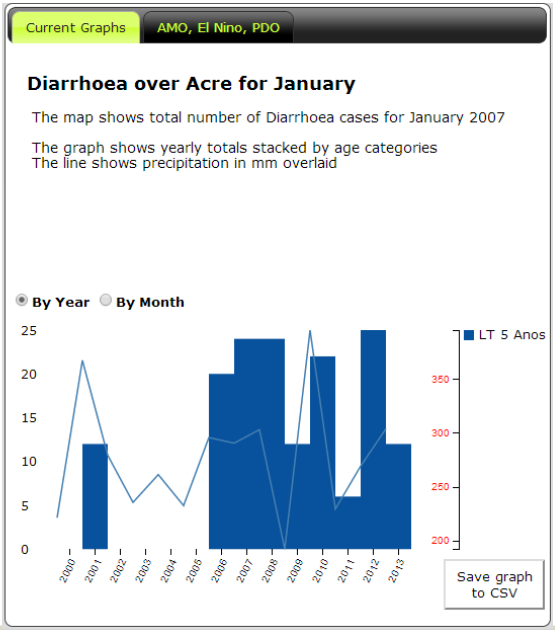


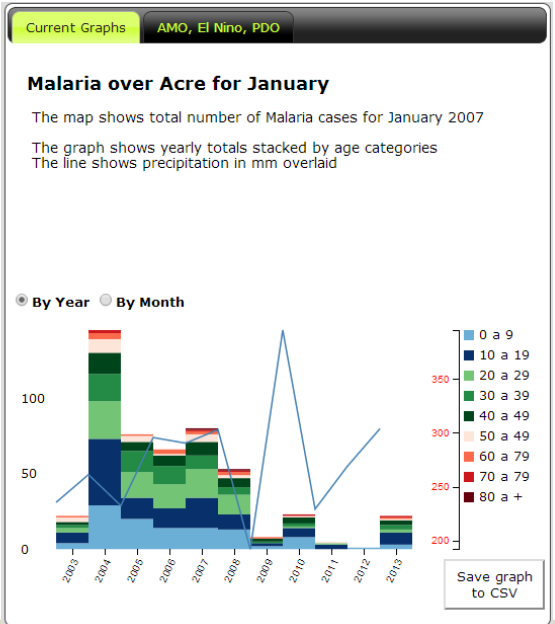


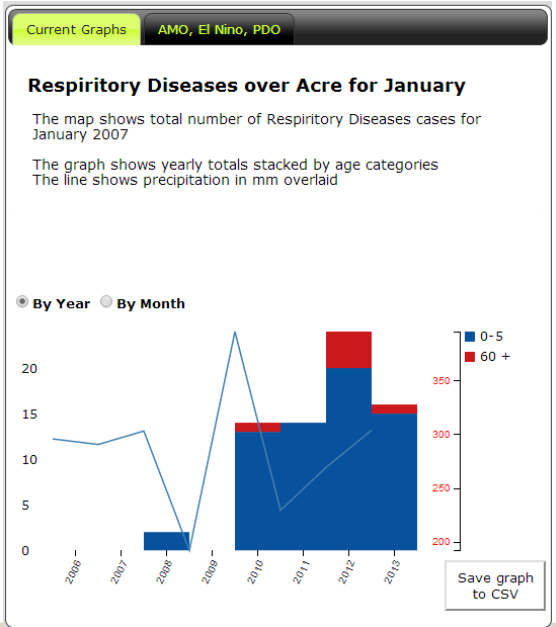
• Impacts on Ecosytems and Human Health



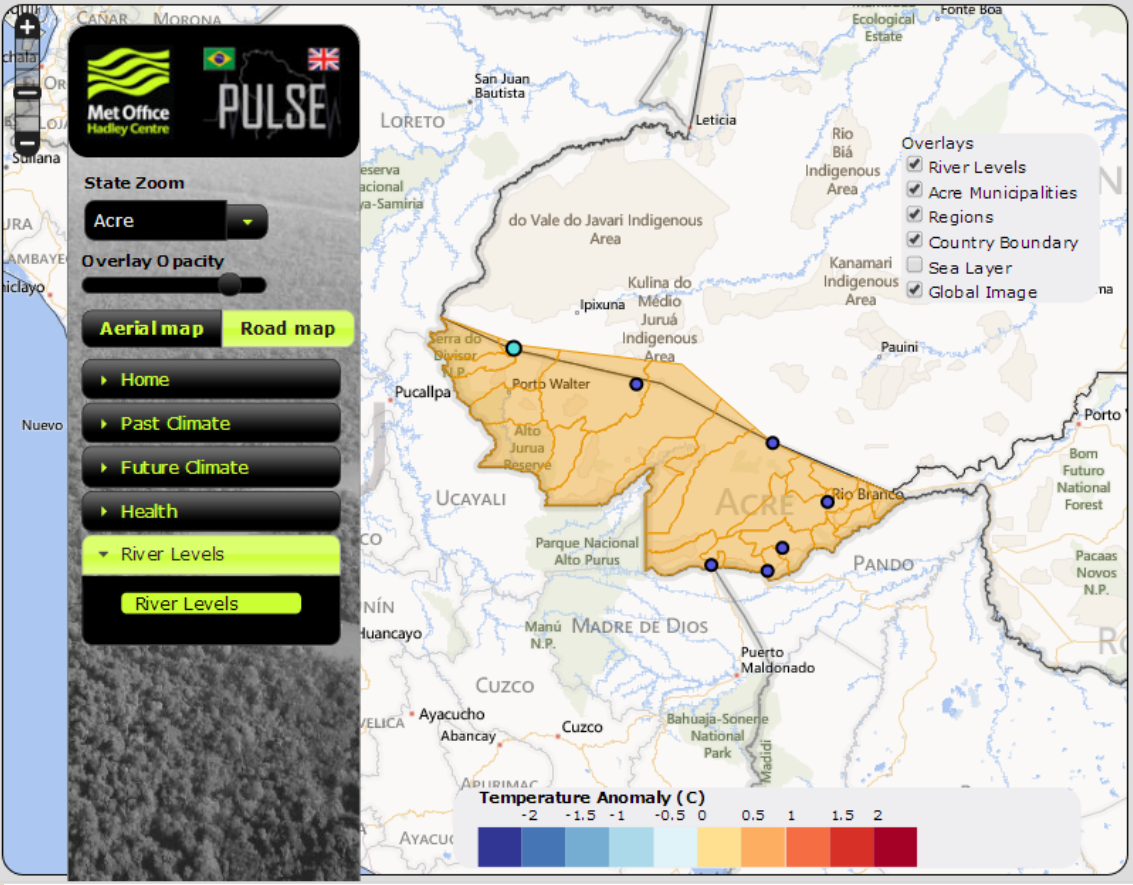








River Levels

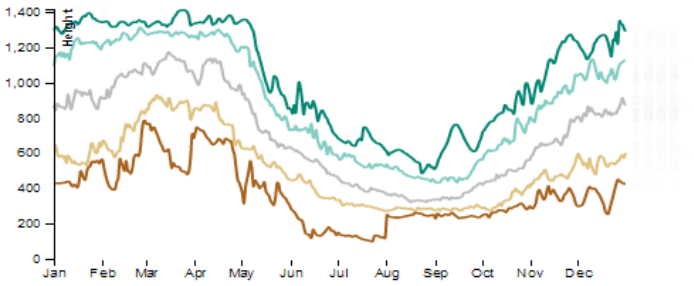


Current Graphs | AMO, El Nino, PDO

River Levels over Cruzeiro do Sul

The graph shows river levels. Hovering over the graph gives the level for each year in cms. The darker colours indicate higher river levelsz

The warning level is 1180cm and the flooding level is 1300cm



Comments and Final Remarks

We expect that the PULSE platform can assist in the planning of government actions directed towards the increase of resiliency of Amazonian communities to climate change.

Finally, PULSE-Brazil would have a lasting positive impact by greatly facilitate links between scientists in the UK and Brazil on global environmental change, by building capacity for the next generation of scientists and decision makers, and through the development of techniques to communicate scientific outcomes to stakeholders and the general public, using GIS-based systems.

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