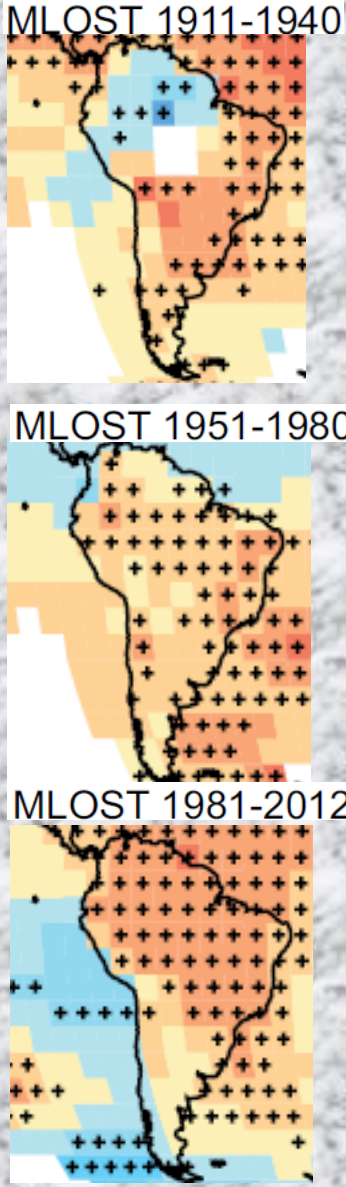


# The need of a cryospheric network in Chile

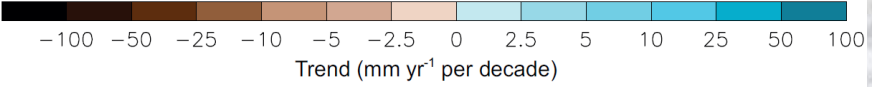
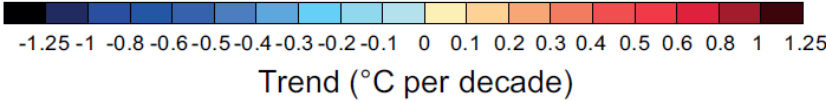
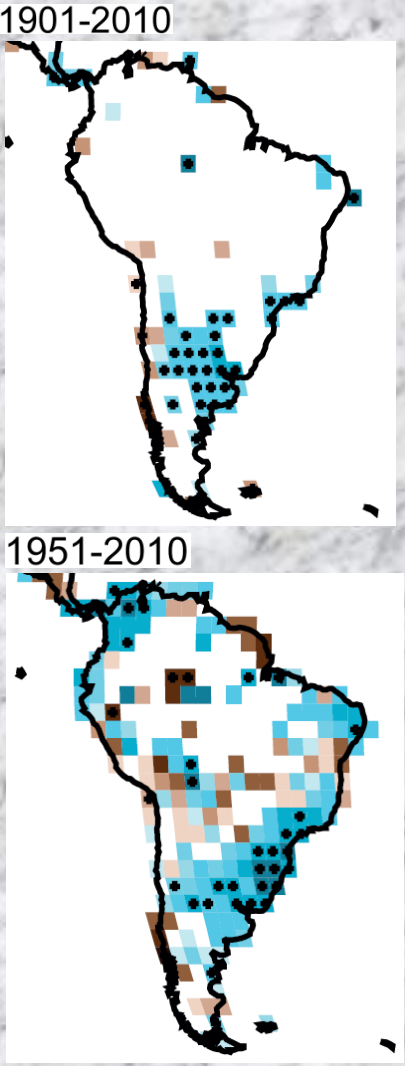
**Jorge Carrasco Cerda**  
**Universidad de Magallanes**

