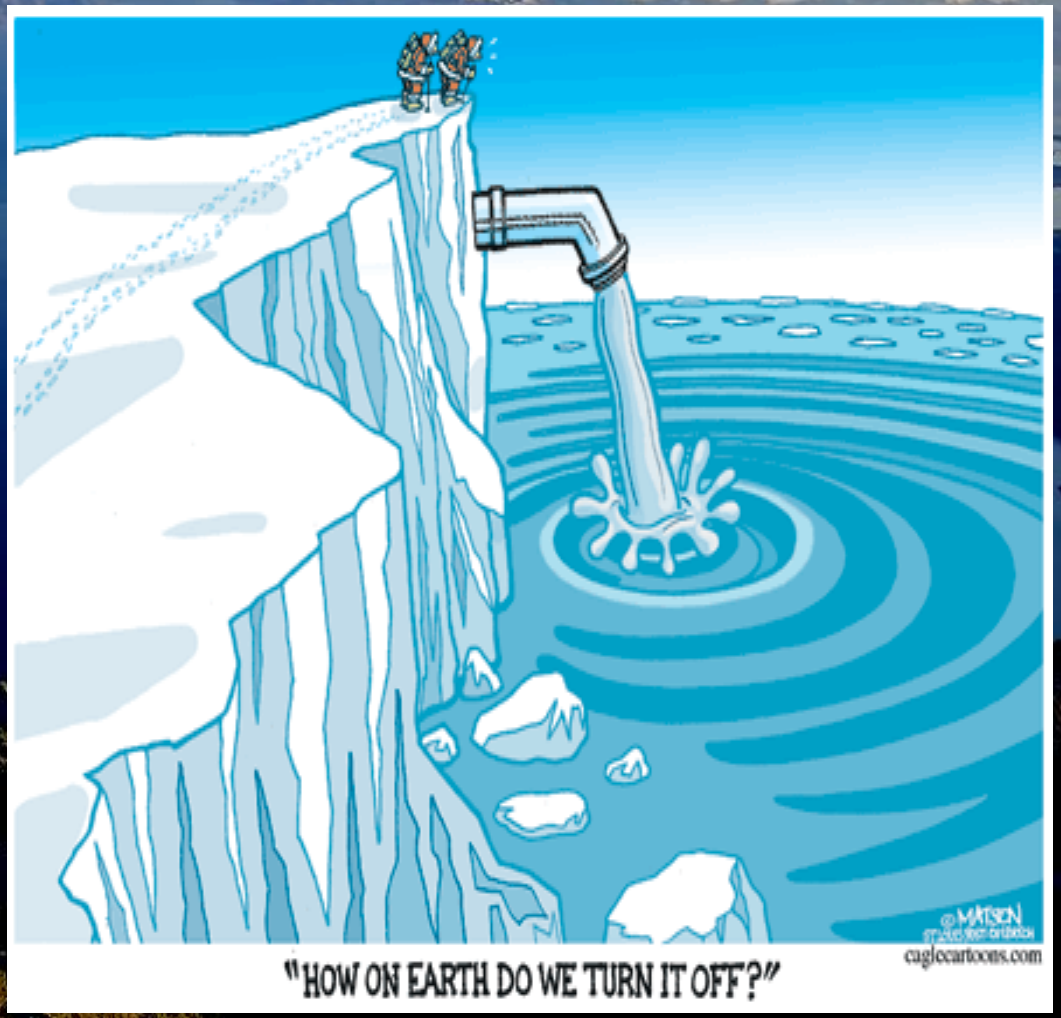
IMPACTS OF CLIMATE CHANGE ON RECREATION

Impacts of Climate Change on Recreation

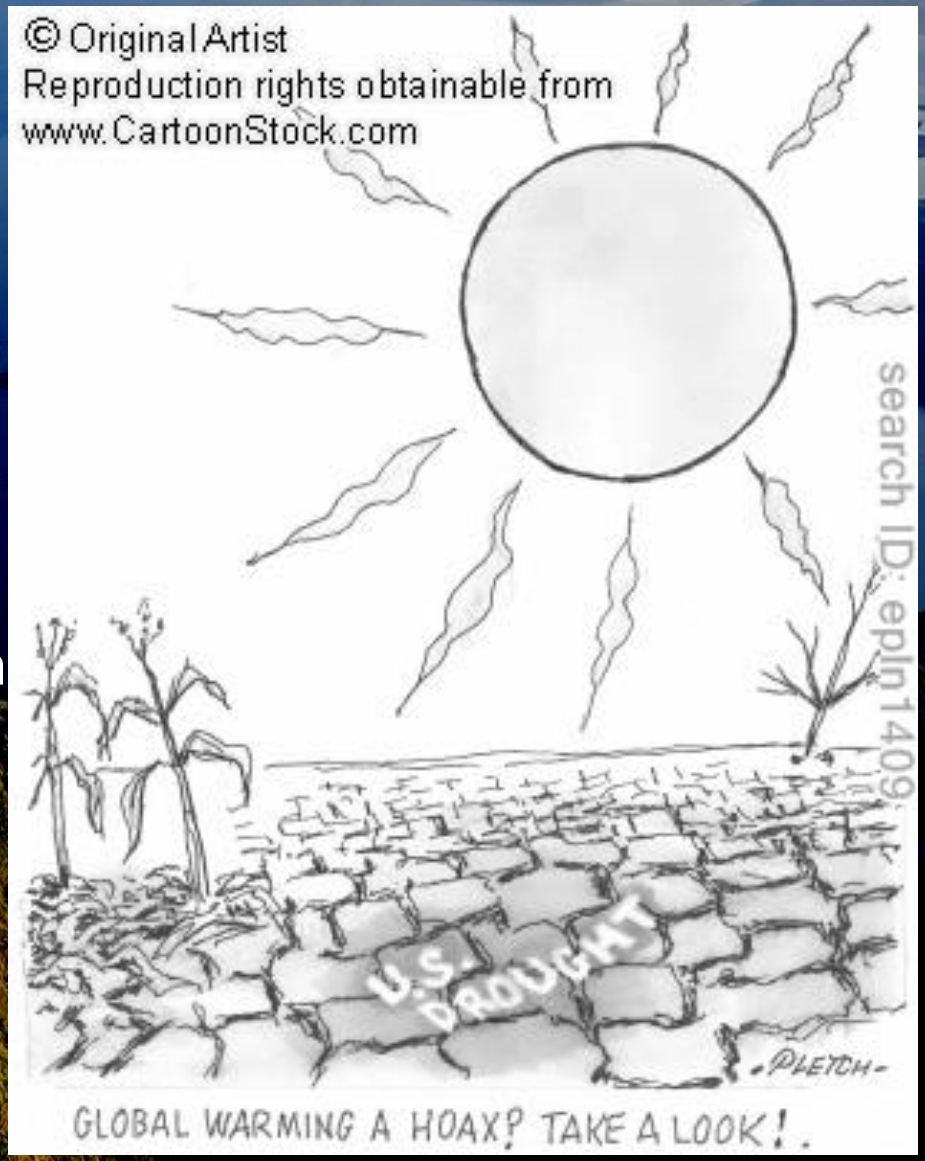
- Computer models predict that average annual temperatures may rise by at least 5-10 degrees over the next 50 years.

- The potential impacts of climate change are shown to be extremely wide-ranging and may have far-reaching implications for many recreation.



Direct impacts

- Climate change will directly influence tourism.
- Weather and climate influence decisions both at the destination and at the source region.
- Climate has a direct impact on such decisions as: 'When to go on holiday?' and 'where to go on holiday?'



Indirect impacts

- These arise mainly as a result of the impact of climate change on the environment of a given location.

