The Third International Conference on Climate Services (ICCS 3) features the first Tools Expo of the Climate Services Partnership.

The Expo will provide conference participants with an opportunity to learn about a range of tools that can assist in the prioritization, production, and use of climate services. It will also allow those who have developed or are familiar with specific tools to share their expertise with the wider community.

The Expo will begin with a series of short presentations by tool experts. Participants will also be able to engage with presenters directly and learn more about the workings of each tool at the poster session.

In-depth training events will be held throughout the conference to provide participants with a more hands-on learning experience. These sessions will cover a range of themes, including climate data analysis, information products, decision support, and capacity building.

This guide can be used to learn more about the event and navigate the various sessions.
The ICCS 3 Tools Expo includes a series of brief presentations meant to introduce participants to a number of tools related to climate services. On each day of the Expo, participants will be able to attend presentations in two of three rooms; when the bell rings after the first round of presentations, participants should please switch rooms for the second round. Participants will be able to learn about the tools they do not get to hear about during the poster session.

**Room C1: Information Products, Part 1**

**Climate Analysis and Applications Map Room**
Tufa Dinku, International Research Institute for Climate and Society (IRI), tufa@iri.columbia.edu

*About:* The Climate Analysis and Applications Map Room consists of 3 map-rooms: Climate Analysis, which provides information on mean rainfall and temperature at national and sub-national levels; Climate Monitoring, which enables monitoring of the current season; and Climate Forecast, which translates seasonal forecasts to user-friendly values.

Tanzania: [http://maproom.meteo.go.tz/maproom/](http://maproom.meteo.go.tz/maproom/)

**Coupled Routing and Excess Storage (CREST) Hydrological Modeling Tool**
Eric Kabuchanga, Regional Center for Mapping and Resource Development, kabuchanga@rcmrd.org
John Rao Nyaoro, Kenya Ministry of Water and Irrigation jryoaoro@yahoo.com

*About:* Developed by SERVIR, a partnership between USAID and NASA, CREST is a hydrologic modeling tool that integrates satellite rainfall information with a number of variables to calculate actual evaporation, transpiration, soil moisture, and streamflow to make global and small-scale flood predictions. It aims to improve decision making in community development, environmental management, agricultural planning, and other areas.

*Web link:* [http://ags.servirlabs.net/crestviewer/](http://ags.servirlabs.net/crestviewer/)

**Beet Armyworm Pest Outbreak Forecasting Model**
Michelle Sherwood, Ministry of Agriculture and Fisheries, mishanton@yahoo.com, ppu@moa.gov.jm

*Organization:* Research and Development Division, Ministry of Agriculture and Fisheries, Jamaica

*About:* This system was developed for St. Elizabeth, Jamaica in response to repeated pest outbreaks in onion and scallion crops from 2009-12. The system involves monitoring and uploading pest and meteorological data, data analysis, and media and information dissemination regarding anticipated outbreaks and preventative measures.

**NOAA’s Quarterly Climate Impacts and Outlooks**
Meredith Muth, National Oceanic and Atmospheric Administration (NOAA), Meredith.F.Muth@noaa.gov

*About:* NOAA’s Regional Climate Services (RCS) program leads the production of quarterly syntheses of climate impacts and outlooks for many regions of the United States and in partnership with Canada and Mexico. These syntheses highlight recent and current climate issues at regional scales alongside NOAA data and services supporting regional customers.

*Web link:* [http://www.ncdc.noaa.gov/climate-information/regional](http://www.ncdc.noaa.gov/climate-information/regional)
Room C2: Climate Data Analysis

Providing Regional Climates for Impacts Studies (PRECIS)
Jane Strachan, UK Met Office, jane.strachan@metoffice.gov.uk

About: PRECIS is a regional climate modeling system designed to run on a Linux-based PC. The system generates detailed climate change projections, and can be used in the field of climate change adaptation, which requires high-quality climate change information, often with in-depth spatial detail.


