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HyCRISTAL holds its third Annual Meeting in Kampala, Uganda

HyCRISTAL held its third annual meeting from 23rd – 27th April 2018 in Kampala, Uganda to share project progress with project partners and to develop plans for future work. Delegates from Uganda, Kenya, Tanzania, Ethiopia, the UK and USA attended the event. The meeting was officially opened by Rt. Hon Cecilia Atim Ogwal, Deputy Speaker in the Uganda Parliament, who emphasised the need to plan now for a changed climate in years to come, especially to reduce vulnerability of the region’s poorest people. She urged participants to help Uganda and Africa to tap appropriate research data and knowledge, to help build climate resilient infrastructure. Dr Callist Tindimugaya, Commissioner for Water Resources Planning and Regulation, Ministry of Water and Environment (MWE), Uganda, who gave the second keynote, noted that HyCRISTAL’s work will ensure that climate science informs formulation of Uganda’s plans and policies. The third keynote by Vera Bukachi of Kounkuey Design Initiative provided unique insights on processes found to be successful in improving awareness and reducing flood risk in the Kibera slums of Nairobi, Kenya.

The 5-day meeting highlighted progress made so far, including planned activities by the climate, urban and rural livelihood working teams of the project. The event activities included field visits to Lubigi wetland in the outskirts of Kampala and Bugolobi residential area in Kampala.



Participants of HyCRISTAL Annual Meeting

Breaking News: New HyCRISTAL project on Ethiopia & South Sudan

HyCRISTAL has been awarded a NERC Gap-filling grant for the sub-project "*Where East meets West - Convection and rainfall over Ethiopia and South Sudan under climate change*" to extend the current climate research on drivers of projected climate change in rainfall over Ethiopia and South Sudan using unique new high-resolution simulations from the [IMPALA FCFA project](#). The project will build upon and relate to initial findings from work within HyCRISTAL, [AMMA-2050](#) and [IMPALA](#), with a detailed focus on this interface region between the different consortia. It will be implemented through collaboration between the University of Leeds and [IGAD Climate Prediction and Applications Centre \(ICPAC\)](#). Although focused on the underpinning climate science, the project will work with relevant stakeholders from the region to evaluate implications for decision-making.

ABOUT THE PROJECT

HyCRISTAL is working with stakeholders across East Africa to integrate climate change information into long-term decision making and provide improved understanding of climate change to aid long term planning across the region

HyCRISTAL MEMBERS

- University of Leeds
- African Centre for Technology Studies
- British Geological Survey
- Centre for Ecology and Hydrology (UK)
- Evidence for Development
- Jomo Kenyatta University
- Loughborough University
- Met Office (UK)
- National Centre for Atmospheric Science (UK)
- North Carolina State University
- Stony Brook University
- Tanzanian Meteorological Agency
- Ugandan National Meteorological Authority
- Ugandan Ministry of Water Resources
- University of Connecticut
- Practical Action
- Maseno University
- Makerere University
- Walker Institute
- University of Reading (Africa Climate Exchange)
- IGAD Climate Prediction and Applications Centre

HyCRISTAL is one of the four Regional Research Consortia (RCs) of the [Future Climate for Africa \(FCFA\)](#) program. FCFA is advancing scientific understanding of African climate on medium- to long-term (5-40 year) time horizons and integrating this science to inform long-term climate-resilient development strategies

New data from HyCRISTAL observation stations to improve understanding of climate processes in the region

Through installation of a flux tower in Kericho, Kenya, weather/lake sensors aboard two ships in Lake Victoria, and hydromet network in Kampala, HyCRISTAL is enhancing regional observing capacity to generate new data for evaluating critical model processes and enable monitoring and prediction of marine resources. The ship observations over the lake are already providing new data for the first time that will improve understanding of the dynamics of the lake, including for enhanced fish stock prediction.



A flux tower installed in a tea farm in Kericho, Kenya (left). Dr. Kamazima Lwiza of Stony Brook University discusses with participants of the HyCRISTAL annual meeting how the ship observations are providing new data that will enhance fish stock projections in lake Victoria (right)

Tools for cost effective climate resilient WASH services

The HyCRISTAL's urban pilot, centred on understanding the impacts of long-term climate change on urban water, sanitation and hygiene systems is focusing particularly on the complex situations found in informal settlements in/ around the urban centres of Kisumu and Kampala. Several successful engagement and workshops with partners have been conducted in the pilot sites and have informed gathering of Water, Sanitation and Hygiene (WASH) status data and hot spot analysis. These are being used to quantify how climate change will exacerbate impacts of extreme events on public health systems, that are often already under stress.

Progress have been made in establishing tools for cost-effective climate resilient WASH services for Kampala and Kisumu. These include ongoing development of WASH Infrastructure and Services Planning Platforms (WISE Platforms) to facilitate identification of cost-effective interventions that can deliver effective resilient WASH services under future climate scenarios; and a draft model of urban WASH system for climate risk assessment. Planned activities include completion of WASH system model, development of geo-spatial data platform, development of flood simulations for key climate scenarios, and development of urban guidance for urban centres in Lake Victoria Basin.