# Observed changes

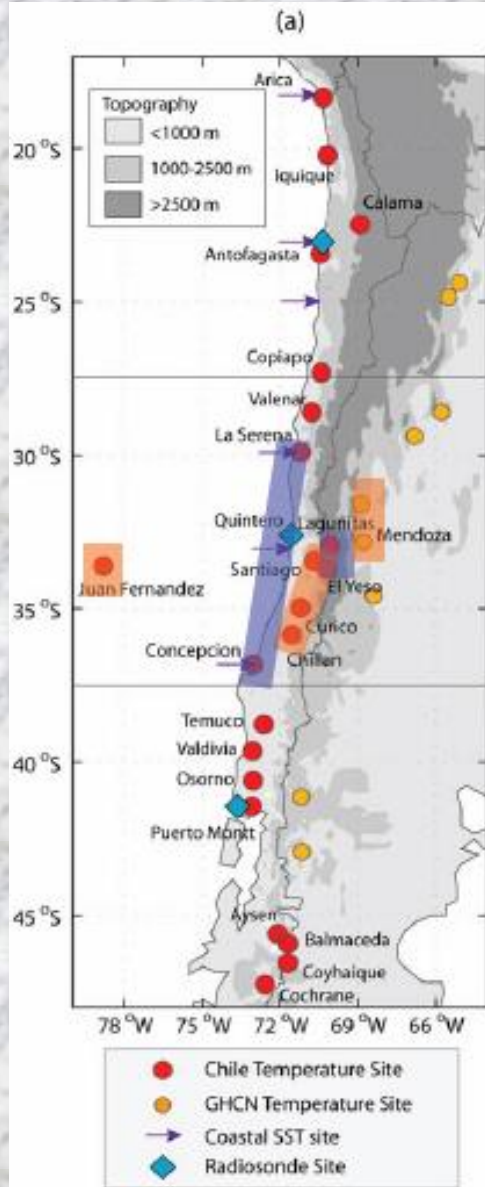
Air Temperature



Precipitation

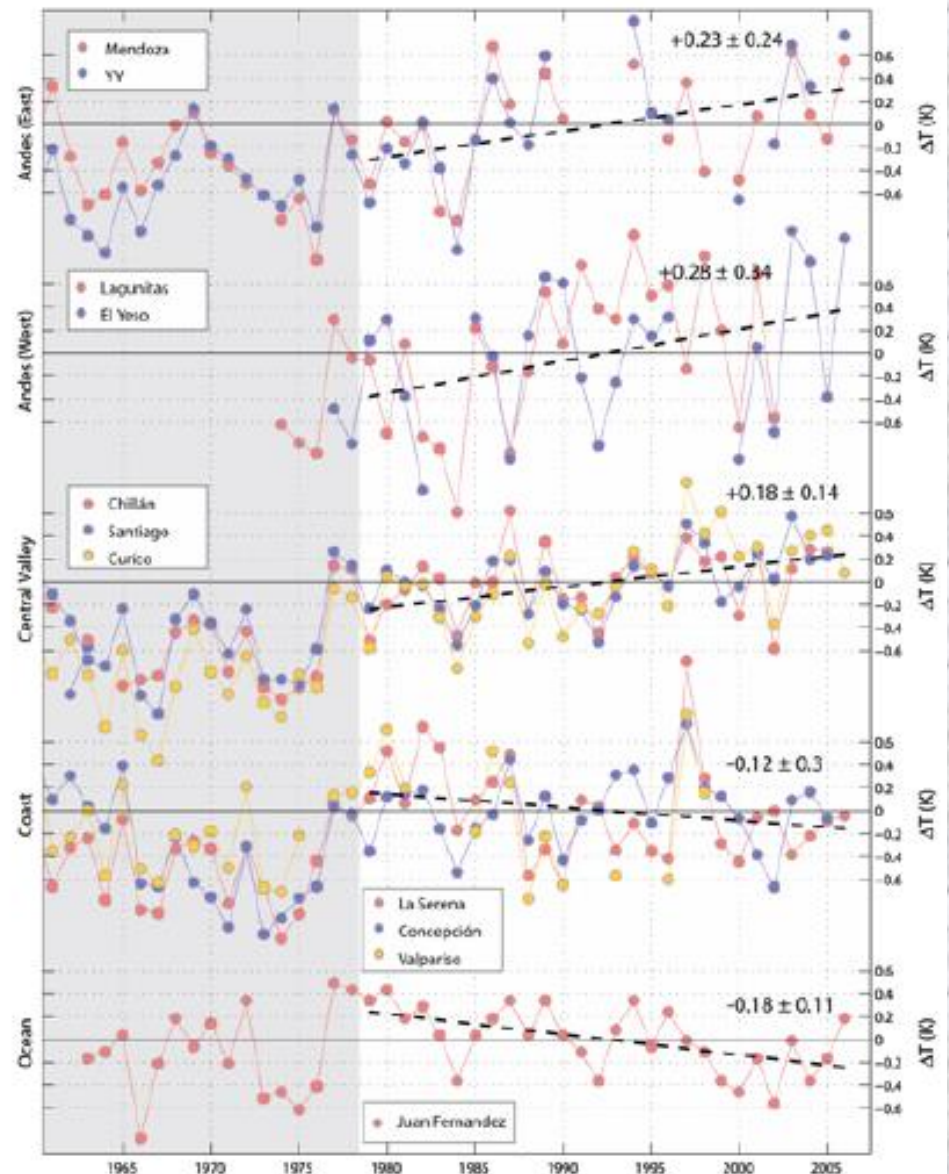


# Observed changes

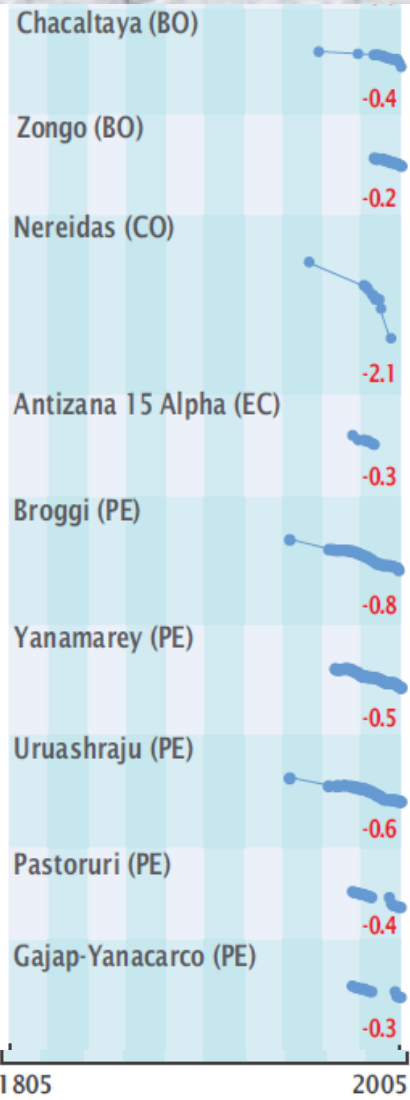
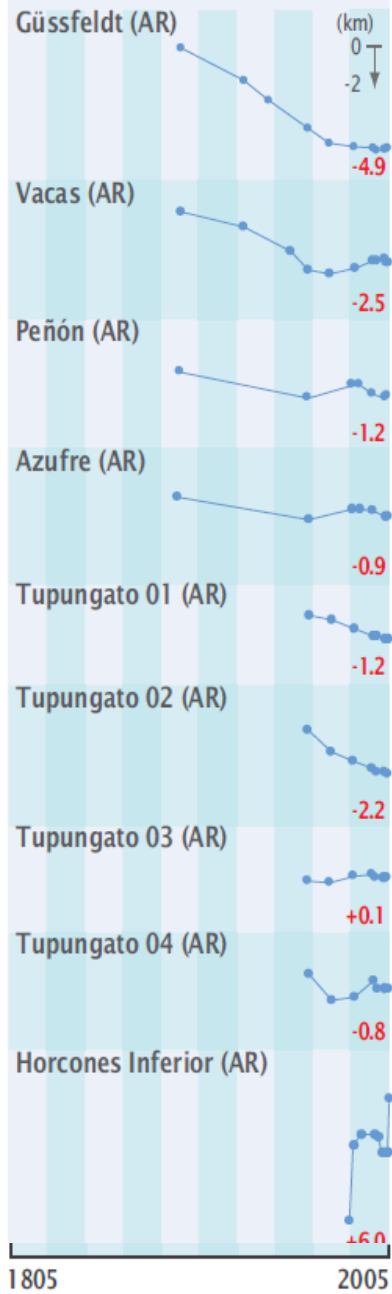


