

Zentralanstalt für Meteorologie und Geodynamik 

Permafrost Monitoring at the Sonnblick observatory

Michael Staudinger ZAMG – Salzburg

Atmospheric physics

Climate change

„Permafrost - Geology“

Radioactivity

Meteorology –
Climatology

Climate monitoring
in the rock!

Tritium
Gamma radiation
Gamma spektroscopy

SO₂
chem., organ comp.
of aerosols,
precipitation

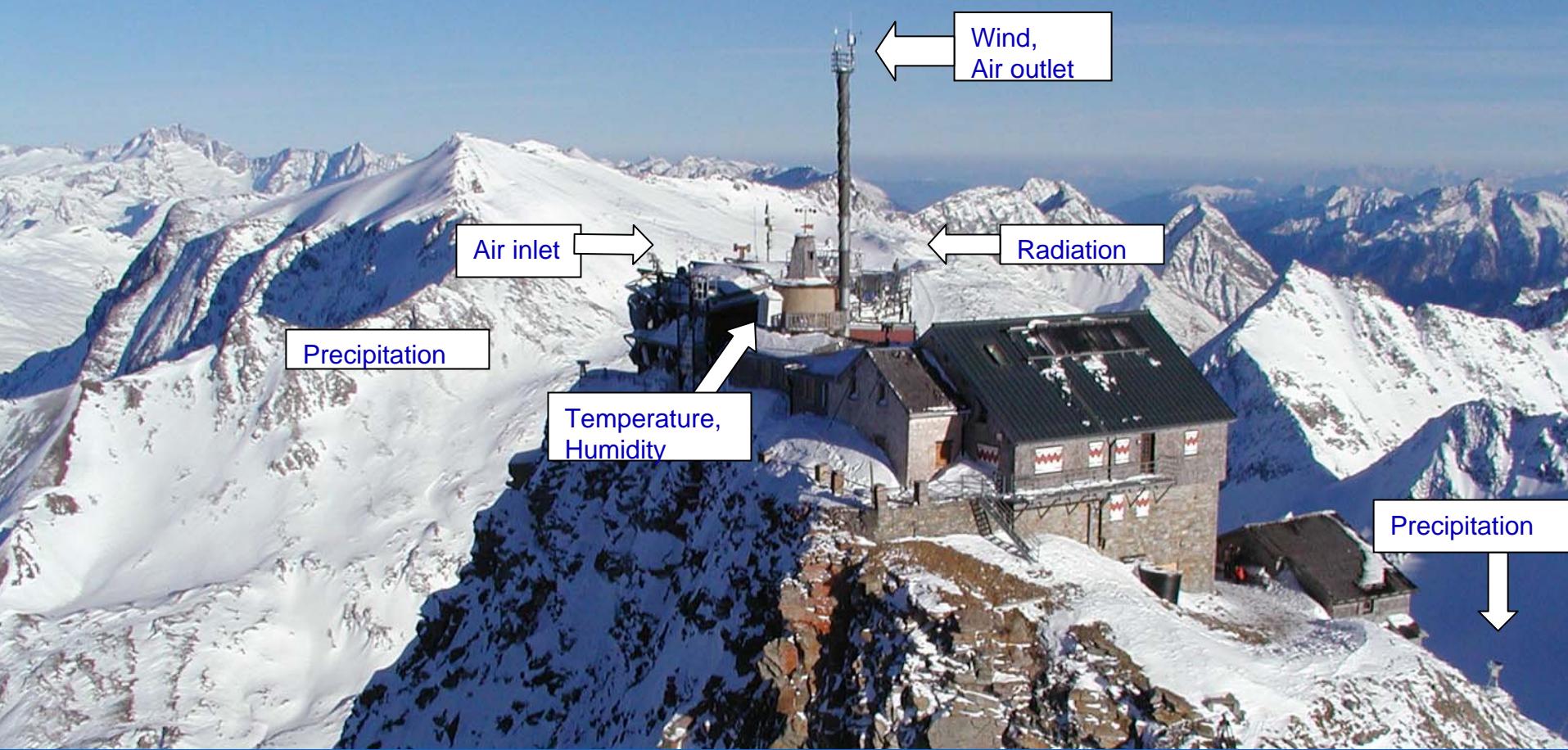
Bakteria in clouds

Medicine in high altitudes

Radon

kosm radiation

(measurements done at Sonnblick)

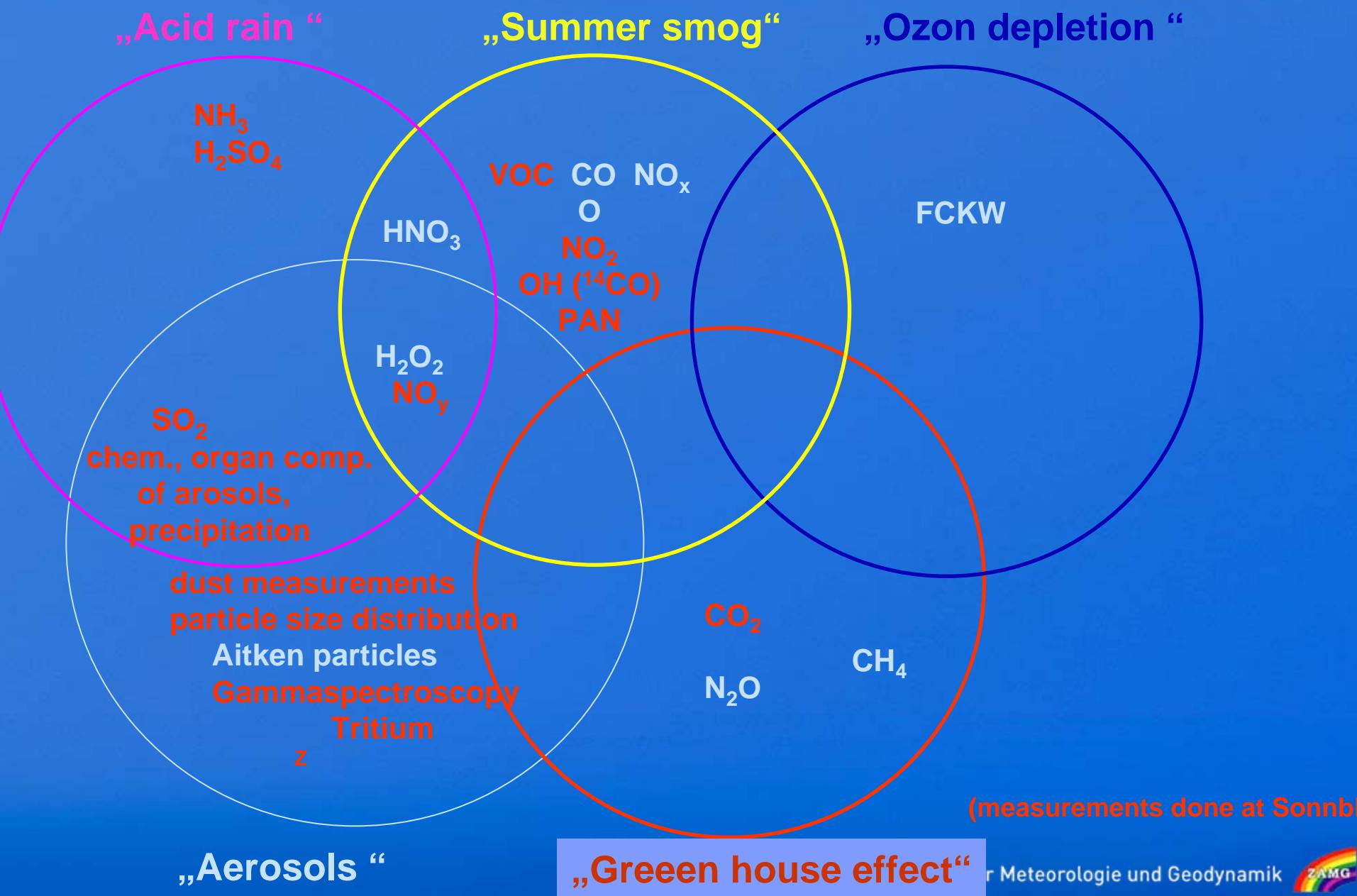


Atmospheric chemistry

(Präsentation)

