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data SOLUTIONS journal
LAND INFO

A Publication of LAND INFO International, LLC - *Global GIS Data & Services*

Coverage Spotlight

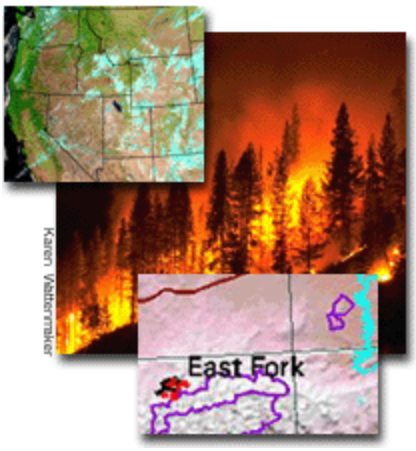
SHRIMP, FLOWERS, & OIL FUELING ROSEY ECUADOR GROWTH

Ecuador is Latin America's fastest growing economy. Last year, the country grew at an estimated 6%, more than four times the Latin American average. A major stimulus is the United States dollar, which became the country's official currency in January 2000. This "dollarization" complemented very strong growth in petroleum, shrimp, flowers, and high-tech services exports. Ecuador, and its world renown Galapagos Islands, has also remained a major destination for eco-tourists.

Ecuador's rich geography and diverse biodiversity has attracted many. The most famous was Charles Darwin. In 1855, Darwin first visited the Galapagos Islands. The islands sit 960 miles offshore. Scientists believe the islands were formed by a rising plume of hot lava rock that escaped from a major crack in Earth's crust. Darwin's studies on the islands led to his controversial *Theory of Evolution*. The islands are home to several species of iguanas, giant tortoises, seals, other unique marine life.

Market Solutions

FIGHTING WILDLAND FOREST FIRES WITH GIS



This month, the Canadian province of Quebec joined Colorado, Arizona, and other North American "hotspots" fighting a series of out-of-control wildland fires. Each year, in the U.S. alone, over 100,000 wild fires destroy over four million acres of forests and grasslands. Property damages, costs of fighting the fires, and expenses to rehabilitate the scorched land spiral into the billions of dollars. Brazil, Australia, Russia, Indonesia, and other countries also face similar challenges in controlling wild burns. Sprawling housing developments in forestland have put new pressures on managing these fires. Land managers, fire fighters, and ecologists are using GIS technologies to win the heated battle of fire management.

In 2001, the United States government launched GeoMAC, the Geospatial Multi-Agency Coordination system. GeoMAC is a GIS-based system that was developed through a partnership of the U.S. Forest Service, Bureau

Hotshot teams on the ground. Through special transmitters, the flight data can be used to guide field teams to underground fires. These underground fires may not be identifiable to the naked eye. Therefore, the thermal imagery, integrated with geospatial mapping, acts as the guide for ground teams. Hotshot teams are able to find and extinguish these underground threats before they flare above ground.

"Safety is probably the most important influence of GIS on fighting wildfires." commented **Staci Owens**, Henderson Aviation's Camera Operations Manager. "In addition to deploying

Thermal Images Define Hotspots

(click to see more images)

manpower and resources to the fire's hotspots, the flight data also enables fire managers to keep personnel out of really dangerous areas."

Fire managers use a myriad of planes, helicopters, tanker trucks, and ground forces to assault large fires. The coordination and efficient use of these forces are critical to beating the fire. Using the thermal photography and GIS base data, managers pinpoint retardant and water air assaults on the fire's hotspots, which are often hidden under a veil of thick

Petro Pipeline
In 2004, Ecuador will unveil a transnational pipeline that is expected to double its oil exports. The pipeline was funded in part by the United States, Italy, Canada, Spain, and Argentina.

Pharmaceutical Forest
Ecuador's biodiverse rain forests are known to contain 10% of the world's vascular plant species, much more than any one area in the world. Approximately a quarter of the world's pharmaceuticals are made from ingredients based on these plants. Most significantly, only 1% of Ecuador's forest plants have been tested and analyzed.

Say It with Flowers
Ecuador is the third-largest exporter of cut-flowers in the world. The fertile, volcanic soils of the Andean highlands are home to hundreds of growers. The country is mostly known for its long-stemmed Roses, acclaiming itself as the "Rose capital of the world."

Farming the Ocean
Ecuador enjoys over 400 miles of coastline on the Pacific Ocean. The tropical seas have become a primary breeding ground for shrimp. Ecuador ranks second in the world for shrimp exports, outpacing all countries in the Western Hemisphere.

