

Report of the Director

In the financial and economic world the year 2008 will be remembered for the beginning of a global crisis with unprecedented dimension. Fortunately, in the world of science, and especially for the International Foundation High Altitude Research Stations Jungfrauoch and Gornergrat (HFSJG), the consequences of the dramatic financial and economic changes were minimal. I am extremely happy, therefore, to be able to state that, as documented by the individual reports that have been prepared by the respective research groups, the year 2008 was again extremely rich in scientific activity at Jungfrauoch and Gornergrat. Therefore, the main goal of the International Foundation HFSJG, i.e. providing infrastructure and support for scientific research of international significance that must be carried out at an altitude of 3000-3500 meters above sea level or for which a high alpine climate and environment are necessary, was again successfully pursued.

The Foundation HFSJG

According to the by-laws of the Foundation HFSJG the Board has its regular meetings only every other year. As the last meeting took place on September 7, 2007, no meeting was scheduled for 2008. Statutory items, now required by new Swiss regulations for foundations every year, were settled by correspondence ballot voting. The activity report and the statements of accounts for 2007 were approved unanimously.

Unfortunately, as announced last year, the Istituto Nazionale di Astrofisica INAF in Rome terminated its membership in the Foundation HFSJG. One major reason for this decision was the fact that there are no longer any scientific astrophysical activities at Gornergrat involving Italian institutions.

On the other hand, the president of the Foundation HFSJG, Prof. Hans Balsiger, in a remarkable personal effort, was successful in putting the long supportive collaboration between the University of Bern with its Physikalisches Institut and our foundation on a more formal basis. We are extremely happy to report that as of January 1, 2009, the University of Bern is officially a member of the Foundation HFSJG. We thank the rector of the University of Bern, Prof. Urs Würgler, and the Director of the Physikalisches Institut, Prof. Willy Benz, for their support and benevolence in this matter.

For many years, the financial contributions from the Swiss National Science Foundation SNF form the backbone of our existence. In 2008 we submitted a request for financial support for the next budget period. Fortunately this request could be based on the very substantial activity reports that were provided by the user community, documenting how scientifically successful the activities in our two stations are. It gives me great pleasure to report that our application was successful and that the SNF awarded a substantial new grant for the three years 2009-2011.

Under the chairmanship of its new president, Prof. Martin C.E. Huber, the Jungfrauoch Commission of the Swiss Academy of Sciences (SCNAT), which looks after the interests of Swiss research within the Foundation HFSJG, settled its position within the newly structured organization of the Academy by joining the platform "Mathematics, Astronomy and Physics" ([Platform Mathematics, Astronomy and Physics \(MAP\)](#)). At its meeting on November 7, 2008, the commission decided to participate in the project "Jungfrau Klimaguide", a public outreach initiative in the

Jungfrau region by the University of Bern on the occasion of its 175-year anniversary (<http://www.jungfrau-klimaguide.ch/de/#/home/>). On November 25/26, 2008, the Jungfrauoch Commission hosted the workshop “Spawning the Atmosphere Measurements of Jungfrauoch”. About two dozen scientists from Belgium and Switzerland who work actively at Jungfrauoch exchanged ideas and discussed the most recent results of their research in the “House of Science” of the Academy SCNAT. Participation of the Belgian scientists was supported and coordinated by Prof. J.-C. Gérard of the University of Liège, in close collaboration with the president of the Commission, Prof. M.C.E. Huber, whose work as the main organizer of the workshop is gratefully acknowledged. For a detailed report with all the presentations please see <http://www.ifjungo.ch/workshops/2008/>.



Figures 1 & 2: Snapshots of the workshop “Spawning the Atmosphere Measurements of Jungfrauoch”, hosted by Prof. M.C.E. Huber and the Jungfrauoch Commission of the Swiss Academy of Sciences SCNAT on November 25/26, 2008, in Bern.

The Astronomic Commission, which acts as a users’ and science advisory committee to strengthen the Foundation’s internal and external communication, had no meetings in 2008.

The meeting of the Board and the General Assembly of the Sphinx AG took place at Jungfrauoch on June 19, 2008.

