

# Glaciers and Permafrost

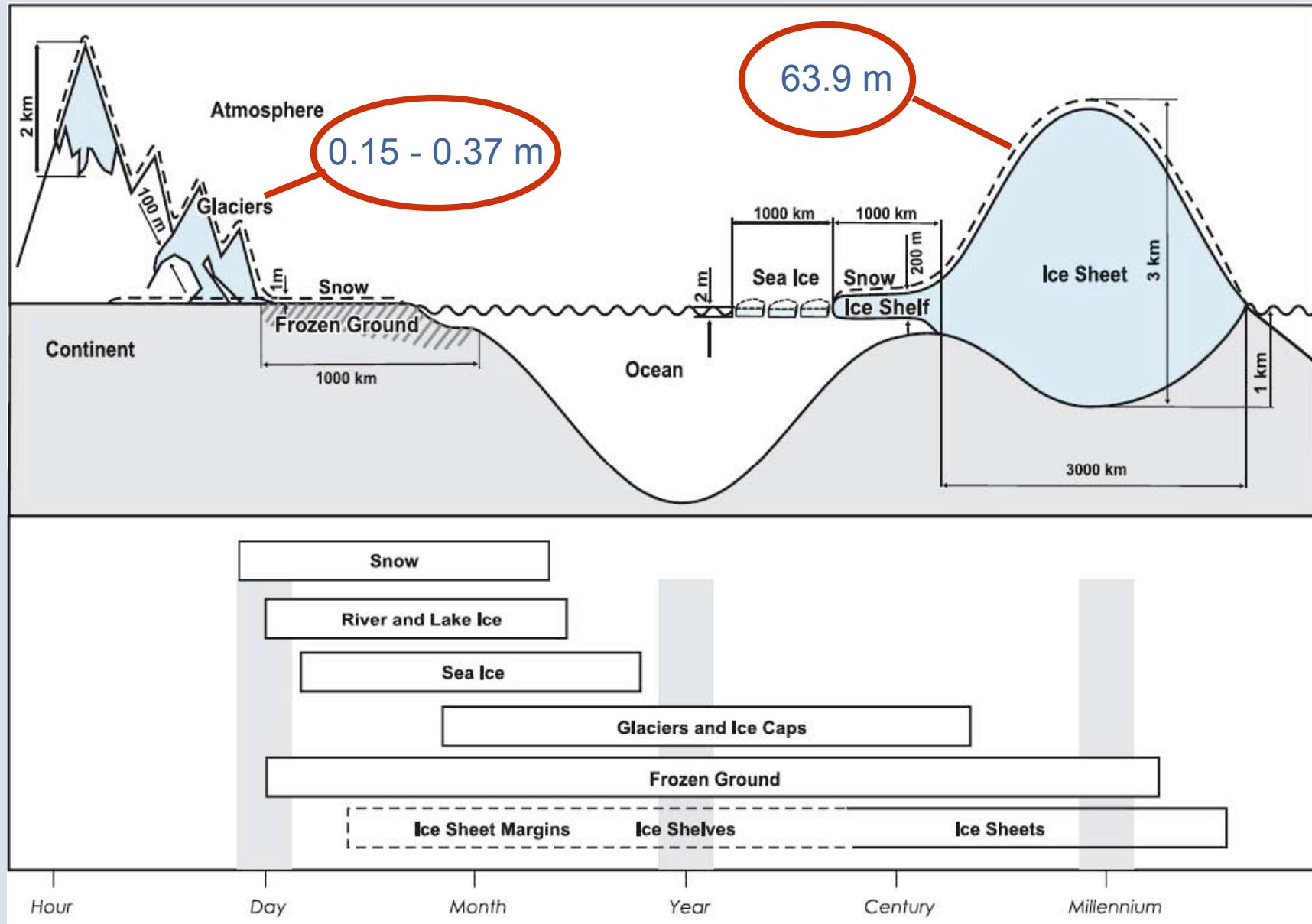
Forum IPCC  
Fourth Assessment Report



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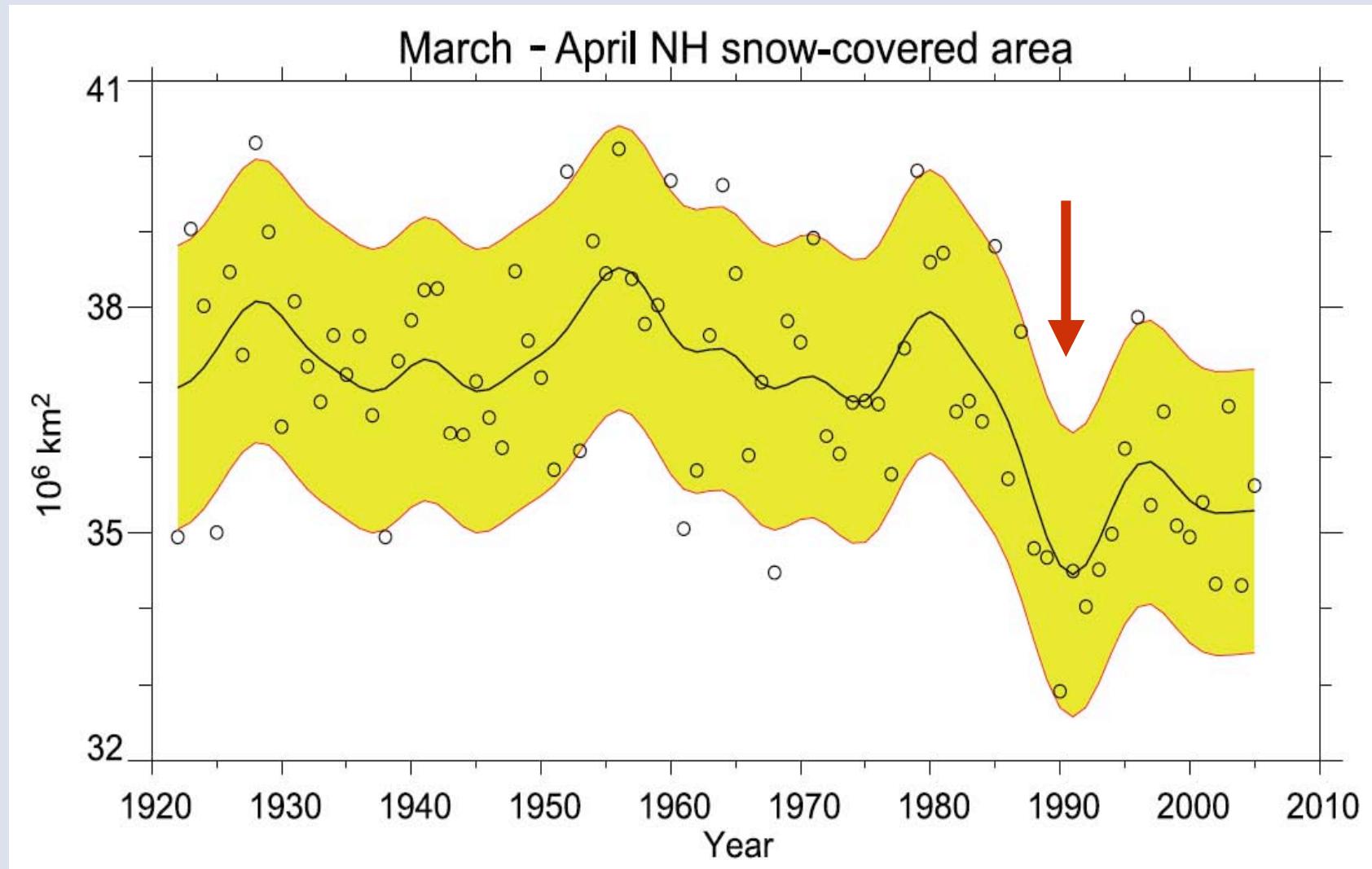
# Global View

