

## **SUSTAINABILITY OF CLIMATE: THE CHALLENGE TO AGRICULTURE OF PRESENT AND PROJECTED FUTURE CLIMATES**

**Roland E. Schulze, Professor Emeritus of Hydrology  
Centre for Water Resources Research, University of KwaZulu-Natal  
Pietermaritzburg Campus**

In terms of natural capital, South Africa's climate, and with that its agriculture and water sectors, is anything but sustainable under present conditions, being characterized by generally low rainfall which is highly variable in space and over time, coupled with extremes of intense floods and droughts. In agriculture these overall primary attributes of climate have to be translated into more important secondary characteristics such as heat units, heat waves, chill units, frost damage and critical rainfall and temperature thresholds either being exceeded or not met, all of which manifest themselves in variable crop yields. Additionally, tertiary responses such as fire occurrence, pest and disease occurrences and livestock reproduction are affected, with repercussions down the entire agricultural value chain. Examples of all of the above are illustrated for South Africa, not only for present climatic conditions, but also for projected future climates under global warming. The presentation concludes with an illustration of sustainability issues around climate using the food-water nexus approach and a plea for a more integrated approach between government, science and the practitioner for a more sustainable future.

+