GeoCafe: an information tool for the coffee market

The decline in coffee prices has had an adverse impact on the social and economic conditions of countless coffee farmers around the world, making it more important than ever that small growers can certify and market coffees that obtain premium prices. The GeoCafe initiative aims to help them do so

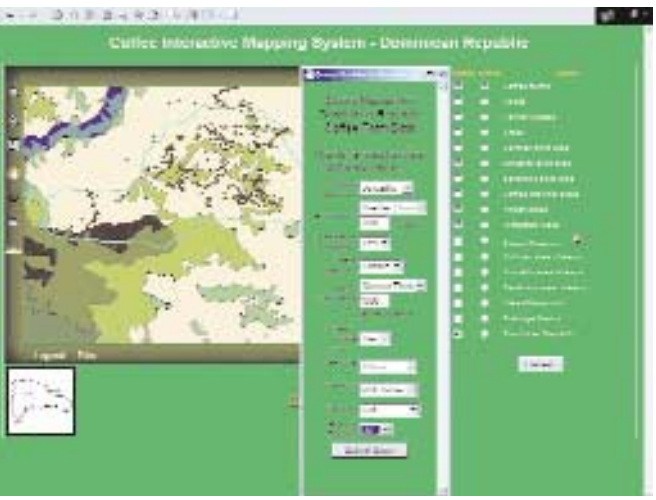
One way that growers can obtain better prices for their coffee is to move into the market for specialty coffee, but to do so they also have to meet new requirements imposed by the specialty market.

The consumer will pay more for a specialty coffee, but he also demands more, and needs to know that the coffee was properly harvested and processed, guarantee that it comes from a specific region or farm, prove that producers share the benefits of premium prices, and confirm that the product is friendly to the environment.

It all boils down to a simple fact: more and better information is required from the coffee sector. But how are small farmers able to provide this type of information?

Many important questions go unanswered because there is a basic lack of information or because of the difficulties raised accessing it – questions such as which areas are planted with coffee, how much coffee could be produced next year, who produces a certain quality coffee, where does a specific batch of coffee come from, what are the climatic conditions that produce a specific type of coffee? The list is long, and the resources limited, to answer these and many other similar questions.

The challenge is not limited to information collection and analysis, however, it also lies in making the information available to a broad range of users with diverse needs in easy to use and understandable ways.



GeoCafe screen shot. GeoCafe is being funded by USAID and using GIS expertise provided by the USGS

Recently, several agricultural institutions in Latin America have risen to the challenge, and have started organising coffee information in a structured, transparent, and easy to use way.

ICAFE and CATIE in Costa Rica, and IDIAF and CODOCAFE in the Dominican Republic, have pioneered the development of coffee information systems in Latin America, and have teamed with the US Geological Survey EROS Data Center (EDC), ANACAFE in Guatemala, and national specialty coffee institutions, to develop a new approach, known as GeoCafe, the main aims of which are to implement new knowledge and information systems, with a strong geographic content.

Project Scope

As Eric van Praag and Larry Tieszen of the USGS explained, in the GeoCafe project, the aim is to facilitate access to information on production, processing, and marketing of coffee, over the Internet, and help coffee producers establish direct contact with buyers and obtain premium prices for their quality coffee.

Another key objective is promoting the establishment of mechanisms that facilitate coffee monitoring and 'trace-back,' and assist in the delineation of geographic areas that will form the basis of appellation systems, providing training to partner agencies on the use of new technology for the generation and management of spatial information, and training to industry representatives on the use of the Internet as a source of information and as a marketing and communications tool.

The GeoCafe

The name given to the project is really self-explanatory - a CAFÉ information system with a strong GEOgraphic component, the project being part of a USAID-funded Quality Coffee Programme, an initiative currently assisting the specialty coffee sectors in Central America and the Dominican Republic.

Participating countries were selected based on their capacity to participate and benefit from the output of the first phase of the GeoCafe project. Guatemala and Costa Rica are important producers of specialty coffee, and there are plans to involve other countries in the near future.

What van Praag and Tieszen call the GeoCafe "visible faces" are specialty coffee web sites and coffee GIS web services (GWS). The web sites offer a whole range of tools and information products for the coffee sector, and the GWS components, and innovative geographic tools, offer access to a broad range of geo-referenced information.

Who benefits from GeoCafe?

Take for example coffee traders in the US or Europe. Using an Internet browser, they can consult one of the GeoCafe national systems, choose to visualise those farms located in a coffee region over 1,000m that produces certified organic coffee, and contact the cooperatives producing the coffee they are interested in to obtain samples.

The system can also answer many other questions, such as:

- Where is a particular type of coffee produced and by whom?
- Where are certified farms and cooperatives located?
- Which farms are located at a certain altitude with appropriate climate and soil conditions necessary to produce good coffee?
- Which farms feature shade cover above 60 per cent?
- Which cooperatives produce a certain volume of organic coffee?