Potential sea level rise



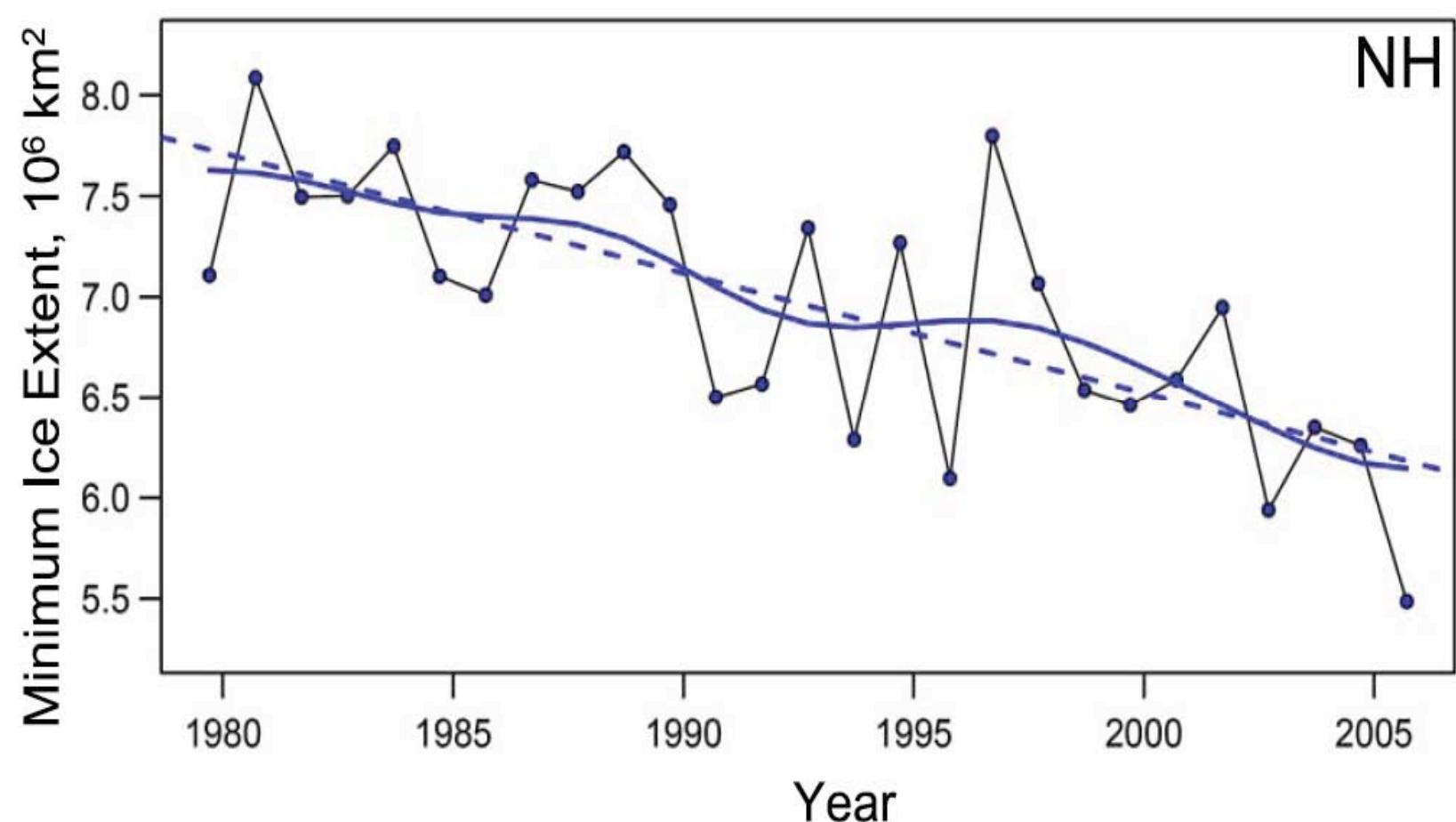
IPCC, 2007, WG I, chapter 4, p.341

# Snow



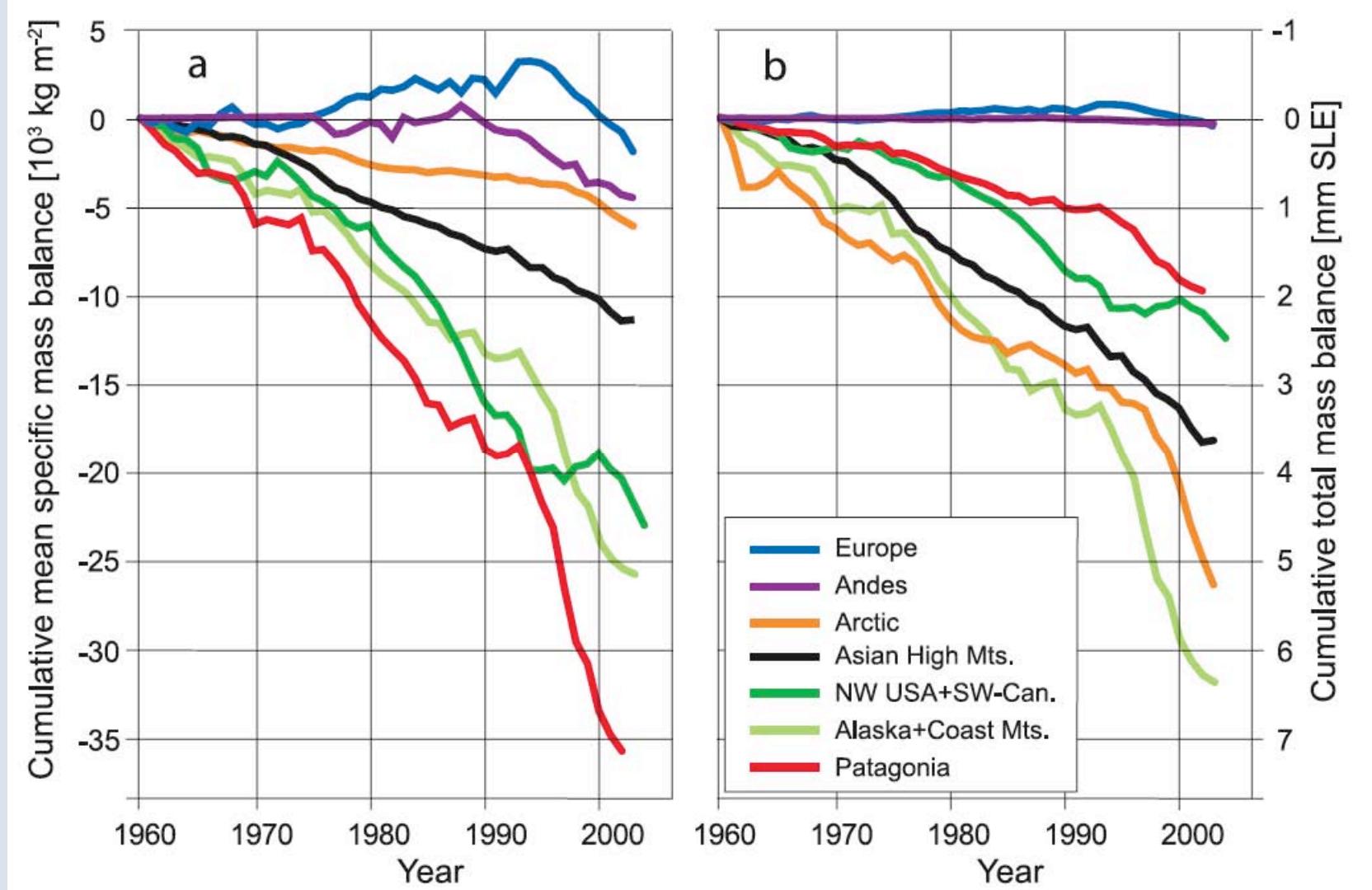