**R**
Rachel Lowe, Institut Català de Ciències del Clima (IC3), rachel.lowe@ic3.cat

About: R is a language and environment for statistical computing and graphics. The tool offers a range of statistical (linear and nonlinear modeling, classical statistical tests, time-series analysis, classification, clustering, etc.) and graphical techniques, and is very extensible.

Web links: General information: [http://www.r-project.org/](http://www.r-project.org/)

IRI Data Library
Ángel Muñoz, International Research Institute for Climate and Society (IRI), agmunoz@iri.columbia.edu

About: The IRI/LDEO Climate Data Library contains over 300 datasets from a variety of earth science disciplines and climate-related topics. The Data Library allows the user to access and analyze datasets, visually monitor present climate conditions, and download data in a variety of commonly used formats.

Web links: [http://iridl.ldeo.columbia.edu](http://iridl.ldeo.columbia.edu)

Quantum Geographic Information Systems (QGIS)
Jennifer Boehnert, University Corporation for Atmospheric Research (NCAR), boehnert@rap.ucar.edu

About: QGIS is an Open Source user-friendly GIS application that provides a number of visualization, data management, data analysis, and map composition tools. The GIS Program at NCAR has developed a number of research frameworks and spatial methods for the integration of diverse, multidisciplinary datasets.


Climate Predictability Tool (CPT)
Ángel Muñoz, International Research Institute for Climate and Society (IRI), agmunoz@iri.columbia.edu

About: CPT provides a Windows package for constructing a seasonal climate forecast model, performing model validation, and producing forecasts given updated data. It is specifically designed for producing seasonal climate forecasts.

<table>
<thead>
<tr>
<th>Room C6: Decision Support, Part 1</th>
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### Climate Change Knowledge Portal (CCKP)

Ana E. Bucher, World Bank, [abucher@worldbank.org](mailto:abucher@worldbank.org)

**About:** The CCKP provides a web-based platform to assist in capacity building and knowledge development. The aim of the portal is to help provide development practitioners with a resource to explore, evaluate, synthesize, and learn about climate-related vulnerabilities and risks at multiple levels of detail.

**Web link:** [http://climateknowledgeportal.worldbank.org](http://climateknowledgeportal.worldbank.org)

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### Regional Agricultural Forecasting Toolbox (CRAFT)

James Hansen, Climate Change, Agriculture, and Food Security (CCAFS), [jhansen@iri.columbia.edu](mailto:jhansen@iri.columbia.edu)

**About:** CRAFT is a software platform that supports 1) spatial input data and spatial crop simulations; 2) the integration of seasonal climate forecasts; 3) spatial aggregation and probabilistic analysis of forecast uncertainty; 4) the calibration of model predictions from historic agricultural statistics; and 5) analysis and visualization.

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### Community-based Risk Screening Tool - Adaptation and Livelihoods (CRiSTAL)

Anne Hammill, International Institute for Sustainable Development (IISD), [ahammill@iisd.ca](mailto:ahammill@iisd.ca)

**About:** CRiSTAL is a project-planning tool that helps users design activities in support of climate adaptation at the community level. CRiSTAL seeks to systematically assess the impacts of a project on the local determinants of vulnerability and exposure, so that project planners and managers can design activities that foster climate adaptation.

**Web link:** [http://www.iisd.org/cristaltool/](http://www.iisd.org/cristaltool/)

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### Decision support System for Coastal Climate Change Impact Assessment (DESYCO)

Antonio Marcomini, Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC), [marcom@unive.it](mailto:marcom@unive.it)

**About:** DESYCO is an open-source GIS-based decision support system for the assessment and management of climate change impacts in coastal areas. DESYCO, which incorporates data from different scenarios, models, and datasets, can be integrated within open source or commercial GIS software and applied at a range of spatial scales.