27.10.2005

Folie 4







(C) ITL Academia Engidiana

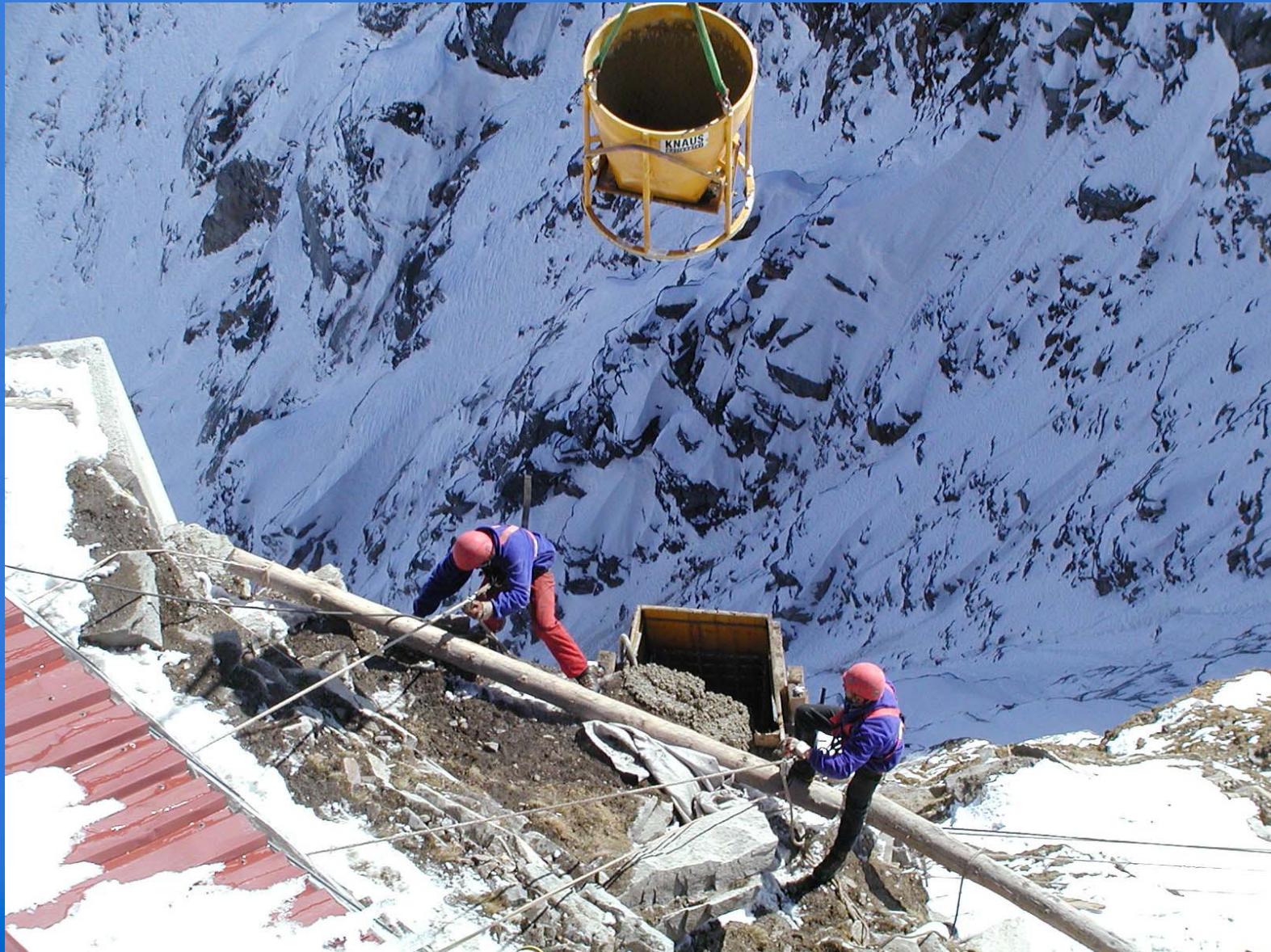
Zentralanstalt für Meteorologie und Geodynamik



