

# Observation of a natural phenomenon using the video camera

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It is most effective in an aiming at understand nature better and symbiosis with nature sake to observe a natural situation and natural change directly. Change of a natural phenomenon has a various time scale. The diurnal motion of an astronomical phenomenon, a motion of a planet, etc. which are one of the natural phenomena start from several hours that change of a phenomenon observes half a day also. Therefore it is difficult to observe and observation by the special method is required of the usual method.

By this paper, the partial solar eclipse which is one of the astronomical phenomena was photoed with the video camera, and contents observable from an image and the study effect using the image were considered.

A solar eclipse is the astronomical phenomenon in which the moon passes through a solar side. The space range becomes 50 degrees from the start of a phenomenon to the end for about 3 hours. There are a method of setting a video camera by the solar diurnal motion, and changing direction, and the method of fixing and photoing a video camera as photography method of a solar eclipse. By the method of moving direction of a video camera, since a solar side is expandable, the geographical feature of the moon and the details of an magnitude of eclipse can be photoed. On the other hand, when a video camera is fixed, change of the position of the moon seen from the earth and the sun can be photoed.

According to the astronomical observation chronology 2004, the forecast of the partial solar eclipse on October 14 in Akita-city begins to be missing, it will be time at 12:35.6 and the maximum time of a eclipse of an eaten part of the maximum eclipse is the end time of a eclipse 0.310 at 11:34.9 at 10:34.2. The time which has generated the solar eclipse is 2 hours and 1.4 minutes, and a space scale is 49.5 degrees in the direction. This time, a photograph was taken by the method of changing the direction of a camera according to the solar diurnal motion. Image which installed the digital camcorder which attached the neutral density filter of D4 filter and ND filter on the body tube of 20cm refraction equatorial telescope at the astronomical observatory of an earth science laboratory, made F value to 6.0, and made magnification 10 times for a setup connected the digital camcorder to the personal computer, and recorded it on the hard disk drive.

In this photography, after from of the maximum solar eclipse of a partial solar eclipse several minutes to the end of a solar eclipse was able to be photoed. The signs of a partial solar eclipse that a part of solar side is hidden in the moon were recordable. It was missing and the time of the maximum solar eclipse has not recorded according to the trouble of a machine from the start. From the photoed image, limb darkening of the phenomenon of a solar side is observable, but The situation of the geographical feature of macula, white spot, and the moon was unobservable. Moreover, although magnitude of eclipse to which the sun means whether it is how much missing can be estimated, the geographical feature of the moon is unobservable.

This partial solar eclipse observed as a subject matter of a basic earth science experiment and a guide to astronomical observation. After observing a partial solar eclipse, it is thought that recognition of a space scale and a time scale improved, and the interest to an astronomical phenomenon deepened more from the comment of the student who looked at the photoed video image.

Since a solar eclipse is not an always observable phenomenon, it needs preparation of a photography plan, and management of a movie camera machine. Since the generating time of a solar eclipse was unrecordable, the photography method needs to be improved of this photography. From now on, the astronomical phenomena in which photography is planned will be movement of the satellite of Jupiter, the diurnal motion of a fixed star, etc.