



A SHORT BRIEF

The Megalithic Observatory Kokino is located about 30 kilometers northeast of Kumanovo. This site has a diameter of 100 meters and is scaled on two levels underneath the mountain peak Tatihev Kamen at an altitude of 1013 m. When discovered in 2001 it was believed to be a special mountain sanctuary from the Bronze Age. A detailed archaeo-astronomical research carried out afterwards showed that the locality has all the characteristics of a holy place but also of an older observation of celestial objects.

The most important characteristic of the observatory includes positions for observation. Special stone markers used for marking all movement characteristics of the Sun and Moon have been found on the east horizon. The observatory used a method of static observation marking positions of the Sun at the winter and summer solstice, as well as the equinox. Archaeological excavations are carried out on the upper platform on which valuable material has been found, ceramic fragments mostly, but also animal bones, pyramidal weights, fragments of two hones (grind stones), made of filitic slate and kelt mould.

Megalithic Observatory Kokino spreads on both platforms each of them possessing own typical contents. Observatory length is around 90 metres and its width is around 50 metres. To answer why this ancient site is considered to be observatory, we should remind on the primary characteristics of the Sun and Moon's movements. In the course of one calendar year, Sun and the Full Moon rise in different places on horizon, also determining the so called extreme rise positions on the horizon. This mean that Sun in winter when the day is the shortest or in the day of the winter solstice (22nd of December) rises in it's the southernmost position on the horizon. Then, day by day it moves towards the north and on the day of vernal equinox (21st of March) Sun rises on east. Sun continues to move toward the north, the length of the day increases and in the day of summer solstice (21st of June) Sun reaches its northernmost point on the horizon. After that Sun returns back and in a day of the autumn equinox (23rd of September) again it will rise on east, and on 22nd of December it will complete the cycle rising in the winter solstice point. Every careful observer of the Sun can easily notice and mark points of the Sun rise in the days of the winter solstice, vernal and autumn equinox and summer solstice. Such types of markers are found on the Megalithic Observatory Kokino. The summer solstice marker is well preserved, vernal and autumn equinox marker has some small damages, and the winter solstice marker has greatest damages. These damages most probably are due to the catastrophic earthquakes. Moon has more complex movements and marking the points of the Full Moon rise are rather difficult. Simplest way of explaining is that in winter Moon moves on the sky on the places where the Sun moves in summer, and in summer it moves on the places where the sun moves in winter time. Thus, around the markers of the summer and winter solstice on the left and the right side there should be two stone markers that will mark the Full Moon rise points in its typical extreme positions. These types of stone markers can be also found in the area of the ancient observatory. In order this site to be ranked as observatory there should be one more very important condition fulfilled. All seven markers must be seen from one same place, or lines that go through the markers to cut-cross in one point, which is in fact the central position of the observatory and that is also identified on the site. Archaeo-astronomical analyze facilitate in accurate determination of the construction time when the stone markers for marking the Sun rise and Moon rise points on the horizon were built. Analyze has shown that the stone markers are built in the decades around 1800 B.C., meaning the Megalithic Observatory Kokino is at least 3800 years old. Prove that we are really dealing with marked points of the Sun and Moon rise can be seen on the documented photographs where the rise of the Sun over the stone marker in the day of the summer solstice is shown. As a consequence of the Earth rotation axis precession, today Sun rise a little bit lower and little bit to the left from the marker, but exactly that is an evidence for the accuracy of the stone marker, as these deviations are anticipated by the exact astronomical analyze. Such evidences were accepted by the American Space Agency NASA and in 2005 this agency ranged Megalithic Observatory Kokino on the 4-th place on the World's Ancient Observatories list.



Location: north east Macedonia

Nearest town:

Kumanovo / Kratovo

Accessibility:

Asphalt road leads to bottom of the hill, light hiking needed to reach the site

Site highlights:

According to the American Space Agency NASA the Megalithic Observatory Kokino is ranked on the 4-th place on the World's Ancient Observatories list.

Nearby attractions:

The picturesque town of Kratovo, Kuklici - the Valley of Stone dolls locality, Church of St George in village Staro Nagorichane.

