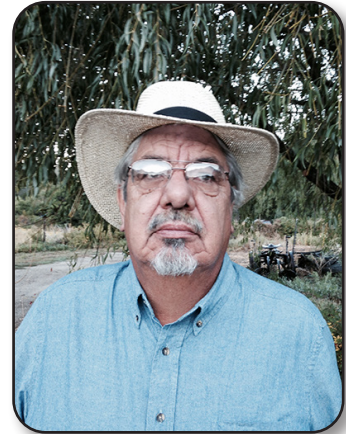


NM Land Grants (Mercedes) as the Cradle of Democracy

David F. Arguello, Acequia Commissioner
and Land Grant Official

David Fermin Arguello earned a BA in Sociology from UNM, a MSW and PhD from University of Washington. He taught social welfare policy, research, data collection and analysis in Schools of Social Work at the University of Utah, San Jose State University and New Mexico Highlands University. He is now retired and lives in Valdez, NM at his ancestral farm and continues to be active in health, water, and land issues. He belongs to the American Red Cross, National Alliance for Mental Illness, has been on the Commission of two Acequias, is president of the Arroyo Hondo Arriba Land Grant, and vice president of the NM Land Grant Consejo.

Editor's Note: The presenter did not have PowerPoint slides to accompany their remarks, and a transcription of their talk is not available.



Save Our Snow: Climate Change and Ski Areas

Mark Williams, University of Colorado, Boulder

Mark Williams is a Fellow at the Institute of Arctic and Alpine Research and Professor of Geography at the University of Colorado, Boulder. Mark is on the core faculty of Environmental Studies. He is also on the faculty of the Hydrology Program in Geography and his classes can be used to satisfy the Hydrology Certification Program in Geography. His research interest is the hydrology and biogeochemistry of mountain areas, including snow hydrology, glaciology, water quality, surface/groundwater interactions, acid mine drainage, avalanche dynamics, and the water/energy nexus. Mark has current or past research activities in many of the mountain ranges throughout the world, including the Rocky Mountains, Sierra Nevada of California, the Tien Shan and Qilian Shan of China, Andes of South America, European Alps, and the Himalayas. Mark received his PhD in Biological Sciences with an emphasis in ecology from the University of California at Santa Barbara in 1991. He is a Senior Fulbright Scholar, in residence in Ecuador in 1999 and in Nepal in 2013-2014. He was elected a Fellow of the American Geophysical Union in 2012, for "outstanding research that has made fundamental advances in mountain hydrology and biogeochemistry." Mark was the long-time PI of the Niwot Ridge Long Term Ecological Research (LTER) Program, the only alpine LTER program. He is the Co-I on a \$7,400,000 grant from USAID to study disappearing Himalayan glaciers and water security for High Asia. He is also a Co-I on a \$12,000,000 grant from NSF to study economic and environmental trade-offs from unconventional oil and gas extraction. Before becoming an academic, Mark was the owner and general manager of a backcountry ski lodge and also a certified avalanche instructor. He draws on this varied background to talk to us about climate change and skiing.





Figure 1. Introduction.

