CASE STUDY 5

CROP MONITORING IN ERITREA

SUMMARY

Title
Crop monitoring in Eritrea

Service
Bulletins of crop yield forecasts

End users
- Local authorities in the region concerned (Eritrean institutions, national agencies)
- European policy entities and development funds providers such as DG DEVCO

Intermediate users
European Commission Joint Research Centre (EC-JRC)

Application(s)
- Anomalies of meteorological and vegetation conditions for Eritrea in the Kremti season (main annual harvest)
- Climate monitoring

Models used
ECMWF reanalysis data for precipitation

Climate data records used
Time-series and climatologies for precipitation and NDVI

Satellite observations used
- Satellites (and other) data used in ECMWF reanalysis
- Metop, SPOT-VGT, AVHRR (for NDVI), PROBA-V

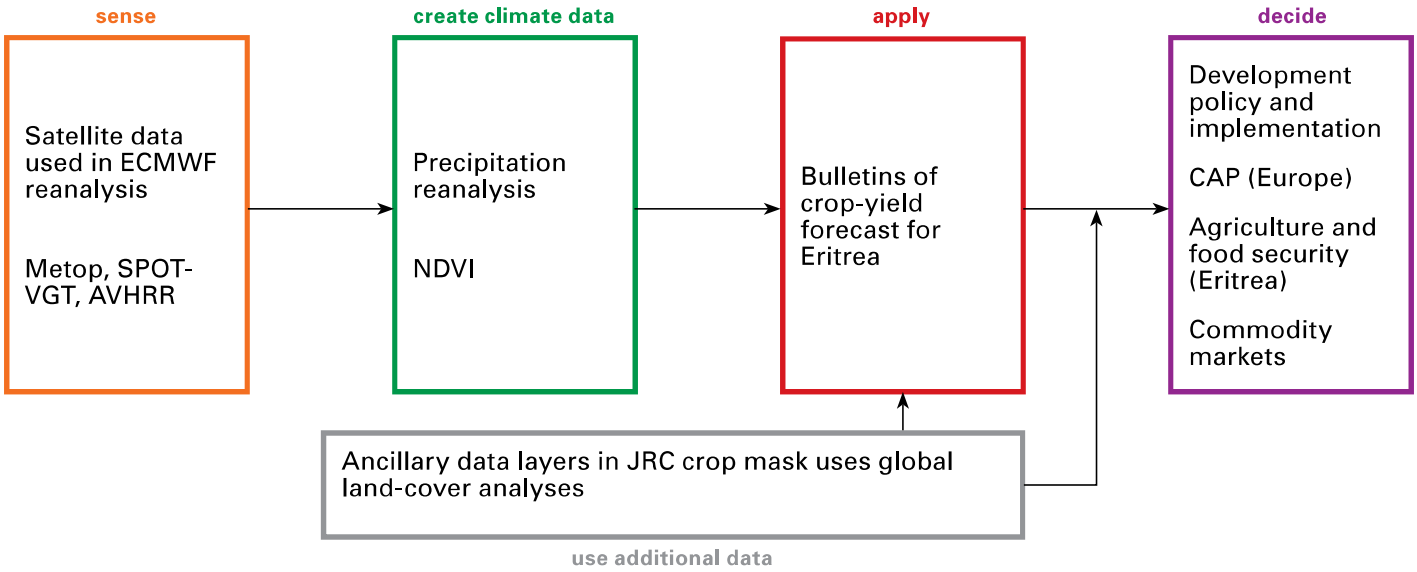
Agencies that produce records
- All satellite operators providing data to ECMWF
- EUMETSAT (Metop), NOAA (AVHRR), SPOT-Image (SPOT-VGT)
- EC-JRC (crop products)

Sustainability of service (demonstration or ongoing)
Sustained service for European users; ad-hoc service to third-party countries

NEIL PALMER (CIAT)

A farmer at work, Eritrea

INFORMATION FLOW



DESCRIPTION

The Monitoring Agricultural Resources (MARS) Unit of the European Commission Joint Research Centre has been developing and running a crop-yield forecasting system since 1992 in order to provide timely crop production forecasts at European level. The Unit, also known as the MARS Crop Yield Forecasting System, monitors crop vegetation growth (including cereal, oil seed crops, protein crops, sugar beet, potatoes, pastures and rice). It also monitors the short-term effects of meteorological events on crop production, and provides seasonal yield forecasts of key European crops. The Unit's activities contribute to the evaluation of global production estimates for crops such as wheat and maize and support the management decisions of the Common Agricultural Policy (CAP). The MARS Crop Yield Forecasting System is a complex, integrated analysis tool, comprising remote sensing and meteorological observations, meteorological forecasts, agrometeorological and biophysical modelling, and statistical analysis capabilities.

While the crop-yield forecasts for Europe are produced on a regular basis, other main producing areas of the world receive increasing attention, since global commodity markets increasingly influence the CAP. Therefore, the MARS Crop Yield Forecasting System is being extended in its simulation capacities to methodologies tailored to other crop-producing regions. Its crop-yield forecasts are also being gradually extended towards key regional production areas across the world.

The present example focuses on Eritrea. The country's economy largely depends on subsistence agriculture, with two thirds of the population earning their living through subsistence farming and pastoralism. This makes them vulnerable to climate variability.

