

AN OPPORTUNITY FOR HIGH MOUNTAIN COSMIC RAY OBSERVATORIES



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The High Mountain Observatories (HMOs) played a relevant role not only for Nuclear Physics but also for Astrophysics. For example, before the construction of the particle accelerators, cosmic ray (CR) measurements performed at high altitudes were the only way to investigate high-energy interaction mechanisms. The first HMOs (dated to the first half of the past century) were witnesses of an intense research activity performed by outstanding physicists (many of them awarded with a Nobel Prize); new detection techniques were introduced and new particles were discovered. Nowadays, HMOs are still of importance for fundamental research, as well as for instrument calibration, validation and integration of satellite data. Certainly, the HMOs, their instruments and obtained data series are a scientific heritage that should not be lost.

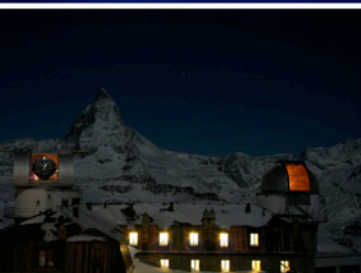
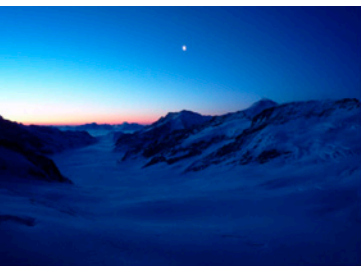
During the International Conference on *Astronomy and World Heritage: across time and continents* (Kazan, 19 - 24 August 2009), following the invitation by the Coordinator (Ms. A. Sidorenko-Dulom) of the UNESCO World Heritage (thematic initiative: *Astronomy and Word Heritage*), it was proposed to include HMOs with special historical and scientific interest in a list to be submitted to the UNESCO World Heritage Committee. The request is in complete agreement with was established at the 29th Session of the World Heritage Committee of the World Heritage Centre:

“... to further explore the thematic initiative “Astronomy and World Heritage” as a means to promote, in particular, nominations which recognize and celebrate achievements in science. Following this recommendation, all States Parties were invited to identify national focal-points in charge of coordinating the implementation of all activities relevant to the Initiative, in consultation with the UNESCO World Heritage Centre, the Advisory Bodies and national authorities”

For this reason, at the ACP Symposium on Atmospheric Chemistry and Physics at Mountain Sites (Interlaken – Switzerland, 8-10 June 2010) a round table discussion on the topic, chaired by Dr. M. Huber (President of the *Jungfrauoch Kommission*, Swiss Academy of Science), has been organized (see [The “Interlaken Initiative” – Declaration of Interest](#)).

Work initially supported by the Turin Section of the National Institute of Nuclear Physics and by IFSI-Roma of the National Institute for Astrophysics.

ACP Symposium 2010



June 8–10, 2010
Interlaken, Switzerland
<http://acp.scnat.ch/symposium>

Thursday June 10 : 16.30 - 18.00 Round-Table Discussion on High Altitude Research Stations and World Heritage Chair: Martin Huber

The «Interlaken Initiative» – Declaration of Interest

Having Regard

- that properties related to science are among the most under-represented on UNESCO's «World Heritage List»;

Recalling

- that the World Heritage Committee, at its 29th session, requested the World Heritage Centre to further explore the thematic initiative "Astronomy and World Heritage" as a means to promote, in particular, nominations which recognize and celebrate achievements in science,
- that the World Heritage Committee at its 32nd session examined an Integrated *Implementation Strategy* of the thematic initiative "Astronomy and World Heritage":

Considering

- the numerous historic observatories – outposts of civilisation – located at diverse high mountain sites on several continents, and
- as an example, in particular,
 - the striking «Sphinx» edifice, crowning the Jungfrauoch with a platform, on which Nature has been investigated at high altitude, in a virtually pristine environment, starting early in the last century,
 - the robust research-station, ducked into the mountainside – yet well isolated from the natural rock –, which has sheltered researchers addressing wide-ranging scientific and technological projects, for nearly a century now,
 - the location of this specific facility within the natural World Heritage property of Jungfrau – Aletsch – Bietschhorn;

Noting

- that these buildings house **High Mountain Observatories (HMOs)**, constructed for observations and research in astronomy and physics, in meteorology and atmospheric chemistry, in medicine and physiology, and for science in general, and
- that, through the work of early pioneers as well as later generations of scientists, this has led to
 - discoveries on cosmic rays and elementary particles in the first half of the last century, which today provide substantial information about the origin of the Universe and its composition,
 - collection of meteorological data, as well as data on atmospheric composition, at high mountain sites, which represent today an archival history of observations of the terrestrial atmosphere that are indispensable for studying climate change today,
 - pioneering research in high-altitude physiology, medicine and biology that has fostered further investigations at High Mountain Observatories worldwide, and
 - a broad heritage of invaluable data archives, historical photos and instruments;

an Assembly of Participants at the «International Symposium on Atmospheric Chemistry and Physics at Mountain Sites», following a Round-Table Discussion on 10 June 2010, requested the Establishment of a Working Group (WG)