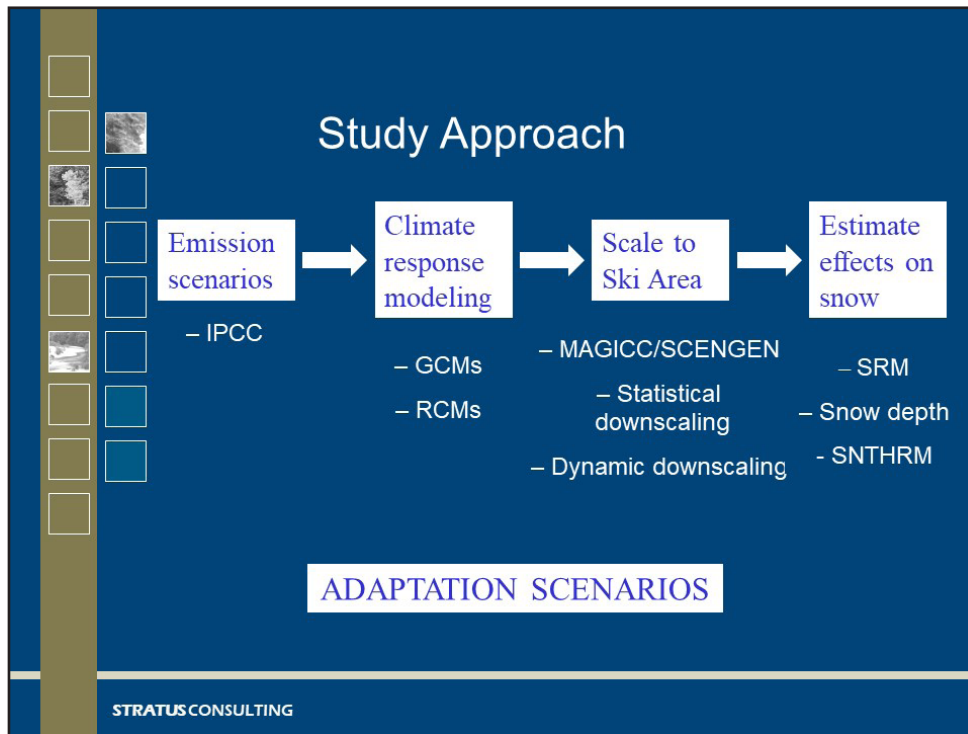


Figure 2. Approach to the snow study.

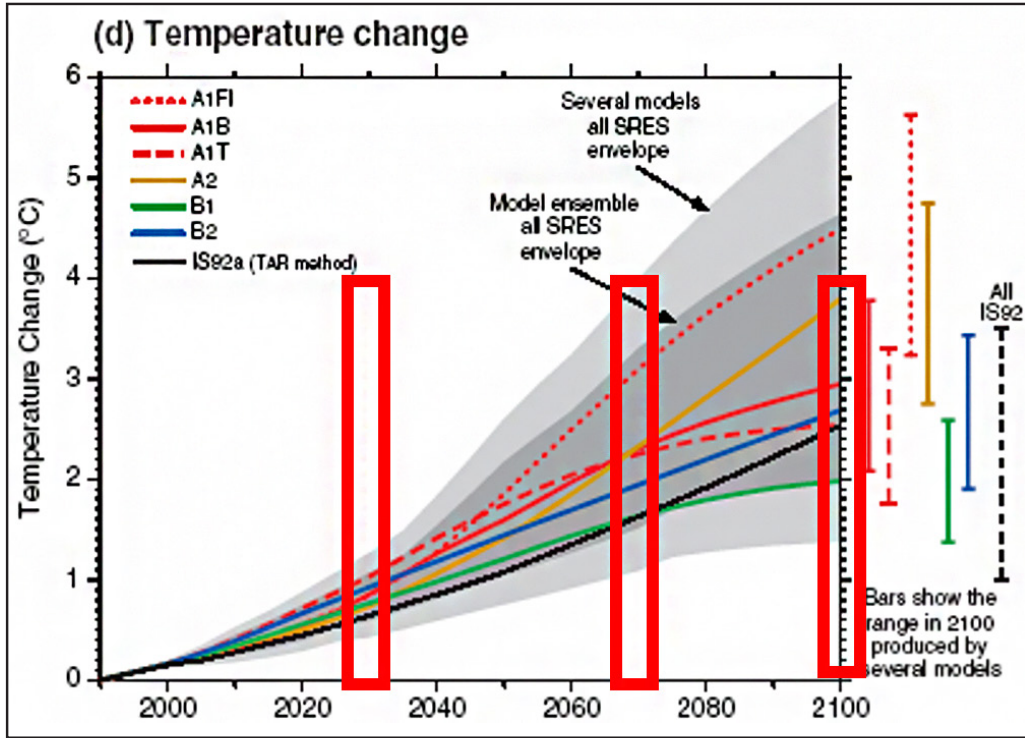


Figure 3. Rising CO₂ will lead to accelerated rise in air temperature.