There are three distinct rainy seasons in Eritrea: Bahri rains from December to February in the eastern coastal lowlands, Azmera rains between March and May in the highlands (Debub and Maekel regions) and the Kremti rains from June to September over the whole country apart from the coastal plain. The Kremti crops form the basis of the main annual harvest.

Bulletins of crop-yield forecast for Eritrea provide a rapid overview of the meteorological and vegetation conditions of the Kremti season, focussing on cultivated areas, due to the Kremti's importance for agricultural production. Major crops that grow during that season include wheat, barley and teff in the highlands, maize at intermediate altitudes, short-cycle sorghum and pearl millet at lower altitudes and sesame, which is mainly grown in the Gash Barka region.

The analyses based on satellite imagery and meteorological data (Figure 1) indicate above-average vegetation conditions and no major concerns for the 2014 Kremti season. Moreover, the abundant and well-distributed rains throughout the season could ensure the first good harvest in years. Harvesting is expected to start normally at the beginning of November with a good production forecast for the main agricultural areas.

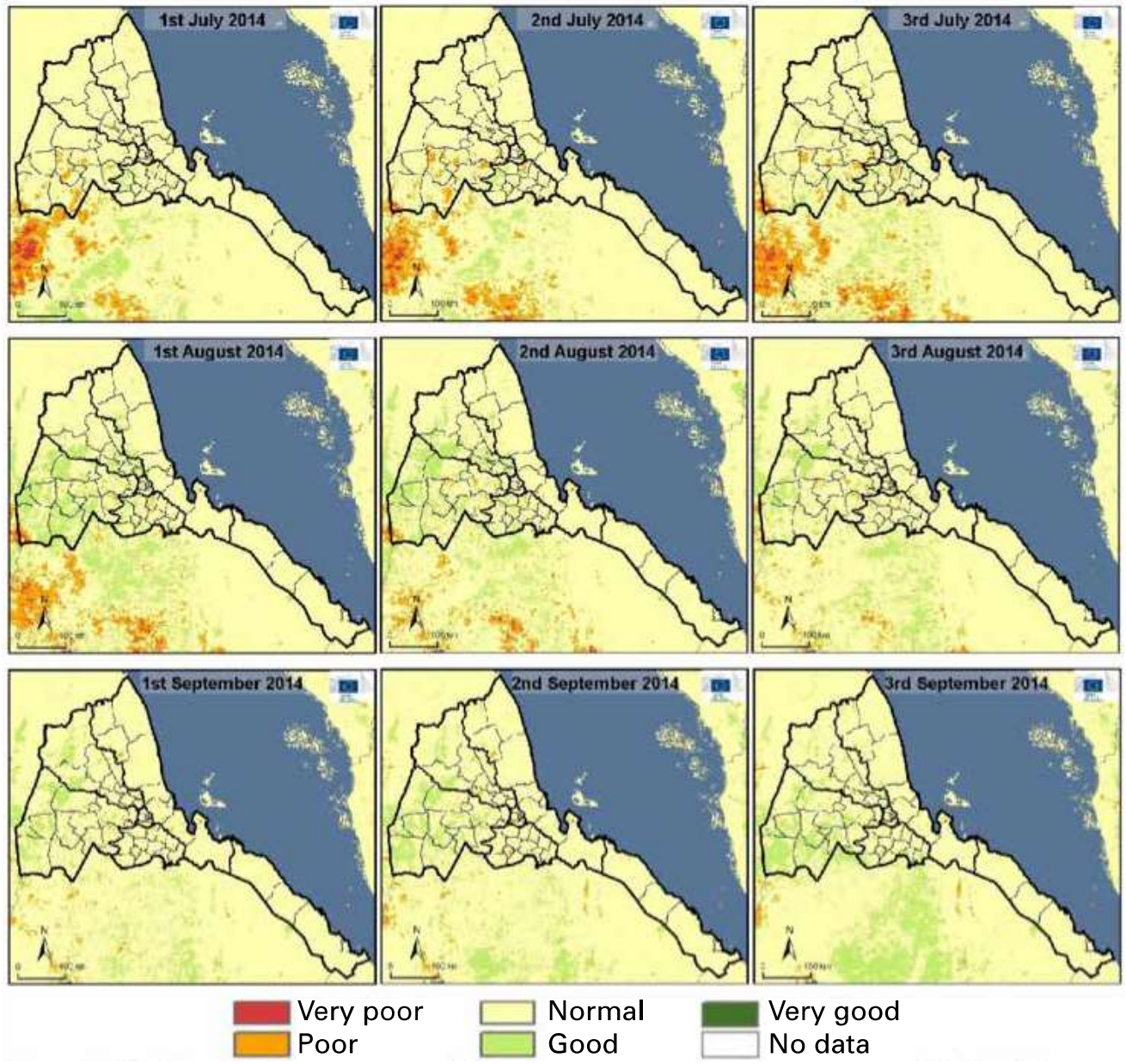


Figure 1. Monthly vegetation conditions (NDVI) compared to the historical average (2007–2013). "1st July 2014" denotes the first 10 days of July 2014, "2nd July 2014" the second 10 days of July 2014, etc.

Source: METOP-NDVI