IPCC, 2007, WG I, chapter 4, p.344

# Sea Ice



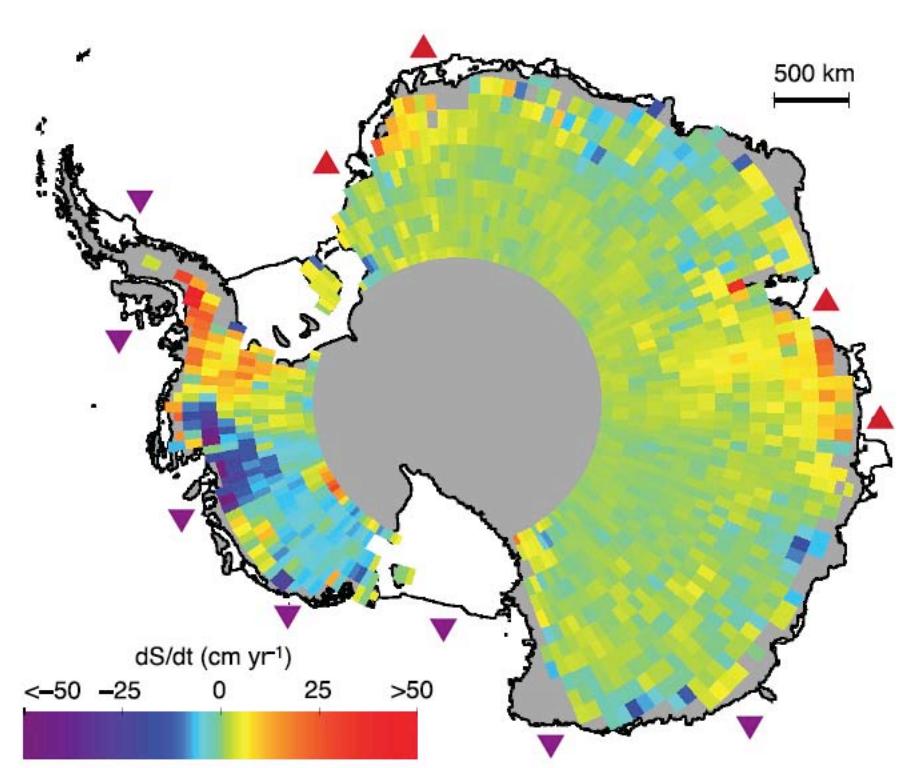
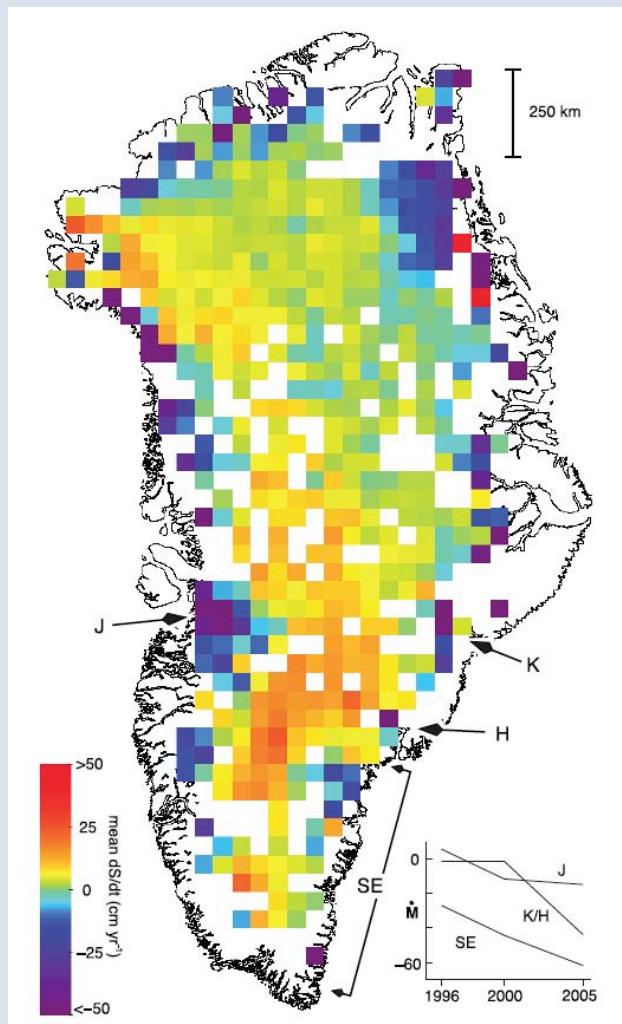
IPCC, 2007, WG I, chapter 4, p.351

