Major Ecological Regions of Alaska

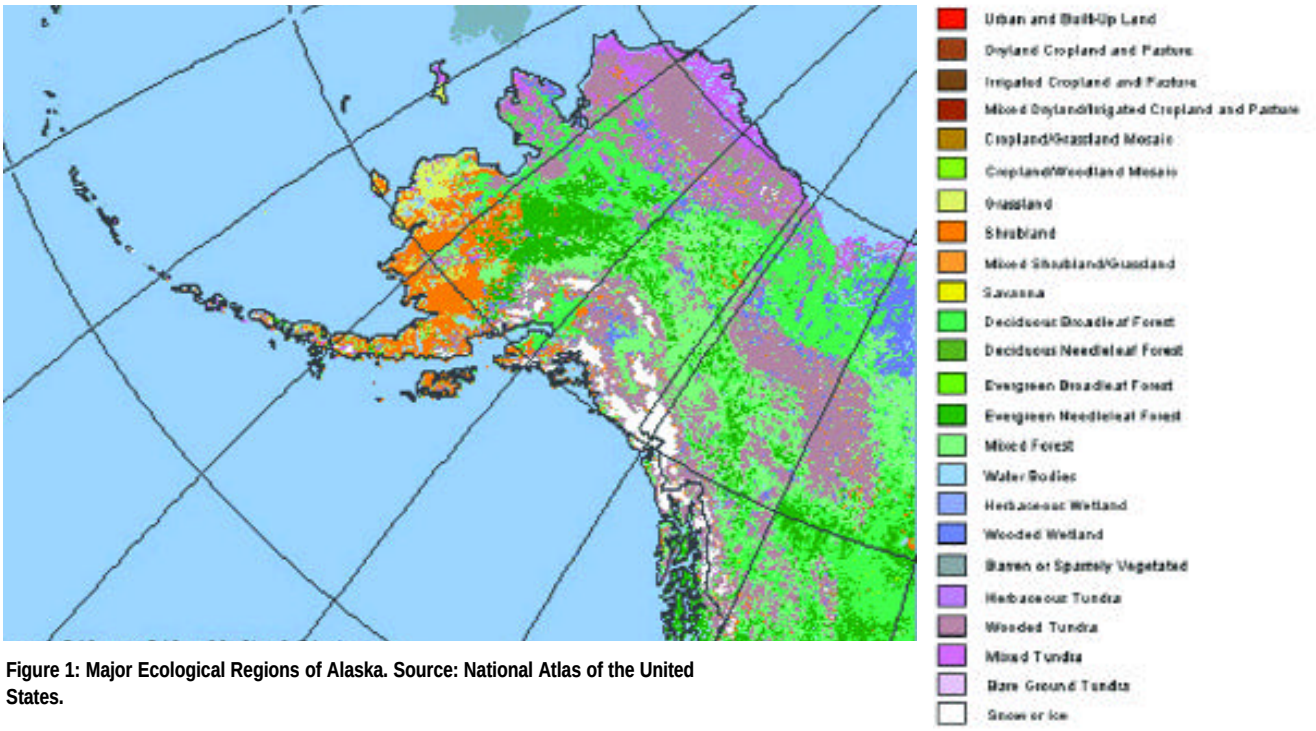

Figure 1: Major Ecological Regions of Alaska. Source: National Atlas of the United States.

Alaska: 20th Century Annual-average Temperature

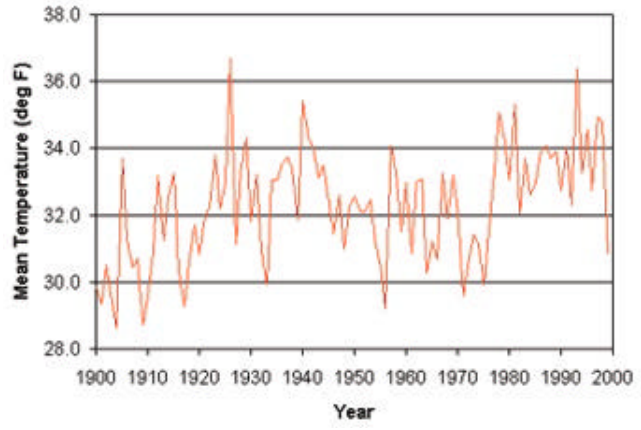

Figure 2: Average temperatures in Alaska have increased over the 20th century, with about 4°F warming since the 1950s. Source: Historical Climate Network, National Climate Data Center.