Additional scientific and public outcome of the events in celebration of the 75th anniversary of the High Altitude Research Station Jungfrauoch

Under the leadership of Prof. Dr. Markus Leuenberger, who acted as guest editor, the proceedings of the Jubilee Conference “Jungfrauoch – Top of Science”, held from September 11-13, 2006, at the Casino-Kursaal in Interlaken, were finally published by ELSEVIER in “Science of the Total Environment”, vol. 391, issues 2-3, March 2008, and are now available online at sciencedirect.com.

The work on the popular brochure about the scientific station at Jungfrauoch initiated by Prof. Hans Balsiger turned out to be much more extensive than anticipated. Steady progress was made, but the goal to have this task finished before the end of the year was unfortunately missed by a narrow margin. We are happy to report, however, that at the time of the writing of this report, the final versions in German and English have been printed. We gratefully acknowledge all those involved in the project, in

particular the contributing authors, Mr. Ulrich Schotterer for his invaluable help in preparing the DVD that is part of the brochure with the movies and the scientific reviews, and the financial support by the Swiss Academy of Sciences SCNAT.

The High Altitude Research Station Jungfraujoch

As documented by the individual reports and the lists and statistics, the High Altitude Research Station Jungfraujoch continued to be a place of exceptionally lively and exciting research. In 2008, 40 (2007: 36) teams were active at Jungfraujoch. Among a total of 43 (2007: 46) research projects, 22 (2007: 22) were primarily based on automatic measurements around the clock.

All member countries of the Foundation benefited from the excellent research conditions (Figure 3). Although Austria was not present with a research project, it was represented by a student excursion from the Department of Meteorology and Geophysics, University of Vienna. By number of projects, Germany and Belgium were again the largest users after Switzerland. Even a research team from the University of Tsukuba, Japan, carried out a test project for a 30cm radio telescope.

Scientists spent a total of 1339 person-working days at Jungfraujoch. As shown in Figure 4, this number is again higher than in the previous year (2007: 1273). Figure 5 illustrates the relative number of person-working days for 2008 by country. Leading in presence at Jungfraujoch were the Department of Internal Medicine, Centre Hospitalier Universitaire Vaudois CHUV, Lausanne (323 person-working days), followed by the Institut d'Astrophysique et Géophysique, Université de Liège (262), the Institut für Sport und Sportwissenschaften, Universität Basel (190), and the Laboratory of Atmospheric Chemistry, Paul Scherrer Institut, Villigen (107).

As an outstanding example of long-term activity at Jungfraujoch, Dr. Ginette Roland, corresponding member HFSJG, was awarded with the HFSJG “Distinguished Scientist Award”, on September 4, 2008, in recognition of 50 years of outstanding achievements in solar spectroscopy and atmospheric research at Jungfraujoch, and in grateful acknowledgement of her personal endeavors for the benefit of the Research Station and the Foundation. She is the second recipient of this award after Prof. Luc Delbouille (2006).



Figure 6: *The presentation of the “HFSJG Distinguished Scientist Award”, by the director HFSJG, to Dr. Ginette Roland, on September 4, 2008, for 50 years of excellent scientific work at Jungfraujoch.*

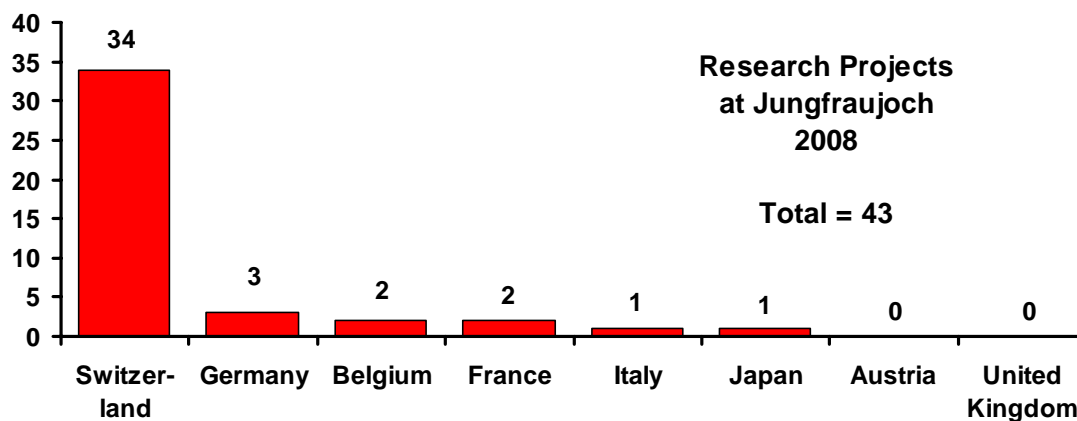


Figure 3: Number of research projects at the High Altitude Research Station Jungfrauoch in 2008 by country.

