

Archaeoastronomy as a Tool for Understanding Celestial Phenomena

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Abstract

This is an interdisciplinary approach to science teaching, through archaeoastronomy activities targeted to students of primary and secondary education.



1. Introduction

Archaeoastronomy is the study of the astronomical beliefs, practices, and discoveries of prehistoric and ancient cultures, and the role that astronomical phenomena have played in human societies. The acquisition of knowledge by observing the sky and studying the celestial phenomena (stars, planets, sun, moon, comets, asteroids, meteors, orbits, seasons, etc.) decisively influenced all human cultures.

Archaeoastronomy can be applied to all cultures and all time periods. The meanings of the sky vary from culture to culture; nevertheless there are scientific methods which can be applied across cultures when examining ancient beliefs. It is known, for instance, that many of the monuments and ceremonial constructions of early civilizations were astronomically aligned.

Therefore, the research of the astronomical knowledge and its usefulness/importance for each culture

may reveal important anthropological data. Inversely, by studying astronomical alignments we can learn about the development of science and of cosmological thought across cultures.

2. Astronomical legacy and ancient monuments combined

The island of Rhodes has a rich astronomical legacy. It was the place where lived and worked famous ancient Greek astronomers such as Hipparchus, Eudemus and Posidonius. It is rich in monuments, ranging from ancient temples and sacred places of the Hellenistic times to Roman and Venetian fortresses and castles, Catholic churches and Muslim mosques.

We have been very active in developing several activities, in collaboration with the National University of Athens and with the active participation of students from schools of Rhodes, in order to demonstrate the methodology used by our ancestors in aligning monuments in conjunction with their astronomical beliefs and understanding of celestial phenomena.

Azimuths, angular altitude of skyline, star declinations, star attribution and solar season are produced from field measurements and home made software. Students participate in field experiments and collect data which they take along to classroom, providing inspiration and added value to their science courses at school.