**Web link:** [http://www.cmcc.it/models/desyco](http://www.cmcc.it/models/desyco)

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### Assessing National Water and Climate Services: Utilization of the GFCS Framework in Canada

Jamie Smith, Environment Canada/Meteorological Service of Canada, [jamie.smith@ec.gc.ca](mailto:jamie.smith@ec.gc.ca)

**About:** The Global Framework for Climate Services (GFCS) provides a framework for categorizing important climate services. The methodology was tested in Canada and results suggest the “tool” is helpful for 1) optimizing services by reducing duplication; 2) creating a common understanding of water and climate services to inform improved coordination; and 3) identifying opportunities for improved sharing of climate information and products.
**Climate Information Platform (CIP)**
Bruce Hewitson, Climate System Analysis Group (CSAG), (hewitson@csag.uct.ac.za)

**About:** The Climate Information Platform (CIP) is a web interface that provides structured guidelines alongside climate information visualizations and spatial maps. In doing so, CIP facilitates the simple but effective use of climate information, which is meant to transcend traditional climate data delivery.

**Web link:** [http://cip.csag.uct.ac.za/webclient2/app/](http://cip.csag.uct.ac.za/webclient2/app/)

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**The Extreme Climate Indices (EC) Map Room**
Ángel Muñoz, International Research Institute for Climate and Society (IRI), agmunoz@iri.columbia.edu

**About:** EC allows users to compute and visualize several extreme rainfall and temperature indices, their probability distributions, and trends. The map room also offers an approximate timescale deconstruction of the past variation of selected indices in terms of long-term, decadal, and inter-annual signals.

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**Local Climate Analysis Tool (LCAT)**
Presented by Meredith Muth, National Oceanic and Atmospheric Administration (NOAA). For more information, contact Marina Timofeyeva, NOAA, marina.timofeyeva@noaa.gov

**About:** LCAT is an online interactive tool that assesses local impacts of climate variability and change. LCAT is intended for technical users of climate information and comes in a package that includes help support, dynamic interpretation statements, and online training modules to maximize user experience.

**Web link:** [http://nws.weather.gov/lcat/](http://nws.weather.gov/lcat/)

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**The Annual Climate Explorer (ACE)**
Teddy Allen, International Environmental Data Rescue Organization (IEDRO), teddy.allen@iedro.org

**About:** ACE is an interactive software package that automates the processing and display of a year-round climatological time series of observed and simulated datasets. The program is freely offered for popular computer platforms, and is a fully interactive software where users substitute command line coding for a simple point and click.

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**InStat**
Clifton Wilson, ACDI/VOCA, cwilsonacdivoca@flowja.com

**About:** InStat Plus is a basic statistics package that includes a range of features to facilitate the processing of climatic data for decision making. InStat can be used to teach statistical concepts, and can also support data analysis across fields. In Jamaica, analyses were prepared regarding the occurrence/length of dry/wet spells and minimum/maximum temperatures; roughly 30 extension officers were trained to use InStat.
Room C2: Capacity Building

MetEd website
Emily CoBabe-Ammann, University Corporation for Atmospheric Research (UCAR), ecobabe@ucar.edu

About: MetEd is a collection of learning resources for the geoscience community, with specific focus on meteorology and climate. Materials include training courses, modules and webcasts that can be used for professional development, training and certifications.
Web link: https://www.meted.ucar.edu

Social Network for Index Insurance Design (SNIID)
Dan Osgood, International Research Institute for Climate and Society (IRI), deo@iri.columbia.edu

About: SNIID is a process meant to ensure the sustainability of an index insurance project, with farmer-driven, science-based educational activities and participatory design and validation processes. The SNIID tool includes software materials, activities, and timelines for a community of experts, partners, and clients to quantitatively develop and update an index, integrating it into complimentary project interventions.

Online Learning Platform - Hydromet and Climate Services: A Value Chain Approach to Project Design
Kanta Kumari Rigaud, World Bank, kkumari@worldbank.org

About: Hydromet and Climate Services: A Value Chain Approach to Project Design is an online learning platform meant to guide future planning and the implementation of hydromet and climate services (HCS) investments. It serves as a practitioners’ tool on how to develop targeted HCS projects, integrate HCS into sector-specific projects, or address user-specific HCS needs, with a consideration of the whole HCS value chain.