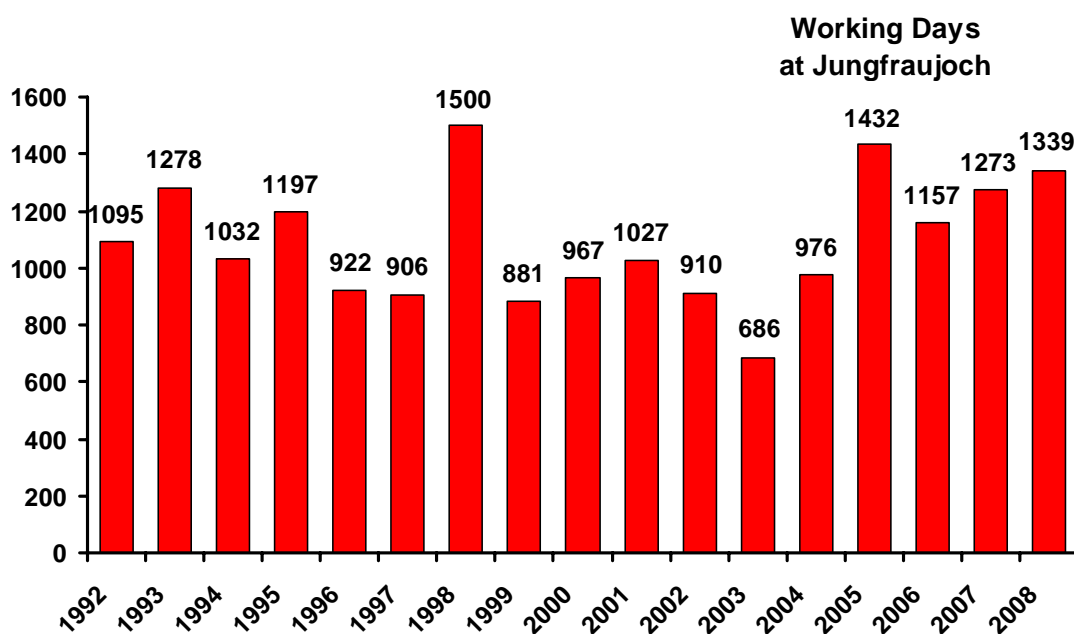


Figure 4: Number of working days spent by scientists at the High Altitude Research Station Jungfrauoch during the past years.

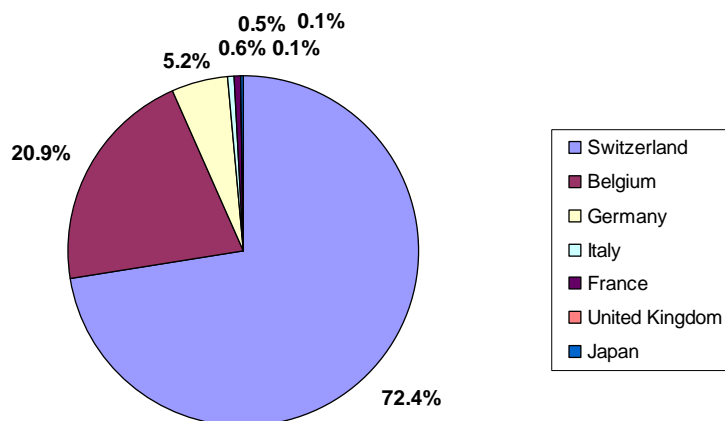


Figure 5: Relative number of person-working days in 2008 at the High Altitude Research Station Jungfrauoch by country.

The research conducted at Jungfraujoch resulted in the following output in 2008:

52 refereed publications,
67 conference presentations / posters,
10 data publications and reports, and
6 Ph.D. theses.

Scientific results obtained at Jungfraujoch were presented by the various research groups at a number of international conferences, e.g. at the 2008 General Assembly of the European Geosciences Union EGU in Vienna.