Enabling evidence-based decision making at community level to enhance climate adaptation capabilities

HyCRISTAL is responding to the impact of climate change in rural areas of the Lake Victoria Basin by generating data and understanding of the livelihood patterns of rural communities vulnerable to climate change, including factors that limit their sources of livelihood. Rural livelihood measurements are completed in Mukono Uganda and Homa Bay, Kenya with livelihood zone maps generated. These will help determine community level adaptation capabilities, policy implications, and develop realistic scenarios of the potential impact of climate change on specific populations to inform targeted interventions.

Development of the Integrated Database for African Policy makers (IDAPs), a tool to guide policy decisions around rural adaptation which aims to establish a repository of impact-relevant data on rural livelihoods and their interaction with climate is at advanced stages. An initial analytical report is already produced and two WhatsApp (advocacy) groups established for continued discussions. The rural livelihoods work is already informing policy decisions with a Briefing Paper on rural adaptation in Uganda provided to the Deputy Speaker for the Prime Minister on request from the Ugandan Parliament. Planned activities to enable optimum utilization of the tool in decision making for rural adaptation include capacity building of government at different levels on rural adaptation; and linking communities and local initiatives with national processes.

GEOGRAPHIC FOCUS

- Uganda
- Kenya
- Tanzania
- Rwanda
- Burundi
- Ethiopia
- Somalia
- South Sudan

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Climate change impacts on hydrology

HyCRISTAL's work on climate change impacts on water is feeding into its pilots on WASH and rural livelihoods, as well as directly into Uganda MWE's water management plans. Ongoing hydrology analysis in East Africa is examining how mean surface water runoff would change based on a range of model projections. Along with groundwater recharge modelling, the aim is to assess future water availability to meet growing demand. Other works address modelling and impact assessment associated with urban floods; improved understanding of trends in urban groundwater quality; and assessment of possible impacts of changing lake-levels by GIS mapping of lake-shore land use. The associated HyCRISTAL Transport Pilot Project (HyTTP; funded by the UK Department for International Development through the Corridors for Growth Trust Fund administered by the World Bank) is analysing plausible changes of Lake Victoria lake levels under climate change, and sharing these with those developing plans for on-lake transport and port infrastructure.

Tea production in Kenya

The sub-project on Climate information for Tea (CI4Tea) has been working with tea estates and research organisations in Kenya to produce Kenya-tea-relevant climate information and projections of future change which have been shared with users at workshops (CI4Tea is a joint project with [UMFULA](#) and also addresses Malawi). The work has quantified risks of increasing temperatures passing thresholds which damage tea, and is examining possible mitigation strategies.

Improving East African climate change science

HyCRISTAL has developed new understanding of the processes determining the spread in East Africa climate change projections across the different global simulations of climate change (Rowell and Chadwick, 2018). This includes new information of the balance between the roles of uncertainties in remote climate change that are then transmitted to East Africa, and uncertainties in the local response to these drivers. New research is also showing how simulations from the pan-African high resolution (4.5 km) convection permitting regional climate model, CP4-Africa (from [IMPALA](#)) shows a better treatment of physical processes in East Africa than coarser resolution models that are not able to capture. These are expected to fill some of the gaps in understanding of the dynamics of some critical regional and local-scale processes that influence water cycles in East Africa, such as improved representation of the Lake Victoria circulation system, including the timing and severity of storms.

Better ways to communicate climate information to trigger action

HyCRISTAL is adopting the narrative approach as one tool to communicate the new climate information being generated to empower decision-makers to make sense of it and increase the practical value of the climate information. Narratives provide a collection of possible futures, highlighting how things might turn out under climate change, with the futures chosen aimed to capture much of the range of projected future scenarios and impacts. This makes climate information accessible - in terms of relevance, language, style and visual appeal, capturing uncertainty without suggesting that nothing is known. Trialing of provisional narratives at the annual meeting generated almost universal support from partners, and invaluable feedback on content and presentation.

Newly developed Change Frameworks were also trialed at the annual meeting. These frameworks are being adopted to help translate long-term climate adaptation vision into the right, short-term, prioritised actions that not only advance the vision but also deliver incremental value now. Given a future climate scenario, participants were encouraged to work backwards to what must be done in the next 20 years, 10 years, 5 years and now, to prepare for that future. As well as producing necessary actions, the frameworks break down apparently enormous problems to more tractable steps.

Latest HyCRISTAL publications

1. [A new, long-term daily satellite-based rainfall dataset for operational monitoring in Africa](#)
2. [Causes of the Uncertainty in Projections of Tropical Terrestrial Rainfall Change: East Africa](#)
3. [Designing the next generation of climate adaptation research for development](#)
4. [Identification of deficiencies in seasonal rainfall simulated by CMIP5 climate models](#)
5. [Application of scenario-neutral methods to quantify impacts of climate change on water resources in East Africa](#)
6. [Policy Brief: Synthesising Evidence for Targeted National Responses to Climate Change](#)