Climate trends and food security in southern Africa

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Agriculture is regarded as the most important sector in the economies of most African countries and is an important contributor to food security over the continent. Approximately 70% of Africa's population depends on this sector for their livelihood. Important to note is that agricultural activities in most of Africa are subsistence in nature with a high dependence on temperature and rainfall. The continent is particularly susceptible to changes in the climate system, because it has some of the world's poorest nations with little access to high technology farming, which would hamper their ability to adapt to a rapidly changing climate. Climate change associated with prolonged drought is particularly one of the most serious hazards that face the agricultural sector of the continent. The staple food for the region, maize, is particularly susceptible to such drought. Since agriculture hinges in rain fed, prolonged droughts might have a devastating effect on agriculture and food security in Africa, with conditions that will affect the majority of the continent's population.

Early detection of any current or projected changes that might occur in the climate of Africa is essential for early planning, for the introduction of adaptation strategies and for sustaining food security. It is therefore important that scientists use all the measures available to monitor climate and to generate possible future climate change scenarios.

This talk gives an objective overview of what scientists currently know about climate trends over Africa (in particular southern Africa), and of what might happen to temperatures and rainfall in future as a result of both natural climate variability and anthropogenic (human induced) greenhouse warming. It will be indicated that there is strong agreement amongst scientists that anthropogenic greenhouse warming might lead to increased air temperatures, although great uncertainty still exists about projected rainfall changes. The talk will therefore focus more on rainfall over southern Africa in an effort to produce some advice of what changes might be expected in the near future.

It is indicated that the Zimbabwe-Zambia-Malawi region that might suffer most from climate change since it was found that this region already experiences prolonged droughts, and it is envisaged that these droughts, associated with increasing surface temperatures, might prevail in future. This might result in a reduction of maize yield, which might pose a threat to food security in the region. The natural dry west of southern Africa might become slightly drier, while the far eastern (from Mozambique northwards) might expect to receive more rain in future. Signals for South Africa are mixed with little evidence of strong consistent rainfall trends in observations and climate change simulations, although some studies indicate a shift in season.