construction site Sonnblick



construction site Sonnblick

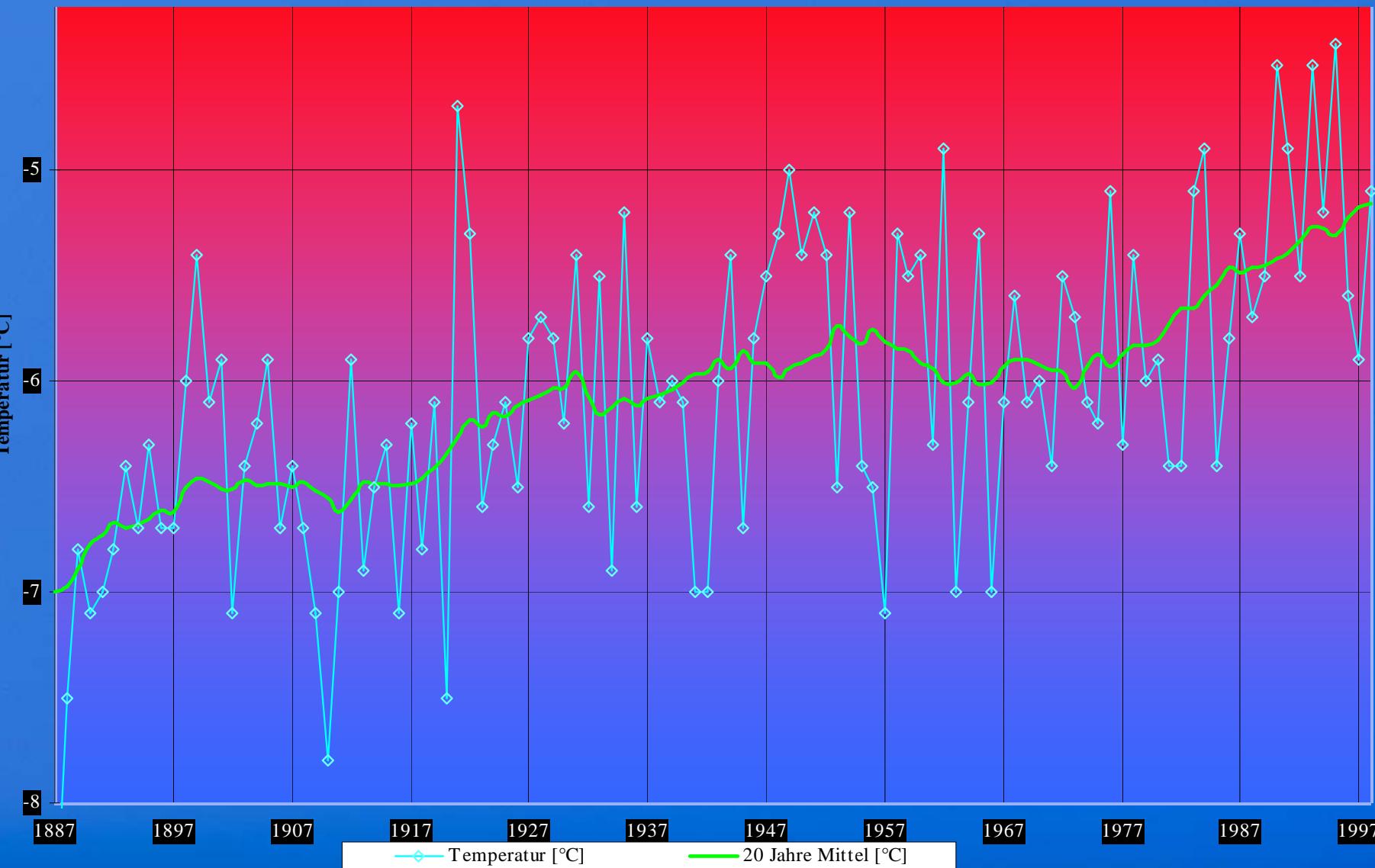


construction site Sonnblick

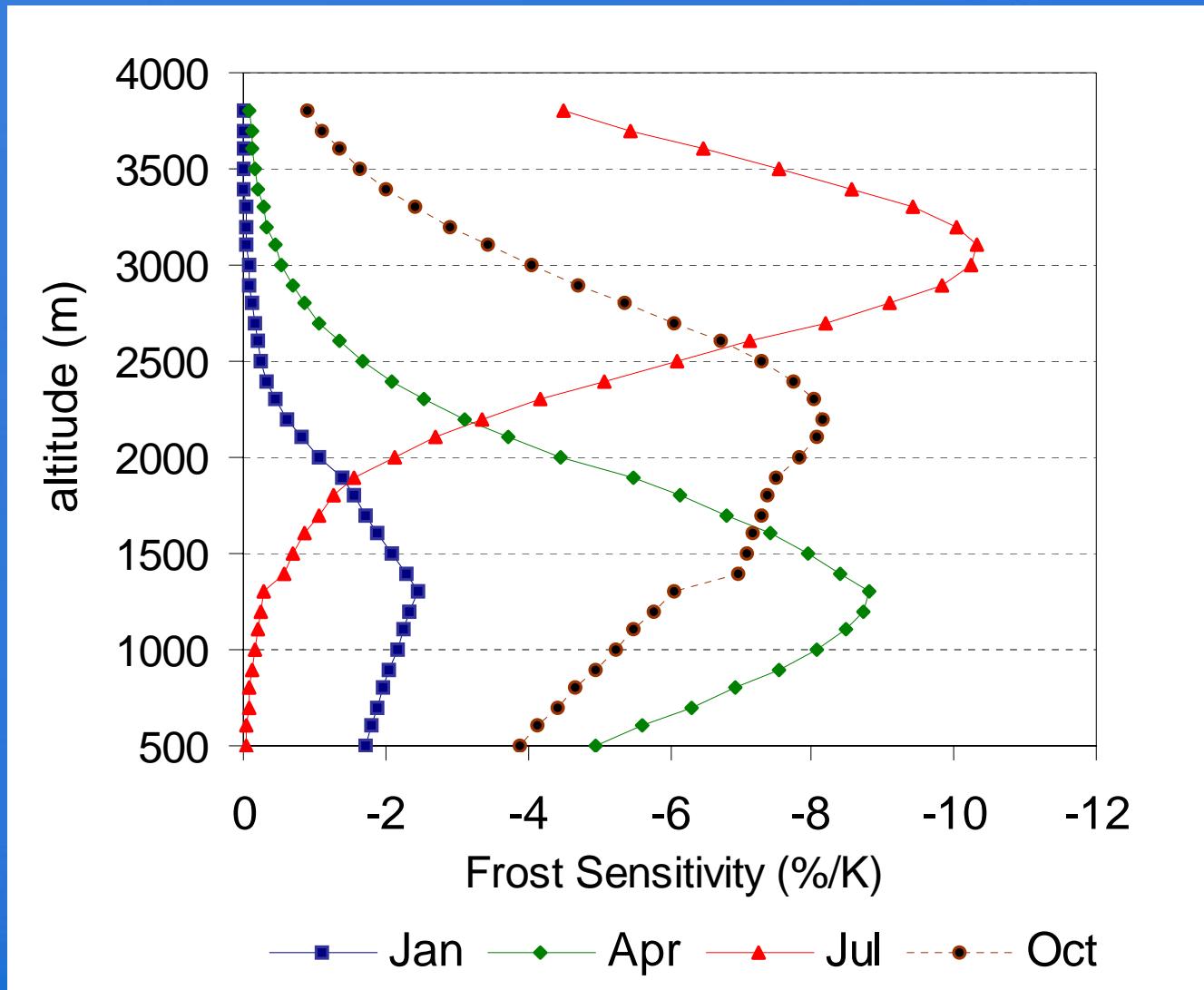


construction site Sonnblick

