

## **Chelmos (Aroania): a New European Telescope Site for the 2.3-m Telescope of the National Observatory of Athens**

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**Abstract.** The National Observatory of Athens (N.O.A.) will install a new, advanced technology 2.3-m telescope in Greece. A favoured location for the installation of the new telescope is the top of Mount Chelmos. We present preliminary results concerning the conditions at this site. It is found that the site has a quite dark sky, a good percentage of clear nights (about 60%) and very good seeing conditions.

### **1. Introduction**

The National Observatory of Athens (N.O.A.) will install a new advanced technology 2.3-m telescope in Greece. The telescope will have Ritchey-Chretien optics with a field of view of 1.04 degrees. Its construction was awarded to Carl Zeiss Jena GmbH.

The National Observatory intends to install it at the top of Mount Chelmos (Aroania), at approximate coordinates longitude 22°12' East and latitude 37°59' North. The site is near the town of Kalavryta in northern Peloponnese, at an altitude of 2340 m.

In satellite images (Fig.1, adapted from Cinzano et al. 2000), the site appears near the centre of one of the darkest spots of Southern Europe. We present below first results of our site tests (weather and seeing) and analysis of weather conditions based on satellite images.

### **2. Weather Conditions at the Chelmos Site**

NOAA satellite weather maps (in visual and infrared) were studied in the period May 1998 to April 1999. The distribution of clear, partially clear and cloudy days is shown in Figure 2. The numbers inside the columns of the histogram indicate the actual number of days studied.

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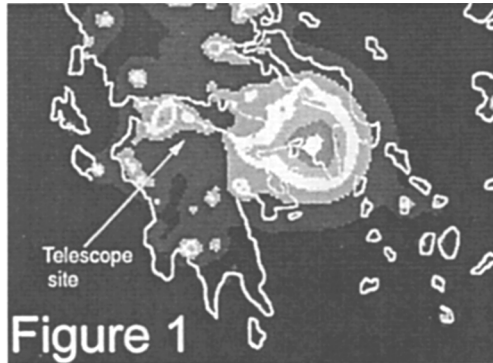


Figure 1. Location of Chelmos site in satellite image from Cinzano et al. 2000.

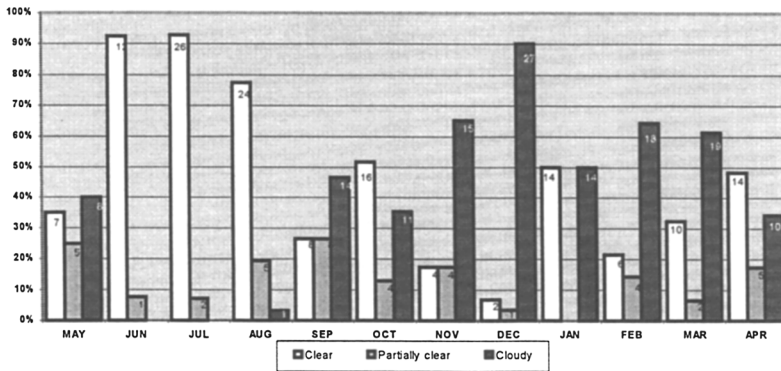


Figure 2. Chelmos weather statistics based on observations with NOAA satellites.

It is worth noting that the top of Chelmos mountain lies often above the clouds. This means that several of the cloudy days indicated in Fig. 2 are in fact clear ones at the telescope site. This is also evident after a comparison with Fig. 3, which presents the distribution of clear and cloudy days at Chelmos based on visual observations for the period December 1998 to April 1999. These observations were made at the parking lot of the nearby Winter Sports Center at an altitude of 1650 m, which is practically always below the cloud layer. From these data we conclude that the total amount of clear nights at Chelmos is about the same as that at La Silla (Schwarz and Melnick 1993).

### 3. Seeing Conditions at the Chelmos Site

Seeing measurements were taken using the stellar trace technique (Birkle et al., 1976). A ST8 CCD camera (1530×1020 pixels, pixel size 9μm) was used for the

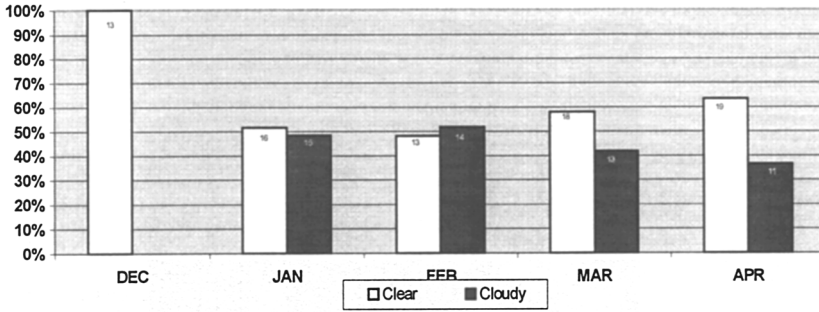


Figure 3. Chelmos weather statistics based on visual observations.

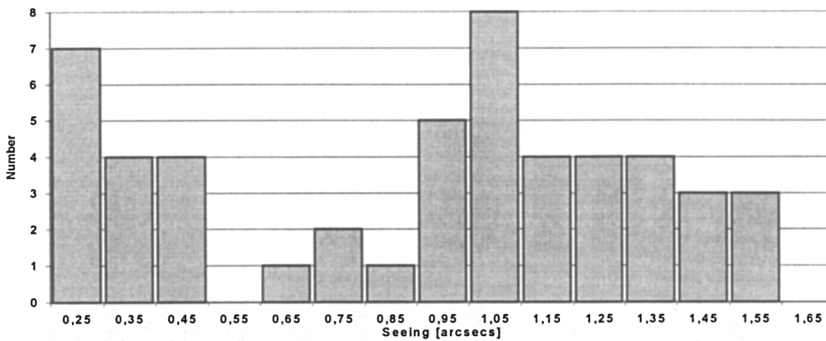


Figure 4. First seeing measurements at the Chelmos site.

observations. The preliminary results are presented in Fig. 4, which shows the amount of seeing as it is estimated from several observations during ten winter nights. These data indicate very promising seeing conditions, with a mean value around 1 arcsec and, very often, as small as 0.3 arcsec.

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