# Glaciers and Ice Caps



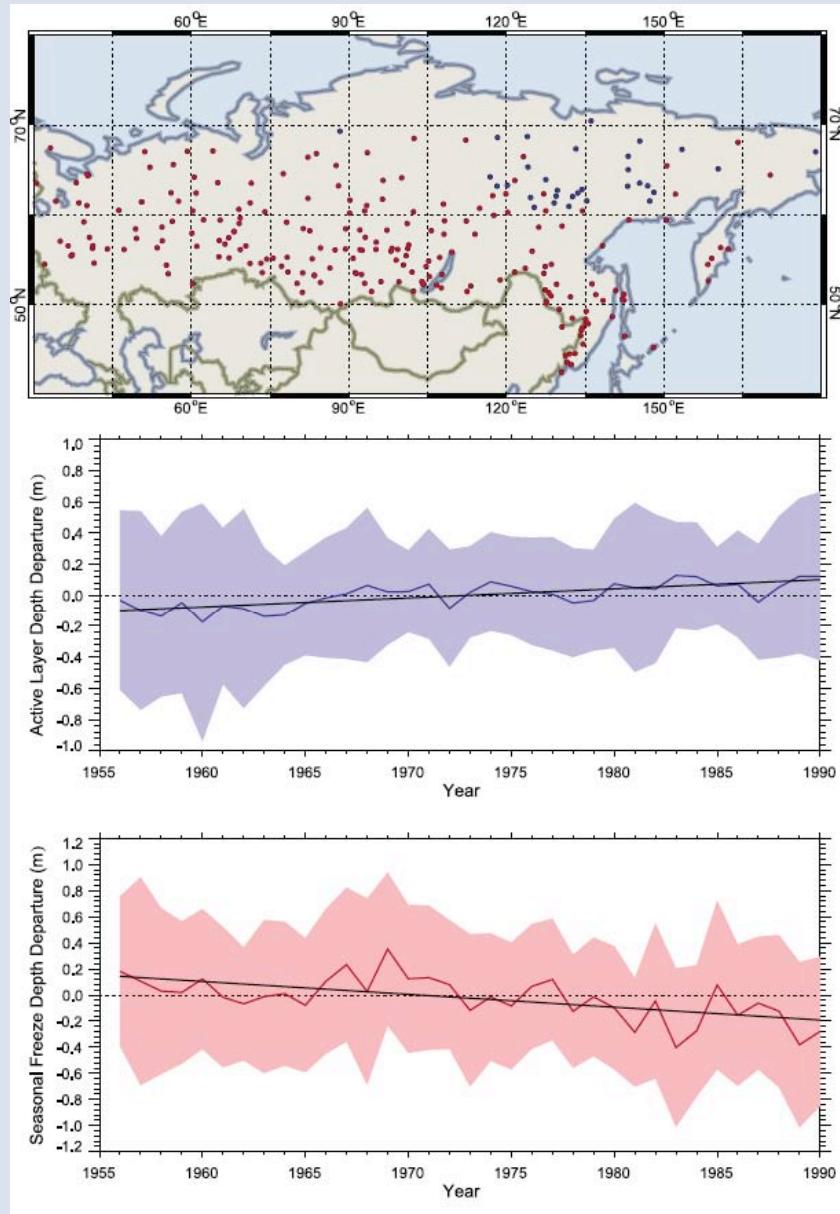
IPCC, 2007, WG I, chapter 4, p.359

# Ice sheets



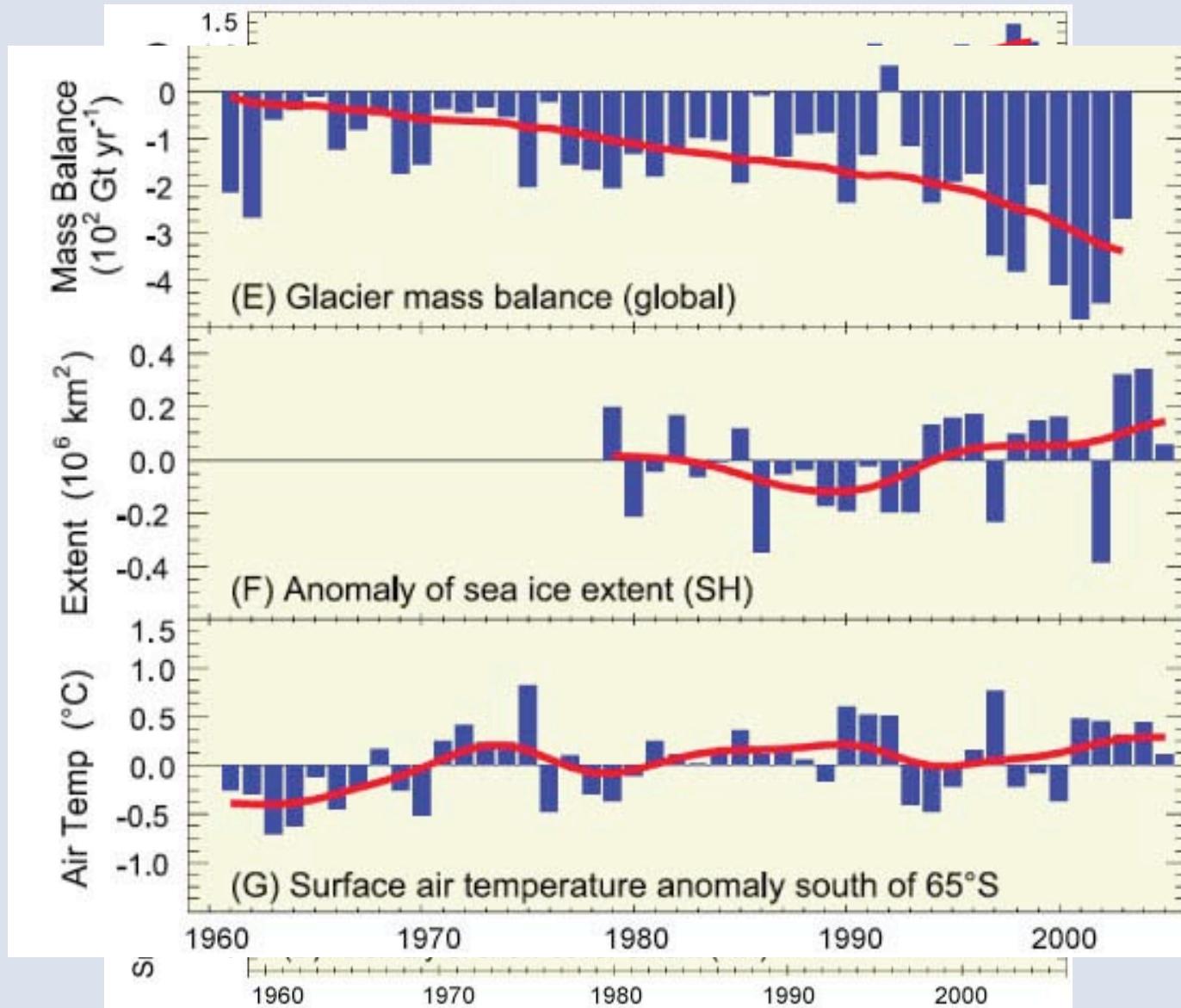