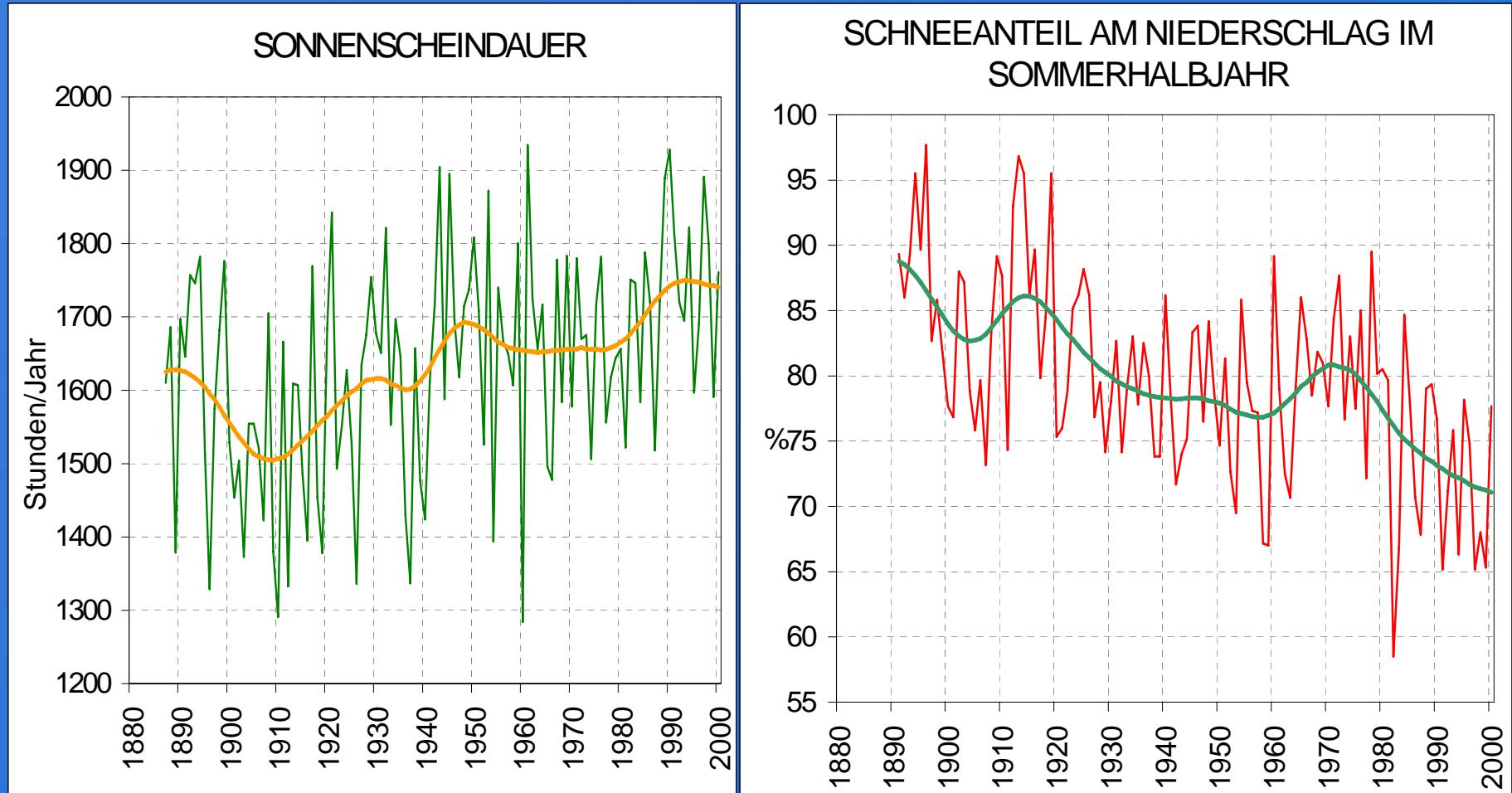




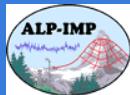
Results CLIVALP



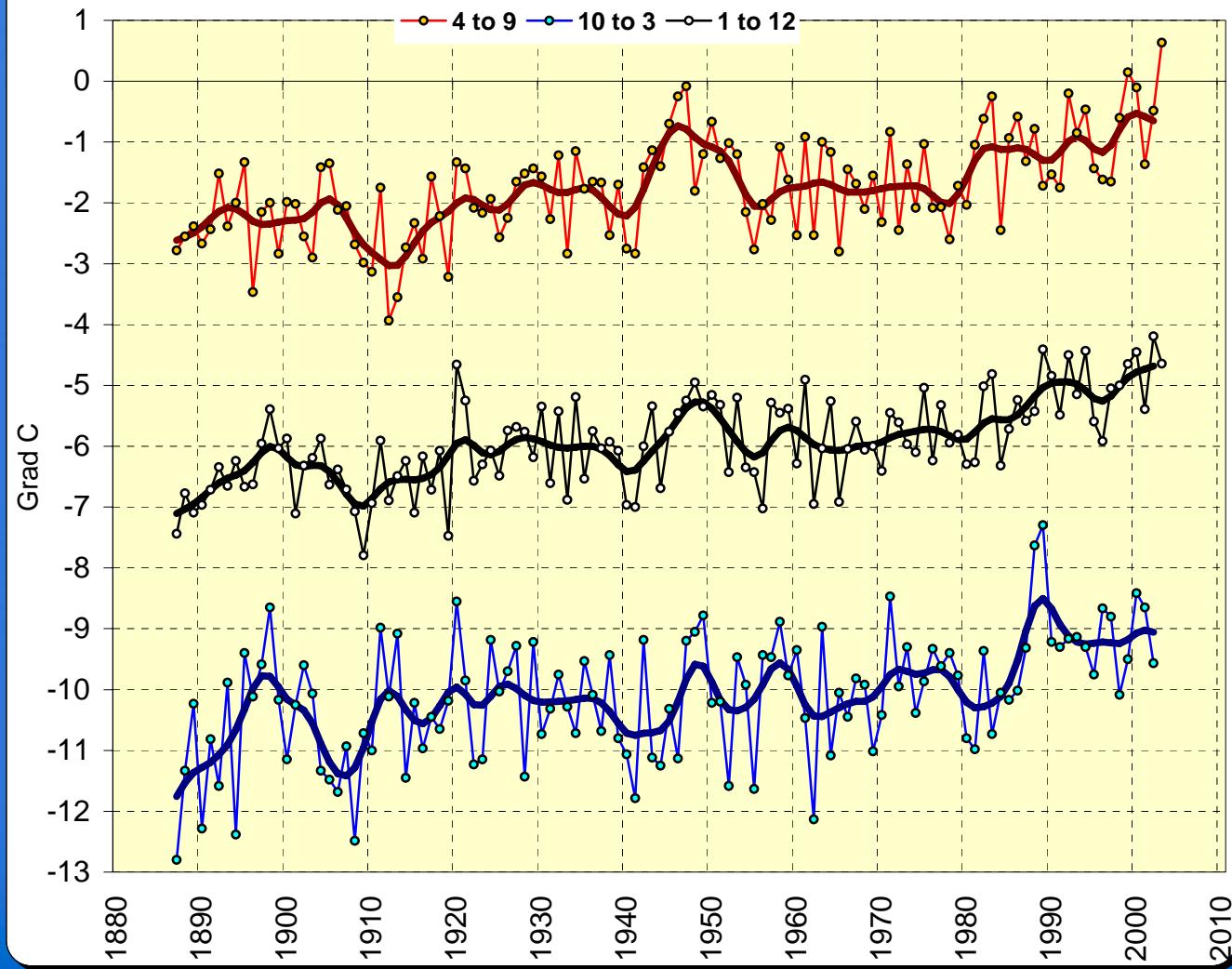
Sunshine duration – precipitation as snow