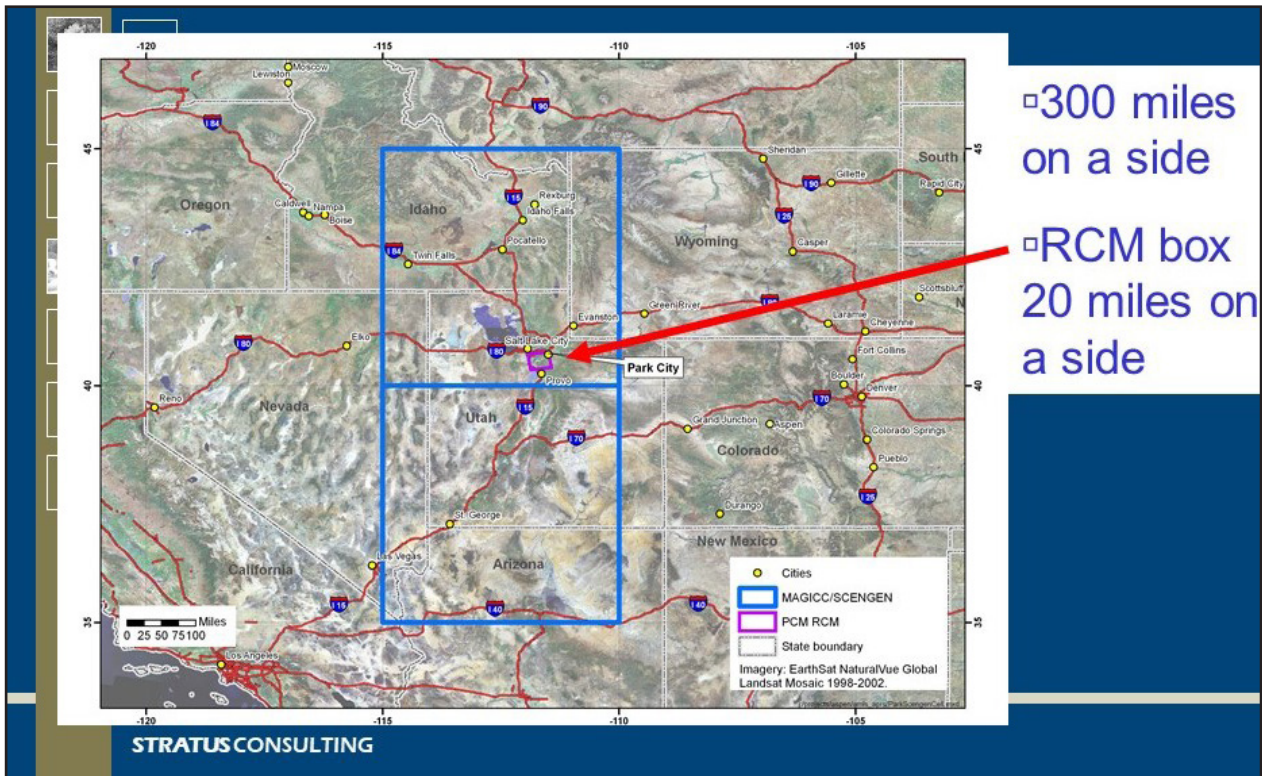


Figure 4. 5x5 grid boxes near Park City.

