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## Commodities and Products

# The FAS Crop Explorer: A Web Success Story

By Harold Kanarek

One of the most prominent additions to the FAS Web site over the last couple of years has been the development of a Web-based analytical tool called Crop Explorer. Crop Explorer provides customers with timely and accurate crop condition information on a global scale unavailable from any other source.

Developed and managed by FAS' PECAD (Production Estimates and Crop Assessment Division), the Crop Explorer Web site features near-real-time global crop condition information based on satellite imagery and weather data. Thematic maps of major crop growing regions depict vegetative vigor, precipitation, temperature and soil moisture. Time-series charts show growing season data for specific agro-meteorological zones. Regional crop calendars and crop area maps are also available for selected regions of major agricultural significance.

*Knowledge of water levels in a region is crucial for the people who plan irrigation and food assistance.*



*For example, the amount of ground surface "greenness" depicted by Crop Explorer's color-coded maps identifies droughts or excessively wet conditions.*

### How Crop Explorer Came About

Crop Explorer began in the wake of the destruction Hurricane Mitch ravaged on Central America in 2002. PECAD used seed money from USAID (the U.S. Agency for International Development) to develop a crop forecast tool to monitor agricultural production in Central America in Mitch's aftermath. PECAD expanded the forecasting tool for global crop monitoring, and it became Crop Explorer, a Web site that provides free, easy-to-interpret crop condition information for all major agricultural regions in the world.

The underlying structure of Crop Explorer was built using years of experience and expertise from PECAD's crop analysts. Their knowledge of in-country conditions was essential for the creation of the agro-meteorological zones.

Major zones of Crop Explorer are North America, Central America, South America, Europe, the former Soviet Union, the Middle East, Africa, Asia and Oceania. These zones are further subdivided by geographical region. For example, the Asian zone is split into Eastern China, South Asia, Southeastern Asia, Central Asia and the Korean peninsula.

### Crop Explorer Today

Today Crop Explorer automates the processing and extraction of specific crop condition indicators from an immense amount of data. Crop Explorer's maps and charts are compiled using soil and climatic data and satellite imagery. The near-real-time estimates of indicators such as precipitation and soil moisture are displayed on maps and charts to forecast crop production.

There are maps and charts for temperature, precipitation, crop modeling, soil moisture, snow cover and vegetation indices. Indicators are further defined by crop type, crop region and growing season. Every 10 days, more than 2,000 maps and 33,000 charts are updated on the Crop Explorer Web site.

### Partnership with NASA

A partnership with NASA (the National Aeronautics and Space Administration) provides satellite imagery and lake and reservoir surface elevation estimates. Satellite imagery is posted to the Crop Explorer Web site twice a day.

"The satellites were designed with oceanographic objectives in mind, so the fact that they can be used for lakes and rivers is an added bonus," said Charon Birkett, a University of Maryland researcher based at NASA's Goddard Space Flight Center in Greenbelt, MD. It was Birkett's work with satellites and inland water sources that caught USDA's interest.

Water level data for many lakes can be hard to get. Lakes may be located within inhospitable regions. Terrain may make it hard to install water level gauges and some countries do not have needed equipment or staff to regularly record measurements. Previously, information on water levels in remote lakes in Africa and Asia, for example, may have been available only if a researcher happened to be passing by the area.

"Now we have a dataset that gives you a global picture of irrigation capabilities," said Brad Doorn, remote sensing technical coordinator in PECAD. "It's very much a night-and-day perspective as it relates to global irrigation potential. Satellite records of lake and reservoir water levels give a good indication of whether there is going to be a systematic or major problem in water supply."

This type of information is especially important for food aid partners, who must budget ahead for food needs and distribution.

Lake and reservoir surface elevation maps are updated every 7-10 days. Time-series charts of lake height variations are usually accurate to within 10 centimeters.

### Who Uses Crop Explorer

Crop Explorer is a primary source of agricultural market intelligence for decision makers. Farmers, agribusinesses,

### The Crop Explorer Interface

Crop Explorer serves as a primary data source on agriculture and farming at two other U.S. government GIS Web sites:

The Geospatial One-Stop:  
<http://www.geodata.gov/gos>

NASA's Global Change Master Directory:  
<http://gcmd.gsfc.nasa.gov>

The FAS Crop Explorer Web site:  
<http://www.pecad.fas.usda.gov/cropexplorer>

commodity traders and researchers, as well as federal, state and local government agencies, find Crop Explorer invaluable in making reliable forecasts about production, supply, demand and food assistance needs. It is also widely used by the remote sensing and GIS (geographic information systems) industry. Visits to Crop Explorer have tripled. The number of monthly visits went from 5,876 in January 2004 to 15,562 in January 2005.

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