
The aqueduct of Los Millares – Water supply and water management of a fortification in the 4th and 3rd millennium BC in Andalusia

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Abstract

The Copper Age fortification of Los Millares, located 15 km north of Almería in Andalusia, was discovered by Luis Siret in 1891. The water supply described by him – a source, already dried up in his time, a water conduit leading to the settlement and a large water reservoir inside the settlement – has now been reexamined and supplemented using archaeometric methods. The results of the geological, hydrogeological and archaeological studies are presented:

230Th/U investigations on calcareous sinter deposits within the fortification provided clear evidence for a leaky water conduit in the Early and Middle Copper Age. According to these investigations, Los Millares was founded at least 150 years earlier than previously assumed on the basis of radiocarbon measurements, probably around 3,357 BC at the latest.

The location of the source drawn by Siret could not be verified. However, the sinter deposits in a canyon bordering the plateau of Los Millares were formed at the end of the Copper Age, while the fortification was still in use or shortly after it was abandoned. U and Sr isotope analyses of the sinter deposits of the conduit and in the canyon, as well as of groundwater samples in the catchment area, clearly demonstrate that this source fed the aqueduct. It is an interesting detail of the isotope analysis that the water of the source was a mixture of thermal and near-surface groundwater. This means that it was probably a strong and steady flowing source

Since there were several water reservoirs within the settlement, the largest of which held at least 270 m³, a water supply balance was performed. Based on a worst-case scenario of approx. 1,000 inhabitants, it can be shown that in the event of a crisis, water was sufficient for at least one month.

Keywords: Los Millares, aqueduct, Copper Age, source, 230Th/U investigations, Sr isotope analysis, water supply balance

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