Temperature Anomaly (°C)

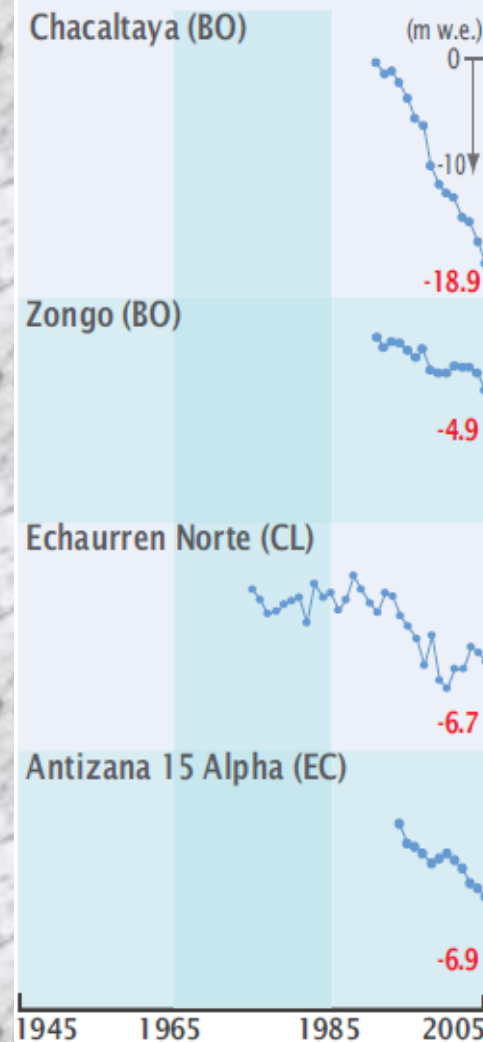
Niño 3 Index



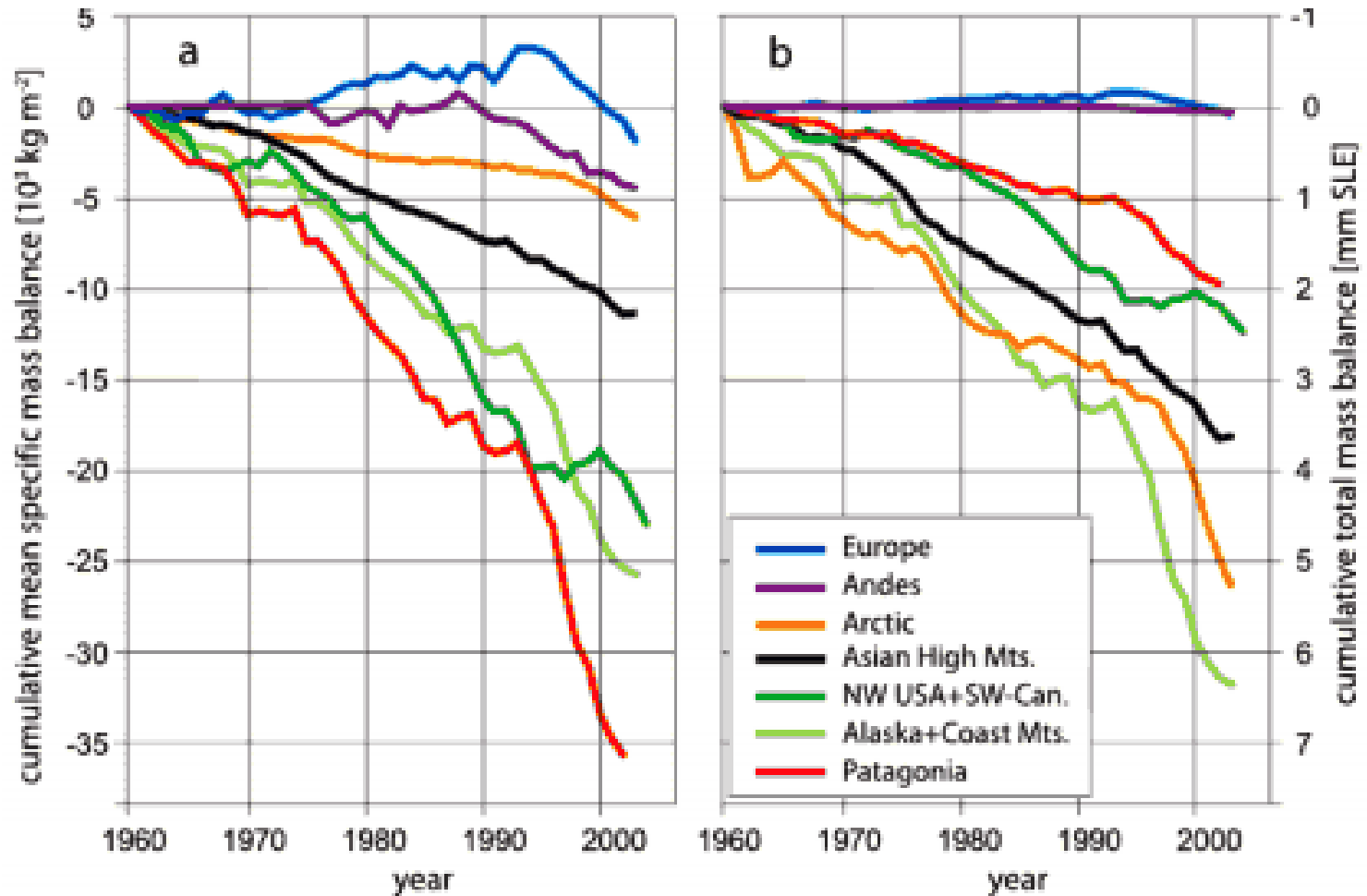
## FRONT VARIATION



## MASS BALANCE

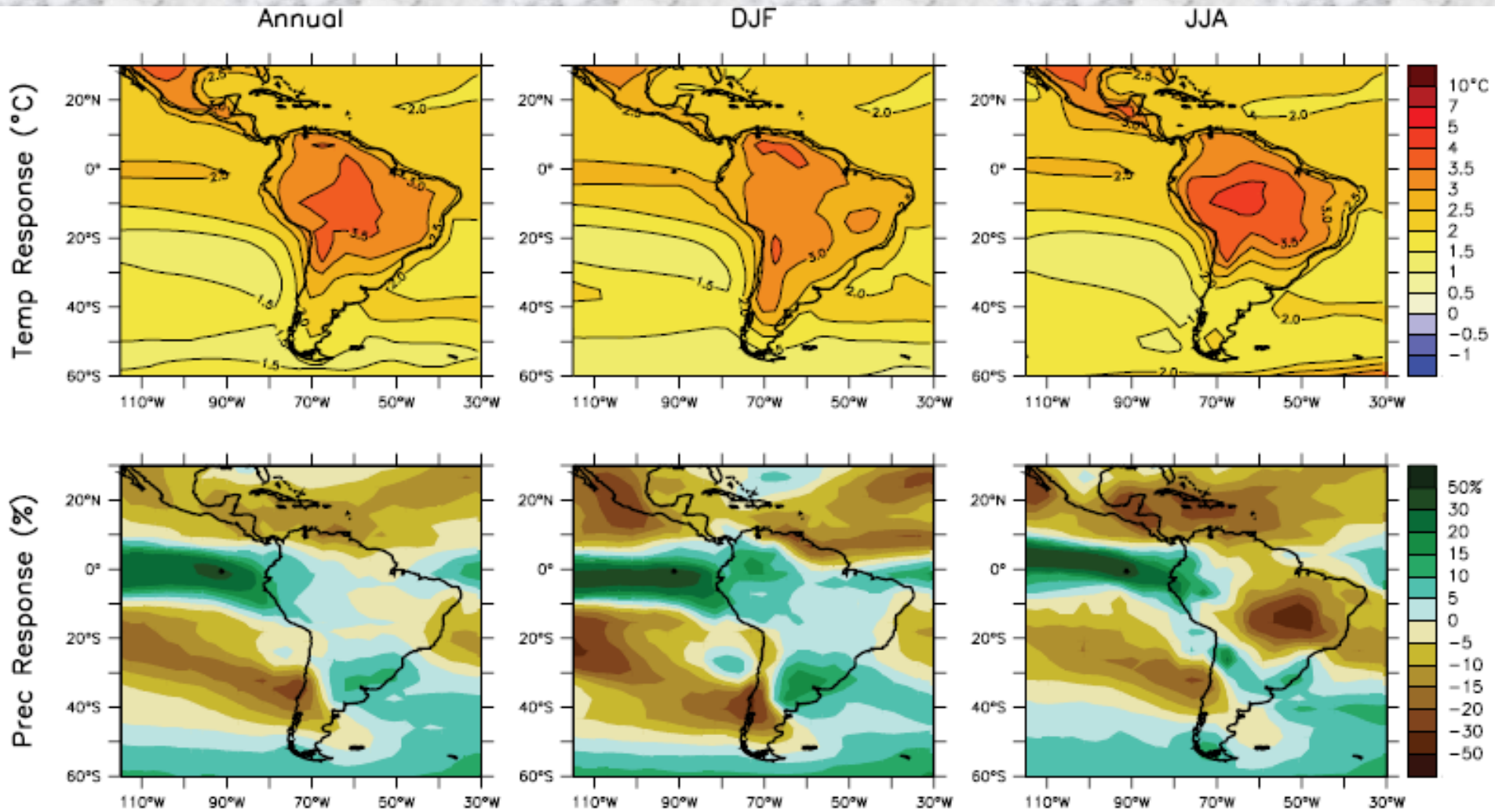




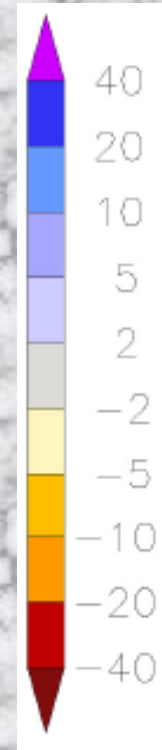
