

## **The Multiple Roles of NASA Data in Livelihood Based Early Warning of Food Security Crises**

Molly Brown, Jorge Pinzon, Richard Choularton, Tanya Boudreau  
SSAI NASA Goddard Space Flight Center

[molly.brown@gsfc.nasa.gov](mailto:molly.brown@gsfc.nasa.gov)

For nearly two decades, the United States' Agency for International Development's Famine Early Warning Systems Network (FEWS NET) has advised local, national and international partners on African food security issues. During the past four years, this program has expanded to two more regions and will soon be available to those countries worldwide who request the program. A founding partner of the program, NASA has contributed real time satellite data for rangeland health, cropped area and rainfall estimation. FEWS NET has implemented a new approach to quantifying food security that incorporates food prices, wealth ranking and levels of vulnerability with agricultural production information. This integrated approach, called a livelihoods-based food security early warning system, is an analytical framework designed to help decision-makers understand the effects of different 'shocks' on household-level livelihood options. Based on a food economy approach, the livelihoods analysis is used in a broader early warning system that organizes information about people living in rural and urban households and, when necessary, connects it to decision makers providing different types of assistance in support of their lives. The quantitative representation of the different food and cash income options available to different types of households in a particular geographic area is typically presented in a baseline report and a food economy spreadsheet designed to facilitate food security outcome analysis. NASA data can be used in each level of the food security analysis once the baseline study on food economy has been conducted. Satellite derived products contribute to estimates of the area of food crops planted in a particular year (LandSAT data), monitoring of crop health throughout the season (TRMM), estimates of the percent of normal production harvested (MODIS, AVHRR), development of rangeland depletion curves (MODIS, TRMM), and inputs to models projecting food price changes over the coming year (AVHRR, SPOT Vegetation). This paper will summarize the livelihoods-based food economy approach, and describe the contributions of NASA satellite data to early warning of food security crises worldwide.