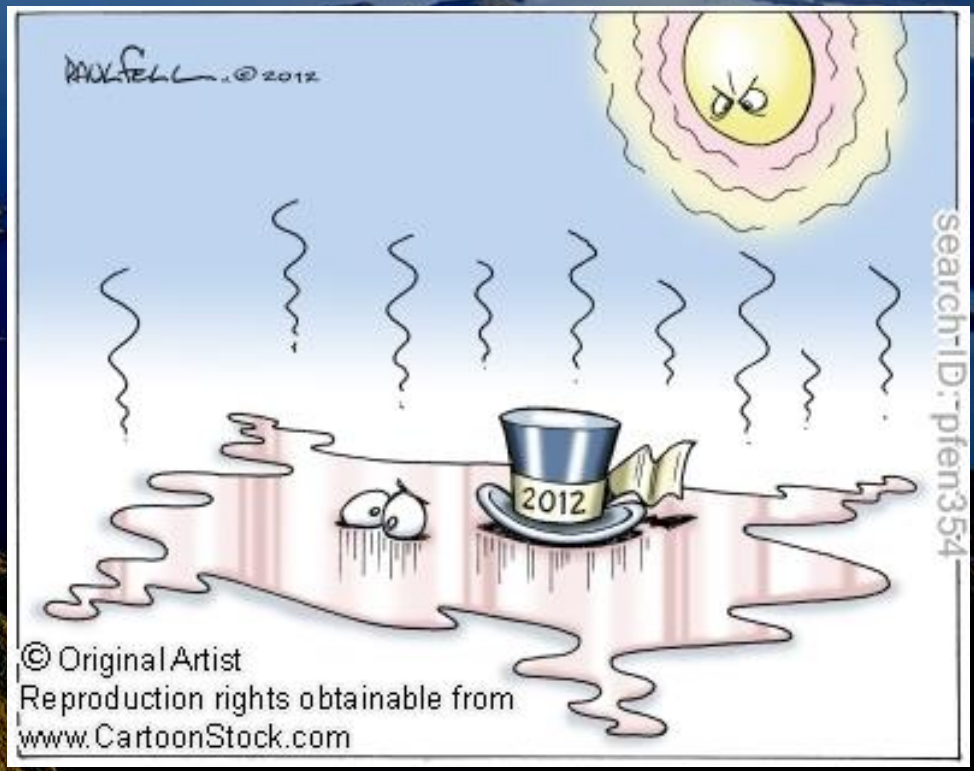
- For example, without intervention;
  - sea level rise; and
  - its effects on coastal erosion will severely threaten recreation and tourist activities associated with coastal locations.
  - Decreasing snow cover and duration may adversely affect low lying ski resorts world-wide.
  - Melting permafrost will effect road access to remote communities.

- A reduction in air quality is already noticeable in some national parks (ie. Visibility at Grand Canyon).
- Concentrations of pollutants may increase to dangerous levels and further threaten tourist destinations.
- Continued warming trend will have a detrimental impact upon these ecosystems and tourism, in the form of coral bleaching and forest die back.

- Effects of climate change on many ecosystems on which much tourism depends, may be widespread.

- Increase in sea level, resulting from a continued warming trend, will threaten not only tourism but the very existence of many islands.