IPCC, 2007, WG I, chapter 4, p.363

# Frozen Ground



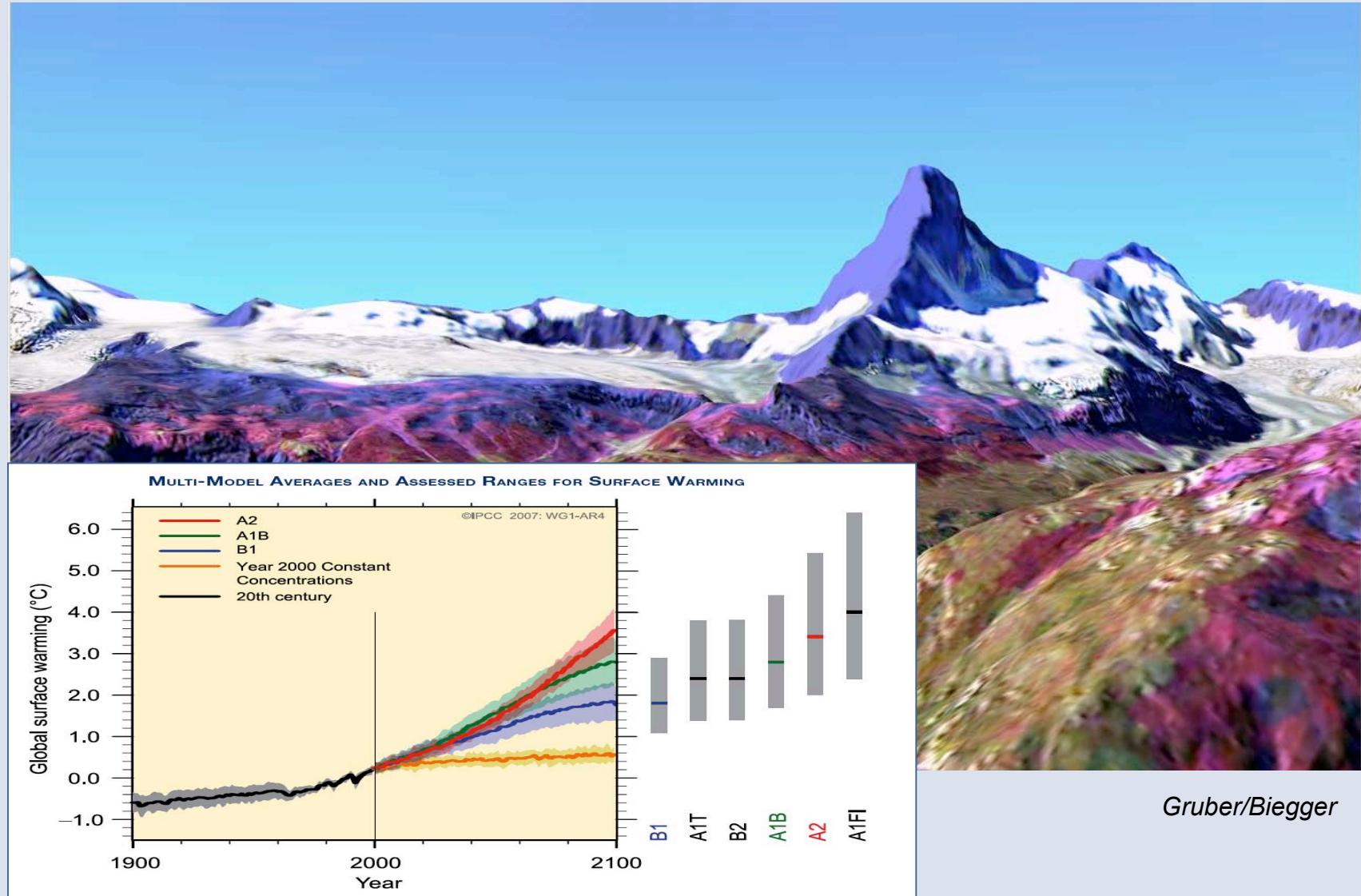
IPCC, 2007, WG I, chapter 4, p.372

# Summary of global cryospheric changes



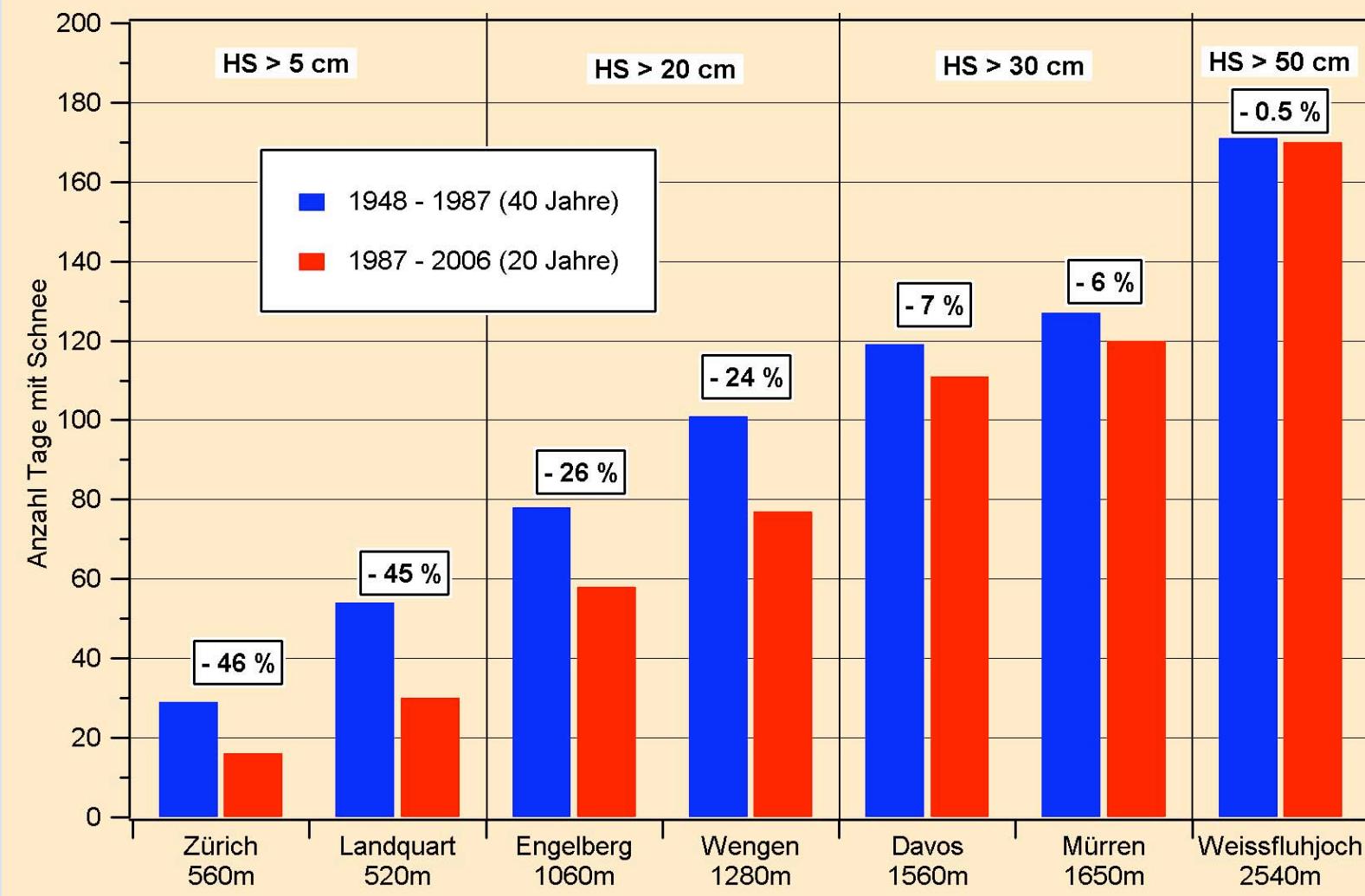