Temperature at different parts of the year

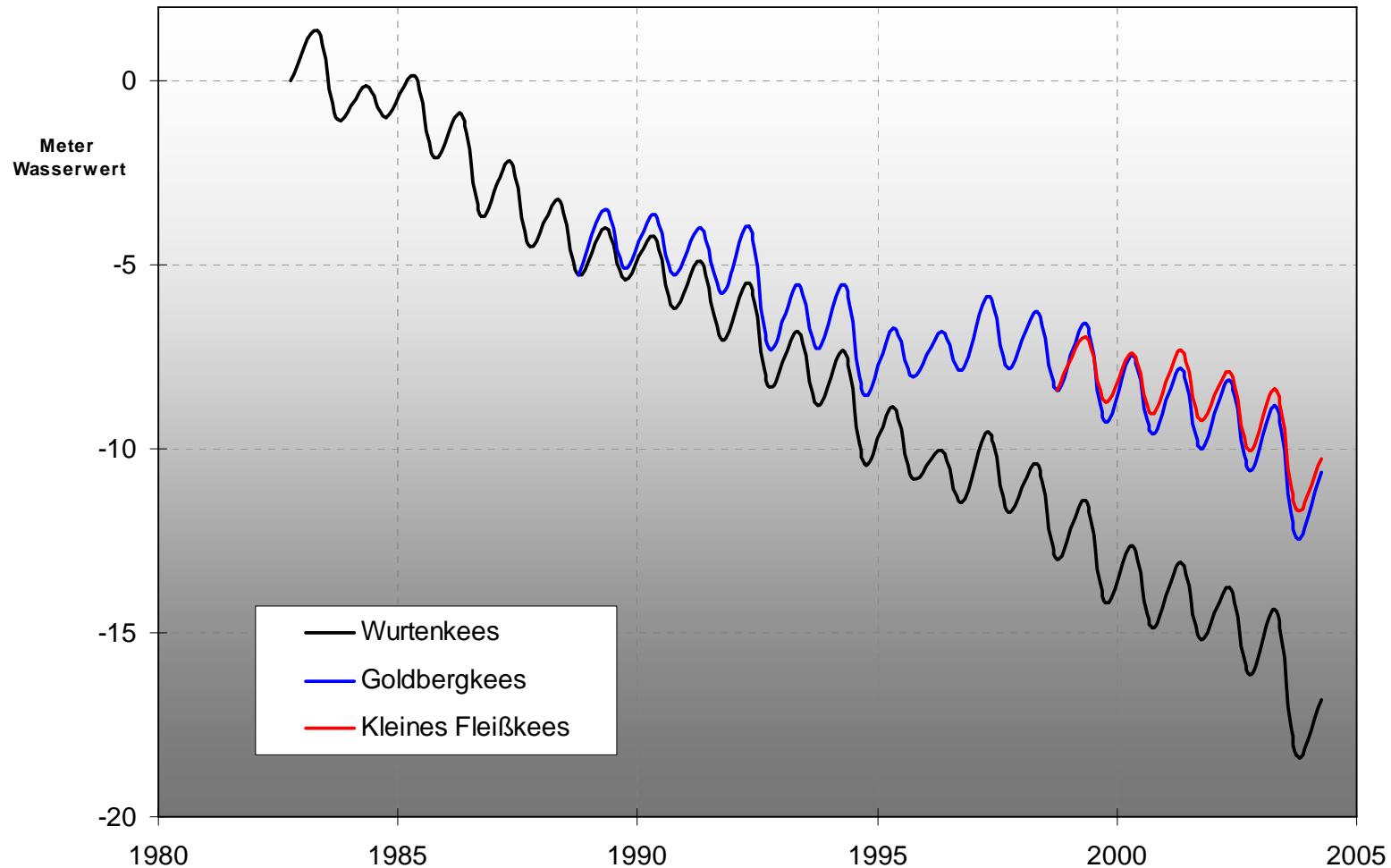


Sonnblick : Lufttemperatur 1887-2003

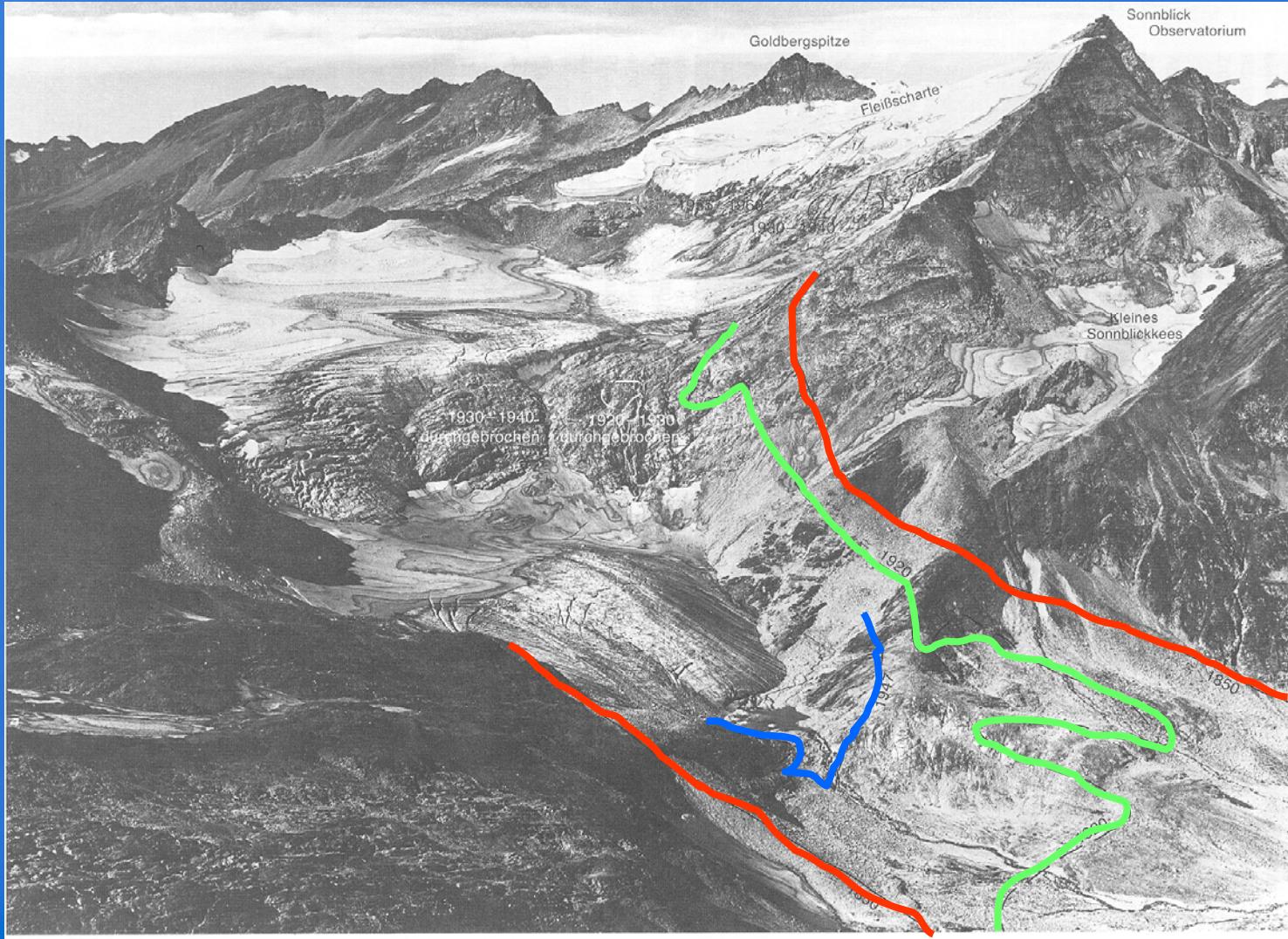


mass balance Sonnblick glaciers

Kumulative Reihe der mittleren spezifischen Massenbilanzen