Climate Concept for Development - Webinar Series
Walter Baethgen, International Research Institute for Climate and Society (IRI), baethgen@iri.columbia.edu

About: The International Research Institute for Climate and Society (IRI) and the U.S. Agency for International Development (USAID) have developed a new set of training webcasts geared for development professionals who want to be more fluent in the science that underpins their climate change adaptation projects.

Climate Attribution Under Loss & Damage: Risking, Observing, Negotiating (the CAULDRON Game)
Erin Coughlan, Red Cross/Red Crescent Climate Centre, coughlan@climatecentre.org

About: The CAULDRON game is an interactive tool that explores the role of scientific knowledge for decision making. The game is fast-paced - a serious though fun way to examine how information about risks and options can inform decisions. This innovative endeavor is the result of a collaboration between ACE-Africa (University of Oxford, AfClix, University of Reading, the UK Met Office, and partners) and the Red Cross/Red Crescent Climate Centre.
Caribbean Online Risk and Adaptation Tool (CCORAL)

Neville Trotz, Caribbean Community Climate Change Centre (5Cs), utrotz@caribbeanclimate.bz
Tyrone Hall, Caribbean Community Climate Change Centre (5Cs), thall@caribbeanclimate.bz

About: CCORAL is an online platform meant to encourage regional- and national-level decision makers throughout the Caribbean to incorporate climate information into their work. The tool promotes climate-smart development and resilience and can be used by government officials, the private sector, and non-governmental organizations.

Web link: http://ccoral.caribbeanclimate.bz/

mDSS (Mulino Decision Support System)

Valentina Giannini, Euro-Mediterranean Center on Climate Change (CMCC), valentina.giannini@cmcc.it

About: The mDSS is a generic Decision Support System (DSS) developed to assist decision makers in the management of environmental challenges. It can help users to explain challenges, explore possible solutions, facilitate public participation, and extend collaboration among stakeholder groups.

Web link: http://www.netsymod.eu/mdss/

Climate Proofing for Development

Eva Wuttge, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), eva.wuttge@giz.de

About: Climate Proofing for Development facilitates a climate-smart analysis of policies, projects, and programs at national, sectoral, project, and local levels. It incorporates climate information, uncertainty, and the biophysical and socioeconomic impacts of climate change in order to support the identification of appropriate adaptation strategies.


The Caribbean DEWETRA Platform

Adanna Robertson-Quimby, Caribbean Institute for Meteorology and Hydrology (CIMH), arobertson@cimh.edu.bb
Shawn Boyce, Caribbean Institute for Meteorology and Hydrology (CIMH), sboyce@cimh.edu.bb

About: The Caribbean DEWETRA Platform is a real-time data and information system used for hydro-meteorological risk forecasting, environmental monitoring, and disaster risk mitigation. The tool fuses hazard and vulnerability information at different spatial and temporal scales to support disaster management decision making processes.

Regional Information System on Climate and Food Security (SIRCSAN)

Adriana Bonilla, Regional Committee for Hydraulic Resources (CRRH), adriana.bonilla@recursoshidricos.org

About: SIRCAN (Sistema de Información Regional sobre Clima y Seguridad Alimentaria y Nutricional) provides information regarding potential impacts and opportunities surrounding seasonal rainfall variability across Central America. SIRCAN is meant for decisions makers in the field of food security risk management. Eventually, SIRCAN will also collect user feedback, and connect users with information from the Central American Climate Outlook Forum.
tools training sessions

These longer sessions will give participants the opportunity to further explore a number of tools via a hands-on training experience.

Climate Prediction Tool (CPT)
Simon Mason, simon@iri.columbia.edu
International Research Institute for Climate and Society (IRI)
Wednesday, 2:00 - 5:30pm, Room C 4/5

About. The Climate Predictability Tool (CPT) provides a Windows package for constructing a seasonal climate forecast model, performing model validation, and producing forecasts given updated data. Its design has been tailored for producing seasonal climate forecasts using model output statistic (MOS) corrections to climate predictions from general circulation model (GCM), or for producing forecasts using fields of sea-surface temperatures. Although the software is specifically tailored for these applications, it can be used in more general settings to perform canonical correlation analysis (CCA) or principal components regression (PCR) on any data, and for any application.