- composed of, among others,
 - the Chair or Vice-chair of the IAU Working Group on Astronomical Heritage,
 - a representative of UNESCO (for example from the Centro UNESCO Torino),
 - representatives of High Mountain Observatories from different Continents, ...
 - a representative of other organisations supporting the initiative.

with the Mandate

- to study
 - the documents related to the 'Convention concerning the Protection of the World Cultural and Natural Heritage', and
 - the Operational Guidelines for the Implementation of the World Heritage Convention and the UNESCO thematic Initiative "Astronomy and World Heritage", and then
- to diffuse the information about the Interlaken Initiative – as well as that contained in the initiative presented at the International Conference "Astronomy and World Heritage: across Time and Continents" (Kazan, Republic of Tatarstan, Russian Federation, 19-24 August 2009) – in other international meetings concerning HMOs,
- to invite HMO directors to indicate the characteristics of their laboratory to the WG
- to examine the characteristics of a number of HMO, according to the Operational Guidelines for the Implementation of the World Heritage Convention (§ 77), where the criteria for the assessment of Outstanding Universal Value are described, and
- to consider a transnational scheme for recognising HMOs as part of the UNESCO World Heritage List.

Subsequently to Prepare for forwarding to UNESCO and interested State Parties

- a tentative list of HMOs correlated with the thematic Initiative "Astronomy and World Heritage",
- a list of other HMOs with outstanding value for atmosphere science, biology and medicine, as well as to other appropriate sciences, and to evaluate the opportunity to open a new thematic initiative.

This «Declaration of Interest» is the result of a Round Table on
**"High Mountain Observatories as a part of
"Astronomy and World Heritage"**
and refers to the study on High Mountain Observatories (HMOs)
as a part of the ICOMOS-IAU Thematic Study on Astronomical Heritage
within the framework of the UNESCO Initiative "Astronomy and World Heritage".

Following three presentations highlighting the rules governing the World Heritage List and illustrating the wealth and significance of HMOs throughout the World, namely

- *Astronomy and World Heritage – across Time and Continents* by Gudrun Wolfschmidt (Vice-Chairperson of the IAU-ICOMOS Working Group on Astronomical Heritage)
- *The scientific and historical relevance of High Mountain Observatories* by Alba Zanini (INFN Torino)
- *An Example: The Bolivian Observatory at Chacaltaya* by Francesco Zaratti (Universidad Mayor de San Andrés, La Paz)

the participants in the Round Table discussed, and supported the above statement.

The Round-table discussion was held on 10 June 2010 in Interlaken
during the
Symposium on Atmospheric Chemistry and Physics at Mountain Sites
organised by the Committee on Atmospheric Chemistry and Physics of the 'Geosciences' Platform of the Swiss Academy of Sciences.

Signed by the Members of the Organising Committee of the Symposium on
«Atmospheric Chemistry and Physics at Mountain Sites», in June 2010

Johannes Staehelin, Chair

Institute for Atmospheric and
Climate Science, ETH Zürich

Urs Baltensperger

Laboratory of Atmospheric Chemistry
Paul Scherrer Institut (PSI)

Brigitte Buchmann

Laboratory for Air Pollution/Environmental Technology, EMPA

Erwin Flückiger

High Altitude Research Station
Jungfrauoch&Gornergrat

Markus Leuenberger

Climate and Environmental Physics
University of Bern

Dominique Ruffieux

Données Atmosphériques
MeteoSuisse

Useful links

<http://whc.unesco.org/en/activities/19/>

http://whc.unesco.org/pg.cfm?cid=281&id_group=21&s=home

<http://www.astronomy2009.org/globalprojects/cornerstones/astroworldheritage/>

Members of the Working Group on “ High mountain Observatories/UNESCO World Heritage”

- **Dr. Maria Paola Azzarrio Chiesa** (info@centrounesco.to.it)
- **Dr. Wolfgang Fricke** (Wolfgang.Fricke@dwd.de)
- **Dr. François Gheusi** (francois.gheusi@aero.obs-mip.fr)
- **Prof. Martin C.E. Huber** (mceh@bluewin.ch)
- **Ao. Univ. Prof. Dipl.-Ing. Dr. techn. Anne Kasper-Giebl** (akasper@mail.tuwien.ac.at)
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