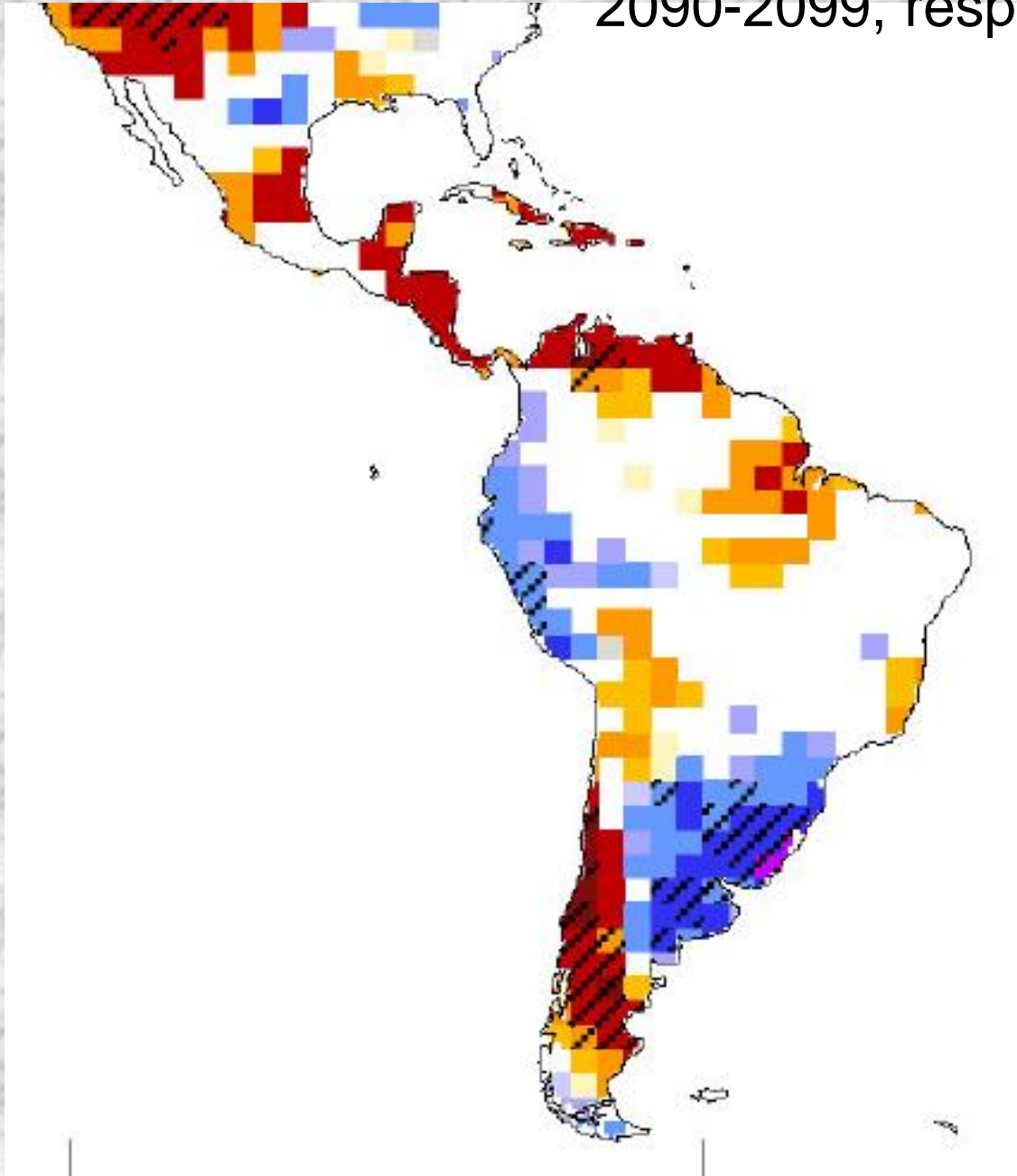


Land Glacier Ice Loss. (Source: IPCC AR4 (2007) based on Dyurgenov and Meyer (2004).) Figure (a) shows the cumulative mass lost over time; Figure (b) shows the relative contribution of loss in each region to sea-level rise.

# Climate prediction



# Projected changes of runoff for 2090-2099, respect to 1980-1999









Current network to monitoring  
changes in the cryosphere in South  
America

?