im Sonnblickgebiet



Goldbergkees



permafrost in retreat



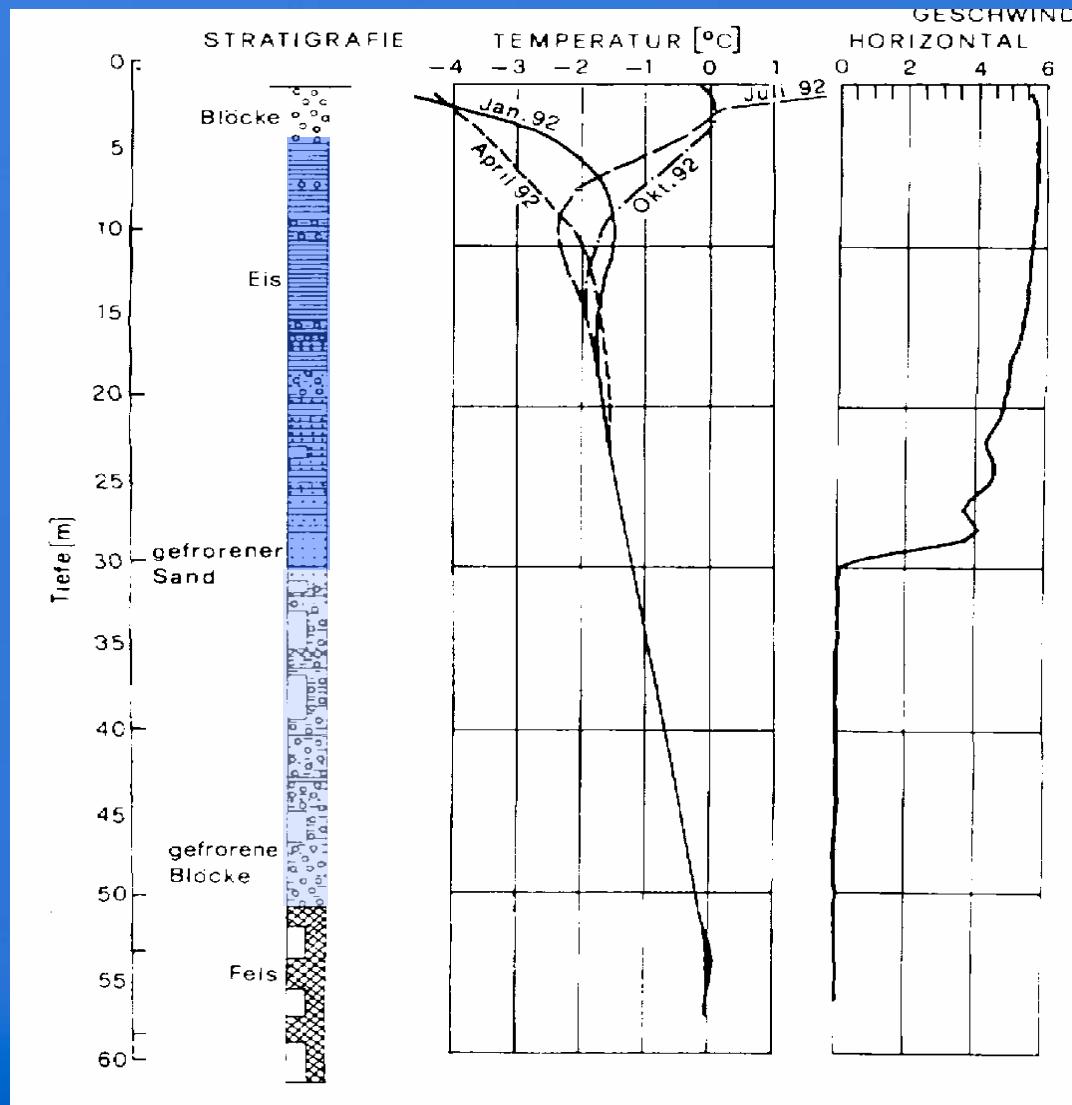
Block glacier

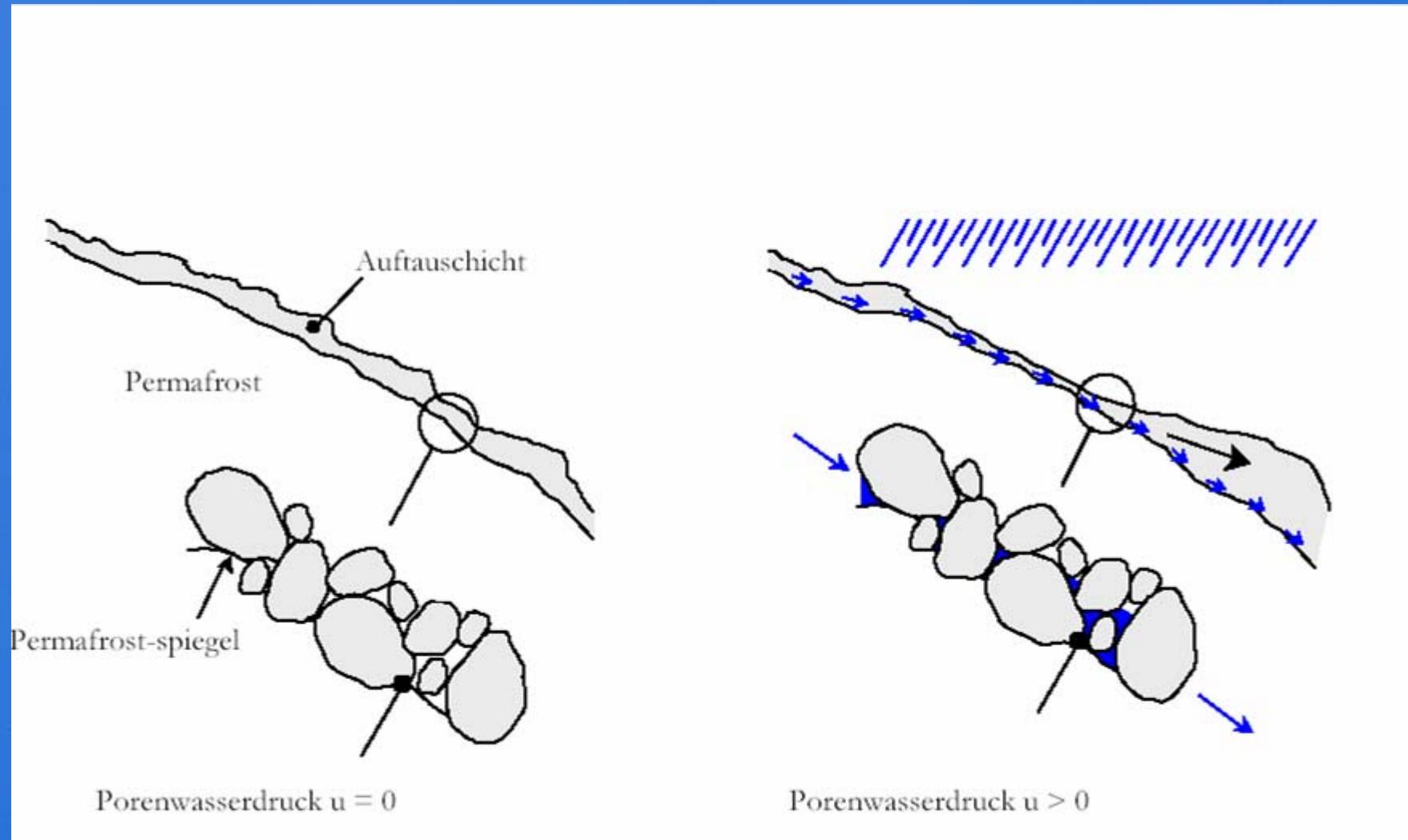


Blockgletscher Murtel am Piz Corvatsch
im Oberengadin (Schweiz)

