

Remote sensing vs in-situ measurements

Satellite estimated precipitation and food security

Precipitation measurement by remote sensing is one of the main goals of several joint projects around the world. But would it be possible to release reliable alerts for food shortage suffering regions and countries one day? Scientific research programmes show some hopeful results regarding long time periods as months or years. Weekly or even daily values with stronger precipitation events are often more problematic due to under- or over estimation of precipitation (M. L. M. Scheel et al., 2011).

During mostly dry periods – as 2015/2015 in the southern Africa regions for example – the satellite estimated precipitation values show some helpful results concerning food security: one can sum up that – if low values result from the remote sensing technology – the effectively occurred precipitation tends to be very low too.

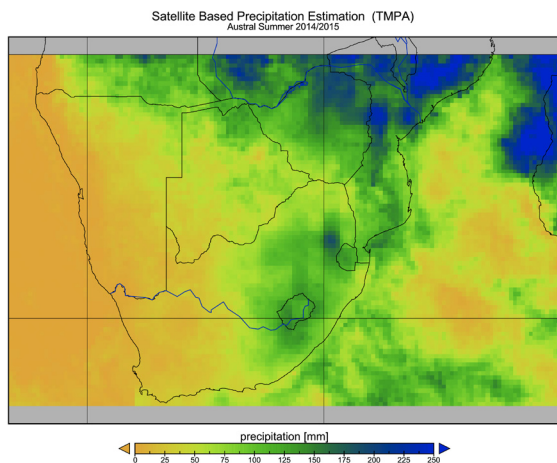


Fig. 2 Precipitation amounts for Dec/Jan/Feb 14/15 in South African regions estimated by remote sensing measurements (Data: TMPA/NASA, Chart: Meteodat)

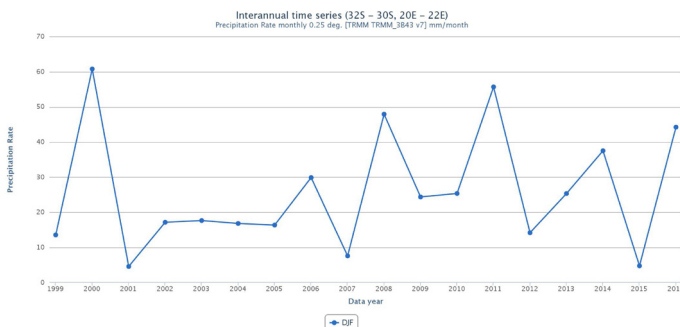


Fig. 3 Estimated monthly precipitation rates for the central parts of South Africa. 2015 appears as one of the driest years since 1999 (Data: TRMM/NASA, Chart: Meteodat)

Extended droughts thus show a fair or even strong correlation to the estimations of the Multi-satellite Precipitation Analysis (TMPA, based on TRMM). Since food security in developing countries is often closely related to the amount and distribution of precipitation such remote sensing products can play a crucial role especially in areas with deficient covering by precipitation gauges. In the field of such evidences, Meteodat GmbH keeps trying to make its contribution for the increase of food security in such drought-stricken regions.

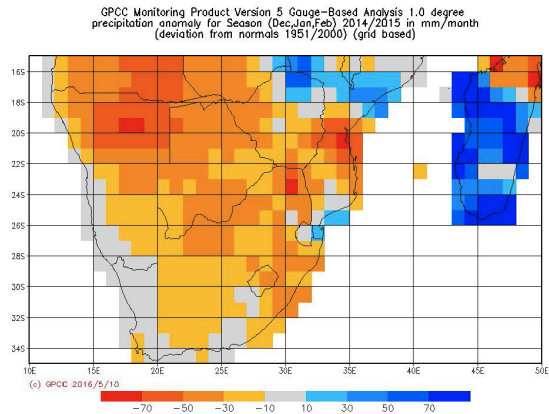


Fig. 1 Gauge based Precipitation Anomaly for Dec/Jan/Feb 14/15 in South African regions (Data: GPCC/NOAA, Chart: Meteodat)

Figures 1 and 2 visualize this finding. The unusually dry austral summer concerned especially both the northern parts of South Africa and the southern regions of Zimbabwe. The satellite based precipitation analysis in Figure 2 shows a high correlation to the gauge based measurements.

Food security and Meteodat GmbH

Meteodat GmbH looks back on many years of experience with analysing remote sensing data in the field of agricultural advisory services.

Several projects were implemented in – for example – India and Peru in cooperation with local partners, NGOs and governmental Organizations like the Swiss Development Corporation. The achievement of food security in drought-stricken regions for sure is also one of the main goals of the UN/WHO.

Projects concerning this topic would be helpful to reach this aim, facing the fact that agriculture still remains the largest employment sector in most developing countries.

Further information:

- <http://www.who.int/trade/glossary/story028/en/>
- <http://www.meteodat.ch/pdf/TRMM.pdf>

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