Alaska: 20th Century Annual Total Precipitation

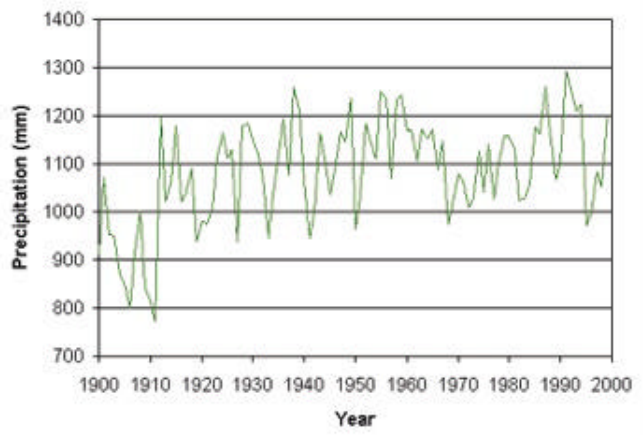

Figure 3: Over the 20th century, precipitation in Alaska has increased. Source: Historical Climate Network, National Climate Data Center.

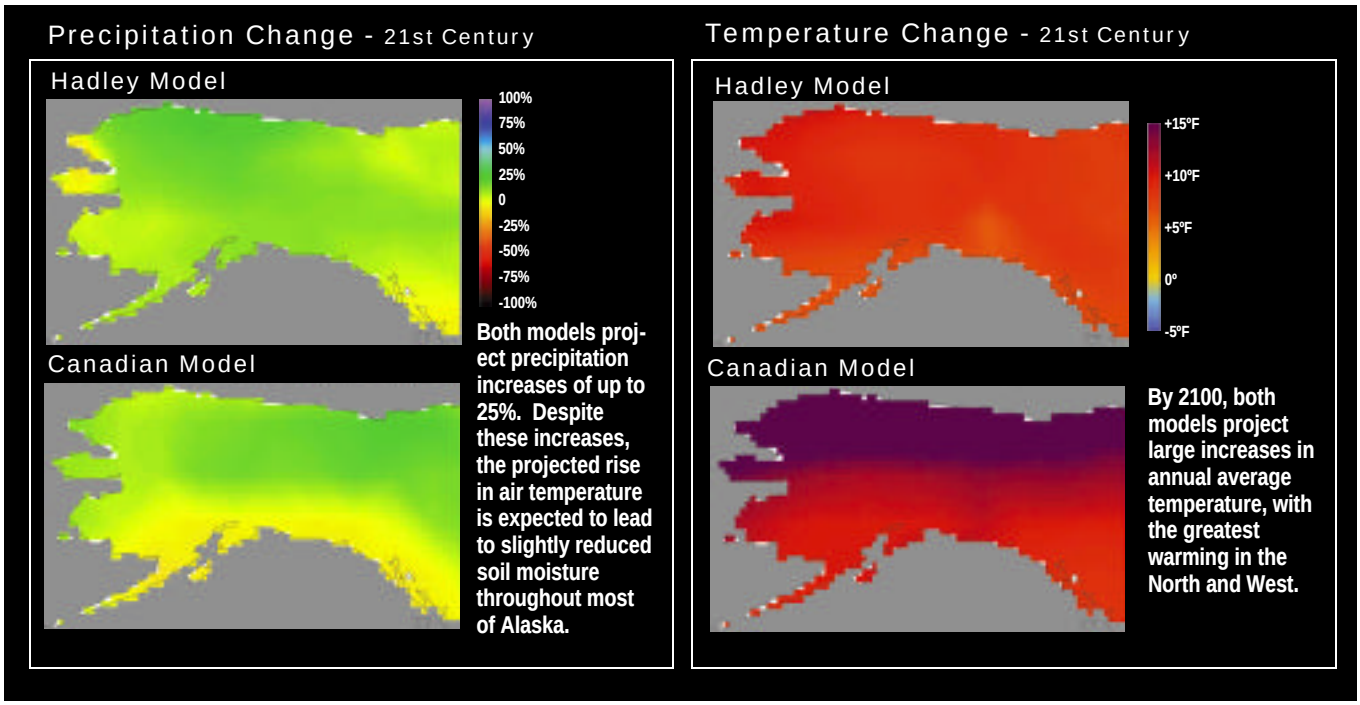

Figure 4: Precipitation and temperature change projected in the 21st century by two climate models.

Winter Maximum Temperature Change

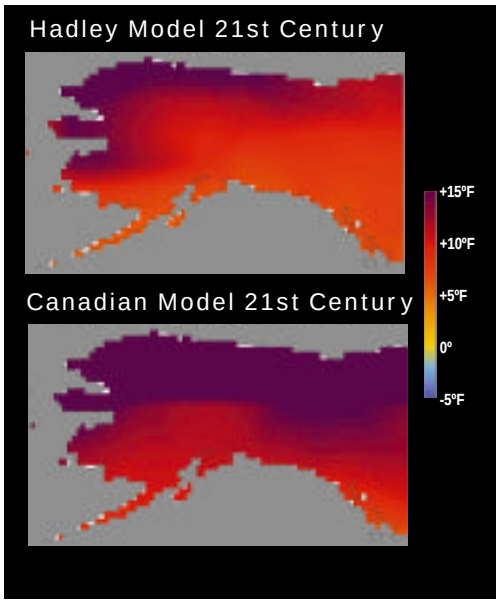

