

COMMISSION 50: PROTECTION AND IDENTIFICATION OF EXISTING AND
POTENTIAL ASTRONOMICAL OBSERVATIONAL SITES

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During the past triennium many efforts have been made by individual members and Commission 50 to keep a good observational environment, along the lines set up by the previous Commission 50 president, P. Murdin. The number of commission members is 65, which is unchanged from the previous period. Since our problems become more severe year by year and are connected directly to the activities of all observational astronomers and indirectly to those of all theoreticians, the commission should have made an effort to increase the number of active members.

The book "Adverse Environmental Impact on Astronomy" edited by D. McNally was published by Cambridge University Press in 1994. This book is a direct output of a meeting held by UNESCO, ICSU and IAU at the headquarters of UNESCO in Paris from June 30 to July 2 in 1992, and shows nearly all the problems which we are facing.

There were two proposals, to launch a very large satellite (1000 m × 400 m) and a pair of large reflecting balloons, which would produce a night sky as bright as that at full moon. The first one was a billboard displaying during the Atlanta Olympics held in 1996 and the second one was for the UNESCO 50 year celebration in 1997. Commission 50 wrote letters opposing these stupid ideas to the presidents of each organization and encouraged astronomical societies of some countries to write similar letters. By a strong effort of the ICSU as well as our efforts we could succeed in stopping their projects. Here, I should note that the UNESCO supported our meeting at one side but at the other side they picked up an idea to disturb astronomical observations. Since the UNESCO is a big organization, one department may sometimes not know what another department tries to do. Therefore, we continuously have to watch for problems which may come even from friendly organizations.

In this triennium Commission 50 faced two new problems, which are dust ejection from copper mining near the Cananea Observatory in Mexico, with a 205 cm telescope, and from a cement factory near the Kottamia Observatory, with a 186 cm telescope, in Egypt. For the former case, Commission 50 sent letters to the Mexican authorities including the prime minister, to oppose its development, but for the latter case we had to make a detailed estimation about damage to the observatory, and with the supportive work of the IAU General Secretary, I. Appenzeller, we succeeded in stopping its construction. It is worthwhile to note for future work that during the estimation S. Isobe had difficulty in getting fundamental data from the Kottamia Observatory and had to work only from data supplied by the cement factory. Astronomers should be collaborative, at least when any observatory faces any kind of pollution problem.

S. Isobe, P. Murdin, D. Crawford, J. Masson and J.D. Castro worked as members of the CIE TC4-21 "Interference by Light of Astronomical Observations" with 5 members of the CIE (International Lighting Society) under the chairmanship of D. Schreuder. In 1994 at the 22nd IAU General Assembly in The Hague, Holland, D. Schreuder explained to the IAU members the CIE idea to reduce light pollution. S. Isobe, J. Masson and D. McNally gave extensive talks to the CIE members at the meeting of *International Energy Efficient Lighting* in Newcastle, U.K. in

June, 1995. Then, at the General Assembly of the CIE in New Delhi, India, in November, 1995, a proposed procedure by S. Isobe to bring the Guideline for Minimizing Sky Glow arranged by D. Schreuder into the ISO standards was accepted by J. Masson and 3 CIM members of TC4-21. The Guideline contains a concept of zoning which was originally proposed by P. Murdin in 1992. The Guideline was put to a vote by 10 members of TC4-21 and is now approved with minor corrections. This will be put to a resolution of the 23rd IAU General Assembly in Kyoto, Japan.

S. Isobe distributed many questionnaire letters to observatories worldwide and obtained 62 responses. The results support recommendation of light control levels contained in the Guideline.

The starwatching program is expanded to the Netherlands managed by D. Schreuder, to the U.S.A. by D. Crawford, and to the U.K. The program at seven east and south Asian countries initiated by S. Isobe has been gradually expanded and in July, 1995 in Tokyo a summary meeting for 3-year activities was held with attendances from Korea, India and Indonesia.

S. Isobe has succeeded in getting observational time of the AVNIR (Advanced Visual and Near Infra-Red) detector on the ADEOS (Advanced Earth Observing Satellite), which was successfully launched on August 17, 1996, to obtain night-time brightness distributions of Tokyo and Shizuoka with a resolution of 10 m. In a few years, it is expected to produce some beautiful results.

Regarding radio interference, the pressure from commercial use of radio frequencies becomes higher and higher, and IAU Commission 40, Radio Astronomy, worked with the collaboration of URSI.

It is now globally realized that space debris is a severe problem not only for ground-based observations but also for space activities. Although space agencies of some countries try to eject as small an amount of space debris as they can, the amount is still increasing. Now, with the support of NASA, ESA, NASDA and some other Space Agencies, there is a regular meeting every spring. S. Isobe attended the meeting held in Darmstadt, Germany, in March, 1996 and gave a talk on observation of geostationary debris.

The Commission 50 proposal submitted in cooperation with Division X, Commissions 8, 21, 40, 46, 50 and 51, for a two day long Joint Discussion on the theme "Preserving the Astronomical Windows" has been approved, with a change to a one and a half day long Joint Discussion, by the Executive Committee as a part of the program for the 23rd General Assembly in Kyoto, Japan in August, 1997. A program for this JD is prepared and will appear in the IAU Bulletin.

S. Isobe.