

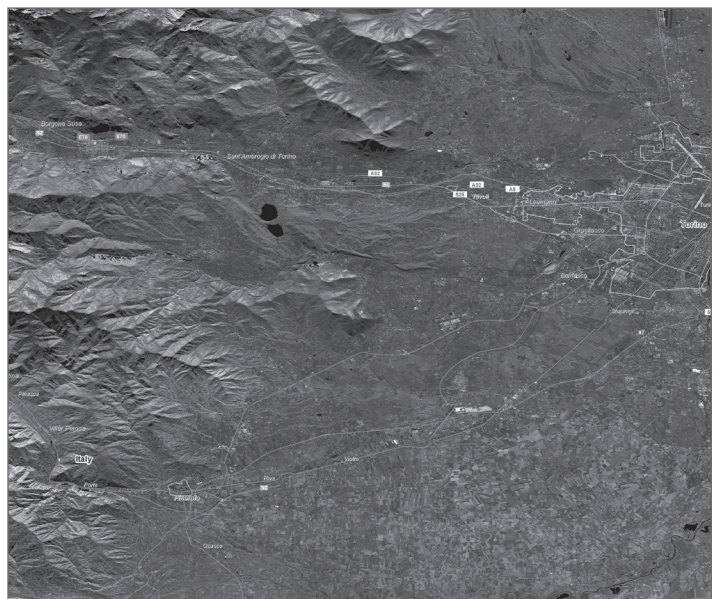
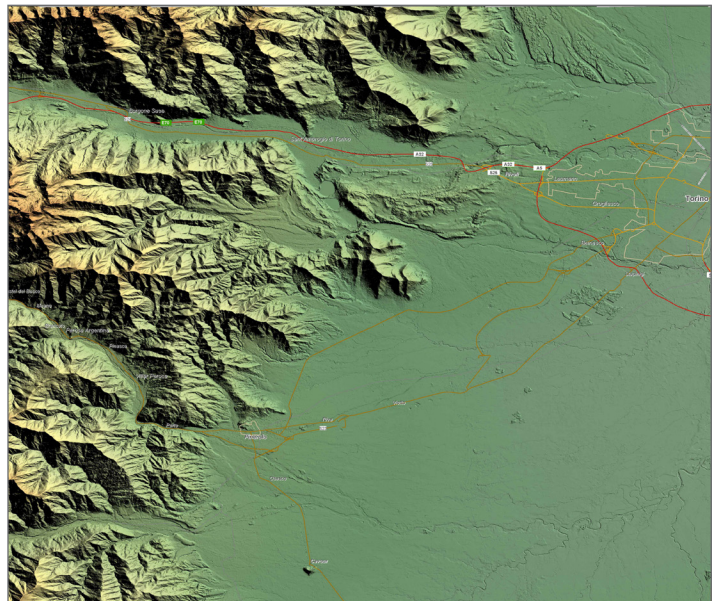
CASE STUDY

Intermap® creates unprecedented elevation model of the entire country of Italy.

Challenges

The Italian mapping agency Istituto Geografico Militare (IGM) plays a leading role in the investigation of emerging geospatial technologies in support of national, European, and international interests. In 2005, Intermap Technologies was contracted to perform a complex mapping project for IGM. Known as the Torino 2006 IFSAR Mapping Project, the task entailed a validation study of Intermap's proprietary interferometric synthetic aperture radar (IFSAR) digital mapping technology. Ultimately, IGM wanted to assess the use of Intermap's IFSAR technology to produce a highly accurate, cost-efficient elevation model of the entire country.

The objective was to produce an orthorectified radar image at a 1.25-meter resolution and a digital surface model (DSM) on a 5-meter posting. Both needed a horizontal accuracy of 2 meters root mean square (RMS), while the DSM needed a 1-meter RMS vertical accuracy. A digital terrain model (DTM),



Digital terrain model (top) and orthorectified radar image (bottom) of Torino, Italy and mountains to the west of the town.

created by removing all vegetation and manmade structures from the surface model and exposing the underlying terrain, was also required.

Solution

Intermap used its airborne systems to gather raw radar data from a study area that covered 5,600 square kilometers of northwestern Italy's most varied terrain, including the three most challenging environments to model: high alpine, lowland floodplain, and urban. Although the extreme differences in elevation provided a serious test of the integrity of the radar processing systems, Intermap's IFSAR technology was able to produce acutely high-quality elevation maps. And because our aircraft are able to operate day or night, in clear or cloudy conditions, turnaround

times were quick and costly weather delays were avoided. The project was completed on schedule and on budget.

Results

Upon receiving the data, IGM performed a comprehensive evaluation of the imagery and elevation models. Extensive testing found that the data consistently exceeded the required specifications and expectations of the project, in terms of both accuracy and interpretability.

"The Torino 2006 Project Area of Interest extended past the Italian border and into the French Alpine Region," stated General Carlo Colella, commander of IGM. "It has provided IGM, and our peers at the French Institut Geographique National, with an extraordinary and unprecedented homogenous DTM for evaluation of IFSAR data to support cross-border applications such as civil defense, environmental management, and emergency response."

“IGM has completed a detailed validation program to verify the results of the Intermap Torino 2006 Project. Our conclusions are that Intermap exceeded both the IGM requirements and the project specifications.”

General Carlo Colella
Commander, Istituto
Geografico Militare Italiano

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