Figure 5: The largest projected warming is in winter, when both models show average daily-high temperatures increasing more than 15ºF over the northern half of the state. Source: B.Felzer, UCAR.

Summer Soil Moisture Change

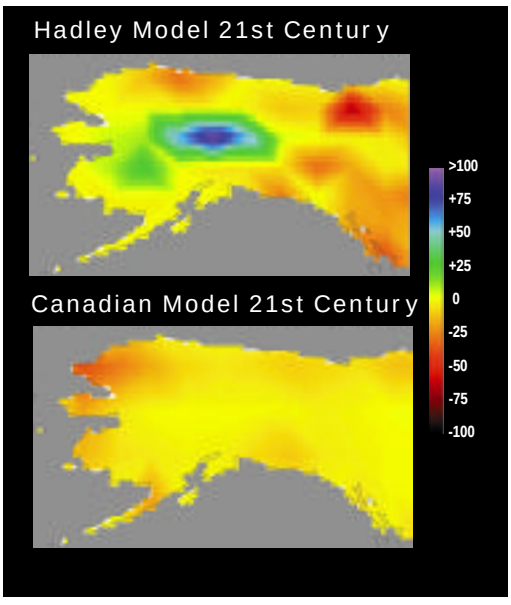

Figure 6: The Hadley model projects increased summer soil moisture in central Alaska and decreases in the north and south, while the Canadian model projects moderate decreases throughout the state. Source: B. Felzer, UCAR.