Government officials, scientists, and other users might have different needs for information, such as which coffee farms are located in areas without protective forest cover or located at altitudes unsuitable for coffee production, or farms that have received subsidies or have been affected by particular coffee pests? The GeoCafe can answer these and many other questions.

Obtaining the information

To obtain the 'raw data' need by the GeoCafe, coffee farms, cooperatives, and mills are precisely mapped with Global Positioning System (GPS) devices, and a variety of data are collected on each, ranging from geographic and climatic conditions, socio-economic data, and production information to harvesting periods, certification issues, type of protective trees, method of coffee processing, and area of influence.

The data is integrated into databases, converted into digital maps for on-line visualisation, and displayed, together with other existing and newly generated spatial datasets such as protected areas, forest cover, shaded-relief, topography, hydrography, cities and towns, and river basins.

National agencies collect the data and put together the GeoCafe 'pieces,' whilst the EDC and CATIE provide technical assistance, know-how, guidance, and coordination.

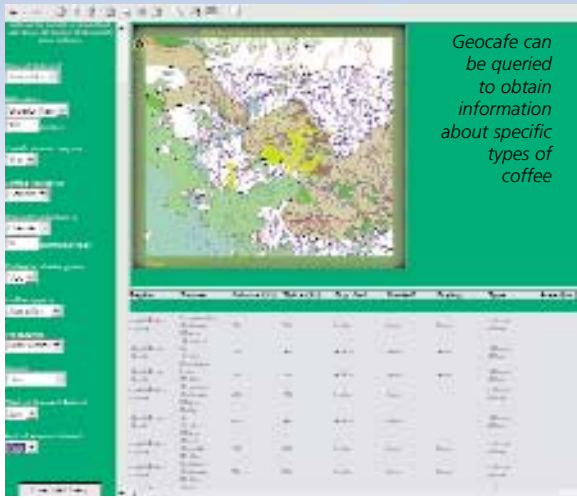
Over the course of the next two years, the EDC will help partner agencies build and maintain the information systems in Guatemala, Costa Rica, and the Dominican Republic. Once the project is over, partner agencies are left with the tools they need to keep the national GeoCafe applications alive: the source code, the know-how, the hardware and software, and trained personnel.

The other important feature of GeoCafe is that its applications also allow the market buying coffee from small farmers to monitor the conditions under which coffee is produced and processed, and trade with small farmers in a way that was not possible before. As a result, the market gains access to superior quality coffee, and the producer to better prices.

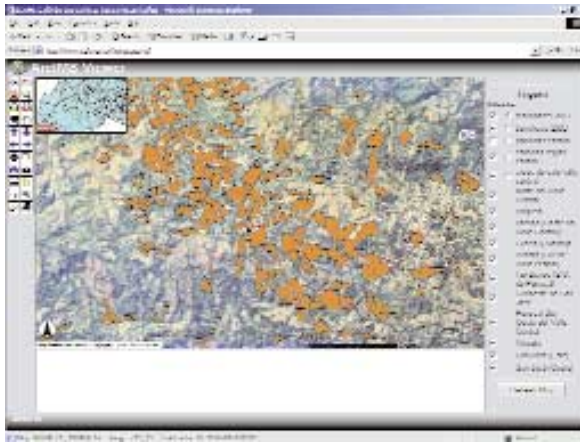
Activities initiated in 2004 will be expanded and completed in 2005, and field data collection will continue until national coverage is completed; partner agencies will expand, operate, and maintain the GeoCafe applications started in 2004, adjusting them to national needs; and spatial data will continue to be adapted and incorporated into the GeoCafe.

New activities will also be initiated in 2005 - new spatial data sets will be developed and staged on the GeoCafe; GIS and IMS environmental and spatial studies will be conducted for selected sites and their results featured in the GeoCafe; and the establishment of new partnerships with regional and national certification, agricultural, and environmental organisations will enable the project to expand into new geographic regions.

For more information on current and planned activities contact Eric van Praag, e-mail: vanpraag@usgs.gov. CCI



Geocafe can be queried to obtain information about specific types of coffee



GeoCafe uses an online mapping and visualization tool to display geographic information

Key role for ArcIMS

John Becker, USAID agricultural policy advisor, views these ArcIMS applications at the heart of the GeoCafe project as part of a bigger agricultural verification effort.

"To certify you must be able to verify, and the collection, transfer and storage of digital evidence is a cost-effective method of verification. The combined use of the Internet with GIS and GPS to help certify specialty coffee represents just the beginning of a new, expanding field of agro-ecological verification that is being driven by market-based and regulatory requirements for traceability."

These technologies, combined with the use of remotely sensed data, also offer the potential to monitor several environmental indicators, such as the impact of coffee production on adjacent forests, the maintenance of forest corridors among coffee producing areas, the encroachment of coffee farms into protected areas, and shade tree density.