IPCC, 2007, WG I, chapter 4, p.376

# Swiss Alpine View



# Snow

Past development!



# Snow

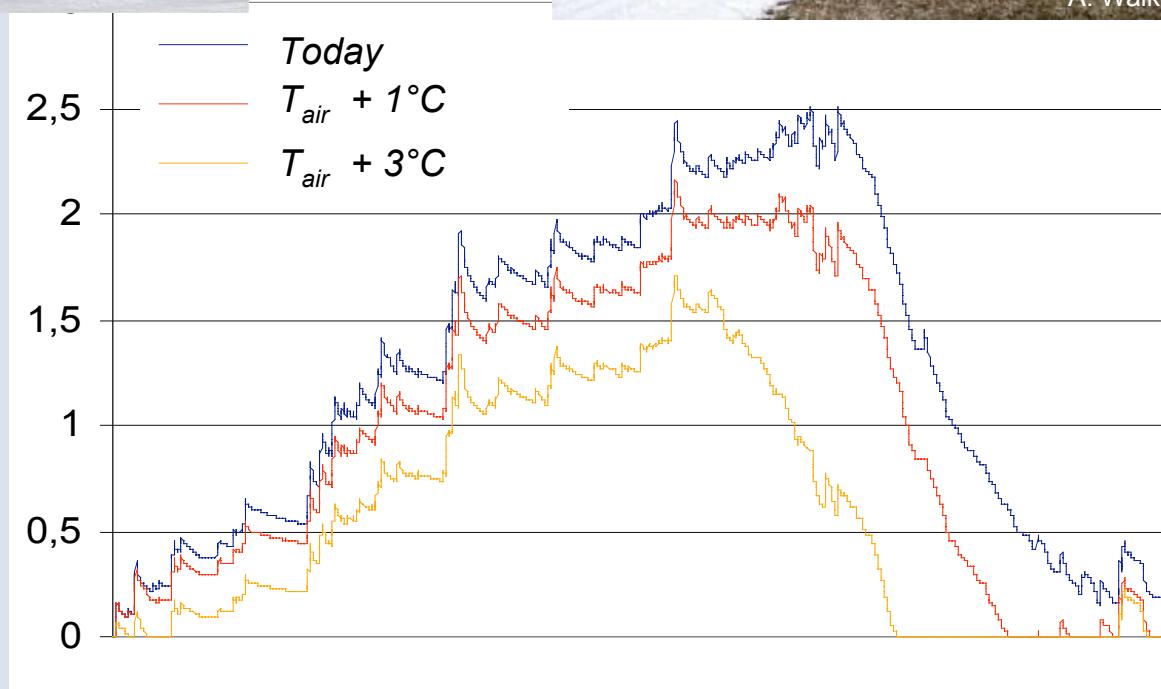
Future development?



