

Meteorological measurements

May 23, 2006 in ETH

Importance of meteorological measurements over glaciers

- > the state of the study site
- > loss of ice mass by melting
 - >> climate fluctuations influence glacier flow
 - longer timescale
 - shorter timescale

Introduction

○ Energy balance

Change of englacial
temperature

+

Melt water
in snow

=

Energy flux from
atmosphere to glacier

Short wave radiation
Long wave radiation (atmosphere)
Long wave radiation (surface)
Sensible heat flux
Latent heat flux

Influenced by **cloudiness**, **wind speed**, **temperature** etc..

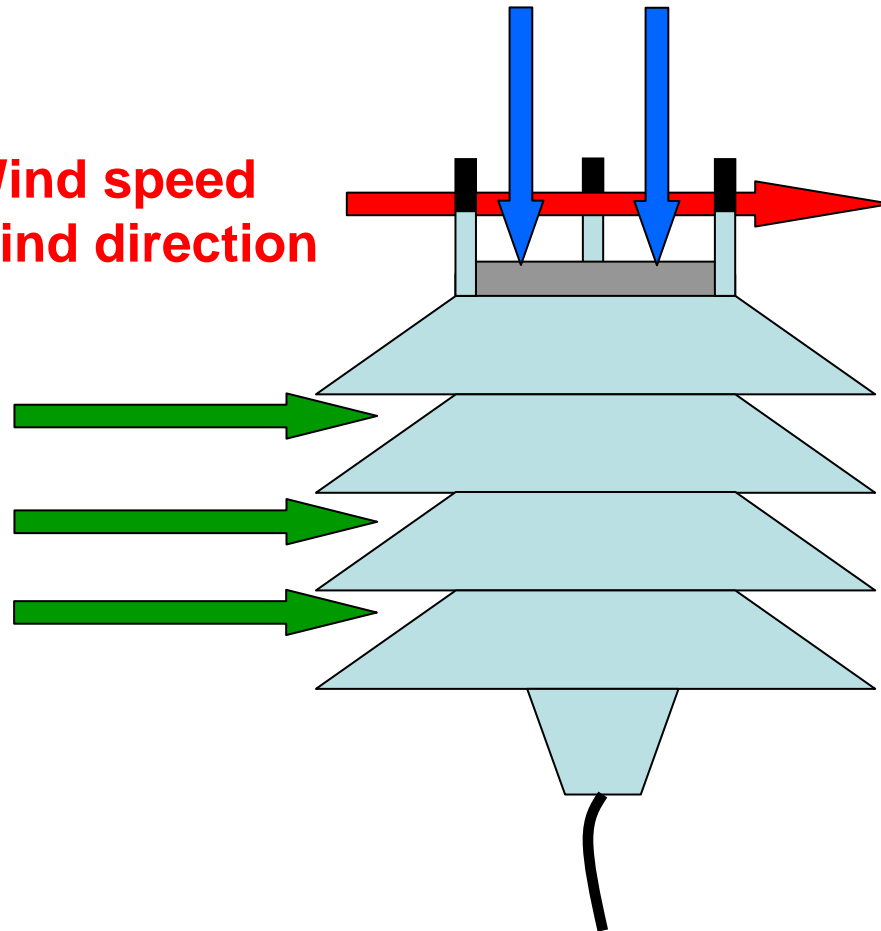
WXT510(Vaisala)