Permafrost Regions of Alaska

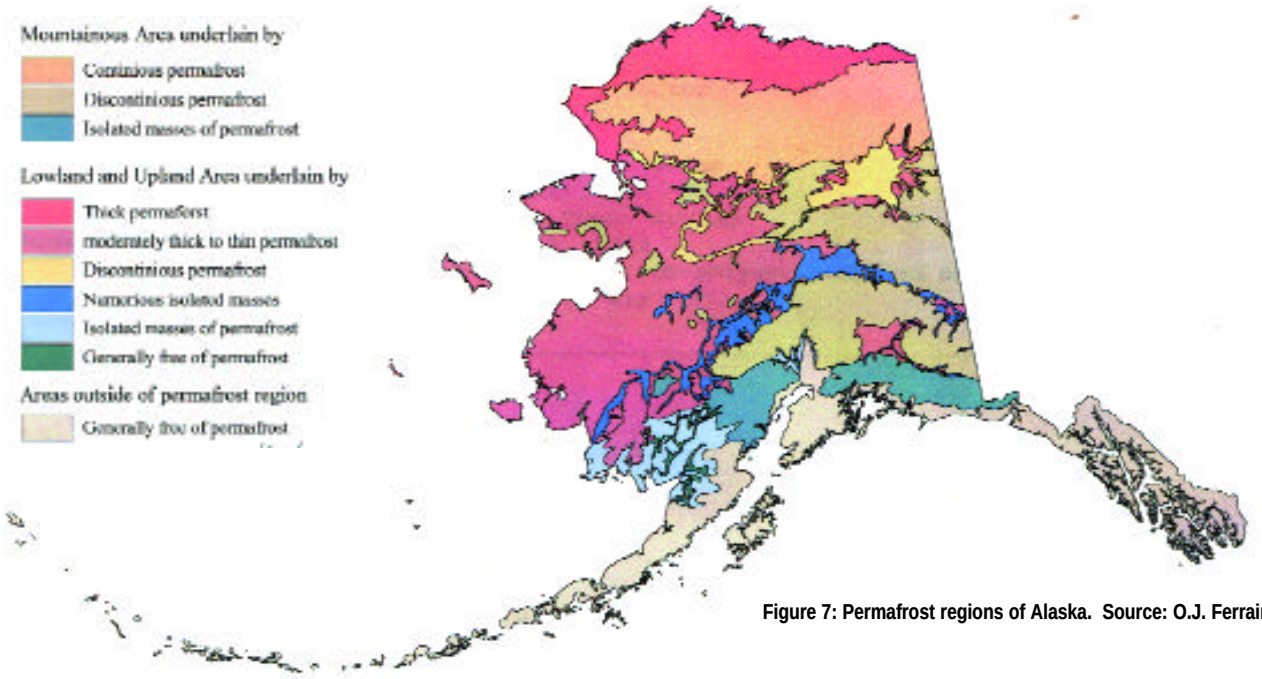

Figure 7: Permafrost regions of Alaska. Source: O.J. Ferrains, 1965.