Due to the unique location and the unspoiled environment as well as the quality of the scientific work, Jungfraujoch has maintained its role as a leading European center for environmental research. The site plays a significant role in a number of nationally and internationally coordinated research programs, many of them funded by the European Commission. Jungfraujoch is a key station in a number of major networks or projects (please see Table 1 for details). As in previous years, Jungfraujoch environmental measurements again played an important role in the validation/calibration of satellite instruments (e.g. the Atmospheric Chemistry Experiment ACE onboard the Canadian satellite SCISAT-1; the German Earth-observation satellite TerraSAR-X).

In the context of international cooperation, research teams working at Jungfraujoch, as well as the Foundation HFSJG itself, participated in an application within the FP7-INFRASTRUCTURES-2008-1 call. The project “European Observatories Network” (EurObsNet), under the leadership of Dr. M. Bittner, German Aerospace Center, was supposed to become a sustainable research infrastructure for climate and atmospheric related research and observations, and to include a “distributed” and “virtual” research infrastructure consisting of selected observatories with long-term support located in Europe, Africa, the Arctic and Antarctica, and the World Data Centers ICSU/WMO WDC-RSAT, ICSU WDC-MARE and ICSU WDC-Climate. The project got high rating at several levels, but finally failed to get funding.

Among a number of scientific highlights the following received special attention in the news media:

- The new portable ice nucleation chamber PINC developed by the cloud physics group of the Institute for Atmospheric and Climate Science of the Swiss Federal Institute of Technology Zürich ETHZ was deployed for the first time at Jungfraujoch in January 2008,
- the new CO₂ tracker developed by EMPA, the Swiss Federal Laboratories for Materials Testing and Research, allowing for the first time the continuous measurement of the isotopic signature of CO₂ characteristic of the main sources of carbon dioxide, and
- the detection of three new Fluoro-Chloro-Hydrocarbons (CFC) at Jungfraujoch by researchers from the Johann Wolfgang Goethe-University, Frankfurt am Main.

During the past years, Jungfraujoch has become a prime site for biologists studying the transport and survival of microbes on intercontinental dust. In 2008 the Laboratoire de Biologie Moléculaire des Plantes Supérieures (LBMPS), Université de Genève, installed a “Bertin” air sampler at the top Sphinx terrace. Researchers studying this topic highly appreciate the new on-line alert system developed by the Laboratory of Atmospheric Chemistry of the Paul Scherrer Institut providing real-time notification of ongoing Saharan dust events.

Table 1: List of major nationally and internationally coordinated networks and/or research programs where Jungfraujoch is a key station

NDACC	Network for the Detection of Atmospheric Composition Change Primary Site (http://www.ndacc.org/)
GAW, GAW-CH	Global Atmosphere Watch, Global GAW Station (http://www.wmo.int/pages/prog/arep/gaw/gaw_home_en.html , and http://www.meteoschweiz.admin.ch/web/de/klima/klimabeobachtungen/GAW_CH_Allg.html)
SOGE	System for Observation of Halogenated Greenhouse Gases in Europe (http://www.nilu.no/soge/)
EARLINET-ASOS	European Aerosol Research Lidar Network - Advanced Sustainable Observation System (http://www.earlinetasos.org/)
GEOMON	Global Earth Observation and Monitoring of the Atmosphere (http://www.geomon.eu/ ; http://geomon.ipsl.jussieu.fr/)
HYMN	Hydrogen, Methane and Nitrous oxide: Trend variability, budgets and interactions with the biosphere (http://www.knmi.nl/samenw/hymn/)
NADIR/NILU	NILU's Atmospheric Database for Interactive Retrieval (NILU: Norwegian Institute for Air Research) (http://www.nilu.no/nadir/)
AGAGE	Advanced Global Atmospheric Gases Experiment Collaborative Sampling Station (http://agage.eas.gatech.edu/)
EUROHYDROS	European Network for Atmospheric Hydrogen Observations and Studies (http://www.meteor.uni-frankfurt.de/eurohydros/)
CarboEuro-IP	Assessment of the European Terrestrial Carbon Balance (http://www.carboeurope.org/)
IMECC	Infrastructure for Measurements of the European Carbon Cycle (http://imecc.ipsl.jussieu.fr/index.html)
EUMETNET	Network of European Meteorological Services (http://www.eumetnet.eu/)
SwissMetNet	Automatic Measuring Network of MeteoSwiss (http://www.meteoschweiz.admin.ch/web/de/forschung/projekte/swissmetnet.html)
RADAIR	Swiss Automatic Network for Air Radioactivity Monitoring (http://www.bag.admin.ch/themen/strahlung/00045/02372/02374/index.html?lang=de)
ICOS	Integrated Carbon Observation System (http://www.icos-infrastructure.eu/)
NADAM	Netz für automatische Dosis-Alarmierung und -Meldung (https://www.naz.ch/de/aktuell/tagesmittelwerte.shtml)
NABEL	Nationales Beobachtungsnetz für Luftfremdstoffe (National Air Pollution Monitoring Network) (http://www.empa.ch/plugin/template/empa/699/*/--/1=1)
AGNES	Automated GPS Network for Switzerland (http://www.swisstopo.admin.ch/swisstopo/geodesy/pnac/html/en/statjujo.html)
NCCR Climate	Swiss Climate Research (http://www.nccr-climate.unibe.ch/)
E-GVAP	The EUMETNET GPS Water Vapour Programme (http://egvap.dmi.dk/)
PERMASENSE	Wireless Sensing in High Alpine Environments (http://www.permasense.ch/)
PERMOS	Permafrost Monitoring Switzerland (http://www.permos.ch/)
NMDB	Real-Time Database for High Resolution Neutron Monitor Measurements (http://www.nmdb.eu)

