

Sierra Nevada Lake Contains Atmospheric Contamination from Bronze Age

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[Peter Suci](#) for redOrbit.com – Your Universe Online

The Roman Republic and the subsequent Roman Empire helped spread language, culture and learning across Europe, northern Africa and into parts of the Middle East. At the same time, it did so through conquest and subjugation, subsequently enslaving millions.

It is thus remembered for its triumphs and its barbarity. Its effects are still felt today, but now researchers have determined it may have even helped contribute to contamination in the waters of Spain's Sierra Nevada mountain range in the region of Andalusia. This is the highest point of continental Spain and is some 11,400 feet above sea level.

Scientists have found atmospheric contamination, which is due to heavy metals and is currently a severe problem throughout the world, is not a recent fact and can be traced back to pre-historic times.

This explains how the Romans may have contaminated the lake.

The team of researchers, which included scientists from the [Andalusian Institute of Earth Sciences](#) and the University of Granada, discovered evidence of atmospheric [pollution](#) caused by lead. The team found traces of lead in a lagoon in Sierra Nevada (Granada) at an altitude of 3,020 meters and determined it was the result of pollution.

The pollution may have come from metallurgical activities some 3,900 years ago during the Early Bronze Age, a time that predates the founding of the Roman Republic by 1,000 years, suggesting Rome can't be entirely to blame. This also dates it as the oldest atmospheric pollution on record in Southern Europe.

However, the study, which was carried out by researchers from the Andalusian Institute of Earth Sciences (Spain), the University of Granada (Spain), the University of Sevilla (Spain), the University of North Arizona (USA), the Andalusian Regional Government (Spain) and the Granada firm Estudios Geológicos y Medioambientales S.L. (Spain) does reveal the influence of human activity on the environment due to the early uses of metallurgy at the end of the Holocene period.

The geochemical analysts looked at sediments deposited during the past 10,000 years in the Laguna de Rico Seco lagoon, a remote Alpine lake located in the Sierra Nevada. The researchers found evidence of atmospheric pollution from lead, which could coincide with the increase in forest fires and [deforestation](#) in the region.

“This data tells us of the great influence our ancestors had on the environment,” [said University of Granada researcher Jose Antonio Lozano Rodriguez](#). “Lead pollution gradually increased during the Late Bronze Age and the Early Iron Age, coinciding with the development and expansion of metallurgy in southern Europe.”

The study's researchers believe the Roman connection is very much there, as high levels of atmospheric contamination occurred during the Roman Empire, when large quantities of the metal were extracted in the south of what is today modern Spain. In addition, atmospheric contamination may have increased in the past 300 years, which coincides with the Industrial Revolution and the reactivation of mining activity in southern Spain.

The study of history could also be used for lessons today. Lozano added that this further "suggests that the global measures taken to reduce lead emissions, such as the use of lead-free gasoline, have helped to reduce the levels of this metal in the atmosphere."

The findings of the study were published in the journal [*Science of the Total Environment*](#).