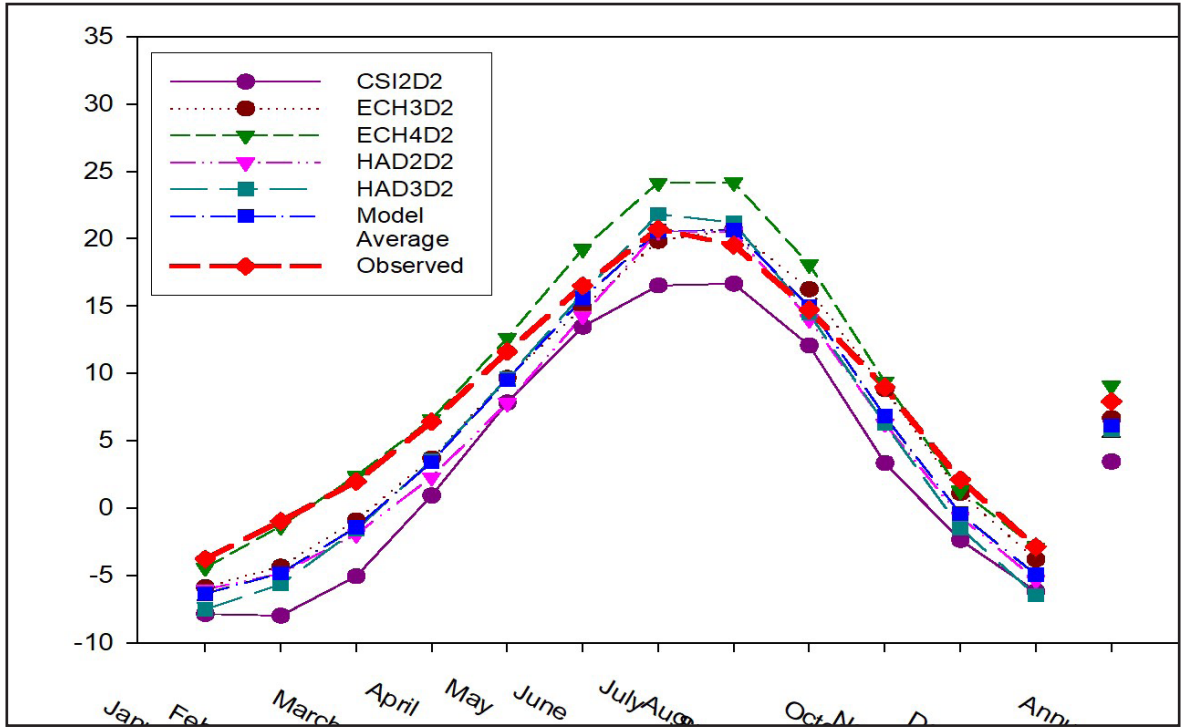


Figure 5. Model vs. observed current (2000) temperatures.