As in previous years environmental research at Jungfraujoch was in 2008 again supported by

INTROP	Interdisciplinary Tropospheric Research: from the Laboratory to Global Change (http://www.esf.org/activities/research-networking-programmes/life-earth-and-environmental-sciences-lesc/current-esf-research-networking-programmes-in-life-earth-and-environmental-sciences/interdisciplinary-tropospheric-research-from-the-laboratory-to-global-change-introp-page-1.html)
ACCENT	Atmospheric Composition Change, The European Network of Excellence (http://www.accent-network.org/farcry_accent/) http://www.accent-network.org/
EUSAAR	European Supersites for Atmospheric Aerosol Research (http://www.eusaar.net/files/activities/transnat_act.cfm)

Most of the measurements made at Jungfraujoch are publicly available via the respective databases, many of them in real or near real-time.

For studies on climate change and the consequences of global warming for the high alpine environment in general and in particular for the region of the UNESCO World Heritage Jungfrau-Aletsch-Bietschhorn (JAB), Jungfrauoch is a research site of utmost importance. Therefore, the projects PERMASENSE (<http://cn.cs.unibas.ch/projects/permasense/>) and PERMOS (Permafrost Monitoring Switzerland, <http://www.permos.ch/>) were diligently continued. In December 2008 within PERMASENSE a new base station (access node between the sensor web and the internet) and a small test network were installed at the Sphinx observatory. The setup of the entire wireless sensor network WSN is planned for early 2009.

As in previous years, the High Altitude Research Station Jungfrauoch served again as a base for scientific expeditions to the glacier area of the Jungfrau region (Laboratory for Radio- and Environmental Chemistry, University of Bern and Paul Scherrer Institute (PSI); within the NCCR climate project VIVALDI: Variability in Ice, Vegetation, and Lake Deposits; and ETH Zürich, Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie VAW). In June 2008 a new thermal drill (TD) using ethanol/water mixtures as antifreeze drilling fluid was successfully tested by the PSI group at Jungfrauoch. Long-term observations of the Grosser Aletschgletscher including length, area, volume, and mass changes are complemented by a new method for the determination of the glacier wide mass balance that merges point-based observations with net volume changes and runoff measurements.

Since 2005, several extensive medical studies have been conducted, e.g. on the short-term acclimatization to high altitude in children. In 2008 two major medical studies were conducted, one by the Centre Hospitalier Universitaire Vaudois, Lausanne, with 60 children and 40 adults, the other by the Institute of Exercise and Health Sciences, University of Basel, with 10 families. Both studies aimed at a better understanding of possible mechanisms predisposing to pulmonary hypertension and possible correlations with acute mountain sickness AMS.

The big spark chamber, built by the Laboratory of High Energy Physics, Physikalisches Institut, University of Bern (Prof. K. Pretzl and Prof. A. Ereditato, and team), in collaboration with CERN, and installed with support by the Jungfrauobahn AG in the tourist area of the Sphinx during the Einstein Year, continued operation throughout 2008.

Complementing the automatic meteorological measurements within SwissMetNet, our custodians continued the daily visual weather observations for the Federal Office of Meteorology and Climatology (MeteoSwiss). The custodians also provide the updates for the internet weather report of the Jungfrauobahnen.

