Leica Geosystems TruStory
Protecting Brazilian's coastline with Leica Zeno GIS

Brazilian Coastal Area and National Parks

The Brazilian Coastal Zone is an area of unique biodiversity and contains extremely complex and fragile ecosystems known as biomes. The flora and fauna of these areas are dependent on each other for survival. They are important to our world as well, supplying us with fresh water and oxygen. If they are destroyed then our world cannot survive. Many endangered parks within this zone are planning to research and assess these damaged environments using Leica Zeno GIS in order to prevent further loss.

Located in the northeast part of the state of Rio de Janeiro, the Jurubatiba National Park is a remnant of the ecosystem sandbank. After years of human activities and urban expansion, less than ten percent of the original vegetation still survives. This area is under enormous pressure because it offers an abundance of natural resources and plays an important role in Brazil's economy. However this critically endangers these coastal areas.

Conservation of the ecosystem of sandbank areas using Leica Zeno GIS

The NUPEM/UFRJ in partnership with Embrapa Satellite Monitoring and IG/UNICAMP seeks to understand how human occupation in the area around the National Park Jurubatiba interferes with the stability of the sandbank natural system. Integrating this project, several researchers in different fields are seeking to contribute with their knowledge to the understanding of the man/nature of the site. The involved institutions encourage the production of scientific projects and dissemination of results, understanding that these results are part of world's international realities. The project was conducted on the environmental status of the ecosystem the sandbank employing Leica Geosystems' Zeno Field CS25 GNSS with satellite navigation system (GPS) and

Institutions

Institute of Geoscience – University of Campinas (UNICAMP), Embrapa Satellite Monitoring and Core Social and Environmental Ecology and Development Macaé - Federal University of Rio de Janeiro (NUPEM/UFRJ)

Challenge

To prevent further loss of the sandbanks in Jurubatiba National Park, Brazil.

Objectives

To produce a Digital Terrain Model (DTM) for strategic environmental planning purposes.

Location

The coastal area of the Jurubatiba National Park, Brazil

Deliverables

- The environmental status and geographic coordinates with elevation data of various points along the park's coastal area.
- The collected data was integrated directly into the ArcGIS Desktop

Hardware / Software

- Leica CS25 GNSS handheld tablet computer using GPS-L1
- Leica Zeno Field
- Leica Zeno Office Advanced together with ArcGIS software

Benefits:

- Time/cost savings by using one handheld device for easy integration of geographic coordinates and satellite imagery with elevation data.
- Quick uploading times by using Zeno Field's tablet and Zeno Office software
- Robust easy-to-use device protected against extreme weather conditions
- Non-redundant data and fast, com plete integration in ArcGIS for Desktop for further analysis

Conserving the National Park of Jurubatiba using the Leica Zeno GIS

L1 frequency to help identify areas threatened by close proximity to human activities. The field work aims to create a 3D elevation model of the coastline's true surface known as a Digital Terrain Model (DTM). To make this DTM model, a team of four researchers were sent out in the field to locate and accurately measure specific, predetermined points, already loaded onto the Zeno. A satellite image was also quickly loaded using the CS25 GNSS computer tablet's 1.6 GHz processor and both were applied as a back-ground. After the data was collected, it was sent by the handheld tablet to the research centre for analysing and was then transformed into a 3D Digital Terrain Model.

Saulo Folharini, who is working on his master's degree in Geography (IG/UNICAMP) and does research in Geotechnologies for Embrapa Satellite Monitoring, was one of four persons in the field crew, who located and measured the pre-established points. The use of only one device to collect database information saved time and costs and the easy integration of data using ArcGIS Desktop, needed to create digital terrain models, was optimal. Saulo described working with the user-friendly Leica Zeno Field as ideal. "The user drives with a car to locate points so using the CS25 GNSS tablet's large screen and Zeno Field's "Go To" software func-tion made it much easier. And field work was performed under intense sunlight, so it had to be done efficiently, with equipment that not only withstands high temperatures but is also protected from water and sand."

Embrapa Satellite Monitoring and UNICAMP researchers using Leica Zeno GIS have successfully helped to assess the threatened area by quickly and efficiently collecting nec-essary data and thereby preventing any further loss of these precious environments.

Leica Geosystems AG
Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Phone +41 71 727 31 31

www.leica-geosystems.com