Atmospheric data use  
as a proxy for  
cryosphere monitoring

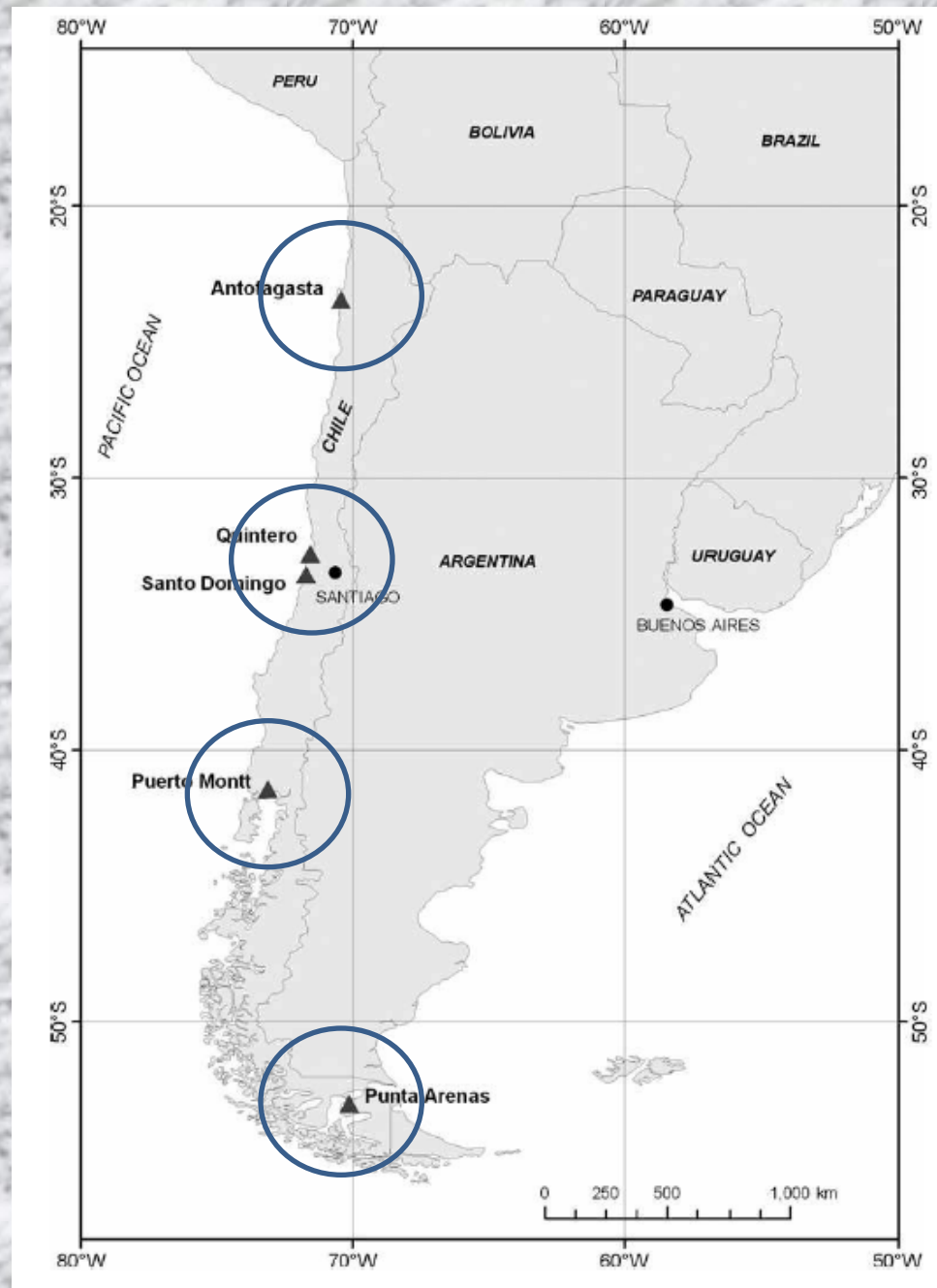
Altitude of the zero  
isotherm