Developing Software
Ecuador is also keeping pace with the high-tech revolution

of Indian Affairs, Bureau of Land Management, National Park Service, Department of Fish & Wildlife, and the USGS. The system interlinks base topographic maps, buildings, property data, imagery data, fire response resources, and thousands of remote weather stations. These GPS-linked stations monitor soil moisture, wind direction, ground temperature, and other key variables to help detect new fires, and monitor behavior of active fires. The GeoMAC system, which is accessible via the Internet, enables centralized and on-site managers to rapidly make decisions based on real-time data.

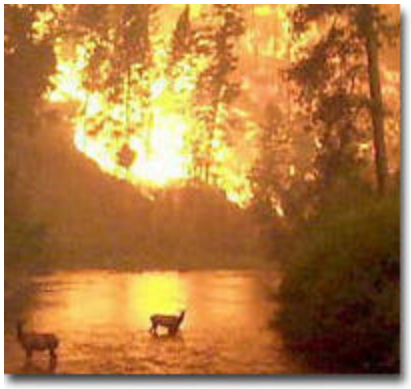
Henderson Aviation is an active participant in the high-tech fight to manage wildland fires. Henderson operates a fleet of helicopters that are used to produce perimeter maps, identify fire hotspots, and collect other critical information for fire managers. Henderson flies over active fires and films both standard color and thermal video. The video is integrated with Global Positioning Satellites (GPS) to collect important latitude and longitude readings. Through voice-activated controls, separate still photos are also captured during the flight.

Back on the ground, the flight data is integrated with LAND INFO topographic base maps to create perimeter maps for the fire. This enables calculations for fire acreage and fire line proximity to residential structures, wildlife habitats, and other sensitive areas. Flight data is delivered to fire managers via hard copy plots, VHS cassettes, & ArcView shape files.

Henderson also has the capability to beam real-time flight data to

smoke.

Forest fires are not isolated to North America. Recent large fires in Asia, Australia, and South America have prompted the need for a global effort to better manage fires. In 1998, Brazil encountered one of the largest fires the world has seen. The fire burned 8.1 million acres of globally significant rain forests. The fire burned uncontrollably for eight months, and prompted the Brazilian government to seek the help of the United Nations. Following the tragedy, the United Nations recommended the implementation of a regular technology program to monitor threatened areas, calculate risks, and analysis of vegetation and weather



Fire Managers Use GIS to Identify Wildlife Habitats in Line of Fire

data. The proposed system is very similar to the United States' GeoMAC system.

LAND INFO is prepared to support fire management and land rehabilitation programs around the world. Topographic base maps, 3D terrain models, imagery, feature data, and other GIS information are available for over 125 countries. The company also provides custom data production for specialized needs. Contact LAND INFO to learn more.

throughout Latin America. The country's IT development market has increased significantly in the past decade. U.S. software giants, Microsoft and Oracle, outsource a considerable number of programming to Ecuador firms. Ecuador is also the sole provider of software technologies for automatic teller machines (ATM) on U.S. aircraft carriers and over 60 banking companies.

LAND INFO International offers GIS data for Ecuador and every country in the Latin American region ***(see Latin American coverages).*** Contact LAND INFO to learn more.

GIS Data Coverage for Ecuador

- 1:50,000 Scale Topographic Maps

- 1:100,000 Scale Topographic Maps

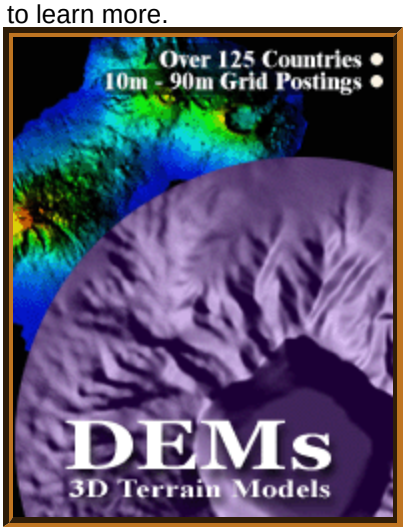
- 30m & 90m DEMs

- Contour Elevation Data

- Roads, Waterways, & Custom Features

- 2m, 5m, & 15m Satellite Imagery

LAND INFO can produce DEMs, Feature Layers, and other datasets for virtually any country in the world. Contact us today. World Index



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