The Research Station, the scientific activity, and the unique environment of the UNESCO World Heritage Jungfrau-Aletsch-Bietschhorn attracted a number of visitors throughout the year. Several organizations initiated meetings of national and international scientific committees in the Jungfrau region and combined these meetings with an excursion to Jungfrauoch. The research station was also visited by a large number of student groups as part of a lecture or training school. Examples of the more than 88 individual and group visitors in 2008 are:

- sol-E Suisse AG, Bern; Inauguration solar power plant; 11.01.2008
- Students for sustainability at ETH and University Zürich; 29.03.2008
- Dr. Bert Scheeren, European Commission, Joint Research Centre, Institute for Environment and Sustainability, Climate Change Unit, Ispra, Italy; 21.05.2008

- Prof. John Seinfeld, California Institute of Technology, Pasadena CA, USA; 01.06.2008
- Visitors group „AGAGE Advanced Global Atmospheric Gases Experiment“; 06.06.2008
- EMPA Director Prof. Louis Schlapbach, Dr. B. Buchmann; Prof. Teruo Kishi, National Institute of Materials Science, Japan; 11.06.2008
- Mrs. Hung Boon Lee, Mr. Sainghui Lim, Cancer Research Initiatives Foundation, Malaysia; 25.06.2008
- Ozone Block Course, PD Dr. Evi Schüpbach; 16.07.2008
- Korea Institute of Nuclear Safety (group of 5 Korean technicians); 03.09.2008
- Dr. Shin Sugiyama, Institute of Low Temperature Science, Hokkaido University, Sapporo, Japan, with glaciology students; 04.09.2008
- IUFRO International Union of Forest Research Organisations / 5 aerosol experts; 11.09.2008
- ETH Zürich, Glaciology students of Prof. Martin Funk; 05.11.2008
- Departement of Meteorology and Geophysics, University of Vienna, Student excursion; 27.11.2008

In addition to the large number of requests for visits of the Research Station at Jungfrauoch, there was an unbroken intense interest by print media and TV, with more than a dozen contributions in 2008.

In order to provide the researchers with optimal working conditions, continuous effort is made to adapt the infrastructure to the changing needs of the researchers and to adequate standards. In accordance with the 10-year plan for the maintenance of the entire infrastructure that was set up with our architect, Mr. Hans Boss, Zweilütschinen, the kitchen and the living room shared by the two custodian couples were renovated in 2008 (Figures 7 and 8).



Figures 7 & 8: *The newly renovated kitchen (left) and living room (right) of the custodians at the High Altitude Research Station Jungfrauoch.*

As in previous years, several coordination discussions took place with the management of the Jungfraubahnen. The annual coordination meeting at Jungfrauoch, a platform for the discussion of items of common concern, took place on November 6, 2008, and was attended by the director HFSJG and the head custodian, Mr. Martin Fischer. Prime topics from our point of view remain the continued efforts to avoid or minimize disturbances of the scientific measurements by emissions in connection with construction work or by apparatus defects. The

measures taken to stabilize the temperature in the Sphinx laboratory turned out to be effective. A subject of common concern is the increasing risk of falling rocks.

On December 12, 2008, the director HFSJG attended the annual meeting of the “Alpenfeuerwehr”, the fire-fighting body now responsible for the High Altitude Research Station Jungfrauoch.

The continuous support by Mr. Andreas Wyss, chief of technical services and maintenance division of the Jungfraubahnen at Jungfrauoch, of Mr. Fritz Jost and Mr. Heinz Schindler in all these matters is gratefully acknowledged.

Much to our regret, Mr. and Mrs. Kurt and Gertrud Hemund, our second custodian couple, resigned from their duty in February 2008. We were lucky to find a qualified replacement with Mr. and Mrs. Felix and Susanne Seiler (Figure 9).



Figure 9: Susanne and Felix Seiler, our second custodian couple as of March 1, 2008.

The High Altitude Research Station Gornergrat

Due to its unique location, its clean environment, and the good infrastructure, the High Altitude Research Station Gornergrat, which at present includes the astronomical observatory Gornergrat South and a container laboratory, continues to be an excellent basis for astrophysical research.

