

The High Alpine Research Station Jungfraujoch



Origin, History, and Future

25 November 2008
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Director HFSJG

Jungfraujoch – Top of Europe since 1912



Jungfrau Railways

The International Foundation High Altitude Research Stations Jungfrauoch and Gornergrat HFSJG

- was founded in 1930
- supports research which requires high altitude and/or high alpine environment
- office/management in Bern

The International Foundation HFSJG

- Present Member Countries
 - Belgium, Germany, UK, Austria, Switzerland
- Switzerland represented by
 - Swiss Academy of Sciences, Jungfrau Railways, Gornergrat Railways, Burgergemeinde Zermatt, University of Bern
- Funding
 - Swiss National Science Foundation
 - annual contributions and redemptions
- URL: <http://www.hfsjg.ch>

Jungfraujoch

3500 m

Sphinx

Observatory

1937



**Top of Europe
Restaurant**

Research Station

1931



Why is Jungfraujoch a unique research site?

Location
Location
Location
Accessibility
Infrastructure



Highlights of Past Research I

- 1950 - Université de Liège: Solar Spectroscopy
Migeotte, Neven, Swensson:
Solar Atlas 2.8-23.7 μm
Delbouille, Roland, Neven:
Solar Atlas 0.3 - 1 μm
- < 1948, 1951
Blackett, Wilson & Powell
(also at Pic du Midi, France)
Cosmic Ray Research \Rightarrow 2 Nobel Prizes

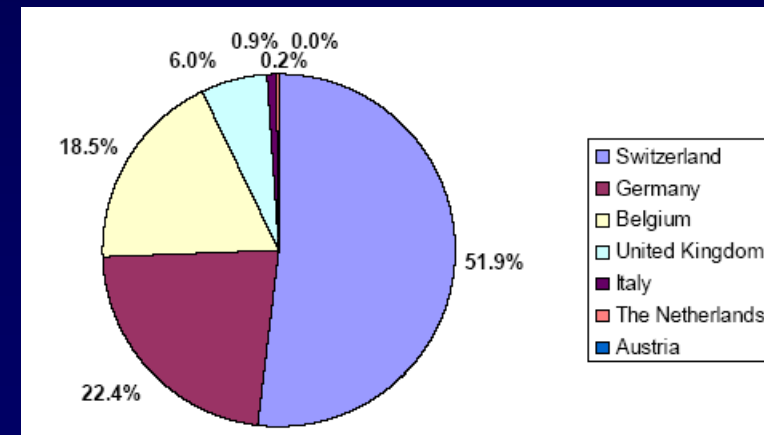
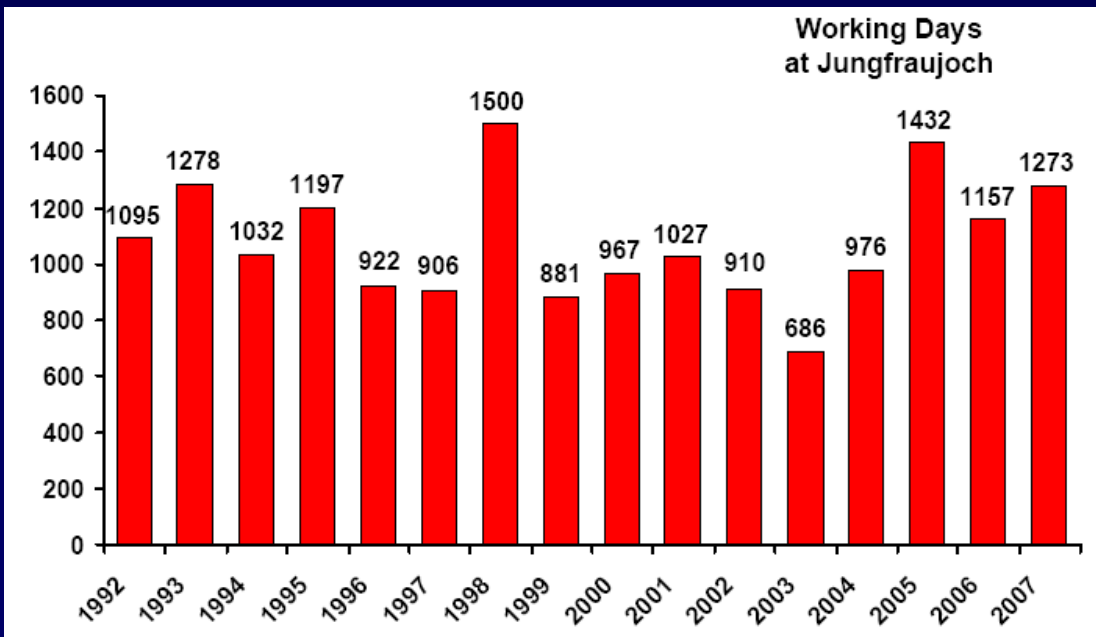
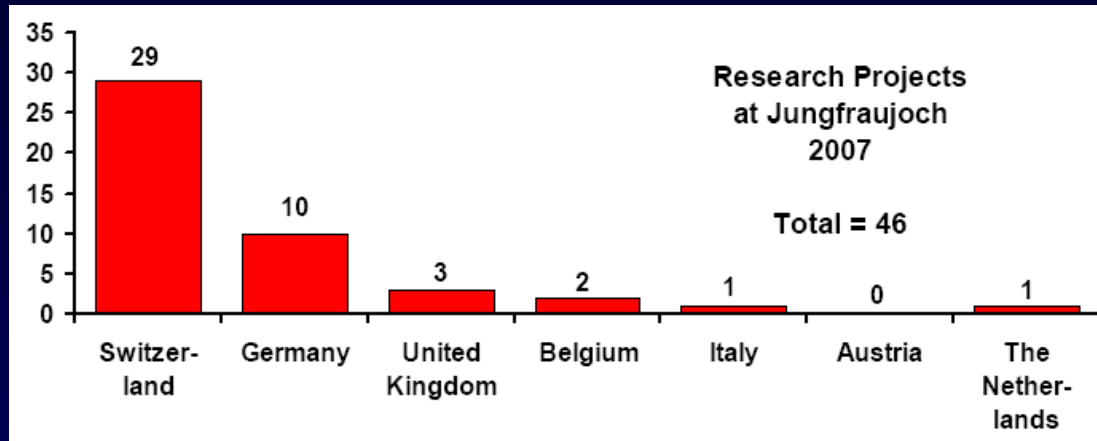
Highlights of Past & Present Research II