Pre-training preparation. All participants should bring a laptop computer if possible.

Statistical modeling of malaria in Botswana using the R language for statistical computing
Rachel Lowe, rachel.lowe@ic3.cat
Institut Català de Ciències del Clima (IC3)
Thursday, 9am - 12:30pm, Room C 4/5

About: R is a language and platform for statistical computing and graphics. The tool offers a wide range of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, etc.) and graphical techniques, and its uses are extremely diverse. The objective of this exercise is to learn how to conduct a simple temporal climate and health analysis using the R. This exercise investigates the relationship between malaria
incidence and rainfall in Botswana (1982-2007) and discusses the application of climate forecasts in disease prediction and control. The malaria incidence time series is also used to discuss the long term trends in disease and vulnerability changes.


Pre-training preparation: Prior to the training, please download R and download RStudio via the links available in the ICCS 3 online agenda. All participants should bring a laptop computer if possible.

Quantum Geographic Information Systems (QGIS)
Jennifer Boehnert, boehnert@ucar.edu
National Corporation for Atmospheric Research (NCAR)
Thursday, 2:30 - 4:00pm, Room C 4/5

About. Climate and society are co-evolving in a manner that may place vulnerable populations at greater risk to weather and climate stresses. Understanding societal risks and vulnerabilities to weather hazards and climate change requires integration of spatial information from physical and social sciences. The GIS Program at the National Center for Atmospheric Research (NCAR) has developed research frameworks and spatial methods for the integration of diverse, multidisciplinary datasets, which are both quantitative and qualitative and exist at different spatial and temporal scales. The GIS program at NCAR fosters interdisciplinary science, spatial data interoperability, and knowledge sharing using GIS technology. The goal of our program is to promote and support the use of GIS as both an analytical and infrastructure tool in atmospheric research. Our program has focused on the integration and analysis of climate model output with traditional GIS data, such as, socio-economic and infrastructure data, in order to facilitate interdisciplinary research and decision making. Quantum GIS (QGIS) is an Open Source user-friendly GIS application which provides a number of visualization, data management, data analysis, and map composition tools. GIS is an excellent tool for performing analysis as well as communicate research results.

Pre-training preparation. Please download QGIS before the training; download instructions can be found under the QGIS Training link of the ICCS 3 agenda. All participants should bring a laptop computer if possible.

Caribbean Online Risk and Adaptation Tool (CCORAL)
Keith Nichols, knichols@caribbeanclimate.bz
Caribbean Community Climate Change Center (5Cs)
Thursday, 4:30 - 6:00pm, Room C 4/5

About: CCORAL is an online support system that facilitates climate-smart development by promoting the incorporation of a risk management ethic in decision-making processes throughout the Caribbean. The tool is intended to be used primarily by governmental agencies at the regional and national level responsible for development, planning, and finance, in addition to users in the private sector and non-governmental organizations. Ministries of Finance and/or Planning have been central to the initial efforts to launch CCORAL, though civil society organizations, universities, financial services, development partners, and local communities can also use the platform to inform actions concerning the climate system. CCORAL emerged following extensive consultation with regional stakeholders to ensure authenticity, relevance, and local ownership. It is a direct response to the Regional Framework for Achieving Development Resilient to Climate Change (the “Regional Framework”) and the landmark Implementation Plan (IP). Both were endorsed by CARICOM heads in 2009 and 2012, respectively. CCORAL was developed by the Caribbean Community Climate Change Centre with funding from the United Kingdom Department for International Development (DFID) and the Climate Development and Knowledge Network (CDKN).

More on CCORAL:
http://ccoral.caribbeanclimate.bz/
http://200.32.211.67/M-Files/openfile.aspx?objtype=0&docid=5599
http://200.32.211.67/M-Files/openfile.aspx?objtype=0&docid=5598

Pre-training preparation: All participants should bring a laptop computer if possible.