



media release

World Water Day, 22 March 2024:

As SA battles increased interruptions of water services, NSTF honours World World Water Day and the Centre for Water Resource Research, University of KwaZulu-Natal

South African news reports in March 2024 have been awash with news of water services drying up, while facing the highest temperatures for late summer on record. (See the recent NSTF Executive Director's Opinion Piece titled 'Water services take a nosedive').

World Water Day, 22 March: Water and climate change are inextricably interconnected. Climate change causes droughts, rising sea levels and creates abnormal precipitation patterns, which exacerbate the global water crisis. World Water Day was proclaimed by the United Nations General Assembly (UNGA) in 1993 and is held annually on 22 March to highlight the importance of freshwater and advocate for the sustainable management of freshwater resources. The 2024 theme is 'Water for Peace', which focuses on the critical role water plays in the stability and prosperity of the world. This significant day raises awareness of the 2.2 billion people living without access to safe water. It is about taking action to tackle the global water crisis. A core focus of World Water Day is to support the achievement of Sustainable Development Goal (SDG) 6: Water and sanitation for all by 2030. **This date also comes directly after the South African Human Rights Day (21 March) every year – a salient reminder that water is a human right.**

Prof Jeff Smithers and his team at the [Centre for Water Resource Research \(CWRR\)](#) at the University of KwaZulu-Natal (UKZN) won the prestigious 2023 [NSTF-Water Research Commission \(WRC\) Award](#) for providing a centre of excellence for cutting edge applied and interdisciplinary research and postgraduate training in water resources research and capacity building.



They have done detailed modelling of water systems to estimate the impact of different tree species on runoff, and on the amount of water that fills up dams. Smithers is the Director of the CWRR; and Umgeni Water Chair in Water Resources Management, Innovation and Research, at the School of Engineering, College of Agriculture, Engineering and Science, UKZN.

Addressing climate change impacts: An estimated 3.6 billion people worldwide now live in areas that are potentially water scarce at least one month per year. According to the [UN World Water Development Report 2020](#), this number will increase to 5.7 billion people by 2050, creating unprecedented competition among water users. Climate change negatively affects freshwater ecosystems by altering streamflow and water quality, posing risks to drinking water. The sources of the risks are increased temperature, increases in sediment, nutrient and pollutant loadings due to heavy rainfall, reduced dilution of pollutants during droughts and disruption of treatment facilities during floods. It is also likely to increase the frequency of droughts in many presently dry regions over the coming decades. This is likely to increase the frequency of flash hydrological droughts (less surface water and groundwater) in these regions. In the colder regions of the world, melting snowpack means that less water is reserved as ice, thus leading to drier conditions which affect communities that rely on snowpack to refill their drinking water supplies.

Climate change also alters the frequency and intensity of rainfall, causing significant impacts on agriculture and food production. While food stressors affect all people, women, rural communities, and subsistence farmers are disproportionately affected. In regions where basic food production and hunger are significant concerns, addressing climate adaptation is essential to reduce long and short-term threats to food security.

There is an urgent need to formulate water policies and action plans that adopt an integrated approach to climate change and water management to achieve the SDGs and the Paris Agreement. Incorporating Western and traditional knowledge systems to build climate adaptation initiatives such as protecting aquifers through Managed Aquifer Recharge (MAR). MAR is also an effective measure for reducing the risks of extreme rainfall run-off and to store fresh water in the soil for the dry season. Conserving wetlands, which act as carbon sinks and buffers against flooding and other extreme weather events, is also an essential measure.

The Centre for Water Resources Research (CWRR): To commemorate this significant day, the NSTF celebrates the achievements of Prof Smithers and his team at the CWRR. Prof Smithers says: "I think all of us recognise that water is probably the most critical resource in South Africa". Recognising that agriculture is the biggest user of freshwater supplies, the CWRR pays special attention to modelling water systems such as irrigation.



He said: "We have for a long time been living with demand for water exceeding the supply and availability, and this has been exacerbated by deteriorating water governance and maintenance of water infrastructure, such as distribution networks and wastewater treatment works".

At the CWRR we are trying to narrow that gap, by developing improved water management practices and governance". The CWRR had previously done this research to investigate the connection between runoff, planting of certain tree species and dam waters. This research on the impacts of afforestation on runoff was also used by the Department of Water and Sanitation (DWS) to determine the charges for stream flow reduction caused by the forestry industry. They have also done extensive research on the impacts of climate change on crop yields and catchment areas.

Prof Smithers said: "There's a lot of uncertainty given the range of predictions that are coming from different climate change models". Several postgraduate students have worked with the CWRR on the projects, garnering valuable expertise in hydrology and other related earth sciences. Prof Smithers said that there has been a lot of new knowledge generated and capacity building when it comes to working with the students, which gave rise to new insights and understanding in water management research.

"There's a lot of uncertainty given the range of predictions that are coming from different climate change models."

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References/Sources:

- [UN_Water_PolicyBrief_ClimateChange_Water.pdf \(unwater.org\)](#)
- [Water – at the center of the climate crisis | United Nations](#)
- [Climate Impacts on Water Resources | Climate Change Impacts | US EPA](#)
- [Water and climate | SIWI - Leading expert in water governance](#)

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- is a broadly-representative stakeholder body for all science, engineering and technology (SET) and innovation organisations in South Africa
- gathers stakeholders around burning issues of national and global interest, across the public and private sectors, including matters of public policy
- includes a network of professional societies in SET and STEM education (STEM = science, technology, engineering and mathematics) - the NSTF proSET membership sector.
- recognises, awards and profiles the outstanding contributions of individuals and groups to SET and innovation through the prestigious NSTF Awards
- runs and supports collaborative projects and youth outreach, including recognition of top performance in mathematics and science, role modelling, bursary and STEM career information
- runs and supports the STEMulator.org which attracts youth and educators to Explore>Discover>Learn the world of STEM including careers. (Established by NSTF proSET)

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