- 1962 Labs & Neckel:
first absolute measurements of the solar constant
- 1963- Observatoire de Genève (Golay):
7-color photometry, catalog of > 40'000 stars
- 1982 University of Bern (Debrunner & Flückiger)
first identification of solar neutrons near Earth
- 1990 Blumthaler & Ambach:
increase of UV-radiation
- - 2006 several research groups:
long-range datasets for more than 25
climatologically harmful atmospheric
constituents

Use / Output (2007)

- 36 teams
- 46 research projects,
22 primarily based on automatic measurements
around the clock.
- 47 refereed publications,
- 87 conference presentations / posters,
- 14 data publications and reports,
- 1 chapter in a book on photovoltaic, and
- 4 Ph.D. theses.

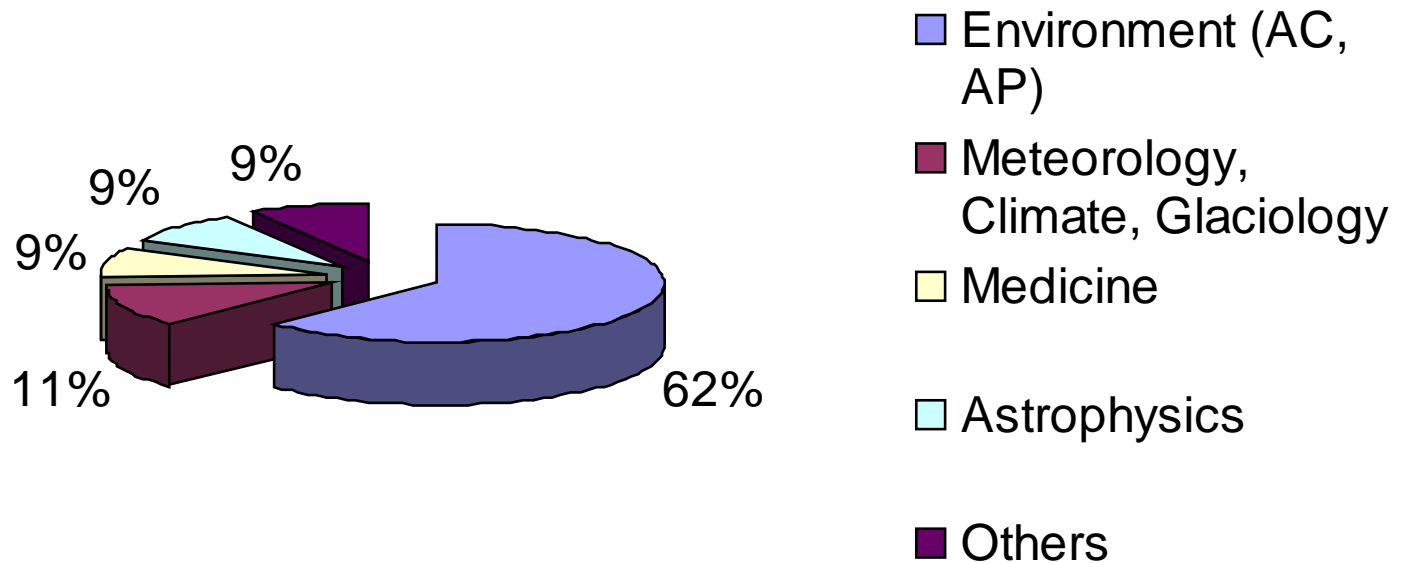
Use / Projects (2007)



Research Topics (Overview)

| | Jungfrauoch CH | Zugspitze D | Gornergrat CH | Testa Grigia I | Monte Cimone I | Pic du Midi F | Sonnblick A | Lomnický Štít SK | BEO Moussala BG | ASEC ARM | Nor- Ambered ARM | Terskol Peak RUS | TUBITAK National Observatory TR | |
|-----------------------------|-------------------|----------------|------------------|---------------------------|----------------------|---------------------|----------------|------------------------|-----------------------|-------------|------------------------|------------------------|--|--|
| Atmosphären- physik | ■ | ■ | | ■ | ■ | ■ | ■ | | ■ | | | ■ | | |
| Atmosphären- Chemie | | | | | | | | | ■ | | | ■ | | |
| Klima- Veränderungen | ■ | ■ | | ■ | ■ | | ■ | | | | | | | |
| Klimaeffekte | ■ | ■ | | ■ | ■ | | ■ | | | | | | | |
| Glaziologie | ■ | | ■ | ■ | | | | | | | | | | |
| UV - B Strahlung | ■ | ■ | | | | | ■ | | | | | | | |
| Fernerkundung | ■ | ■ | | Forschungsbereiche | | | | | | | ■ | ■ | | |
| Solartechnologie | ■ | ■ | | | | | | | | | | | | |
| Sensor- technologie | ■ | ■ | | ■ | | ■ | | | | | | | | |
| Höhenmedizin | ■ | ■ | | | | ■ | | | | | | ■ | | |
| Astronomie & Astrophysik | ■ | ■ | ■ | ■ | | ■ | | ■ | ■ | | ■ | ■ | ■ | |
| Andere | ■ | | | | | | ■ | | | | | | | |

