Session title: **Progress in the Use of Earth Observation for Fighting Hunger**

When? *Sunday, February 21, 2010: 3:30 PM-5:00 PM*

Where? *Room 8 (San Diego Convention Center)*

How Does Earth Observation Support Decision-Making for Food Security?

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Functional decision making requires to be properly informed and to be based on solid evidence. However, too often information is developed in isolation and decisions are taken in absence of clear and reliable information. Integration of climate data, economic analysis, nutritional and health data is becoming a basic condition to inform policy makers on food security.

The recently developed Integrated Phase Classification (IPC) is a standardised scale that combines food security, nutrition and livelihood information into a clear statement about the nature and severity of a crisis and includes implications for strategic response. It is primarily a tool for analyzing and classifying the severity of food security situations at the national and sub national levels (usually based on livelihood zones). All analysis is backed up by both quantitative (ex. mortality rates) and qualitative evidence (ex. widespread conflict, asset stripping). The IPC is also a process whereby key food security organizations and the national government literally sit together to look at the evidence and come to a common consensus on the severity of a crisis. This makes setting priorities and planning a well coordinated response easier.

Moreover, a new information technology platform will be presented: the GIEWS workstation. It is based on the state-of-the-art open-source technologies designed to manage food security related information and to serve as main information management tool at global, regional and national levels. The application handles different types of information such as remote sensing data, GIS layers, databases and texts. It is structured as a network that connects individual installations of the application to facilitate information sharing using a peer-to-peer protocol. The Workstation includes analytical tools to visualize and analyze data as maps, tables and charts and it is used international organizations and national institutions to monitor changes of environmental and socio-economic parameters that may impact on food security. Remote sensing data such as SPOT NDVI and other global and regional products are regularly used for crop and vegetation monitoring.

Both tools have been developed in collaboration with several institutions (including WFP, JRC, Save the Children US and UK, Care international) and funded by key donors such as the European Union, DFID, USAID and others.

Crop Monitoring for Food Security from Space: Challenges, Progress, and Limitations

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The importance of crop monitoring activities has dramatically increased over the last years, in particular following the 2007-2008 food price crises. A global perspective and data infrastructure is required to address highly differentiated agricultural realities ranging from food insecure/drought-prone areas to emerging countries and key commodity exporters. The European Commission's Joint Research Centre (JRC) is playing a substantial role in developing innovative methods for crop monitoring using satellite data and agro-climatic models. The early warning and crop yield prediction capacities of the JRC support the European Commission in planning food aid and in reinforcing existing information systems in regions stricken by food shortages, such as the Horn of Africa. More than 40 regional bulletins are published each year by the JRC providing qualitative and quantitative yield forecasts. JRC bulletins are freely available online at http://mars.jrc.ec.europa.eu/mars and support decision-making within the European Commission, Governments and International organizations. Large efforts have been dedicated over recent years to improve coordination among the main international actors in food security information management such as the Food and Agriculture Organization (FAO), the Famine Early Warning Systems Network (FEWSNET), and the European Commission. In this context, the development and implementation of the Integrated Food Security Phase Classification (IPC) is a milestone in bringing scientific results closer to the decision making process. The IPC, recently developed by a partnership of the main international actors in Food Security, is a standardised scale that integrates food security, nutrition and livelihood information in

a clear statement about the nature and severity of a crisis. It provides a common language and reference on the basis of which all stakeholders can agree on the analysis of the food security situation and possible response options. Examples will be shown of the role of Earth Observation (EO) products in drought monitoring and yield forecasting in comparison with other systems and under difficult circumstances. Discussion inputs will be provided on the advantages and present limitations of remote-sensing derived indicators for providing timely and accurate information to decision makers. Other food-security related developments not directly based on EO products will also be discussed, such as the Post Harvest Losses Information System, an innovative system developed under JRC coordination for calculating possible cereal deficits.

Extended Satellite Crop Monitoring in Response to the Global Food Crisis
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The Famine Early Warning Systems Network (FEWS NET) is a decision support system sponsored by the Office of Food for Peace of the U.S. Agency for International Development (USAID). FEWS NET identifies the times and places where aid is required by the most food insecure populations of the developing world. The livelihood systems of these populations are, to a great extent, based on subsistence agriculture and pastoralism, and are highly climate sensitive. Since station networks are sparse in the countries monitored, FEWS NET has a tradition (dating to 1985) of reliance on satellite observations to support the food security assessment activities of analysts in Africa, Asia, Central America, and the Caribbean. Vegetation, rainfall, snow pack, and evapotranspiration are monitored for rainfed and irrigated crop lands in selected countries of the developing world. Identification of anomalies in plant vigor and/or water availability at key places and times of the year enable early detection of agricultural drought. Interpreting these anomalies with an understanding of livelihood systems, while applying a convergence of evidence analytical approach, can significantly reduce ambiguity that might inhibit a decision to commit aid resources. Examples from Central America, Africa, and Afghanistan will be reviewed and highlighted. As a consequence of the alarming spike in global food prices in 2008, food insecurity has become a potential threat in a many more countries than traditionally monitored by FEWS NET. Thirty to fifty additional countries have been identified for monitoring of crop growing conditions. It will not be possible to establish in-country offices with resident food security analysts (the current practice) in so many new places. Satellite monitoring will therefore take on increased importance, as input to a system designed to detect the first indication of adverse agricultural outcomes in a highly automated fashion. Upon detection, human analysts will follow up with direct examination of data and information to assess the situation. During 2009 and 2010, USGS, NOAA, and NASA are establishing expedited procedures for processing of satellite data and model runs, and web delivery of results. The components of this new system will be described, and progress to date reported.