

Report of the Director

This report covers the second year under the new management of the Foundation and after significant changes in its administration. The last report (for 1999/2000) was intentionally comprehensive and detailed, one reason for this being its presentation at the bi-annual meeting of the board HFSJG held in October 2001. For this intermediate year we aimed for a briefer report. Recognizing the positive feedback we received after publication of the 1999/2000 report, we decided to adopt this sequence of reporting at least for the near future.

The Foundation HFSJG

On October 5, 2001, the Board of the Foundation HFSJG met at the Grand Hotel Zermatterhof in Zermatt for its regular meeting held every odd numbered year. Parting from the traditional alternating between Zermatt and Interlaken as meeting locations, the 2001 meeting was held in Zermatt on occasion of the retirements of Prof. Gisbert Winnewisser from the 'I. Physikalisches Institut der Universität zu Köln', and Mr. Erwin Aufdenblatten, former President of the Burgergemeinde Zermatt, who have been enthusiastically leading and supporting scientific research at Gornergrat for many years. Beside the members of the board, attendance included the 'Jungfrauoch Commission' of the Swiss Academy of Natural Sciences, the 'Astronomic Commission HFSJG', representatives of the Swiss National Science Foundation (our main funding agency), and a number of distinguished guests. The annual activity reports of 1999 and 2000 as well as the statement of accounts for both years were approved unanimously and with no abstentions. The extensive and excellent scientific output which resulted from the research at Jungfrauoch and Gornergrat was recognized with great pleasure and satisfaction. Recognizing also with satisfaction the assured financing for 2002/2003 of the Swiss contribution to the Foundation by the Swiss National Science Foundation, the budget was adopted until the end of 2003. The president informed about constructive exchanges that have taken place between the Foundation HFSJG, the Swiss National Science Foundation, the Swiss Academy of Sciences, and Dr. Charles Kleiber, Secretary of State for Science and Research and Director of the Swiss Science Agency, how hopefully to integrate the Swiss contribution beyond 2003 into a long-term finance plan. For his outstanding services rendered to the Foundation, Prof. Winnewisser was elected Corresponding Member of the Foundation HFSJG. The dinner and the excursion to Gornergrat gave ample opportunity for discussions among all participants and, in particular, with the representatives of the Burgergemeinde Zermatt and the Gornergratbahn.

In the management and administration of the Foundation no changes had to be noted.

The Astronomic Commission, which has the function of a users' committee to strengthen the Foundation's internal and external communication, had a regular spring and autumn meeting.

The High Altitude Research Station Jungfrauoch

The individual progress reports and the statistics of research stays for 2001 give an impressive demonstration of the exciting and lively use of the High Altitude Research Station Jungfrauoch. Figure 1 summarizes the number of working days spent by scientists at Jungfrauoch since 1989. Figure 2 shows the relative number of working days for 2001 by country. With the exception of Germany, all member countries of

the Foundation benefited from the excellent research conditions offered at Jungfrauoch. Researchers from Germany and Italy are working extensively at the astronomical observatories at Gornergrat. The United Kingdom was represented at Jungfrauoch again within a measurement campaign on tropospheric photochemistry (FREETEX 2001). Scientists from Belgium, in particular from the 'Institut d'Astrophysique et Géophysique de l'Université de Liège' and from the LIDAR group of the 'Air Pollution Laboratory' of the Swiss Federal Institute of Technology in Lausanne (EPFL), continue to be prime users.

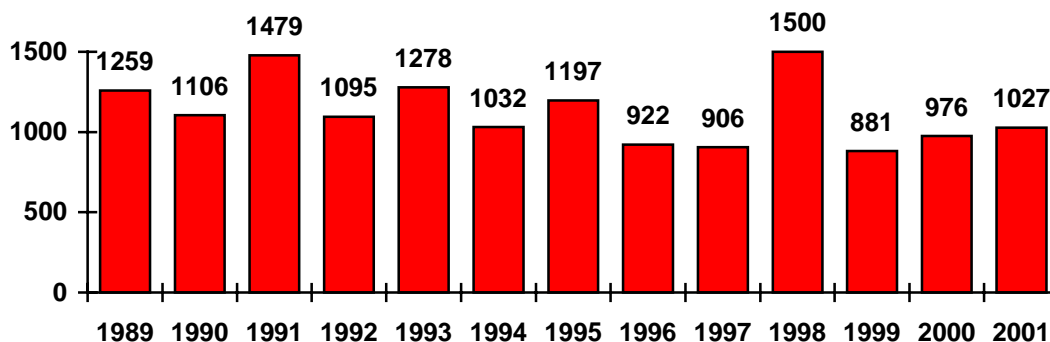


Figure 1: Number of working days spent by scientists at the High Altitude Research Station Jungfrauoch during the past years.