(C) ITL Academia Engidiana

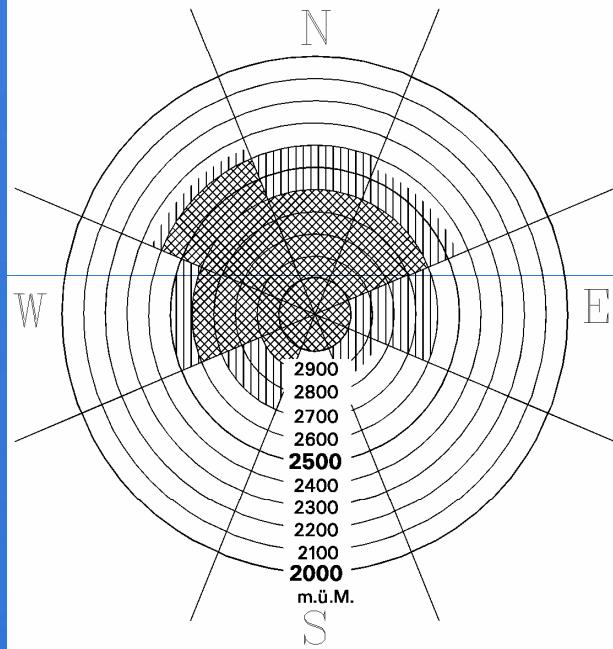
Temperature profile



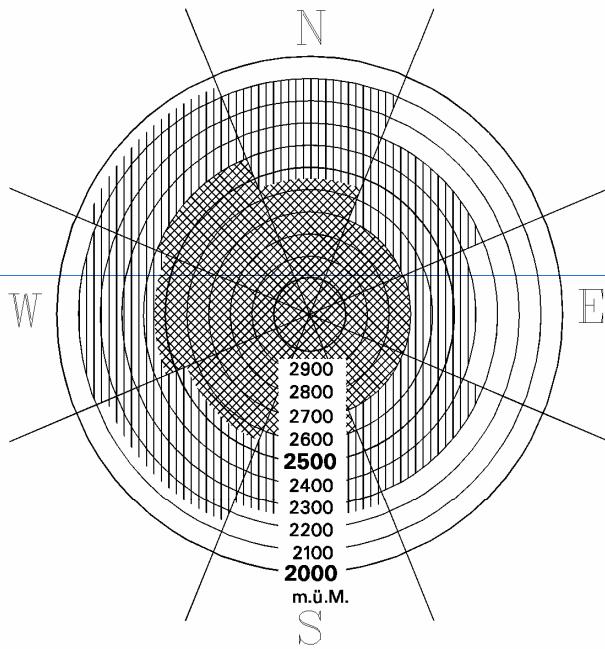


Expositionen

Hangneigung über 11°



Hangfusslagen

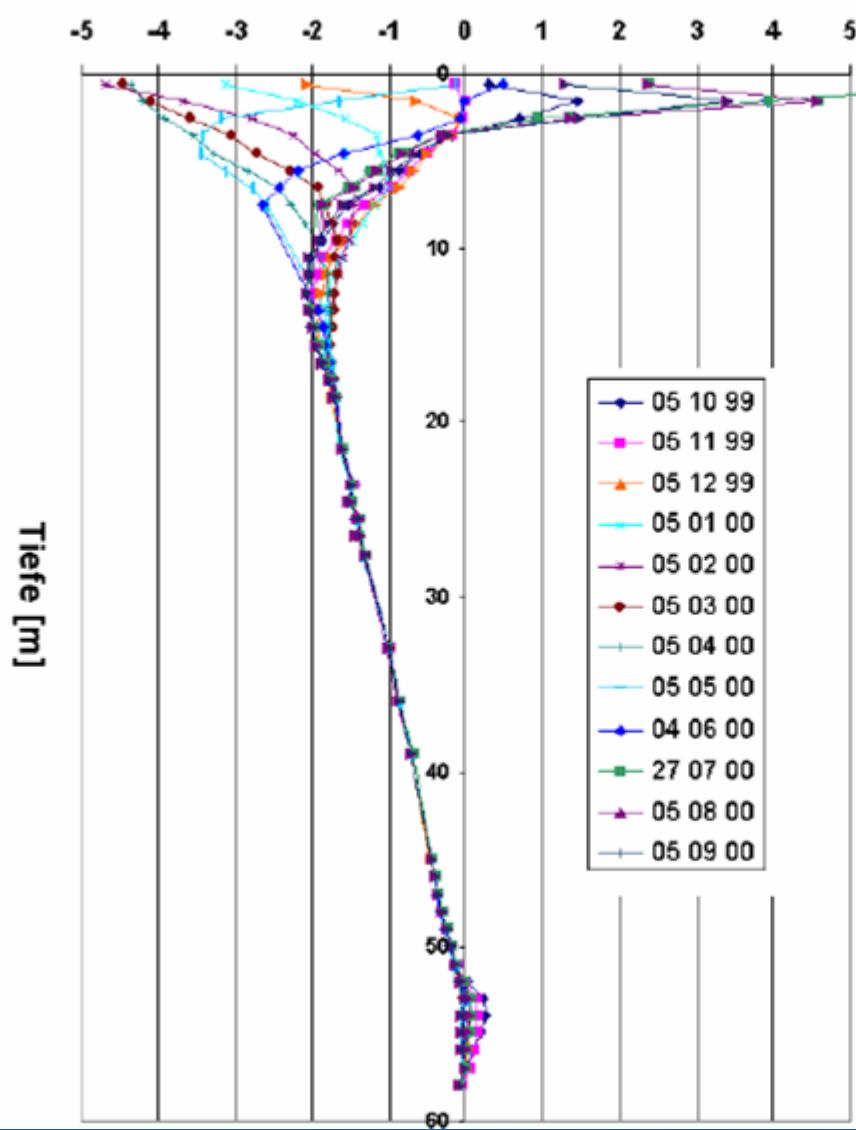


Fleckenhafter Permafrost

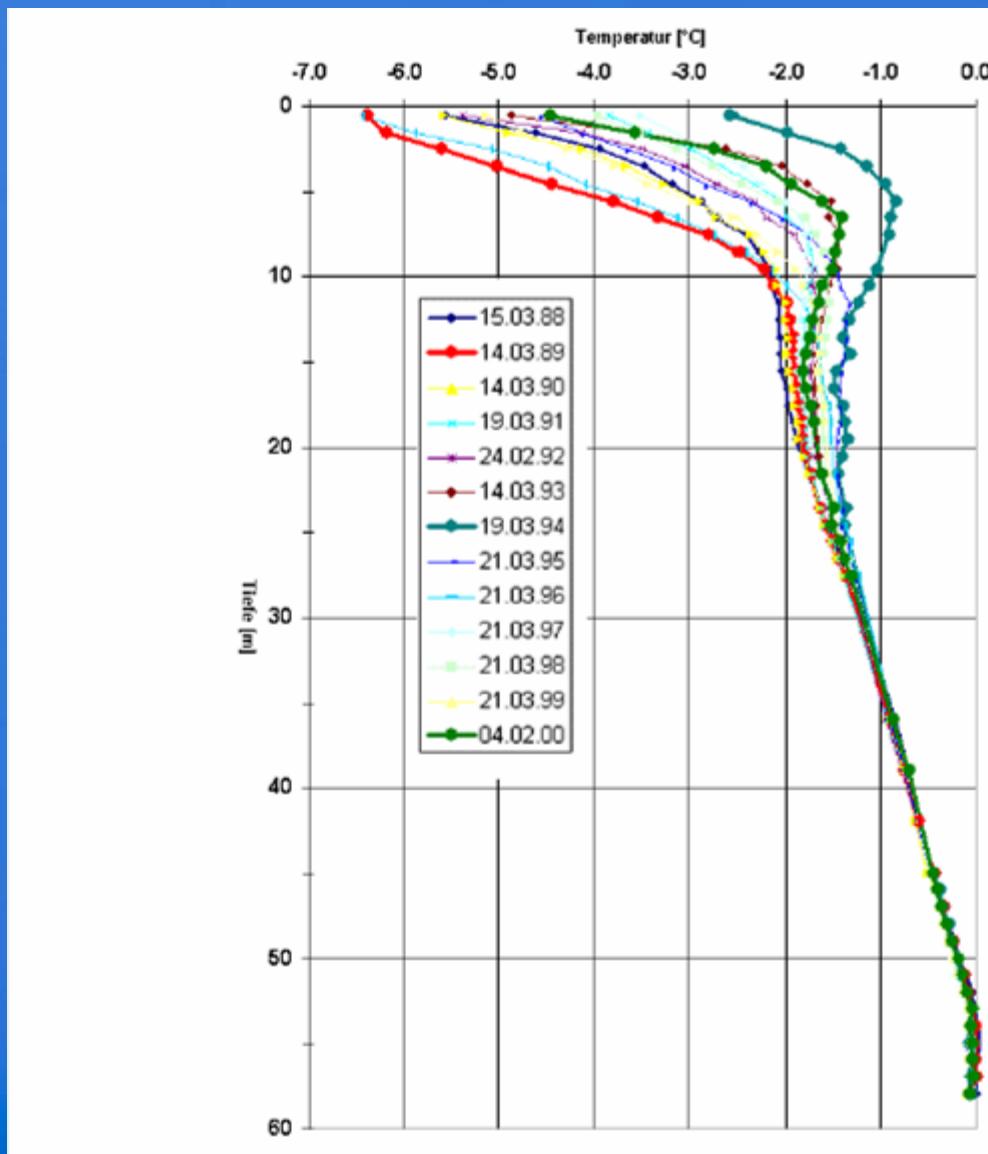


Permafrost flächenhaft

	fleckenhafter Permafrost	Permafrost flächenhaft
Windexponierte Verflachungen:	oberhalb 2600 m.ü.M.	oberhalb 2700 m.ü.M.
Windgeschützte Verflachungen:	oberhalb 2650 m.ü.M.	oberhalb 3000 m.ü.M.

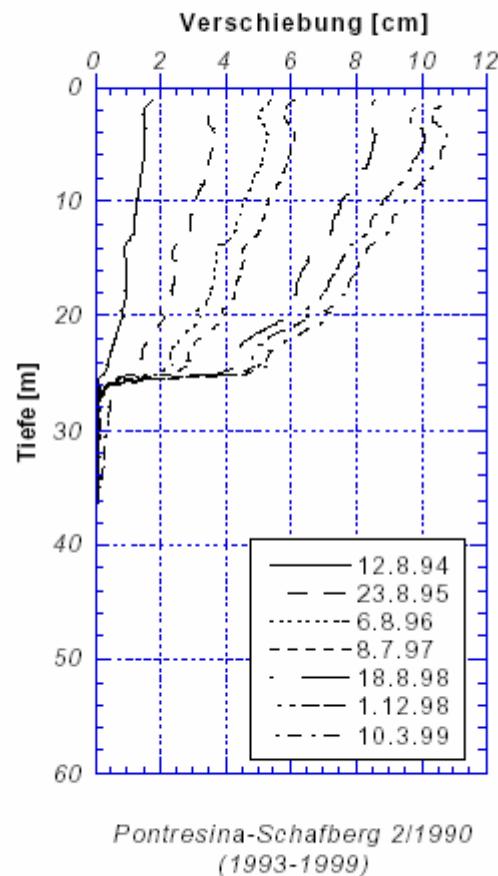


Murtel
Corvatsch
(Permos 2002)

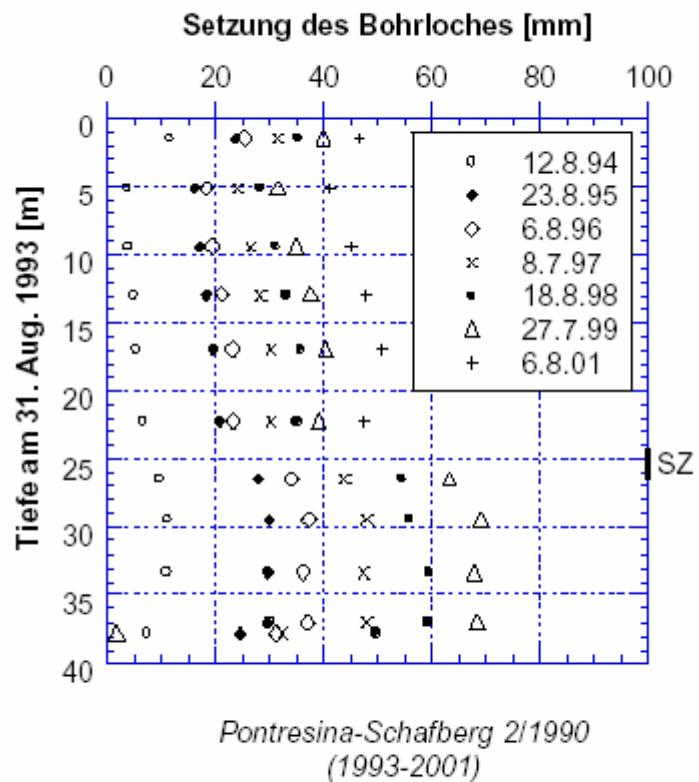


Murtel
Corvatsch
(Permos 2002)

deformation - permafrost



a)

