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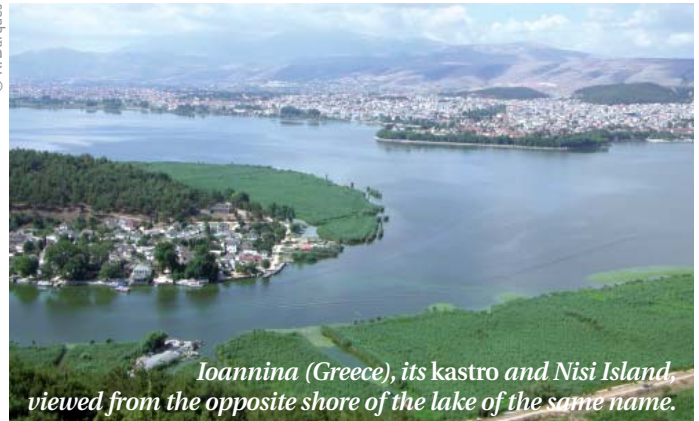
# Documenting the impossible: the development of a GIS for a territory of high strategic importance—the Greek-Albanian border region

The Greek-Albanian border region is a stretch of land and sea located relatively close to the Italian coast. The forests and beaches of Corfu are visible from the tops of the rugged mountains. For almost 50 years, however, this Balkan sector was one of the most tightly sealed and guarded parts of the former Iron Curtain. The state of war declared in 1940 between Greece and Albania was only lifted in 1987. The high militarization in this zone and strict border control ‘froze’ activities in many villages and forced marginalized populations into exile. Since the early 1990s, despite the many conflicts affecting southern Albania, the situation has cooled off and relationships between Athens and Tirana have gradually returned to normal.

How did the transition from the opened Ottoman *vilayet* of Ioannina (which disappeared in 1912)—a hub of activity and trade—to such fragmented areas take place? How can the recent transformation of such seemingly opposed territories and landscapes be explained?

Different GIS and remote sensing tools were implemented to determine the successive territorial changes that have taken place. The initial project (CNRS, *École Française d’Athènes*) was hampered by many factors, including the fact that access to all mapping information and images was prohibited until just recently. However, highly varied data was still collected during several field trips: Ottoman, Greek and Albanian statistics (population, agriculture land use) established over the last century, old aerial photographs, declassified documents from

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*Ioannina (Greece), its kastro and Nisi Island, viewed from the opposite shore of the lake of the same name.*

CORONA satellite\* data, Landsat MSS archives, SPOT 5 and QuickBird images of the towns of Gjirokastër and Ioannina. This effective use and analysis of multisource spatial data by a stakeholder during his research (for potential publication of the findings) is an essential step in this physical and social geographical approach—for this work, the geographer had to be able to adapt to different spatial information processing methods.

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\* American military photographic reconnaissance satellites (1960–1980).

## Remote sensing—a key land reform tool in Madagascar

The Malagasy land reform, which has been under way since 2005 with the support of different expert teams (including UMR TETIS and UMR INNOVATION\*), is based on land management decentralization. Municipalities with a ‘land office’ can now manage untitled private land for which they can award land certificates (CF) after local land recognition commissions (CRL) have been held.

Very high resolution orthorectified and georeferenced remote sensing images provide mapping templates for drawing up, on a municipal level, local land-use maps (PLOF) that are listed in different land acts: titled private property, untitled private property, special status areas, etc. During CRLs, certificate requestors and their neighbours sketch out the boundaries of plots to be certified based on ‘land markers’ that are visible on the images (irrigation canals, bunds, trails, remarkable trees, buildings, etc.). The image thus serves as a base for local participatory and contradictory land mapping. Hardcopy versions of each CF includes a PLOF extract drawn on the image, enabling owners to view the boundaries of their plots and their neighbours’ plots. Remote sensing satellite (QuickBird and Ikonos) images and aerial images are used by local authorities and Malagasy land services.



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The image resolution range is 0.5-1 m. They are projected in the Laborde Madagascar system and used at 1:2500 to 1:10000 scale.

Costs and times for acquiring such images for large surface areas are inevitable issues when archival images are considered insufficient.

In late 2008, 300 municipalities out of 1550 had a land office and a PLOF, which means that considerable investment would be necessary for acquisition of the corresponding images and training on their use for land management purposes.

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▲ *Delivery of an act of recognition for a property in the commune of Miadanandriana, Madagascar (November 2006).*