B. Abegg



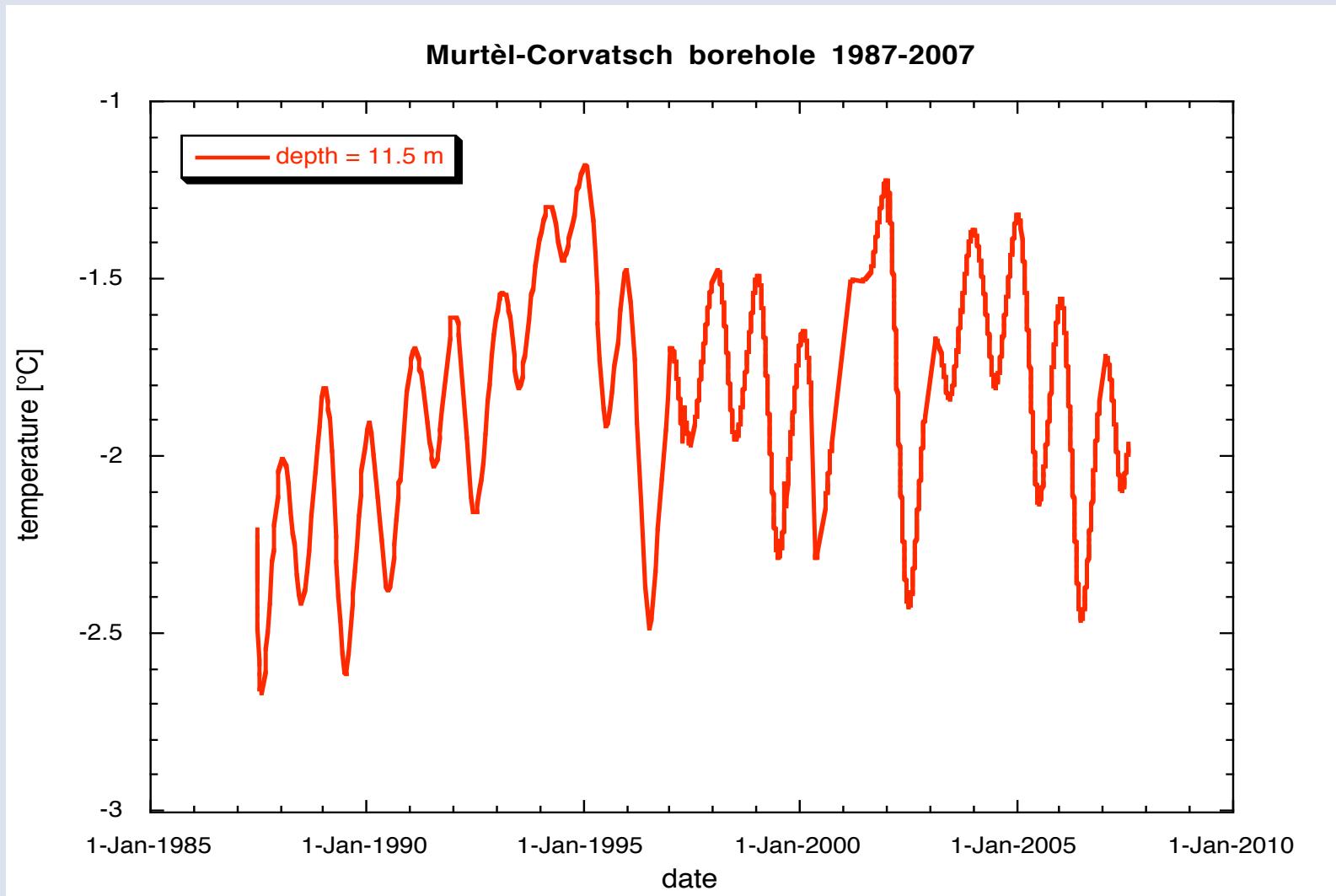
A. Walker



Lütschg, 2006

# Permafrost

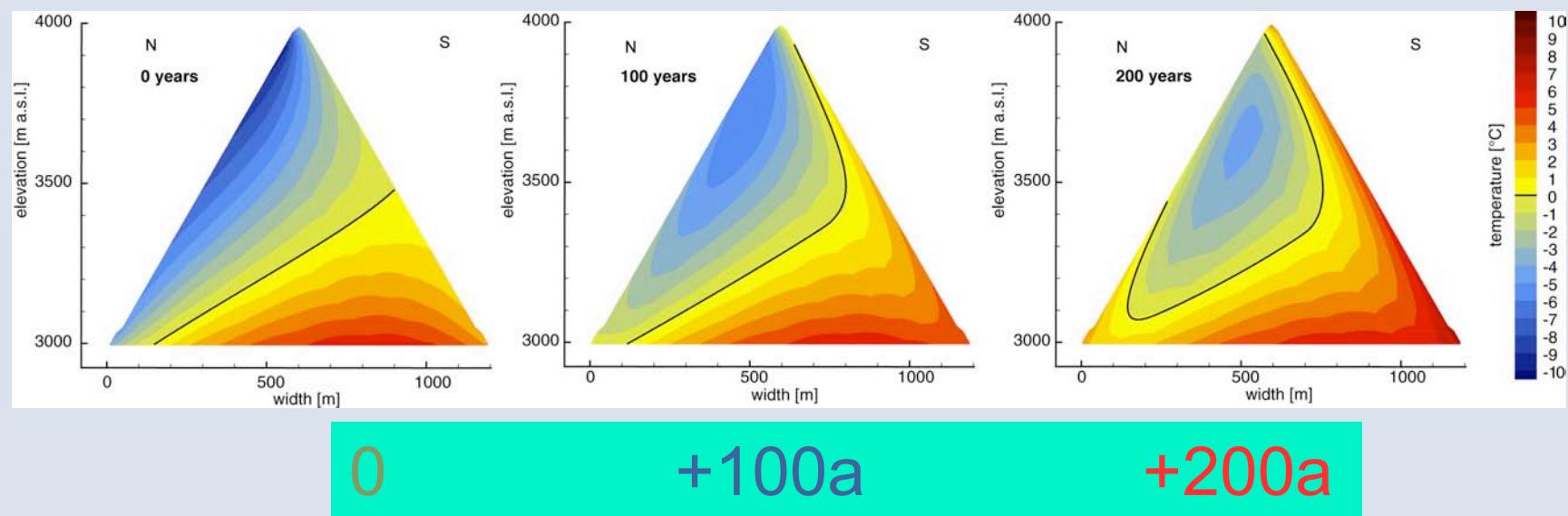
Past development!