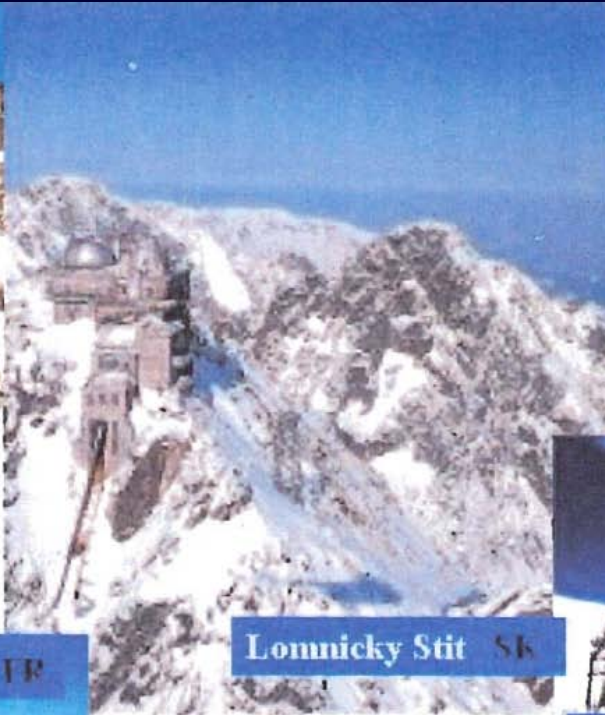
Present Research Areas



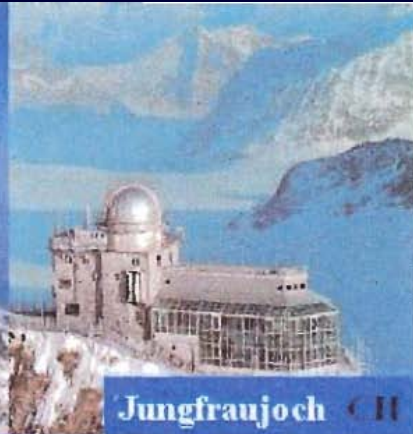
Networks



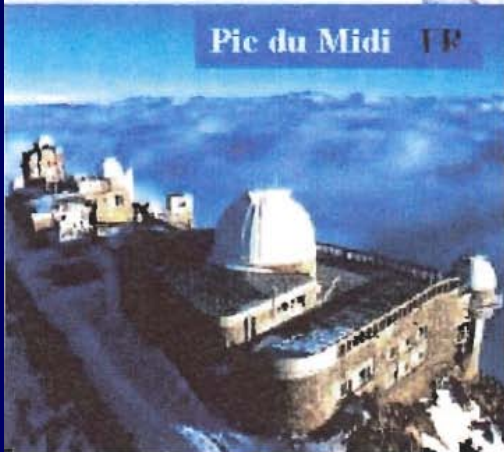
Zugspitze DE



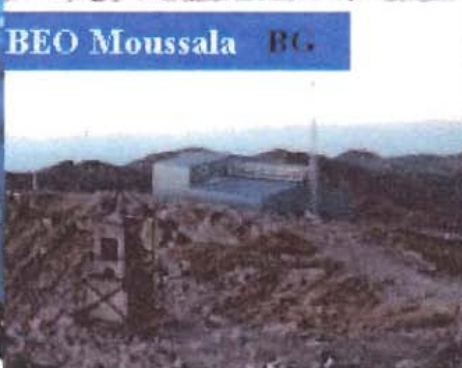
Lonnicky Stit SK



Jungfrauoch CH



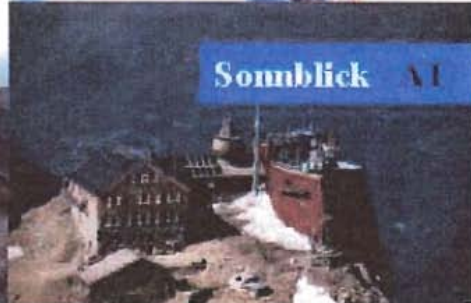
Pic du Midi FR



BEO Moussala BG



Testa Grigia IT



Sonnblick AT

Networks

GAW - NDACC

Jungfraujoch is as **Key Station** in a number of nationally and internationally coordinated research programs, e.g

**GAW (Global Station),
NDACC (Primary Site), UNEP,
EARLINET, ENVINET,
FRETEX, EUROTRAC-2,
AEROCARB, ASRB.....**

Future

- **Environment**
- **Flexibility of Infrastructure**
- **Evaluation of scientific results**
- **Public outreach, support for early-career scientists**
- **Networks**

Summary and Outlook

Due to its

- unique and coveted location, the
- excellent infrastructure, and the
- year-round accessibility

the High Altitude Research Station
Jungfraujoch

- has been playing an outstanding role in various fields of research during the last 75 years and has a bright perspective for the future

A scenic view of a snowy mountain peak. In the foreground, a snow-covered slope leads up to a small, multi-story building with a glass facade and a dome-like structure on top. The sun is low on the horizon, creating a bright glow and casting long shadows across the snow. The sky is a clear, deep blue.

End

Thank you!