Projected Summer Sea Ice Change
Canadian Model: An Ice-free Arctic Summer

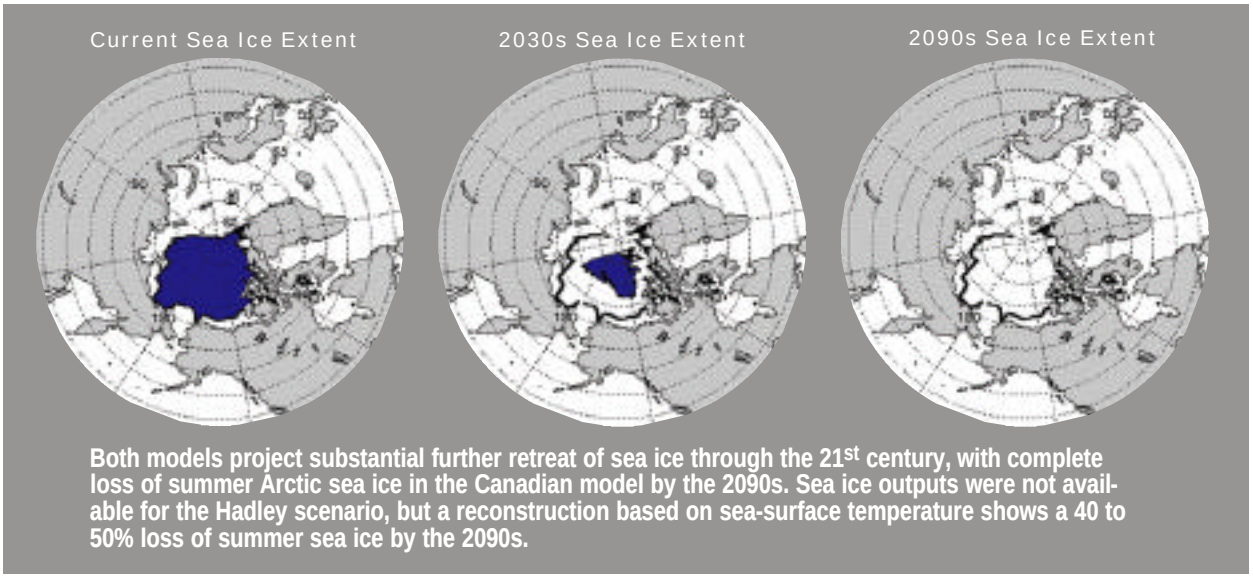

Figure 11: Canadian model projections of future Arctic sea-ice retreat. Source: B. Felzer, UCAR, 2000.

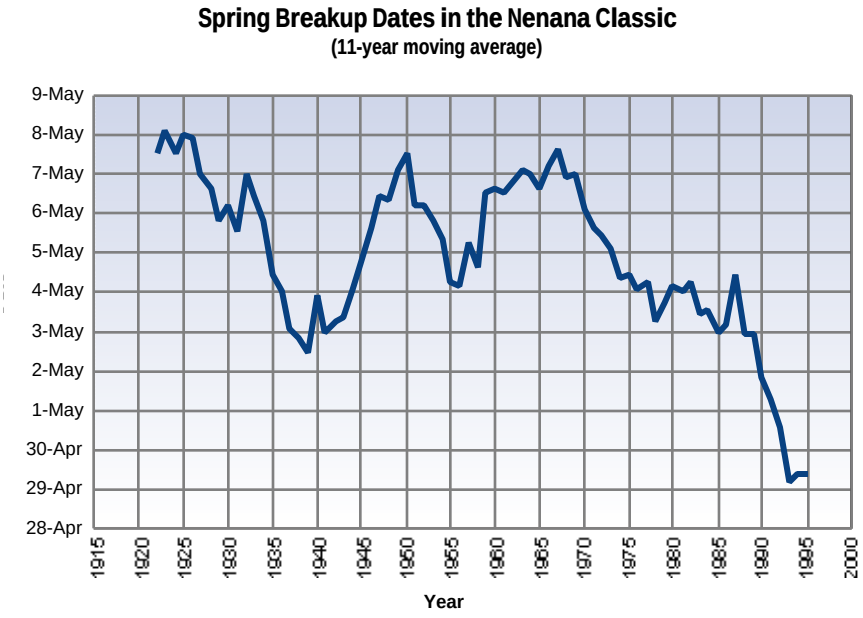

Figure 12: The average date of spring breakup of ice on the Tanana River at Nenana has advanced by eight days between the 1920s and the 1990s. Source: Historical data from Nenana Ice Classic, http://www.ptialaska.net/~tripod/breakup.times.html.