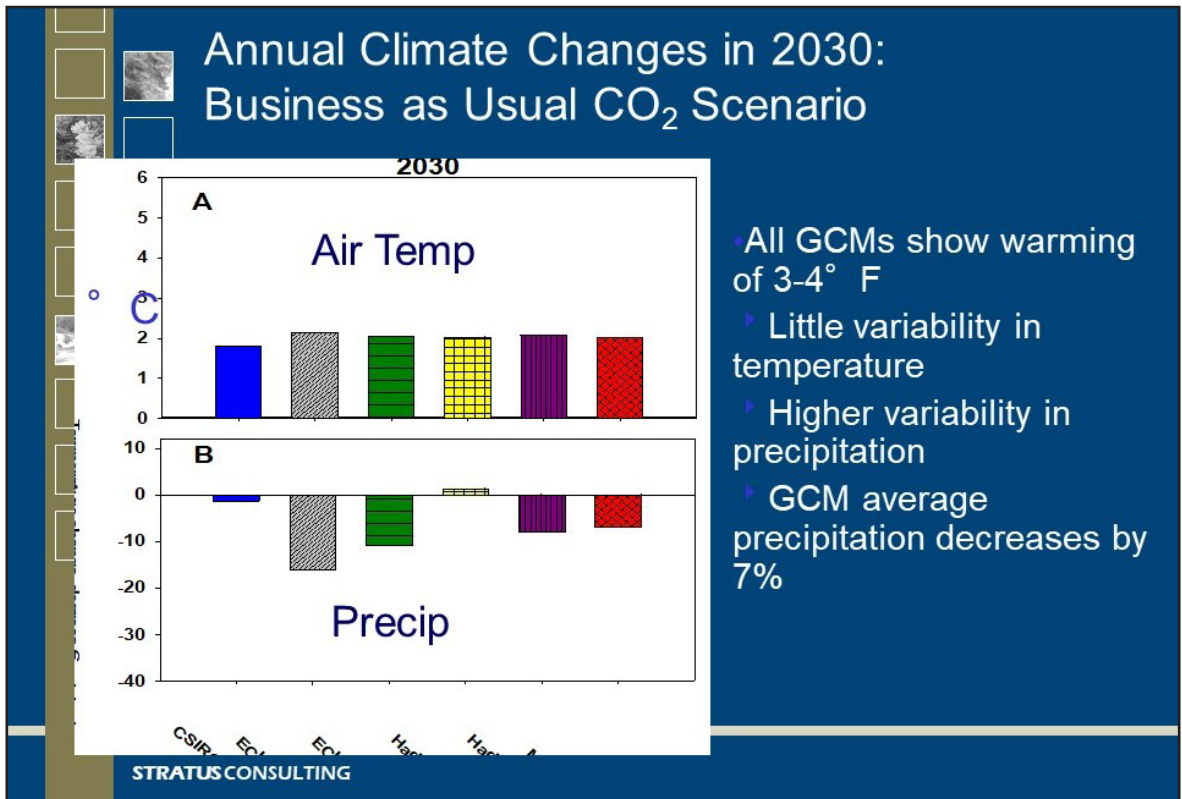


Figure 6. Annual climate changes in 2030 in “business as usual CO₂ scenario.”

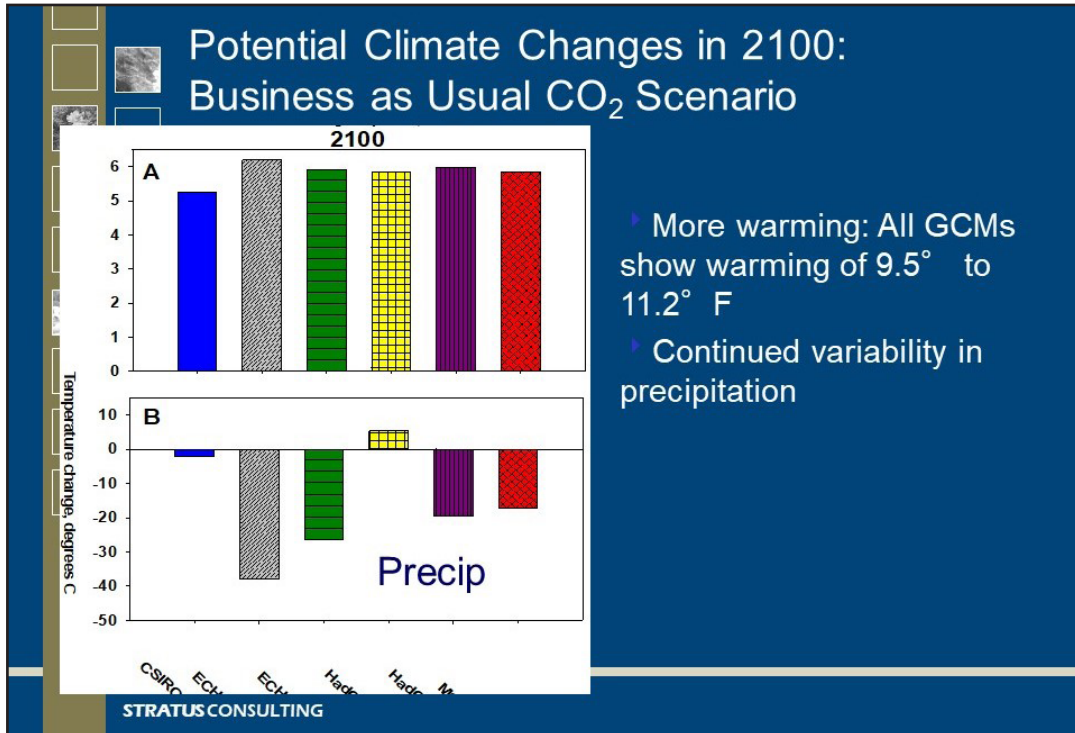


Figure 7. Potential climate changes in 2100.