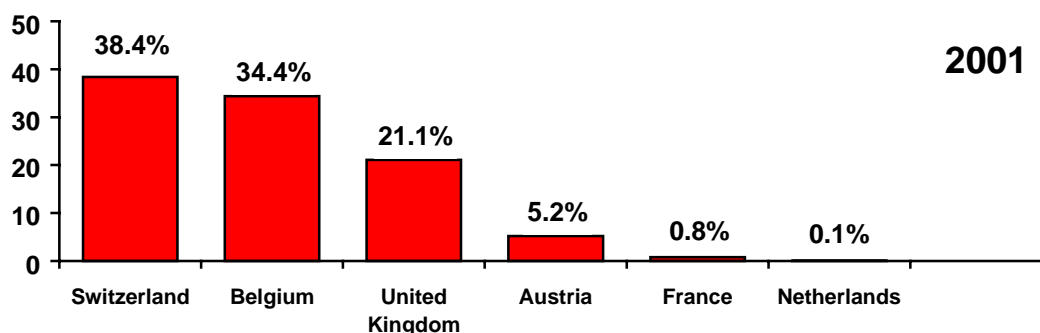


Figure 2: Relative number of working days at the High Altitude Research Station Jungfrauoch by country.

Due to its unique location and the unspoiled environment, Jungfrauoch has established itself as a center for environmental research, and it is playing a key role in a number of internationally coordinated research programs. In 2001 research groups working at Jungfrauoch participated, among others, in the following major projects:

GAW	Global Atmosphere Watch
CHARM	Swiss Atmospheric Radiation Monitoring Program
NDSC	Network for the Detection of Stratospheric Change
UNEP	United Nations Environment Programme
EARLINET	European Aerosol Research Lidar Network

ENVINET	European Network for Arctic-Alpine Multidisciplinary Environmental Research
ANETZ	automatic measuring network of MeteoSwiss
RADAIR	Swiss network for the survey of radioactivity in air
NABEL	Nationales Beobachtungsnetz für Luftfremdstoffe
FREETEX	Free Tropospheric Experiment
EUROTRAC-2	EUREKA Project on the Transport and Chemical Transformation of Environmentally Relevant Trace Constituents in the Troposphere over Europe
AEROCARB	Airborne European Regional Observations of the Carbon Balance
ASRB	Alpine Surface Radiation Budget Network

The extensive research conducted at Jungfraujoeh during 2001 is summarized in the reports of the individual groups.

As in previous years, the scientific work again attracted a number of visitors. Several groups initiated meetings of international scientific committees in the Jungfrau region and combined these meetings with an excursion to Jungfraujoeh, e.g.

- Joint SOHO-ACE Workshop 2001 on Solar and Galactic Composition
- ENVINET Workshop (European Network for Arctic-Alpine Multidisciplinary Environmental Research)
- EUROTRAC (European Experiment on Transport and Transformation of Trace Gases in the Troposphere)
- CERN - European School for High Energy Physics 2001
- GLOREAM Workshop (Global and Regional Atmospheric Modelling)

As a very special event we note the acceptance of the Jungfrau-Aletsch-Bietschhorn region to the UNESCO World Heritage List in December 2001. The area thus becomes the first-ever World Natural Heritage in the Alps to achieve UNESCO World Heritage status. This honor of course brings new responsibilities for the Foundation HFSJG as specifications for the management of the World Heritage Site are being drawn up.

In order to provide the researchers with optimal working conditions, the infrastructure needs continuous maintenance. In 1999 we started the first of three phases to replace the old and leaky windows at the research station. During 2001 the last phase was successfully completed. As in previous years, discussions took place with the management of the Jungfraubahnen in order to avoid or minimize disturbances of the scientific measurements by emissions in connection with ongoing and planned construction work. With only a few exceptions, no combustion engines were used for the construction of the new Plateau exit and tourist hall, which are expected to be inaugurated in 2002. We highly appreciate these efforts and are grateful to the Jungfraubahnen for their willingness to cover the significant additional costs involved.

