

## Remote Sensing for Water Resources Management: CWRR Co-hosts UNESCO Training

Thursday 11 April 2019

In Jan 2019, the CWRR, the Institute of Natural Resources (INR) and the University of West England (UWE) hosted an eight-day [international training course](#) in Pietermaritzburg, on the application of satellite remote sensing and earth observation to support water resources management. The course was developed by UNESCO's [International Hydrological Programme \(UNESCO-IHP\)](#) through its [ClimWaR](#) programme for Africa and Latin America. Around 35 participants attended from a variety of institutions in Africa and Asia. Topics covered included an introduction to remote sensing and land cover analysis and Satellite precipitation estimation and networks. The Agriculture Stress Index System and the FAO [Water Productivity Open-access portal \(WaPOR\)](#). Other topics included soil moisture remote sensing and the African Flood and Drought Monitor. UNESCO-IHP has maintained a long-standing relationship with UKZN, where establishment of a Category 2 Centre is in progress. Kershani Tinisha Chetty was the UKZN-CWRR organizer of the course. The CWRR's Dr. Shaeden Gokool and Maqsooda Mahomed rounded off the course with presentations of local case studies. Both delegates and course presenters were impressed by the exceptional quality of CWRR-UKZN postgraduate research. Read more about the course [here](#). By Kershani Tinisha Chetty



On the 20 March, the CWRR Hydrators student club held their first official event to kick start their adventurous club. The event focused on spreading awareness about World Water Day 2019 ahead of the celebration of this annual United Nations observance on 22 March. The event unfolded in the foyer of Rabie Saunders Building, with this year's theme "Leaving No One Behind" being the highlight of the event. True to its vision to empower young people, the hydrators embarked on activities for students to test their knowledge on water resources. Approximately 100 participants graced the event and actively participated in the quizzes and the Sustainable Development Goals game. The hydrators envisage that this awareness campaign will enable students to be more cognizant on the importance of our precious water resources. By Maqsooda Mahomed

## Hydrators: World Water Day 2019

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## The CWRR Newsletter

You are now reading the third issue of the CWRR Newsletter, with news and updates of the achievements and endeavors of CWRR's members, staff, associates and students.



The Newsletter is also available online at [CWRR.ukzn.ac.za](http://CWRR.ukzn.ac.za) For suggestions and queries, please email [MalingaR@ukzn.ac.za](mailto:MalingaR@ukzn.ac.za)

## Upcoming Research on Tap seminars



### ◆ Thursday 25 April

Topic: **Towards a Water-Energy-Food Nexus Index**

Presenter: Gareth Simpson, CWRR PhD candidate and technical director at Jones & Wagener Engineering & Environmental Consultants

Time and venue: **14.30-16.00**, Botany Lecture Theatre, John Bews building

### ◆ Tuesday 30 April

Topic: **Hydrology and climate change**

Presenter: Prof. Stefan Kienzle, CWRR Associate, Department of Geography, University of Lethbridge, Canada

Time and venue: **14.00-15.00**, Room 53, Rabie Saunders building

### ◆ Thursday 30 May

Topic: **Water Use**

Presenters: CWRR project leads: Prof. Colin Everson, Dr. Alistair Clulow, Richard Kunz.

