



Method Brief

South Africa: The Climate Information Portal – providing climate information to users

The Tool

The Climate Information Portal (CIP) is a web interface operated by the Climate System Analysis Group (CSAG), at the University of Cape Town, South Africa. The portal, which currently provides climate information for Africa and Asia, integrates climate information into a user-friendly map and graph-based interface. The information comes from a climate database that stores a large suite of observed climate data as well as projections of future climate. There is also an extensive collection of guidance documentation that facilitates the best use of the climate data, its interpretation and, importantly, resultant actions. CIP's web address is: <http://cip.csag.uct.ac.za/webclient/introduction>.

Scope and entry points

CIP emerged out of an earlier project aimed to enable users to easily and effectively access climate change projection information, specifically by exploring a range of scenarios generated by various climate models. This concept was developed out of the growing number of requests received by CSAG for data to support climate-smart decision making. The CIP tool allows users to search and retrieve the data and then explore it visually through a client side application.

CIP is available freely via its website – users are requested to create an account so that they may be contacted with regards to changes, improvements and new developments. The majority of the users are from within the NGO and government agency communities of Africa. The target audience includes Local, Provincial and National Government (decision makers), African researchers and students (including non-climate researchers), African agriculturists and the mitigation and adaptation communities in Africa, Asia and around the world.

How it works

The foundational climate data sets within CIP are the observed climate records and the downscaled GCM projections. The **observed climate data sets** are sourced from the Global Historical Climate Network (GHCN), the World Meteorological Organisation (WMO) as well as local country meteorological offices. All observed data is freely available to the public through the institutions concerned though local meteorology office data is generally made available through private contacts.

The **downscaled climate projections** are based on the CMIP3 GCM model archive which is also freely available to the public for non-commercial purposes. The downscaled projections are produced locally, through a statistical downscaling method (SOMD) (Hewitson & Crane, 2006) which was developed at CSAG, and the monthly statistics are made freely available through CIP. Daily time scale projections are also available but are generally provided on a contract basis due to the additional data volumes, complexity, and need for interaction with the end user around appropriate application.

The table below summarizes the **observed and projected climate information provided by CIP**. Information is available through easily accessible and interpretable maps and graphs, though users are also able to access the raw data. Importantly all information is provided with accompanying guidance text so that the information can be interpreted in an effective manner. The guidance text guides interpretation and encourages the user to ask questions of the data and explore further information.

On behalf of

Observed information	Projected information
African, Asian, and South African station maps and observed climate records	African, Asian, and South African downscaled climate projections
Observed climate statistics (plots and Excel data downloads) for all station sites including: Rainfall climatology and variability Minimum and maximum temperature climatology and variability Heavy and extreme rainfall day statistics Dry spell duration statistics	Station scale downscaled CMIP3 projections (plots and Excel downloads) for all station sites including: Monthly rainfall projections Monthly mean temperature (minimum and maximum) projections Extreme rainfall projections Dry spell duration projections
	CMIP3 based multi-model (10 GCMs) summary statistics maps

Table: Observed and projected climate information provided by CIP.

Specifics of Application

Stakeholders and institutional set-up

CIP is developed, hosted, and maintained solely and entirely by CSAG. CIP is managed by a small team that influences the design, structure, data and information that is organically evolving, based on user needs and feedback, as well as learning through stakeholder involvement. A number of close partnerships have been formed during its development primary with the Stockholm Environment Institute (SEI), UK Climate Impacts Program (UKCIP) and NASA-JPL.

Through interaction with a range of stakeholders, the portal has undergone new developments and changes and the continued engagement with user groups and stakeholders will ensure the portal will grow and change as needed.

Resources (personnel, expertise, data demand, funds, time)

CSAG is a specialized climate research unit with core disciplinary depth in atmospheric science, climate modelling, and applied climate analysis. The statistical downscaling method (SOMD) was developed at CSAG and was applied for projections in both Africa and Asia. These projections form the basis of the data provided through CIP. CSAG also has technical expertise, in-house, for the development and maintenance of the CIP interface which requires advanced computer programming and website development skills.

The CIP portal development has been partly funded by a number of different funding agencies. The major funder for the initial development of CIP was the European Union through the United Nations Institute for Training and Research (UNITAR) 3D+ programme, but additional funding has been required to add additional features to CIP. For example, the Climate and Development Knowledge Network (CDKN) have funded the addition of NASA-JPL information into CIP to provide satellite information as part of the 'observed information' component.

Output

CIP provides output in graphical and raw data format as described above.

Capacity required and Ease of use

CIP has been created to be very user friendly and easy to navigate. The level of user expertise across Africa is varied. For some the guidance text is sufficient. The guidance text allows for effective interpretation of the data and encourages users to ask relevant questions of the data, facilitating the best use of the climate data, its interpretation and resultant actions. For others, further capacity building and interactions are needed to more robustly interpret and apply the information taken from CIP. CSAG offers capacity building training in the form of its Winter School course and can also tailor make short courses for interested groups and organisations. CSAG has also launched its e-learning platform that will also help users understand some key concepts and use the CIP information.

Conclusions for future Application

A key goal in CIP development is to ensure that the portal is available to users and compatible with emerging data sources so as to maximize its value among end-users.

The CIP has a strong partnership with the weAdapt knowledge portal, which was developed by the Stockholm Environment Institute and publishes practical examples of adaptation projects. The partnership with weAdapt is only one of many potentially valuable partnerships. To this end the CIP developers have already begun exploring server-side interlinkages with the South Africa Risk and Vulnerability Atlas and the NASA-JPL satellite data tool.

CIP could also serve as an access portal for the World Climate Research Programme's (WCRP) new Coordinate Regional Downscaling Experiment (CORDEX) whose primary intent is producing a comprehensive collection of standardized regional downscaling datasets for 12 domains around the world. Both dynamic and statistical downscaling will be performed by a large collection of global modeling groups. Africa has been identified as the priority region and CSAG–University of Cape Town is mandated as the coordinating institution for the African component of the project.

While the technical developments are important, the greater challenges lie in the **end-users' engagement with the information provided**. The confluence of both statistical and dynamical downscaled data as well as the latest GCM projections from the CMIP5 increases the complexity and potentially the uncertainties presented to the end-user community. This demands keeping in touch with the evolving and increasing requirements of the users across many different user communities. The challenge involves the development of modes of engagement, innovative analysis methods, and rich guidance on best practice usage of the available information.

Meanwhile, CORDEX seeks to ensure the utility of the downscaled projections, not only within the modeling community but also in the larger stakeholder communities of policy-making, adaptation, planning, and decision-making.

References

To view the CIP website please visit
<http://cip.csag.uct.ac.za/webclient/introduction>

Information on the statistical downscaling method (SOMD):

Hewitson, B. C. and R. G. Crane. (2006). Consensus between GCM climate change projections with empirical downscaling: precipitation downscaling over South Africa. *International Journal of Climatology*, 26, 1315-1337.

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