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 central topic of the research with KOSMA, conducted jointly with the Radio-astronomisches Institut, Universität Bonn, is the spectrally resolved observation of the global distribution of interstellar matter in the Milky Way and nearby external galaxies, using the important mm-, submm-lines of CO, and atomic carbon. The most advanced technical equipment combined with the excellent observing conditions at Gornergrat allows astronomical observations up to the highest frequencies accessible to ground-based instruments.

Figure 10 shows the statistics for the use of the Gornergrat South Observatory during 2008. Compared to previous years, the number of 297 working days at Gornergrat was slightly larger than in 2007. The Observatory was again used by a significant number of guest observers.

As already stated in previous reports, the termination of the TIRGO era in 2005 by the Italians left the future of Gornergrat North open. The Burgergemeinde Zermatt would like the Foundation HFSJG to use Gornergrat North to embed science in public outreach and tourism. Unfortunately, the project for a robotic telescope worked out by a team of astronomers under the lead of the president of the Schweizerische Astronomische Gesellschaft, Dr. Max Hubmann, made no progress. Alternatives are

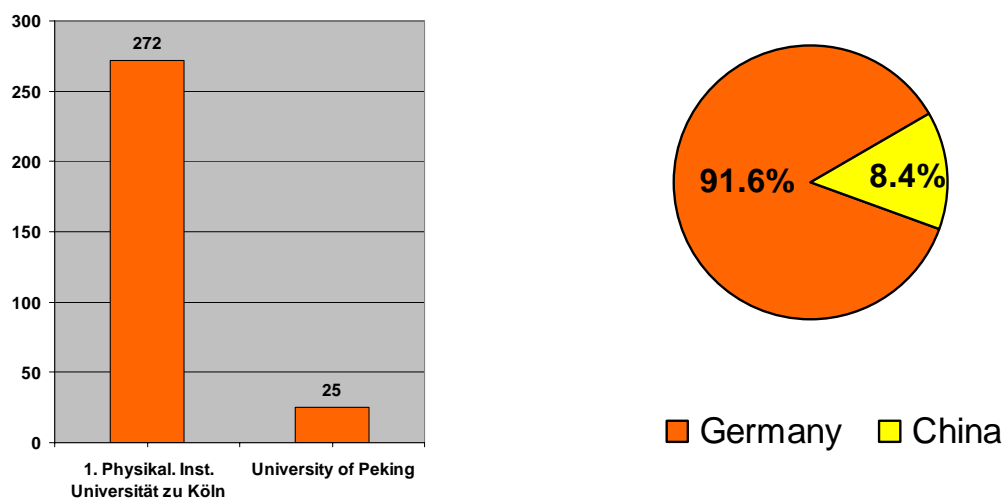


Figure 10: Statistics of the person-working days at the Astronomical Observatory Gornergrat South.

under investigation. In the meantime the Observatory Gornergrat North continues to be used by an experienced amateur astronomer for astrophotography and astronomical lectures to the public (Figure 11).



Figure 11: IC434 Horse Head nebula, photographed at the Observatory Gornergrat North (courtesy Mr. Roland Schneider).

Since 1998, the Space Research and Planetary Sciences Division of the University of Bern has been operating a solar neutron telescope (SONTEL) on the Belvedere plateau. This detector is the European cornerstone of a worldwide network initiated by the Solar-Terrestrial Environment Laboratory of the Nagoya University for the study of high-energy neutrons produced in energetic processes at the Sun. During 2008, continuous operation of SONTEL was ongoing.

During the last couple of years the region of the Gorner glacier has become increasingly interesting to the glaciologists of the Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie (VAW) of the Swiss Federal Institute of Technology in

Zurich (ETHZ). In 2008, the teams under the leadership of Prof. Martin Funk spent about 210 working days near and at the Gornersee in order to study the processes controlling the drainage of glacier-dammed lakes. Another 40 working days were spent in field campaigns in the region by the Alfred-Wegener-Institut für Polar- und Meeresforschung, Bremerhaven, Germany.

In 2008, seven (2007: 7) scientific papers were published based on work at Gornergrat. Details can be found in the individual reports. The Gornergrat site with its observatories was also again a demanded topic for media reports. On October 14, 2008, we had the honor and the pleasure of welcoming the members of the Research Council of Division II (Mathematics, Natural and Engineering Sciences) of the Swiss National Science Foundation for a visit at Gornergrat.



