

## THE QANAT OF NURATA IN UZBEKISTAN (SESSION A)

**Ferrari Angelo<sup>1</sup>, Burri Ezio<sup>2</sup>, Ragni Pietro<sup>1</sup>, Martini Marco<sup>3</sup>, Del Bon Andrea<sup>4</sup>**

<sup>1</sup> CNR – Institute of Chemical Methodologies, e-mail [angelo.ferrari@cnr.it](mailto:angelo.ferrari@cnr.it); <sup>2</sup> University of L'Aquila; <sup>3</sup> University of Milano Bicocca; <sup>4</sup> Hydrogeologist

The oasis of Nurata (Nurota, Hypata) lies at the borders of the Kizil Kum (Red Sand) Desert in Uzbekistan. According to general opinion, Nurata was founded by Alexander the Great. Its ancient name was Nur and it was thought by Alexander as a military fortress against possible enemies coming from the north.

Besides the ruins of an ancient Macedonian fortress, close to the inhabited center of Nurata there are important rocky incisions of the Bronze Age. The continuous presence of man in such a nearly arid area was due to the presence of water sources that were known since the ancient times.

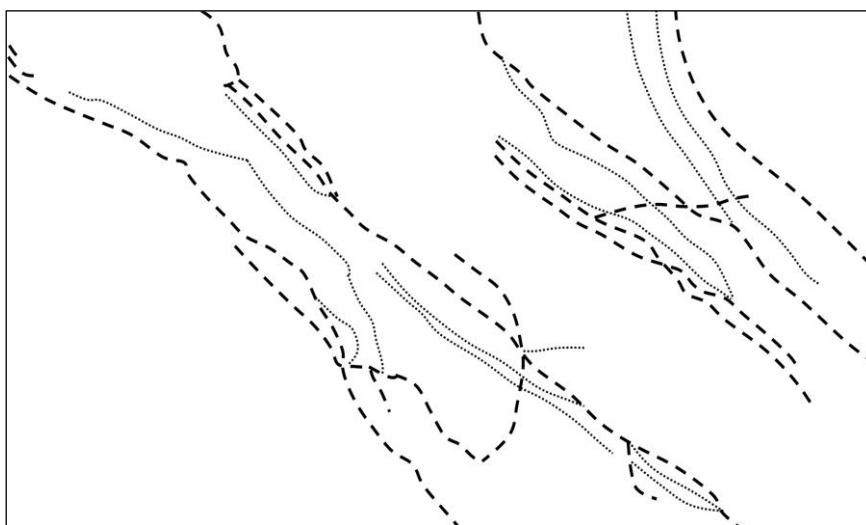
Later on, when the Islamic expansion reached the area of present Uzbekistan, the people of Nurata learnt the techniques to realize an articulated system of *qanat*, also called *Kariz*, which transformed the region of Nurata into a fertile area.

During centuries these ancient hydraulic systems were abandoned almost totally. Recently, the population has restructured and partially reactivated the ancient hydraulic system.

The study of this articulated system of *qanat* is aimed at achieving two principal tasks.

The first one is to acquire a series of scientific data by performing various analyses of waters, climate and ground, and to carry out a survey for gas Radon detection in the tunnels, wells and waters of the *qanat*. The second task is the study and the dating, through the technique of thermoluminescence, of the different maintenance restorations of the *qanat*, carried out by the local workers in the past centuries.

The objective is to arrange, in collaboration with the local researchers and Authorities, a project of historical and cultural exploitation of the whole area of Nurata, because currently it is out of the touristic and cultural runs, which are mostly addressed toward the regions of Samarkand and Bukhara.



*Fig. 1, The qanat of Nurata – Fig. 2, The complex system of the qanat of Nurata; outlined the tunnels reactivated*