Optimal working conditions are, however, for the most part also the result of the work of our custodians. At the end of December 2001, Mrs. Therese Staub and Mr. Hansruedi Staub retired as our main custodians after five years of devoted service to our Foundation. Mrs. Staub was highly esteemed for her warm-hearted spirit and her helpfulness; Mr. Staub was appreciated by scientists as an allrounder who found a

solution to every problem. In addition, both were well-liked interview partners for journalists and thus helped a lot in making the research station Jungfrauoch present in the media. The new main custodians, Mrs. Joan Fischer and Mr. Martin Fischer, worked in at the research station during several stays in November and December. As former custodians at the Schilthorn they have experience in living and working at high altitude, and they started the new challenge with enthusiasm.

The High Altitude Research Station Gornergrat

Due to its unique location, its clean environment, and the good infrastructure, the High Altitude Research Station Gornergrat, including the two astronomical observatories Gornergrat South and Gornergrat North as well as a 'container laboratory', continued to serve as an excellent basis for astrophysical research.

The Astronomical Observatory Gornergrat North is subleased to the Italian 'Consiglio Nazionale delle Ricerche (CNR)'. It is equipped with a 1.5m Cassegrain-Infrared Telescope (TIRGO). The telescope and related instrumentation are run by the 'Centro per l'Astronomia Infrarossa e lo Studio del Mezzo Interstellare (CAISMI)' with the assistance of the 'Osservatorio Astrofisico di Arcetri' and the 'Dipartimento di Astronomia e Scienza dello Spazio of the Università di Firenze'. TIRGO is used very actively with the near-infrared camera ARNICA, the fast photometer FIRT, and the long-slit spectrometer LONGSP. As an example, the long-term project of lunar occultations reached the world record of 400 recorded events. The year 2001 was characterized by the final implementation of the new mid-infrared camera TIRCAM2. With this new equipment, TIRGO has a bright future despite the increasing number of infrared instruments that recently became accessible for online remote operation (e.g. at the new 3.5m Telescopio Nazionale Galileo (TNG) at the Canary Island La Palma).

The Observatory Gornergrat South is subleased to the 'Universität zu Köln'. Here, the 'I. Physikalisches Institut der Universität zu Köln' has installed the 3m radio telescope KOSMA (Kölner Observatorium für Submillimeter und Millimeter Astronomie). The KOSMA telescope with its high-tech receivers and spectrometers allows the observation of interstellar and atmospheric molecular lines in the millimeter and submillimeter range. Since September 2001 the new dual frequency SIS (superconductor-insulator-superconductor) array receiver SMART has been operational. This is worldwide the first two frequency channel array receiver. The most advanced technical equipment combined with the excellent observing conditions at Gornergrat allow astronomical observations up to the highest frequencies accessible to ground based instruments.

Both instruments at Gornergrat are accessible to guest investigators. In a project in collaboration with the Institute of Applied Physics of the University of Bern, KOSMA was also used for solar observations. For the first time ever, a solar flare could be observed above 300 GHz. Together with recordings of the other six telescopes of the University of Bern dedicated to solar flare monitoring at frequencies from 8.4 to 89.4 GHz, and with hard and soft x-ray observations, these observations will contribute significantly to a better understanding of the temporal and spatial evolution of electron acceleration in solar flares.

Since 1998, on the Belvedere plateau, the Space Research and Planetary Sciences Research Division of the University of Bern has been operating a solar neutron telescope (SONTEL). This detector is the European cornerstone of a worldwide network initiated by the Solar-Terrestrial Environment Laboratory of the Nagoya Uni-

versity for the study of high-energy neutrons produced in energetic processes at the Sun. It is expected that this detector will play an essential role in the study of solar neutron events during the maximum and declining phase of the present solar cycle. In association with the large solar flare on April 12, 2001, the Gornergrat and Mt. Aragats (Armenia) neutron telescopes found weak evidence for a simultaneous observation of solar neutrons at the Earth. On April 15, 2001, a cosmic ray intensity increase due to a solar flare event was recorded. This GLE (ground level enhancement) was the largest observed so far in the present solar cycle 23.

The scientific results achieved at Gornergrat during the past years have found worldwide recognition. Details of the activity during 2001 can be found in the individual reports.