Hoelzle, 2007

# Permafrost

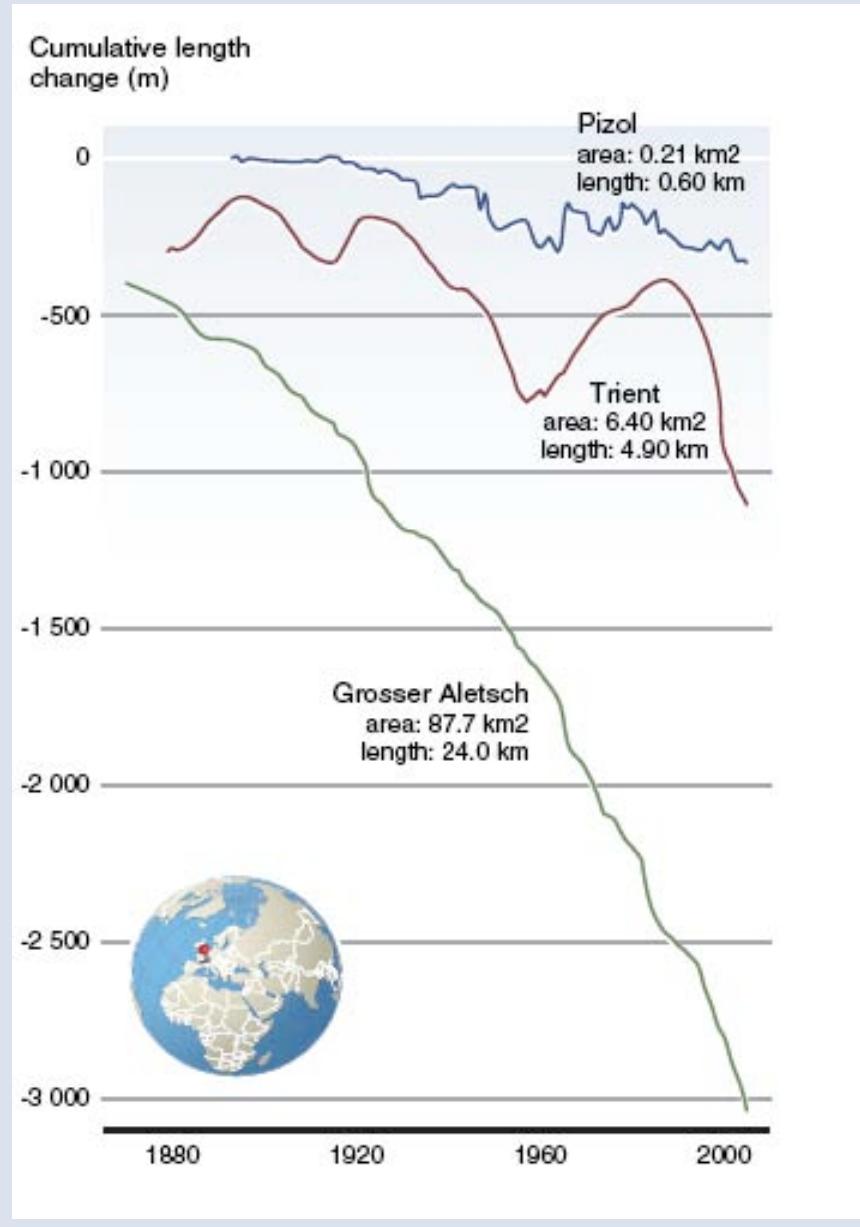
Future development?



# Glaciers



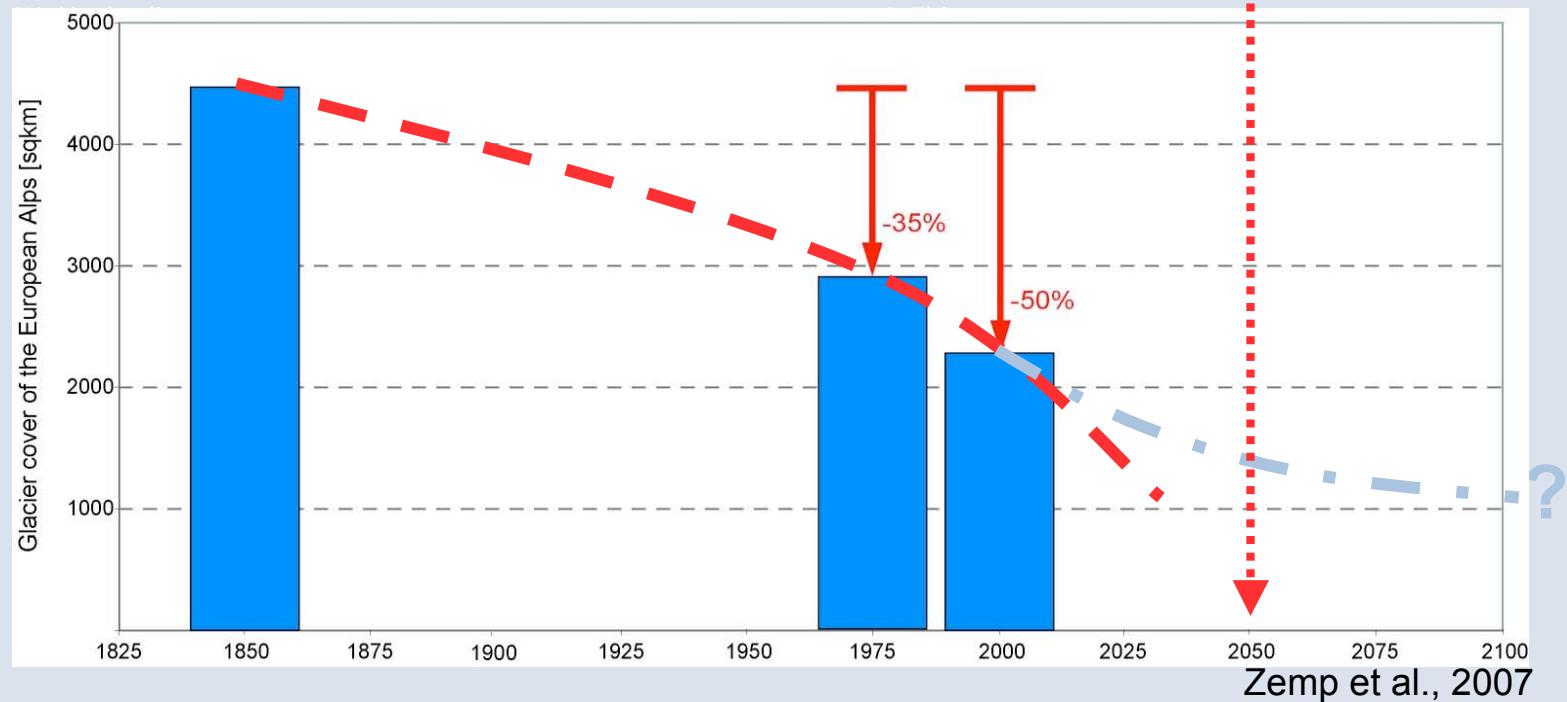
Past development!



UNEP, 2007

# Glaciers

Future development?



# Impacts

## Irrigation Problems



<http://www.ten-tours.de/html/suonen.htm>

## Hydro Power Production



M. Hoelzle

## Natural Hazards



E. Kalt

## Landscape Change



R. Frauenfelder

## Tourism



M. Hoelzle



# Conclusions

- Strong changes on all cryosphere components are observed at a global scale
- Acceleration of changes in the near future are expected, based on todays understanding of the processes
- Alpine cryosphere is currently changing with an increased speed and impacts on society, economy and environment are becoming more visible