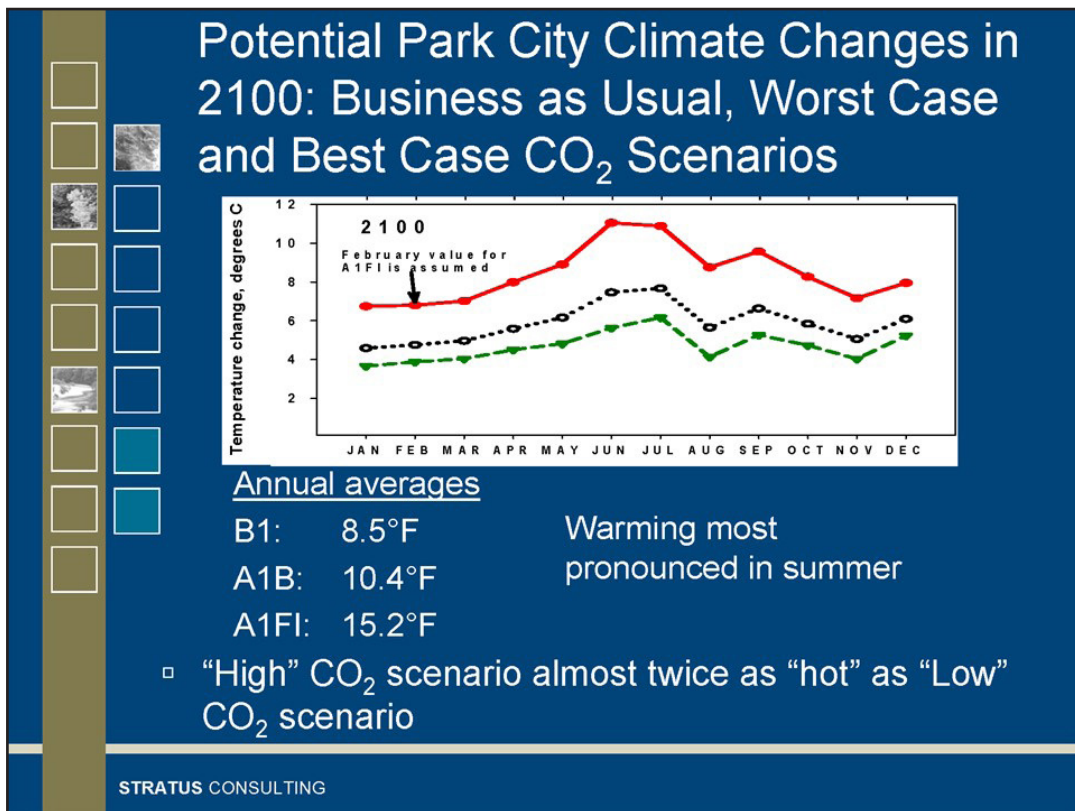


Figure 8. Potential Park City climate changes in 2100: various scenarios.

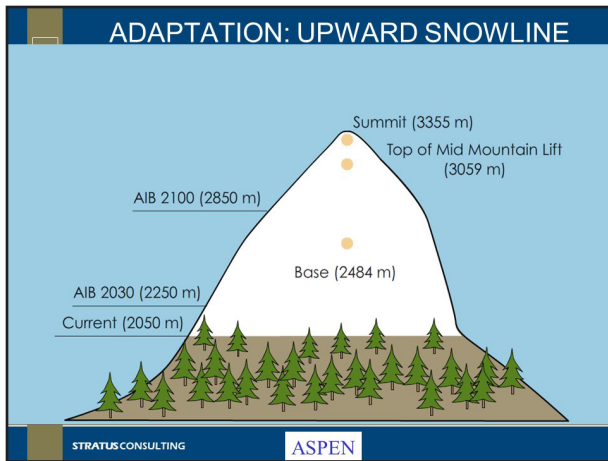


Figure 9. Adapting to the upward changing snowline.