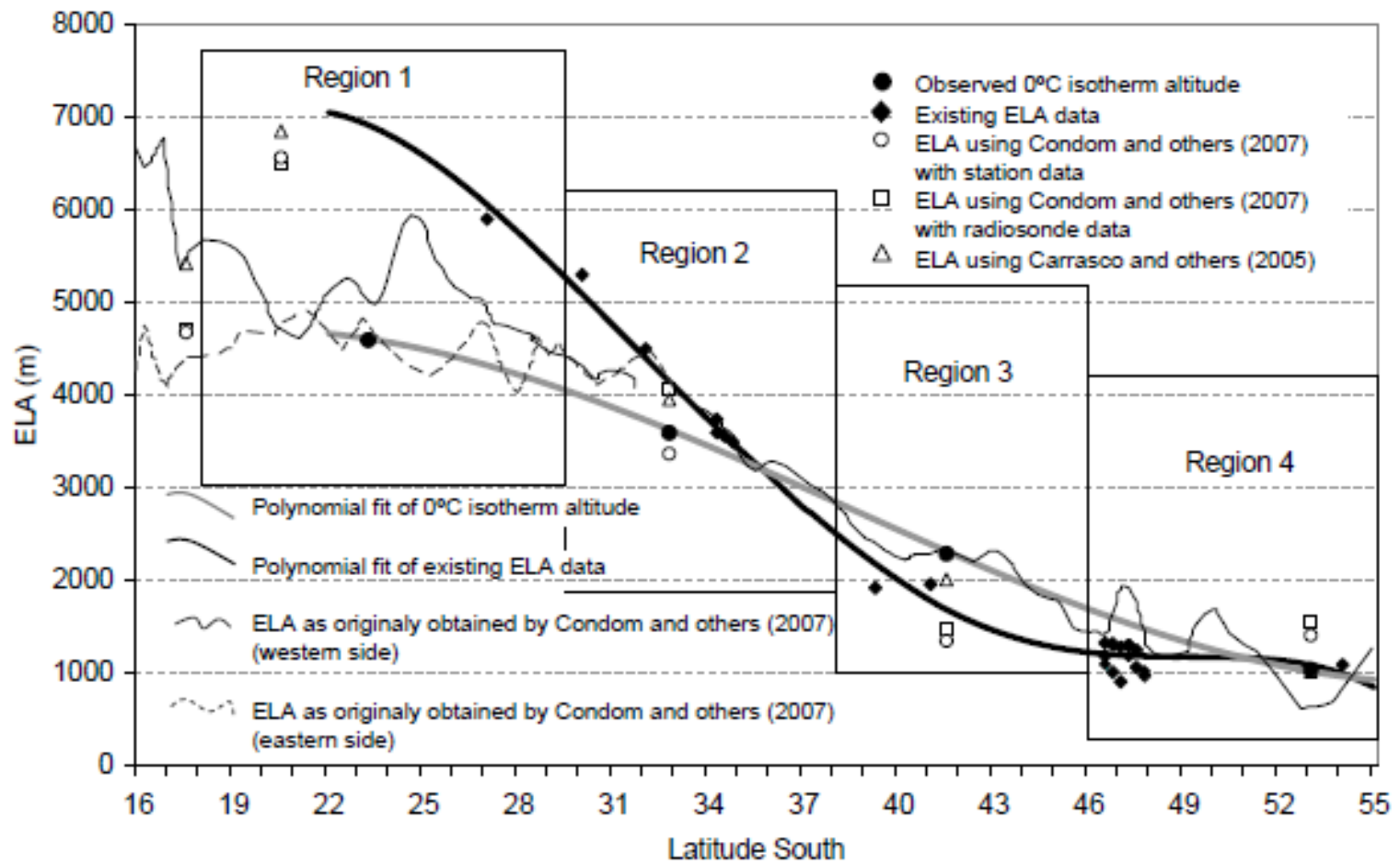
+

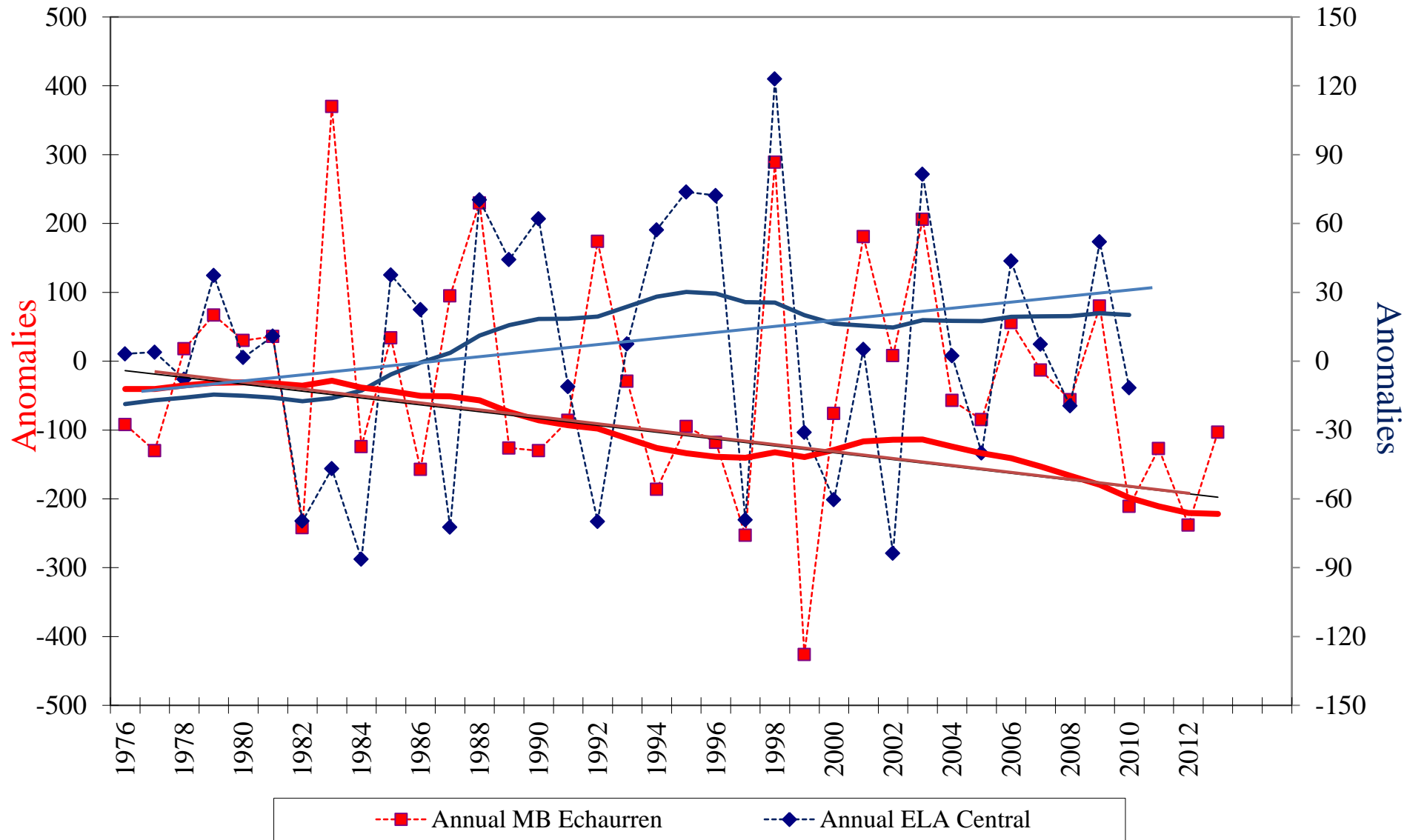
Precipitation

Equilibrium Line  
Altitude (ELA)