Time and venue: **11.00-12.00**, Room 53, Rabie Saunders building

## Latest publications

- ◆ Water governance impacts on water adequacy in smallholder irrigation schemes in KwaZulu-Natal province, South Africa. [Water Policy 2019](#). Tinashe Dirwai, Aidan Senzanje and Maxwell Mudhara.
- ◆ Irrigation management techniques with anaerobic baffled reactor (ABR) effluent – Effect on rice growth, yield and water productivity. [Water Practice & Technology 2019](#). Toyin Busari, Aidan Senzanje, Alfred Odindo and Chris Buckley.
- ◆ Mainstreaming underutilized indigenous and traditional crops into food systems: A South African perspective. [Sustainability 2019](#). Tafadzwanashe Mabhaudhi, Tendai Chibarabada, Vimbayi Chimonyo, Vongai Murugani, Laura Pereira, Nafiisa Sobratee, Laurencia Govender, Rob Slotow and Albert Modi.
- ◆ Water use of selected grain legumes in response to varying irrigation regimes. [Water SA 2019](#). Tendai Chibarabada, Albert Modi and Tafadzwanashe Mabhaudhi.
- ◆ Modelling and measurement of water productivity and total evaporation in a dryland soybean crop. [Agricultural and Forest Meteorology 2019](#). Nicholas Mbangiwa, Michael Savage and Tafadzwanashe Mabhaudhi.
- ◆ Cereal production trends under climate change: Impacts and adaptation strategies in Southern Africa. [Agriculture 2019](#). Luxon Nhamo, Greenwell Matchaya, Tafadzwanashe Mabhaudhi, Sibusiso Nhlengethwa, Charles Nhemachena and Sylvester Mpandeli.
- ◆ The effect of experimental fires on soil hydrology and nutrients in an African savannah. [Geoderma 2019](#). Tercia Strydom, Eddie Riddell, Thomas Rowe, Navashni Govender and Simon Lorentz.
- ◆ Degradation of Kilombero Valley Ramsar wetlands in Tanzania. [Physics and Chemistry of the Earth, Parts A/B/C 2019](#). Munishi-Kongo, Subira and Graham Jewitt.
- ◆ Part of Volume 1: Setting the development nexus scene of South Africa. Water: a limiting and enabling resource in the water-energy-food nexus. [CSIR Briefing note March 2019](#). Inga Jacobs-Mata and Richard Meissner.

## CWRR at WEF Nexus Dialogue

The CWRR was well represented at the “Dialogue on the Status of the WEF Nexus in South Africa” held at the Water Research Commission in Pretoria on the 22 Feb. Drs Tafadzwa Mabhaudhi, Aidan Senzanje and Vimbayi Chimonyo from UKZN and Gareth Simpson from Jones & Wagner attended and made presentations based on the completed short-term WRC-funded project K5/2790. Mabhaudhi presented on an overview of the WEF nexus in South Africa, Senzanje on developing a framework for the WEF nexus in South Africa and Simpson on developing a research agenda for the WEF nexus in South Africa. Prof. Michael Jacobson of Penn State University gave a presentation on Africa WEF Nexus Initiatives, Networks and Partnerships in which he discussed the various activities that Penn State are engaged with in countries such as Germany, Ethiopia and Zambia. Jacobson indicated that he was looking for linkages in South Africa as well on WEF nexus research. The meeting was attended by almost 50 representatives from different sectors that included; universities, government departments, non-governmental organizations (NGOs), newspapers, municipalities, consultants, and research institutions. *By Dr. Aidan Senzanje*

## CWRR work among Top 10 cited articles

Published in 2014, Centre members Dr. Sabine Stuart-Hill, Dr. Michele Toucher and their co-authors' article "[Climate change impacts and adaptation in South Africa](#)" was one of WIREs Climate Change's [top ten most cited articles](#) during 2018. We congratulate them for such achievement!

## Development and Assessment of an Integrated Water Resources Accounting Methodology for South Africa: Phase 2

A summary of the completed WRC Project K5/2512: Increasing water scarcity requires more effective and efficient use of water resources. Water accounts provide standardized summaries to quantify, describe, understand, compare and communicate the status of water resource systems. An integrated water resources accounting methodology was developed using ground-based measurements, remote sensing and hydrological modelling to provide catchment-scale estimates of water stocks, flows and sectoral water use. The accounting sheets were based on the Water Accounting Plus framework. The methodology was applied within the uMngeni, uThukela and Breede Catchments. The methodology is at a sufficiently mature stage of development to consider applying nationally, though there is scope to improve the accuracy of the accounts. *By Dr. David Clark*