Figure 12: *The members of the Research Council of Division II (Mathematics, Natural and Engineering Sciences) of the Swiss National Science Foundation at Gornergrat, on October 14, 2008.*

An extremely important help for the operation of the observatories and the successful scientific work at Gornergrat is the continued support provided by the Burgergemeinde Zermatt, with its president Mr. Andreas Biner, by the Gornergrat Bahn, and locally by Mrs. Fabienne Clemenz and Mr. Fernando Clemenz as the directors of the Kulm Hotel, and their crew.

Summary and Acknowledgements

As documented by the individual activity reports, the large number of publications, and the feedback from meetings, scientific work at the High Altitude Research Stations Jungfraujoch and Gornergrat during the report period 2008 continued to be extensive and of high international standard. Due to the unique observational and measuring conditions, the Jungfraujoch station has maintained 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 continued to be a prime site for astronomical and astrophysical research. The Foundation HFSJG confirmed its

role as a provider of excellent research infrastructure. 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. Christian Leumann (President Div. II), Dr. Paul Burkhard (Head Division II), and the former Deputy Director and Head Interdivisional Coordination, Dr. Jean-Bernard Weber, for the excellent and benevolent collaboration.

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

For the Research Station Jungfrauoch, our thanks go to our custodians, Mr. and Mrs. Fischer, Mr. and Mrs. Hemund, and Mr. and Mrs. Seiler. 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. Special thanks go to the Jungfrau Railway Holding Ltd and to the Jungfrau Railways. Without their goodwill and their substantial support the Research Station at Jungfrauoch could hardly be operated. The Board of the Jungfrau Railway Holding Ltd under its president Prof. Thomas Bieger, as well as the management and personnel of the Jungfraubahnen under Chief Executive Officer Walter Steuri and his successor Urs Kessler, 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 Jungfrauoch we are particularly grateful to Mr. Andreas Wyss, chief of technical services and maintenance, and his team, and to Mr. Fritz Jost, chief Zugförderung und Werkstätte (ZfW). Our thanks also include Mr. Urs Zumbrunn, and the personnel of the Restaurant Top of Europe.

The great efforts of all these individuals and institutions would, however, be worthless if the research facilities would not be used adequately. We therefore would like to express our sincere gratitude to all scientists for their dedicated work and good collaboration, demonstrating through the excellence of their research that the High Altitude Research Station Jungfrauoch continues to fulfill an undisputed need of the scientific community.

In this sense, for Gornergrat our thanks go first to all the scientists of the I. Physikalisches Institut der Universität zu Köln (Prof. Jürgen Stutzki, Dr. Martin Miller) and of the Max-Planck-Institute for Radio Astronomy in Bonn, of the University of Bern, and of all collaborating institutions. We are also grateful to the scientists of the Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie (VAW) of the Swiss Federal Institute of Technology in Zurich (ETHZ). We then thank the Brig-Visp-Zermatt Bahn (BVZ Holding AG) and, in particular, its member of the board, Mr. René Bayard. The substantial continuous support provided by the Gornergrat Bahn, by its Chief Executive Officer 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 Burgergemeinde Zermatt under the presidency of Mr. Andreas Biner, the members of the Burgerrat, to Mr. Fernando Clemenz, director of the Matterhorn Group Holding AG and of the Kulm-Hotel Gornergrat, and to his wife Fabienne. 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. As a consequence of changes at the Physikalisches Institut in the context of the retirement of the undersigned, Dr. Jenzer will transfer his duties within the Foundation HFSJG by the end of 2008 to Dr. Rolf Bütikofer. Continued assistance by the Informatikdienste of the University of Bern in networking and data transfer, in particular by Mr. Christian Heim and Mr. Fritz Bütikofer, is also gratefully acknowledged. We have greatly appreciated the competent services of our treasurer, Mr. Karl Martin Wyss, the knowledgeable support and bookkeeping by Mr. Christian Gasser, and the professional auditing by Treuhand Cotting AG, Bern (Mr. Harro Lüdi). Last, but not least, I would like to thank our president, Prof. Hans Balsiger, and our secretary, Mrs. Louise Wilson. Once again it was to a great deal due to Mrs. Wilson's competence and flexibility in running the administrative affairs, to her kindness in the daily contacts with staff and scientists, and to her devotion to the Foundation HFSJG that we could successfully pursue our goal in supporting top-level research.



Bern, June 30, 2009

Erwin O. Flückiger

