

# DEBRECEN HELIOPHYSICAL OBSERVATORY

(*Report from Solar Institute*)

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## 1. General

The Heliophysical Observatory of the Hungarian Academy of Sciences is a small solar institute located in the Botanical Garden of Debrecen University (at lat.  $47^{\circ} 33.6'N$ , long.  $1^{\text{h}}26^{\text{m}}30^{\text{s}}E$ ; at an altitude of 127 m above the mean sea level). Debrecen is situated in the middle of the Hungarian Plain, more than 200 km to the East of Budapest, and there are on average about 280 days per year in which solar observation is possible at least for a quarter of an hour. Since the University in Debrecen has no department of astronomy, the Observatory has also a modest part to play as an instrument of university teaching.

Solar observations were first carried out in Hungary for a period of nearly five decades, from the year 1872. Some of the original observational material which has survived is preserved at the Debrecen Observatory. This consists of about 9000 first-class and well-orientated drawings of the sun's disc through more than four solar cycles, which were made at the former Ógyalla and Kalocsa observatories, the solar diameter being 13–14 and 20–22 cm respectively. Most (over two-thirds) of the visual photospheric observations come from Kalocsa and cover the period June 1880 – May 1919, while the others, those from Ógyalla, were made between May 1872 and December 1891.

The Debrecen Observatory grew out of the solar section of the Konkoly Observatory in Budapest (of the Hungarian Academy of Sciences), which was established some ten years before it was removed to Debrecen and reorganized as an independent institute in 1958.

The observing equipment consists of one Hale-type spectrohelioscope, modified to a certain degree, and three variant photoheliographs for 'white'-light solar pictures, each having a separate equatorial mounting. One of them also carries a 25 cm visual refractor of 4.5 m focal length used either with a prominence camera, or for various photospheric observations, both visual and photographic. Provision has been made for a  $H\alpha$ -Lyot-Öhman-filter, to be delivered in 1968.

## 2. Research Program and Additional Information

Sunspot and prominence problems, in relation to solar activity, and especially the evolution of active regions of the photosphere, are investigated by means of areal and positional data. Short-term (e.g. daily) variations are studied by making use of

original photographic observations, while in the case of long-term (e.g. yearly) processes some well-known published series of observations are mainly used. Debrecen Observatory has, however, its own photospheric observational material, consisting of about 15000 solar photographs, obtained in a solar patrol in integrated light, which was started in 1954, and which still continues. The main effort, till now, has been in the study of proper motions and areal variations of sunspots, especially the penumbra to umbra ratio.

One part of research results, and the data of observations obtained in Debrecen, are published in the *Publications of Debrecen Heliophysical Observatory of the Hungarian Academy of Sciences*, which started in 1964. Other contributions, published elsewhere, are circulated to various institutions as *Debrecen Observatory Reprints*.