An extremely important help for the very successful scientific work done at Gornergrat is the continued support provided by the Burgergemeinde Zermatt, as the owner of the Gornergrat Kulm Hotel, and the Gornergratbahn. In spring 2001, Mr. Uli Schwall and his wife as the new director of the Kulm Hotel succeeded Mr. Daniel Kern, who up to then managed the Gornergrat Kulm Hotel. A very special event also in spring 2001 was that we had the honor of having all members of the new 'Burgerrat' of the Burgergemeinde Zermatt, under the presidency of Mr. Andreas Biner, as our guests at the astronomical observatories at Gornergrat and to be able to show them the research instruments and the scientific work done at this outstanding location. We are confident that the good relations between the Foundation HFSJG and the Burgergemeinde Zermatt will continue.

Summary and Acknowledgements

Following the high standards set in previous years, the research conducted at the High Altitude Research Stations Jungfrauoch and Gornergrat in 2001 was again extensive and internationally well recognized. Due to the unique observational and measuring conditions, the Jungfrauoch station has strengthened its position as a key station in a number of European and global measuring networks for climate and environmental studies. For the same reasons, Gornergrat continues to be a unique center for outstanding astronomical and astrophysical research. The Foundation HFSJG, therefore, confirmed its excellent performance and ensured the perspectives for a bright future. The hard work and the efforts of all who contributed to this success are highly appreciated and gratefully acknowledged. We also thank all members of the Foundation and their representatives for their support. In particular, we thank the Swiss National Science Foundation for the most significant funding of the Swiss contribution, and in particular Prof. Albert Matter (President Division II), Dr. Paul Burkhard (Head secretariat Division II), and Dr. Jean-Bernard Weber (Head Coordination and Interdivisional Tasks), for the good and benevolent collaboration.

Operation of the High Altitude Research Stations Jungfrauoch and Gornergrat would not be possible without the hard work, the help, and the support of many individuals and organizations.

For the Jungfrauoch station, our thanks go to our custodians, Mr. and Mrs. Staub, Mr. and Mrs. Jenni. With their devotion to duty, their competence, and their ability to create a comfortable atmosphere in the station, they are providing the basis for all scientists to do good research work. A special thanks goes to the Jungfrau Railway Holding Ltd and to the Jungfrau Railways. Without their goodwill and their substantial help the research station at Jungfrauoch could hardly be operated. Both the

Board of the Jungfrau Railway Holding Ltd under its president Dr. Georg Krneta, as well as the management and personnel of the Jungfraubahnen under Chief Executive Officer Walter Steuri, are always open and positive toward our needs, which quite often conflict with touristic objectives. We gratefully acknowledge the generous direct and indirect support and appreciate the continued interest in the research activity and the scientific output. At Jungfraujoch we are particularly grateful to Mr. Andreas Wyss, chief technical services and maintenance, for his continuous support.

For Gornergrat our thanks go first to all the scientists of the 'Centro per l'Astronomia Infrarossa e lo Studio del Mezzo Interstellare (CAISMI)', the 'I. Physikalisches Institut der Universität zu Köln', and of the University of Bern. We then thank the BVZ Holding AG and, in particular, the Gornergrat-Monte Rosa-Bahnen with its president of the Board, Mr. René Bayard. The substantial continuous support provided by the Gornergrat-Monte Rosa-Bahnen, by its Chief Executive Officer Bruno P. Melnik and his successor Hans-Rudolf Mooser as well as the entire crew, has been essential for the success of the scientific work. Finally, we are extremely grateful to the 'Bürgergemeinde Zermatt' under the new presidency of Mr. Andreas Biner, the new members of the 'Burgerrat', and to Mr. Fernando Clemenz, Director, from the Matterhorn Group. Without their goodwill and support it would not be possible to operate a world-famous astrophysical observatory at Gornergrat.

At the administrative office in Bern I would like to thank Dr. Urs Jenzer, the technical assistant HFSJG for electronics and computers, for his proficient work. My final words of thanks, however, go to our secretary, Mrs. Louise Wilson. It is to a great deal due to her competence and kindness in the daily contacts with staff and scientists, to her excellency in running all the administrative affairs, and to her devotion to the Foundation HFSJG that we can successfully pursue our goal in supporting top-class research in the alpine environment.

Bern, February 18, 2002

Erwin O. Flückiger