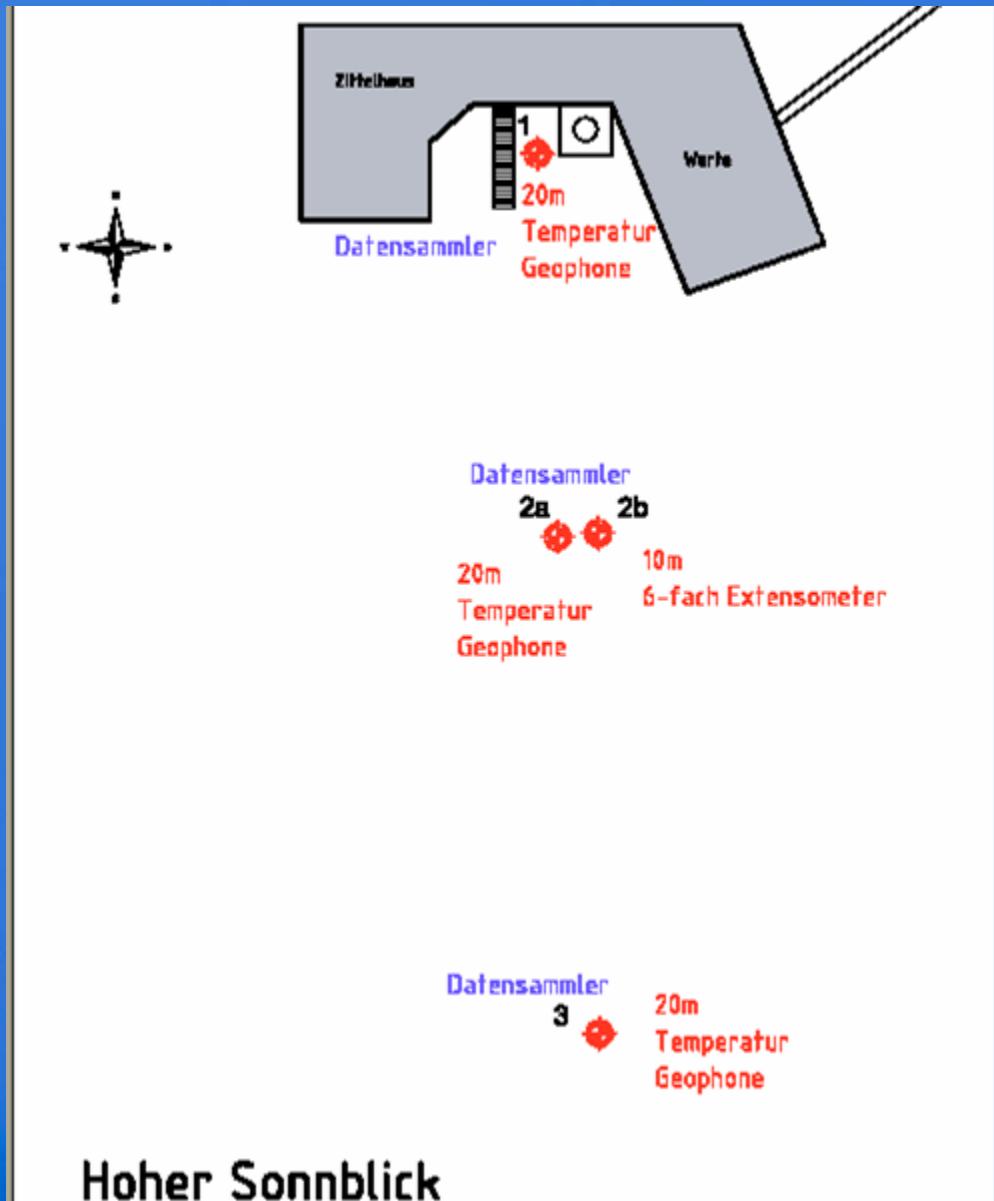


b)

measurement points Sonnblick

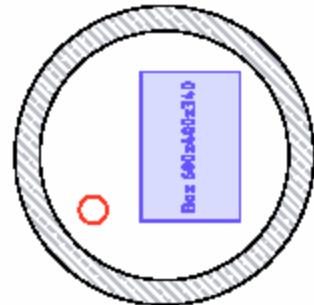
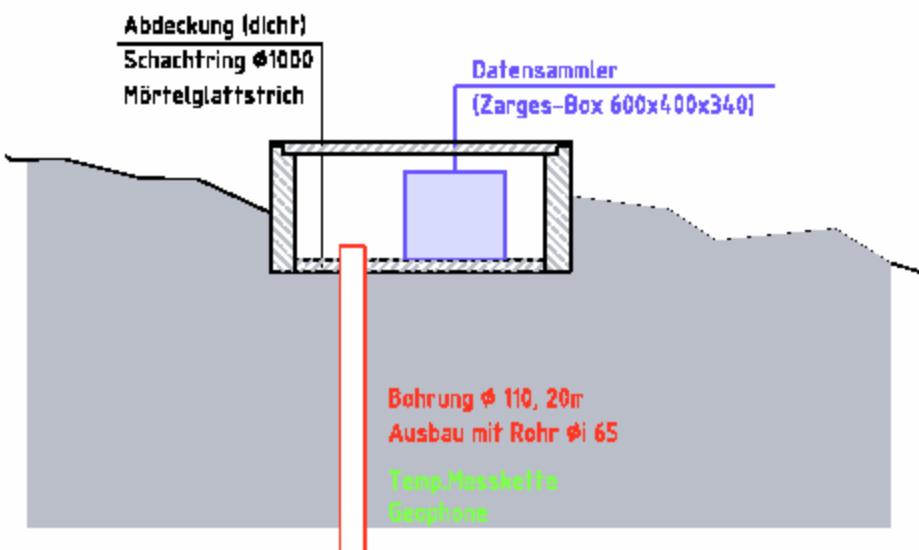


Measurement plan



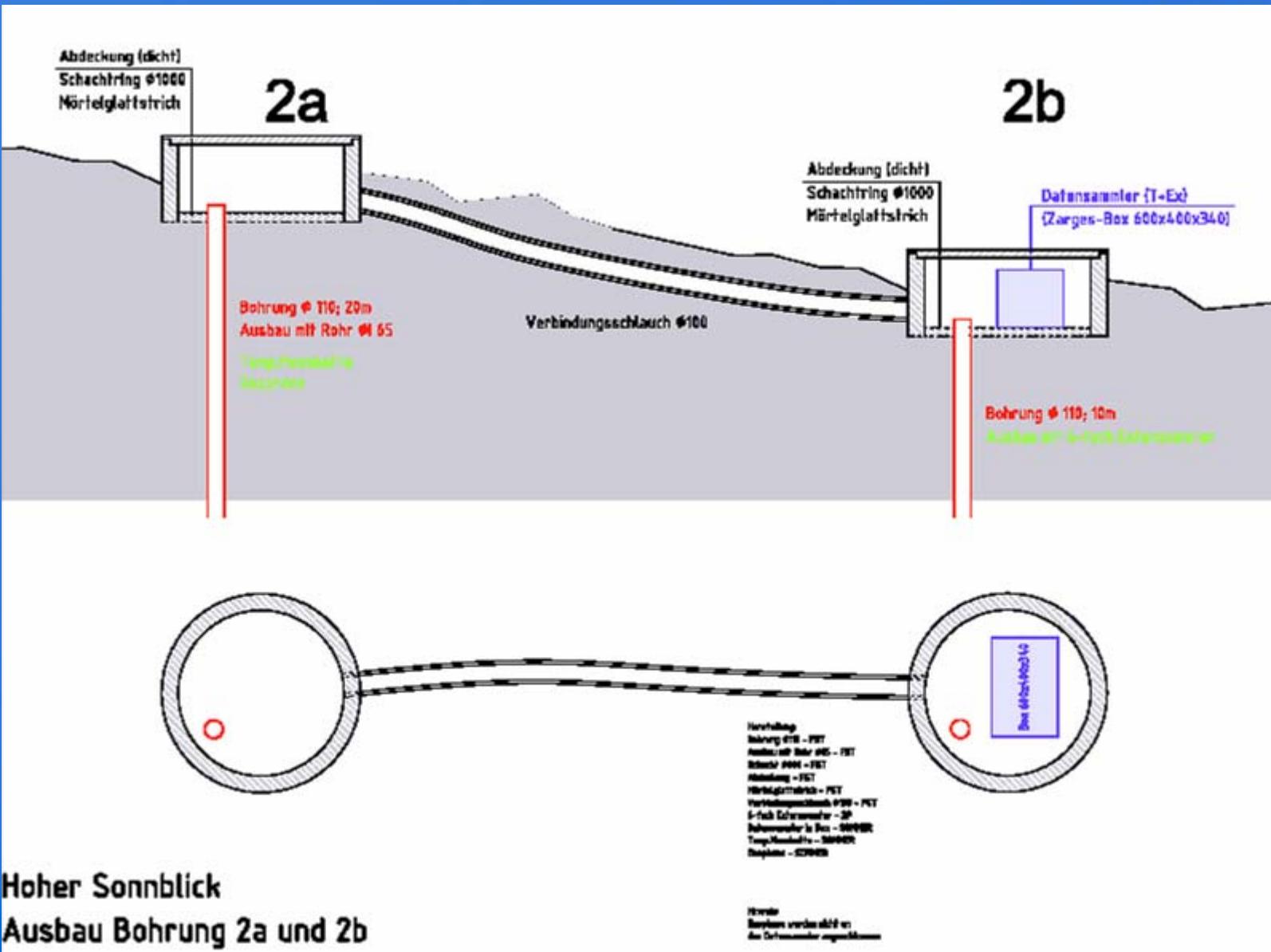
Hoher Sonnblick

Cross section



Herausleitung
Bohrung Ø110 - PGT
Ausbau mit Rohr Øi 65 - PGT
Schacht 400x - PGT
Abdeckung - PGT
Mörtelglattstrich - PGT
Datensammler in Box - SWINGER

Cross section



Thanks for your attention