parameters

liquid precipitation

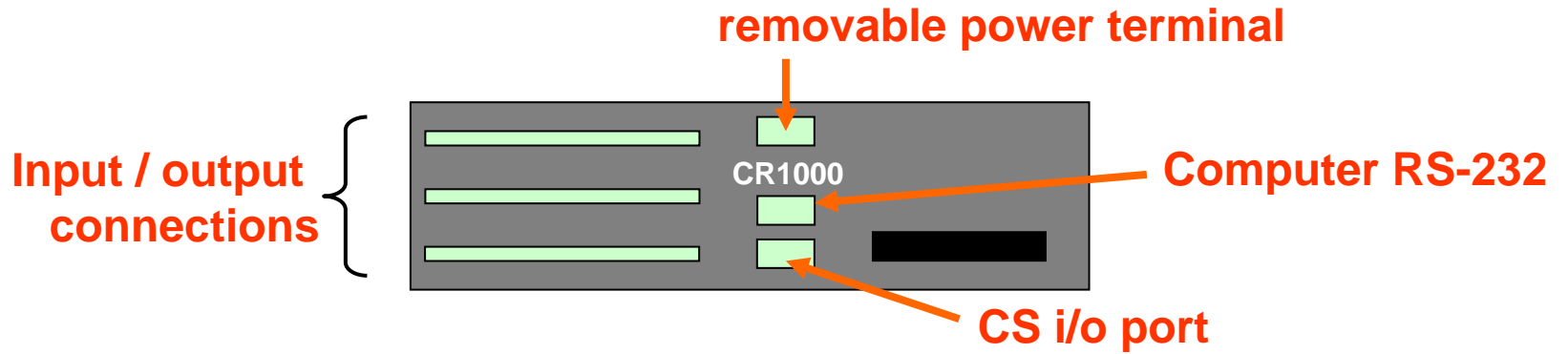
Wind speed
wind direction

barometric pressure
air temperature
relative humidity

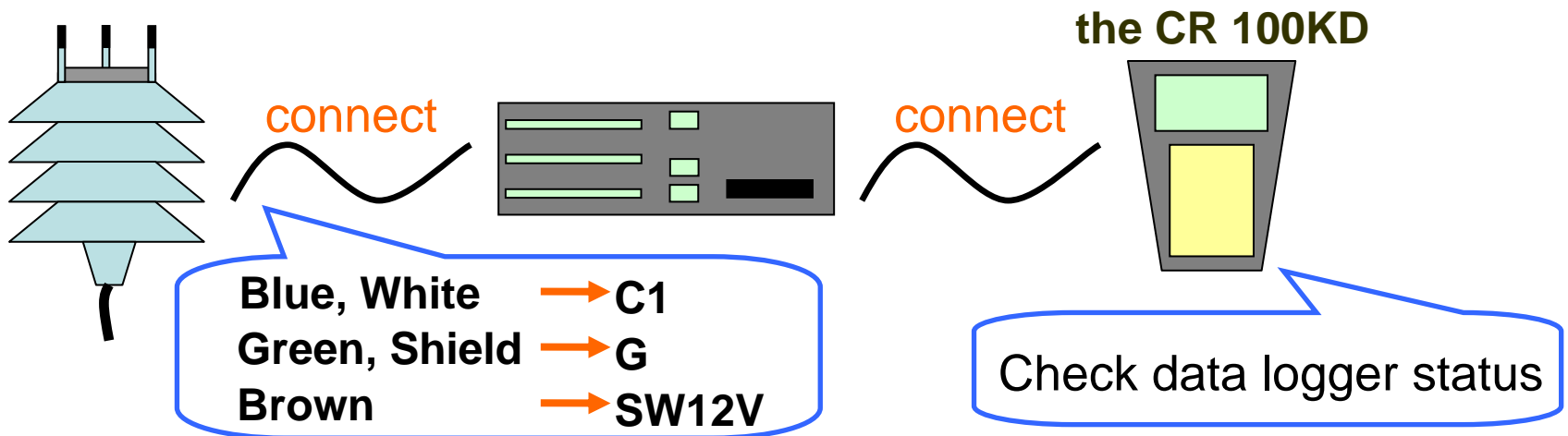


Measurement method

Campbell CR1000 Datalogger



measurement



Study site

○ May 18,
Kleine Scheidegg (2061m)

○ May 19,
Jungfrau (about 3300m)