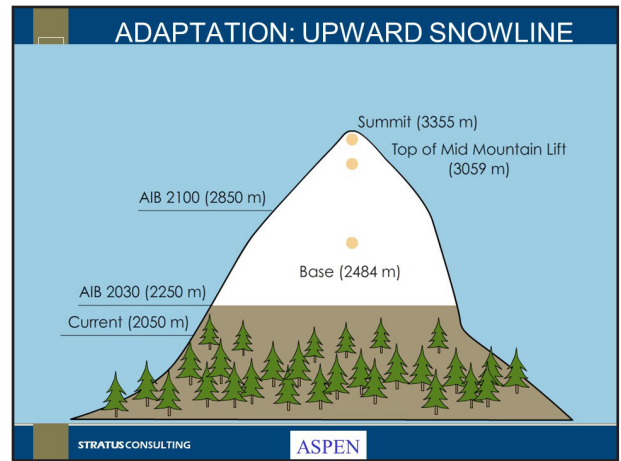


Figure 10. Adapting to the upward changing snowline (cont.).

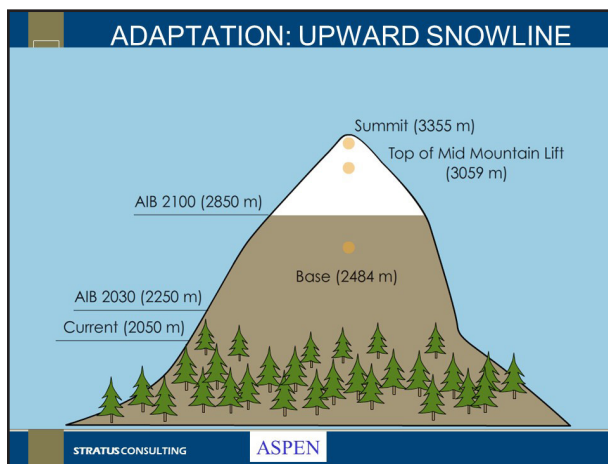


Figure 11. Adapting to the upward changing snowline (cont.).

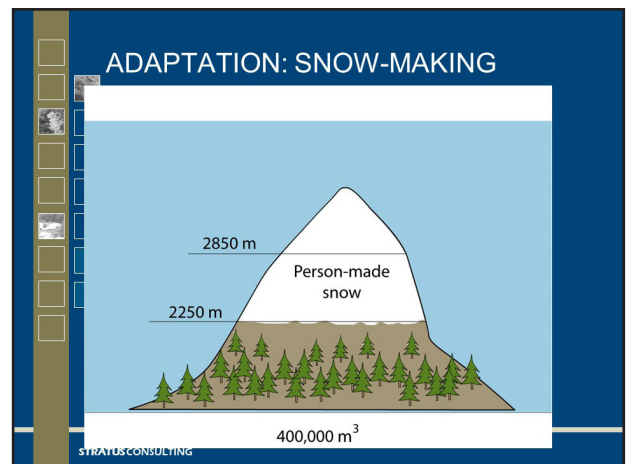


Figure 12. Making snow to compensate for the upward changing snowline.

ADAPTATION: BUSINESS MODEL

- Ski areas economic drivers for region
- Adaptations to climate change expensive
- Ski areas may lose profitability
- SOLUTION: adapt European model
 - Local governments subsidize ski areas

Figure 13. Businesses adapt to compensate for the upward changing snowline.

How Much Difference Can We Make?

- Our carbon emissions will affect how much climate and snowpack will change
- The more we control emissions, the more snow we will have

Figure 14. How much difference can we make to compensate for the upward changing snowline?



Figure 15. Blog post screenshot.