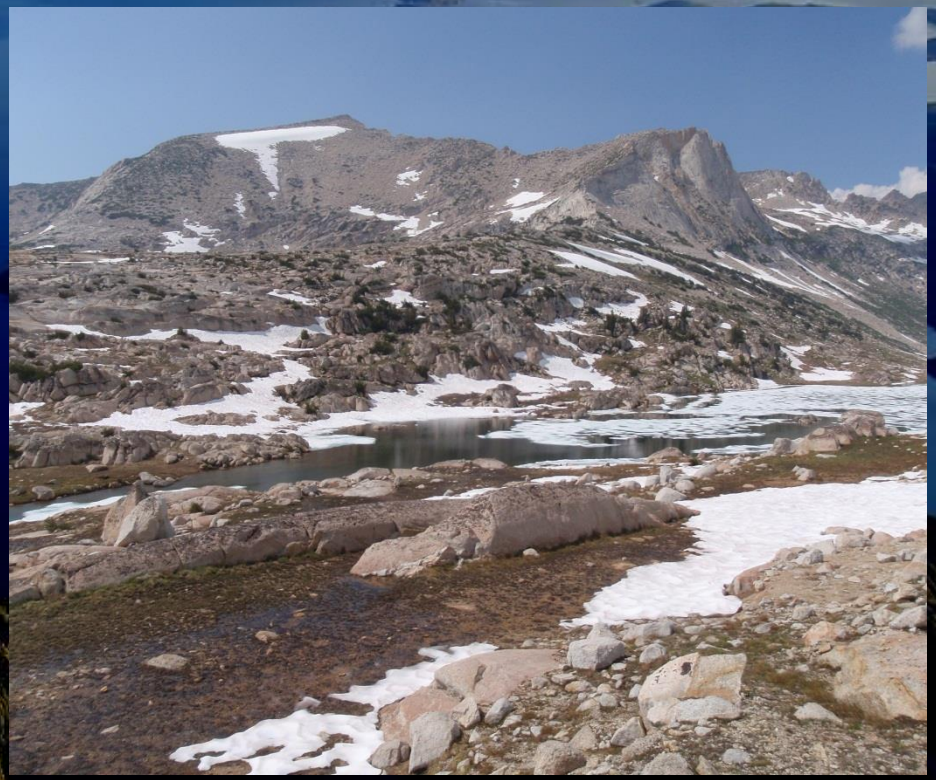
- Drying of the San Pedro River and loss of riparian vegetation would have a major economic impact on tourism in Arizona.



- Dryer campsite conditions can lead to depletion of native vegetation and disturbed soils conducive for invasive weed invasion.
- Natural snow will be an increasingly scarce leading to artificial snow making.
- Diminished natural snow pack negatively impacts both winter and summer activities (ie. Skiing, snowmobiling, White Water rafting, fishing etc.)

- The large investment in snowmaking substantially reduced the vulnerability of the ski industry and climate change.