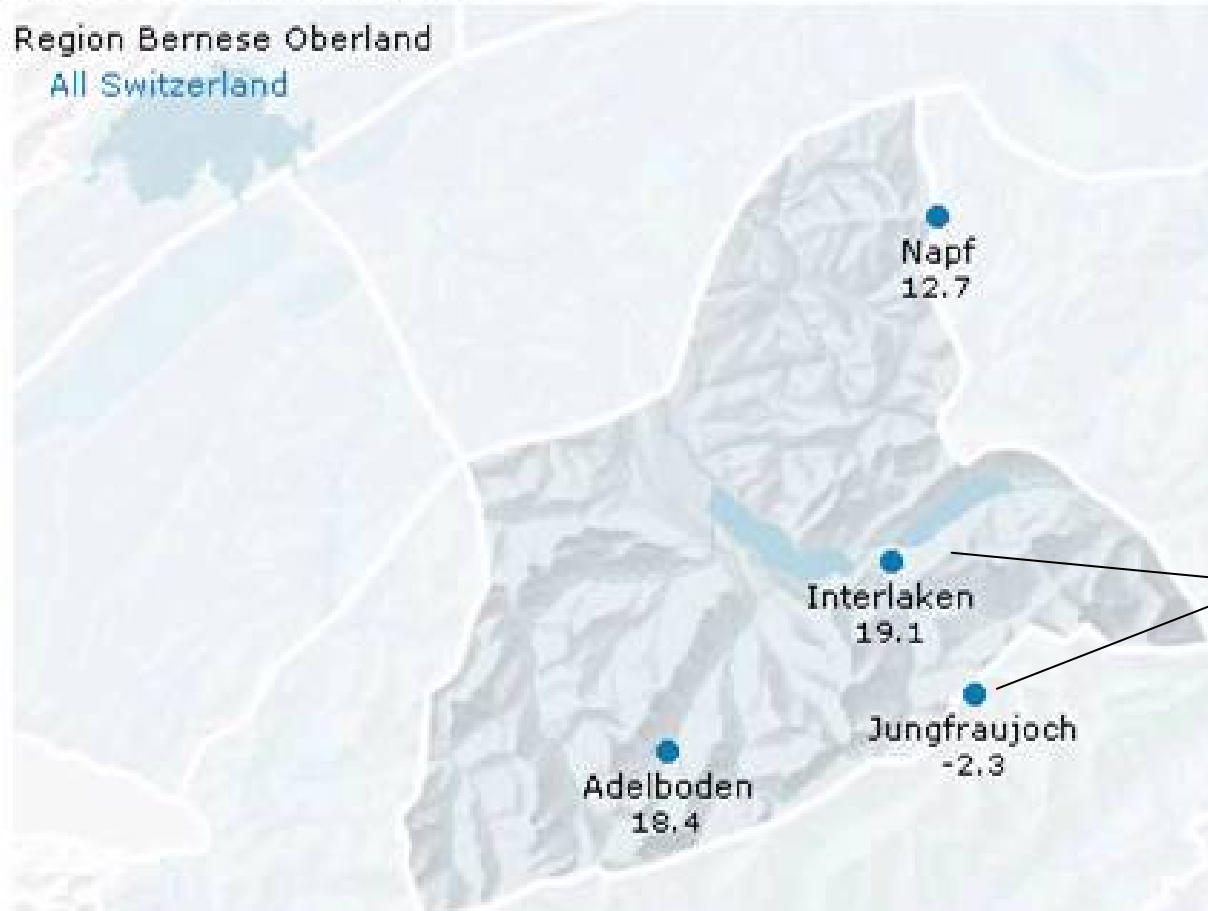
Kleine Scheidegg

Temperature [°C]

