

**Dr Nicholas Scroxtton**



***Constraining past moisture variability in sub-Saharan Africa to improve future projections and enhance resiliency under a changing climate***

My research focuses on improving our understanding of rainfall variability in sub-Saharan Africa. Smallholder farms in countries such as Malawi and Madagascar are particularly vulnerable to changes in rainfall. As the global climate changes, shifts in the amount of rain falling, the timing of seasonal rainfall, and the frequency of droughts and floods will have a large influence on the ability of farmers in the developing world to feed themselves and their communities. Development NGOs such as Self-Help Africa work towards improving agricultural practices to improve crop yields and reduce the dependency on humanitarian assistance in times of climate stress. Are the current agricultural strategies used by NGOs suitable for the conditions in ten or twenty years' time when local rainfall may be very different to today? My CAROLINE fellowship seeks to investigate how rainfall is already changing in sub-Saharan Africa. What are the likely changes that will happen in the future? And what can we do to help climate proof development strategies?

To achieve these aims, I work with climate datasets from the recent past, such as rain gauge data, satellite estimates of rainfall, and climate model outputs. I am looking for any developing trends in rainfall patterns and whether these are likely to continue into the future. At University College Dublin, I combine this work with geochemical analysis of stalagmites, whose chemical composition acts as a gauge of past rainfall. In partnership with Self Help Africa, I will use these results on how rainfall is changing to produce useful, agriculturally relevant metrics. This will help improve the climate preparedness of their strategies, ensuring a more sustainable approach to development activities in sub-Saharan Africa.

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