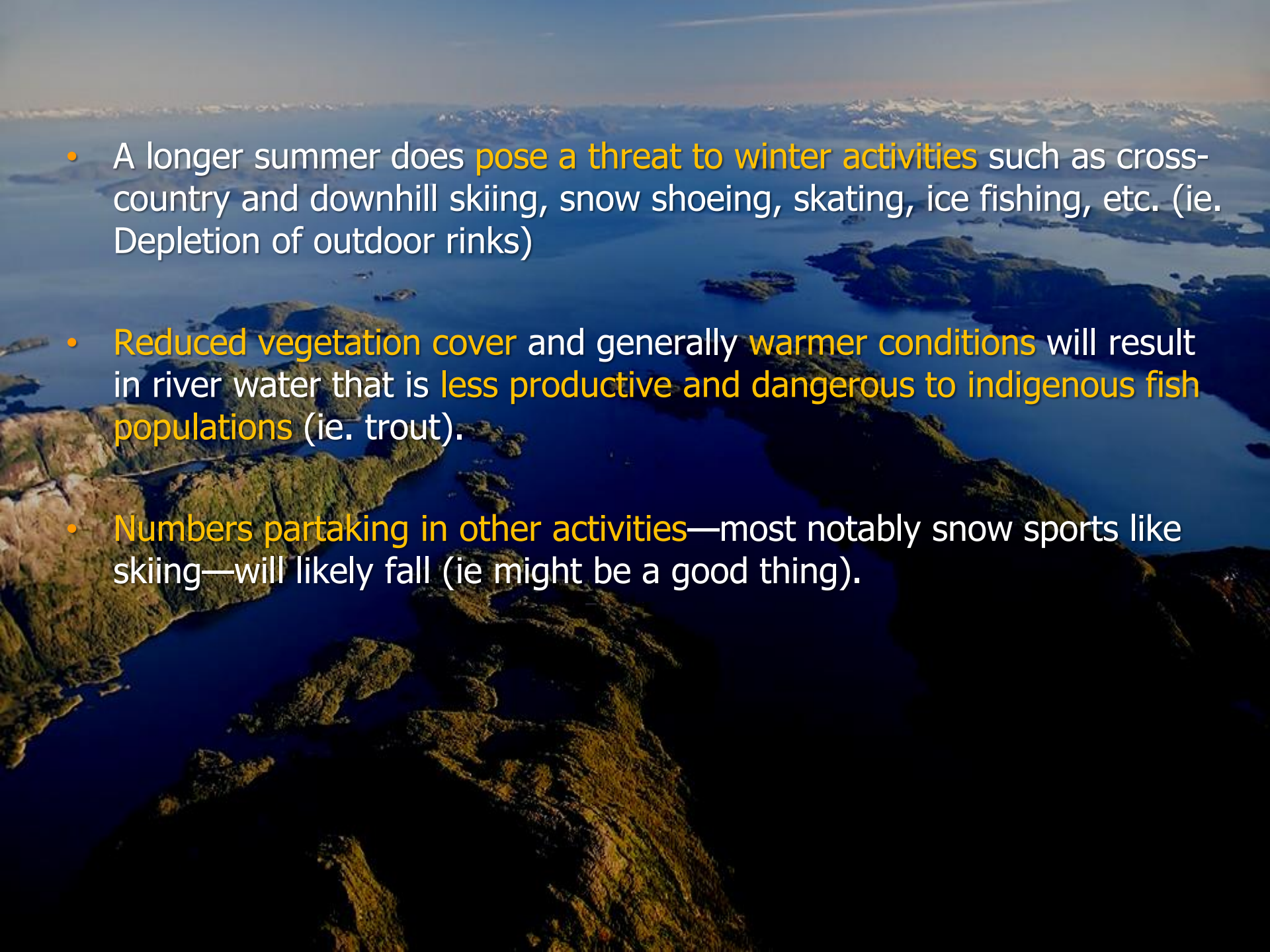
- In order to minimize ski season losses, snowmaking requirements are projected to increase substantially, raising important uncertainties about water availability and cost.



- Higher temperatures, though, are expected to lead to lower water levels in the lakes and greater plant growth making swimming, fishing, sailing and water skiing less available and pleasurable.
- The season for these and other summer activities will be extended by the higher temperatures.

- The ecozones are expected to shift north. Wildlife can be expected to move with the ecozone (ie. Jaguar);
- Climate change could mean that many plant and animal species are unable to adapt and may become extinct in the process;
- Hunting seasons will shift to an earlier time period;
- Subsistence hunters and fishers will more than likely follow their prey, extending what resources they have;
- Learn to hunt and view other forms of wildlife that move into the areas that they themselves usually frequent.

- This could lead to threats to other species that are not currently endangered.
- Tourism will move into the shoulder seasons.
- Hunters will be attracted to the shoulder seasons which are currently the prime season for hunting by local residence and subsistence hunters.
- Potential conflict!!!!!!!



- A longer summer does pose a threat to winter activities such as cross-country and downhill skiing, snow shoeing, skating, ice fishing, etc. (ie. Depletion of outdoor rinks)

- Reduced vegetation cover and generally warmer conditions will result in river water that is less productive and dangerous to indigenous fish populations (ie. trout).

- Numbers partaking in other activities—most notably snow sports like skiing—will likely fall (ie might be a good thing).

- The indirect effects include loss of tourism revenues to local restaurants, hotels and other forms of amusement as well as the loss of jobs for people within the recreation community.

- Less snow cover and a shorter winter season could threaten the livelihoods of ski resort operators who have the potential to go out of business.

- With small increases in temperature, the number of people partaking in certain outdoor recreational activities—such as boating, golfing and beach recreation—is expected to increase by 14 to 36%.