Snowline









# Sonic Ranging Sensor

(a)



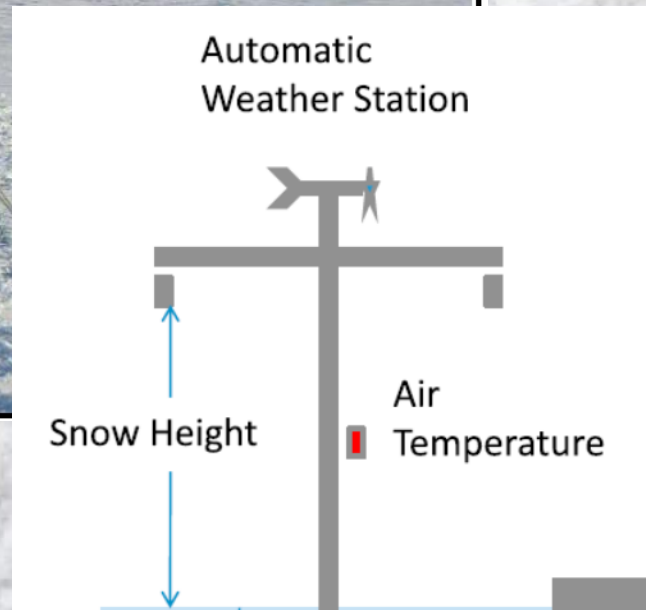
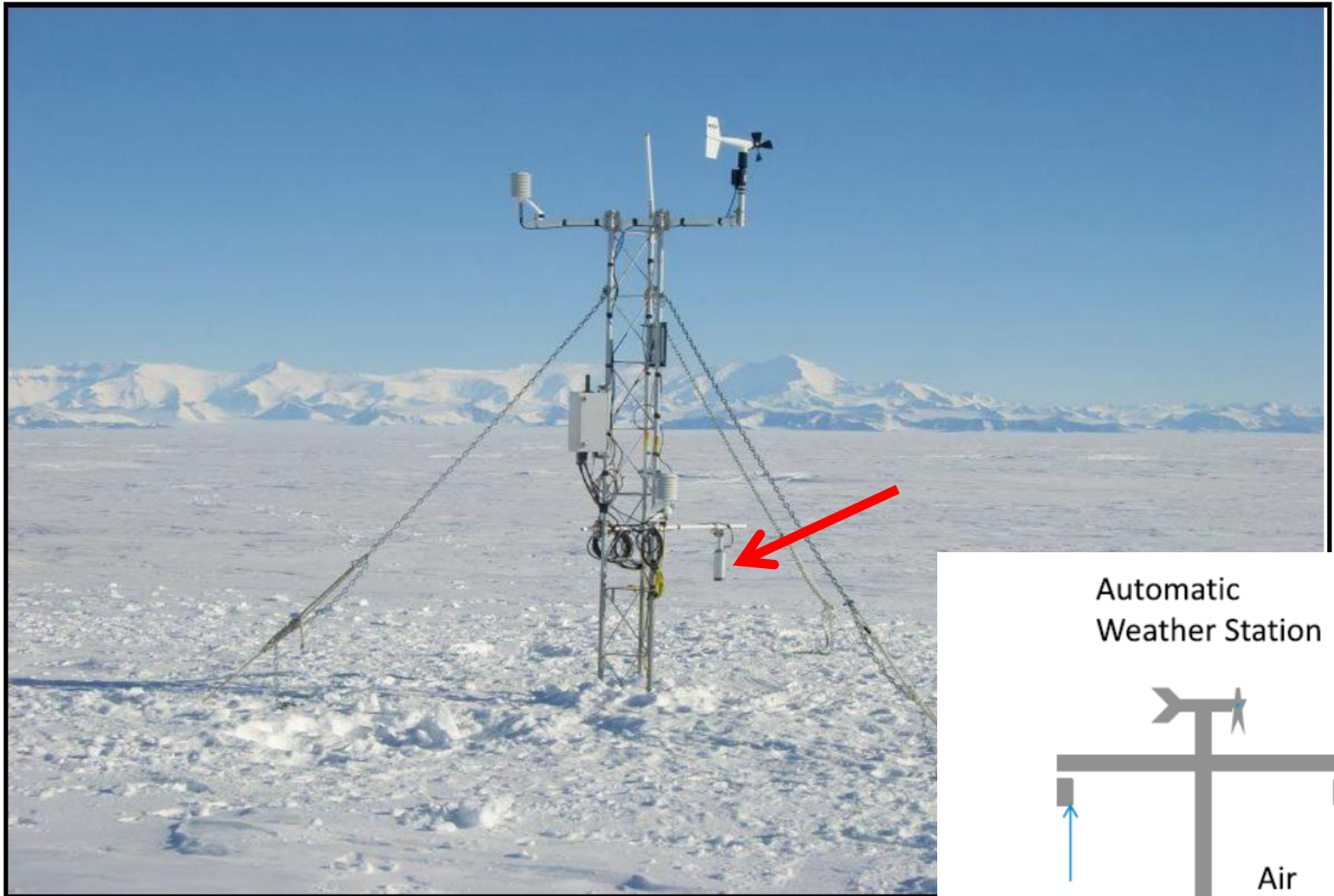
(b)



(c)



FIG. 5. Site photos: (a) Buffalo, NY; (b) Cheyenne, WY; and (c) Davis, WV.







## **Conclusion**

There is a need for establishing a cryosphere network, or .....

Rescue data and archiving