Updated on 22.05.2006, 15.30

Region Bernese Oberland

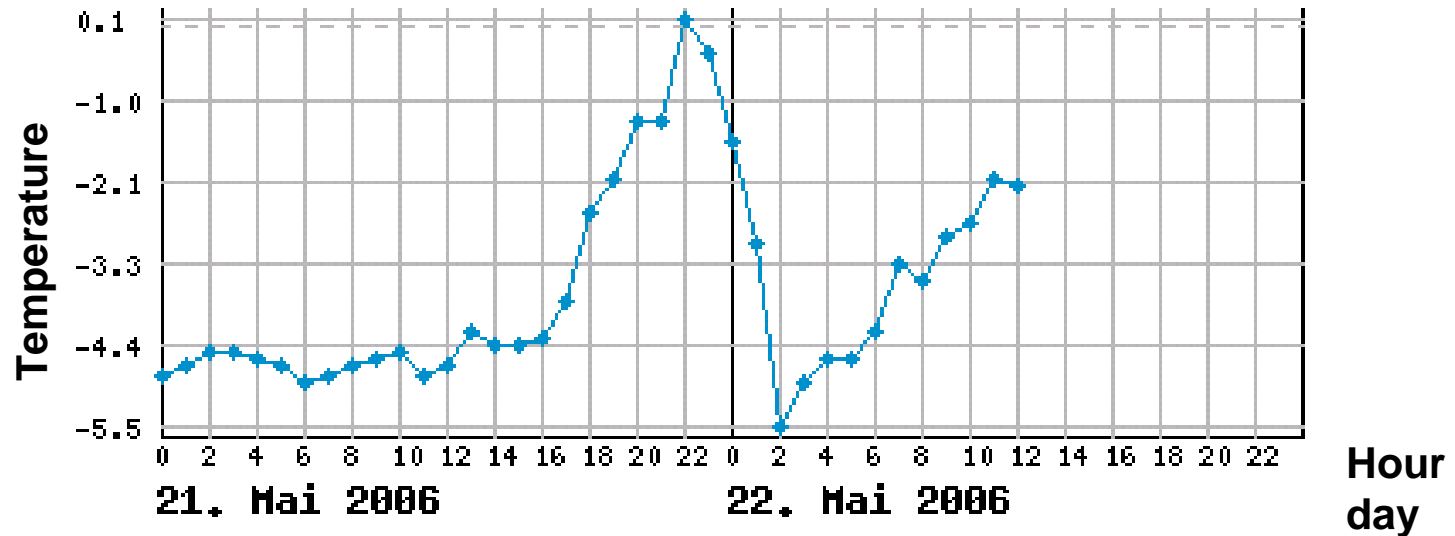
All Switzerland



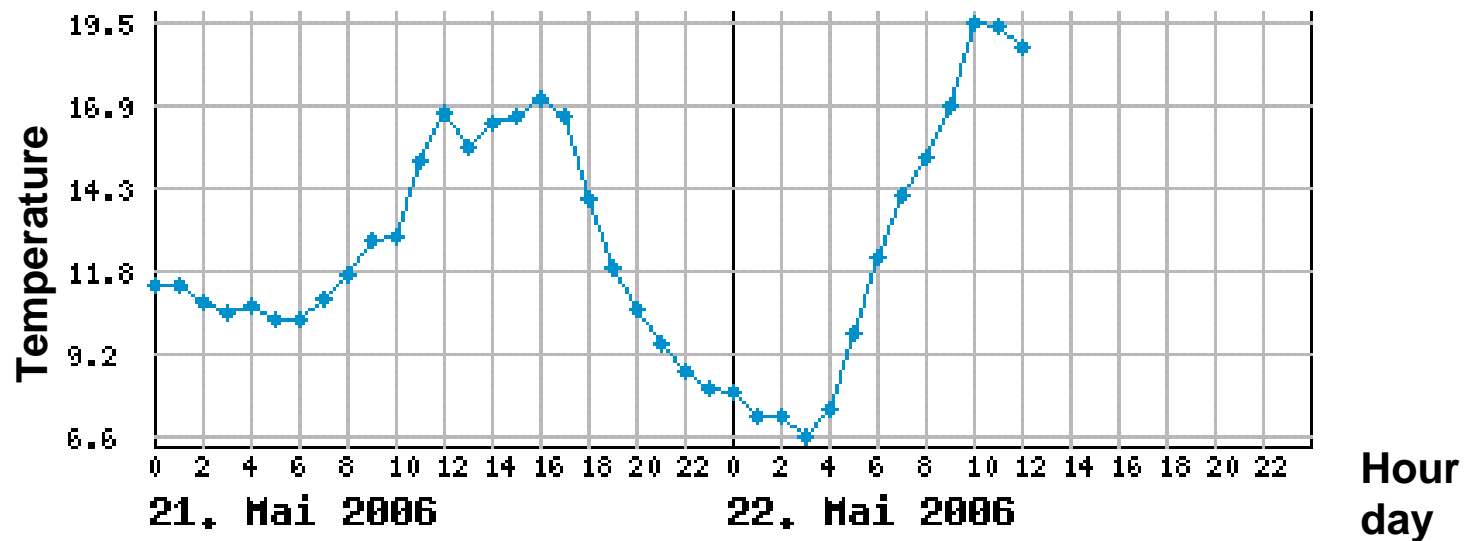
Difference of ASL
3000m

Temperature variation

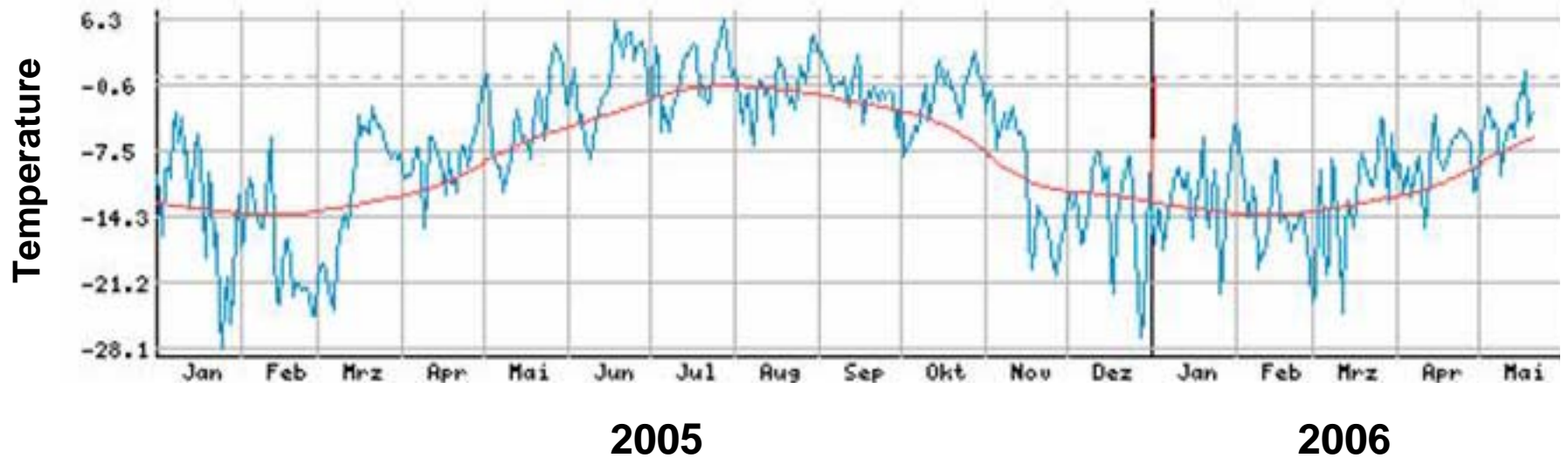
Jungfraujoch(ASL3580m)



Interlaken(ASL580m)



Seasonal variation of temperature at Jungfraujoch



Blueline : average of day
Redline : 1961-1990 average

Future Prospective

- Analysis on meteorology over glaciers using data from meteoswiss
- change study sites in the next year
example; upstream and downstream of glacier
- confirm data completely collected