- Interaction between climate change and local communities could have devastating economic impacts (ie. Reduced river flow could lead to reduced water-based recreation opportunities).

- Migration patterns of species will be interrupted.
- Prime shoreline habitat could be underwater.
- Salmon could disappear in the Pacific North West if CC continues to alter stream flows and increase water temperatures that wipe out young salmon.
- Habitat such as Lodgepole and Whitebark pine forests that sustain Grizzly Bear and other species in Yellowstone and Rocky Mountain could be wiped out by the advance of bark beetles, drought and other climate-related forces.

THE ARCTIC IS WARMING AT A RATE DOUBLE TO THAT OF THE REST OF THE PLANET

- As the ice grows thinner, the entire US population of polar bears, beluga whales, bowhead whales, walrus, ice seals, and so many more crabs and fish that rely on the Arctic's sea ice environment are becoming threatened species.
- Ice loss in recent years has been linked to record high temperatures caused by climate change - a huge threat to walrus populations.
- Declining sea ice over good, shallow-water feeding grounds results in dangerous conditions for subsistence hunters.

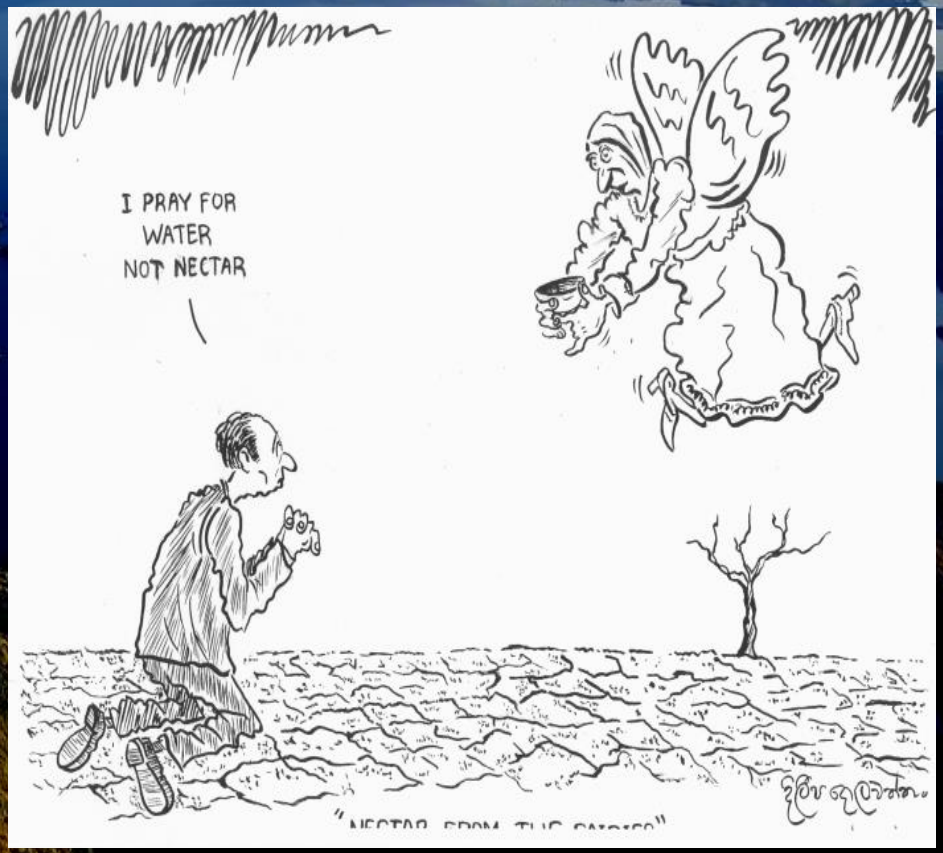
- As Arctic sea ice melts, Alaska's whales, walruses, and polar bears may face a new obstacle as they navigate local waters increased freighter traffic and threaten local subsistence communities (ie. Bering Sea).

