



## **Multitemporal satellite images for the knowledge of ancient Assyrian capital cities and for the analysis of landscape transformations in the upper course of the Tigris**

Giuseppe Scardozzi

CNR-IBAM, Consiglio Nazionale delle Ricerche – Istituto per i Beni Archeologici e Monumentali, Strada per Monteroni c/o Campus Universitario, 73100 Lecce (Italy); g.scardozzi@ibam.cnr.it; fax +39 0832 422225

The paper concerns the contribution that a rich documentation of multitemporal optical satellite images at high resolution provides for the knowledge of the four great Assyrian capital cities (Ashur, Nimrud, Khorsabad, Niniveh in Northern Iraq), and to analyze and monitor changes in the landscape in the higher course of the Tigris during the last half century. The data set, available for each city, consists of both panchromatic and multispectral images of modern satellites for civil use (Ikonos-2, QuickBird-2), both panchromatic photographs of U.S. spy satellites operating in the years 1960s and 1970s (Corona KH-4A, Corona KH-4B, Gambit KH-7), before diffusion of mechanized agriculture and the expansion of urban areas. They are therefore images that also allow to monitor the damage to archaeological sites during the two Gulf Wars, especially the second. The rich data set was collected as part of Iraq Virtual Museum Project, realized by the Italian National Research Council, under which the Institute for Archaeological and Monumental Heritage has dealt with the contextualization of the materials (stored in the Baghdad National Museum) in their archaeological sites of origin, and with the virtual reconstruction of some “rooms” of the virtual museum.

The most interesting data emerged in the research concerns, for example, the reconstruction of the paleo-river bed of the Tigris (and channels connected to it) near the ancient urban areas of Ashur, Nimrud and Niniveh; in the latter city, in addition, the expansion of modern Mosul in recent decades has obliterated part of the ancient urban area and the ancient canals network that surrounded it. In the case of Khorsabad, the images taken in different years allow us to reconstruct the layout of the ancient city and offer a planimetric vision of structures excavated in the XIX-XX centuries and later heavily damaged by weathering, by agricultural works and by the second Gulf War.