- The Yukon Flats refuge is where scientists are documenting the earliest evidence of climate change, including shrinking lakes, warmer temperatures, and wildfires, with all the impact those have on wildlife.

- Musk oxen are among the wildlife that cope with the changing landscape that shifts their range and habitats.

- Climate disruption threatens public enjoyment
  - Closed parks from more wildfires;
  - Beach and shoreline loss from rising sea levels;
  - Protected areas just intolerably hot;
  - Cooler protected areas may become more overcrowded.

- In New Mexico, hotter, drier conditions will make; forests more vulnerable to bark beetle outbreaks; and devastating fire.
- Changing patterns of temperature and rainfall; threaten people's water supplies and alter how and where we grow food.
- More intense and frequent storms, floods and heat waves will threaten our health and safety.



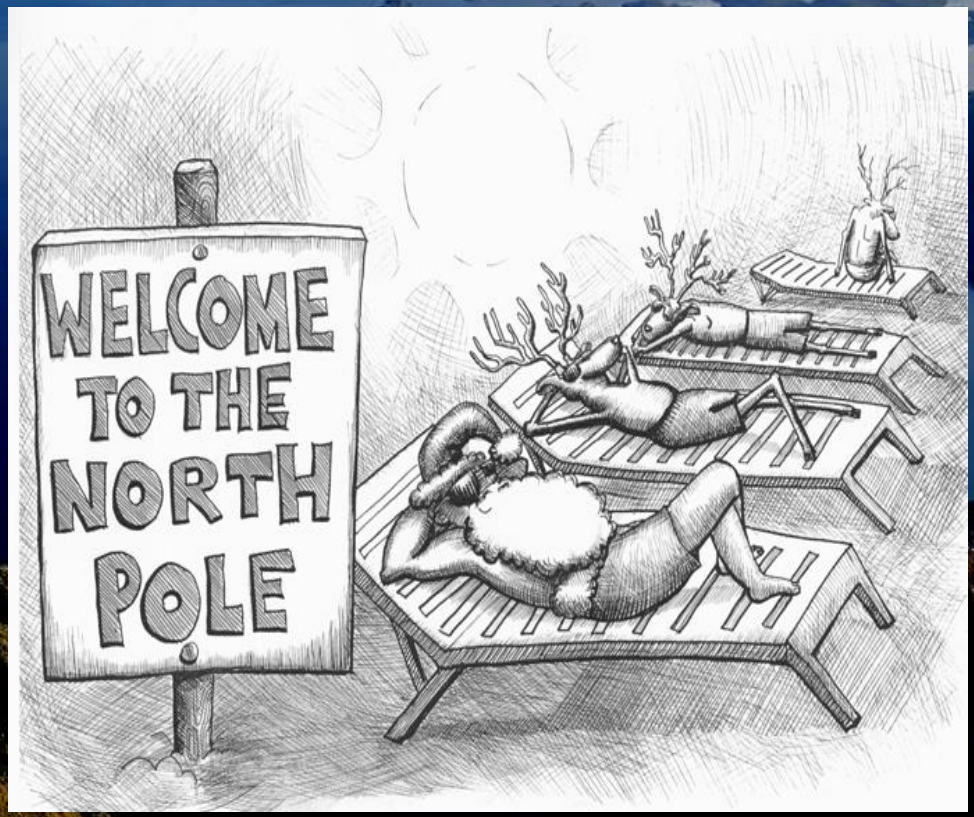
Many Say!

- Climate Change Adaption is the way
  - restoring floodplains would improve river health and help slow and store floodwaters.
  - Preserving barrier islands saves sensitive coastal habitats and protects coastal communities from punishing storms.
  - Protecting healthy coral reefs safeguards these jewels of the sea and helps sustain fisheries and other sources of economic livelihood for coastal communities.

- Climate change scenarios need to become more locale specific.
- A deeper understanding of the economic costs of creating favorable recreation conditions is needed.
- A comparative study needs to be conducted of competing attractions in places bordering on the region and the costs of engaging in these activities.

- New management strategies need to be developed to take into account the changing resource base in its effect on vegetation, wildlife and recreational choices.

- Resource conflicts due to competition for scarce resources such as water need to be anticipated and legislation or a process established for resolving these conflicts.



Still Many Questions!

- How can we help protect both nature and the people who rely on lands and waters for their livelihoods from Climate Change?
- What are the consequences of the projected temperature increases?
- And how will people and nature adapt to them?
- Some say this is all a hoax.

http://www.youtube.com/watch?v=Nw8l0SAXpck

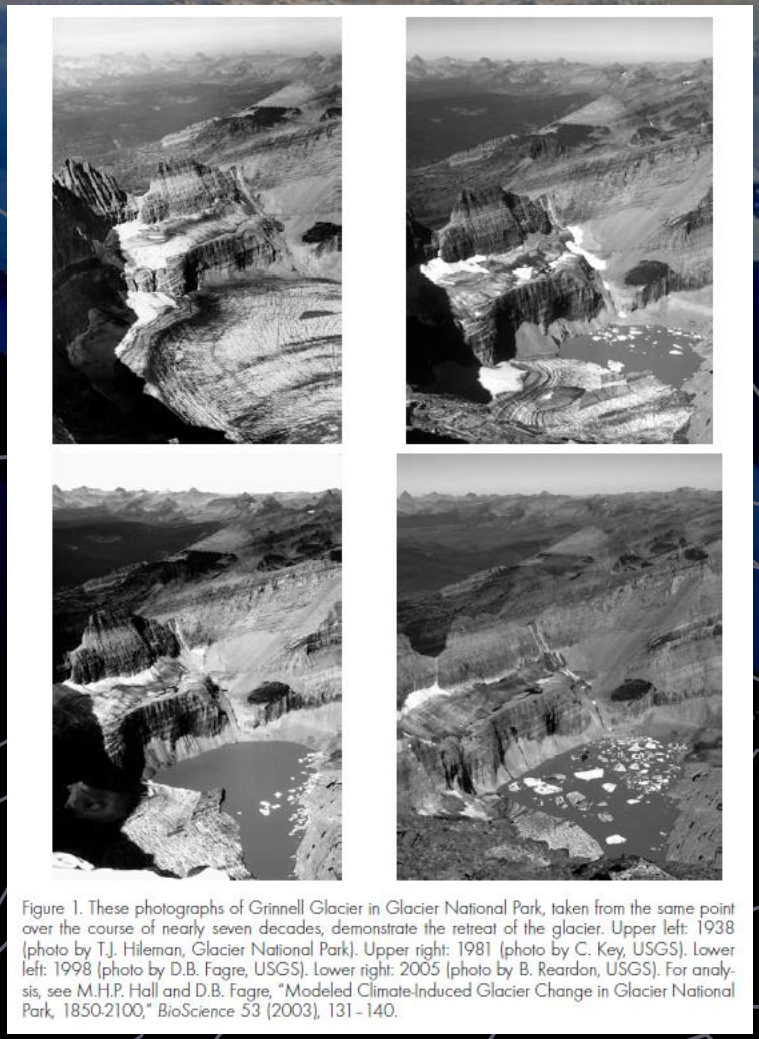


Figure 1. These photographs of Grinnell Glacier in Glacier National Park, taken from the same point over the course of nearly seven decades, demonstrate the retreat of the glacier. Upper left: 1938 (photo by T.J. Hileman, Glacier National Park). Upper right: 1981 (photo by C. Key, USGS). Lower left: 1998 (photo by D.B. Fagre, USGS). Lower right: 2005 (photo by B. Reardon, USGS). For analysis, see M.H.P. Hall and D.B. Fagre, "Modeled Climate-Induced Glacier Change in Glacier National Park, 1850-2100," *BioScience* 53 (2003), 131–140.