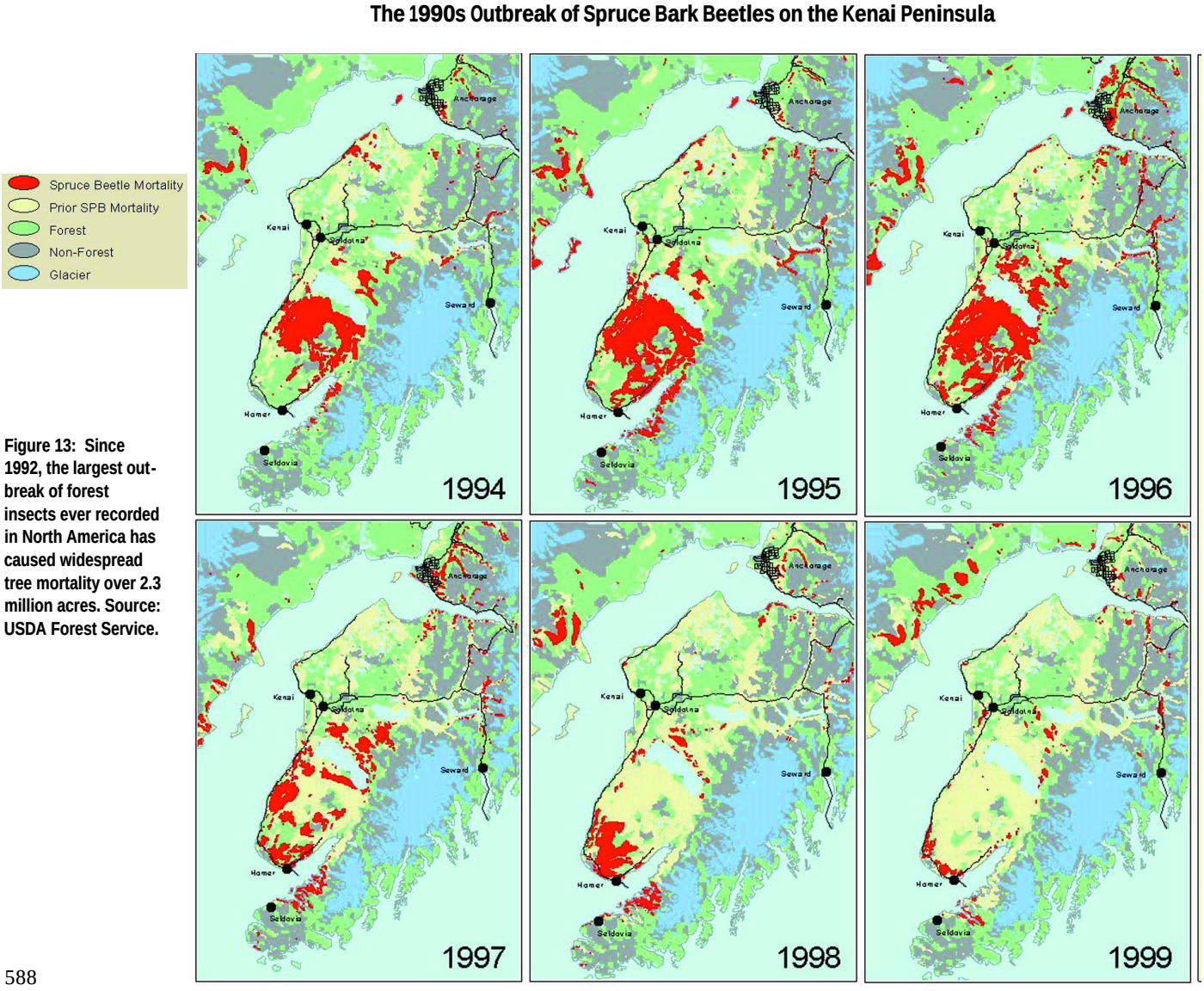

Figure 13: Since 1992, the largest outbreak of forest insects ever recorded in North America has caused widespread tree mortality over 2.3 million acres. Source: USDA Forest Service.

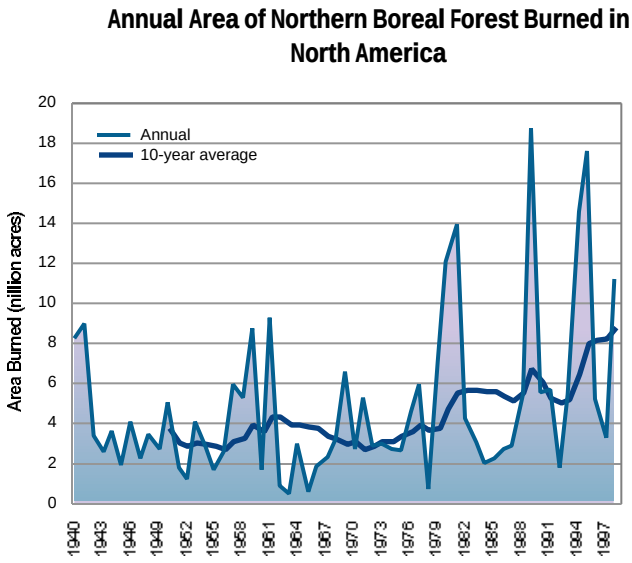

Figure 14: The Alaskan boreal forest is a small part of an enormous forest that extends continuously across the northern part of North America. The average area of this forest burned annually has more than doubled since 1970.Source: Kasischke and Stocks, 2000.

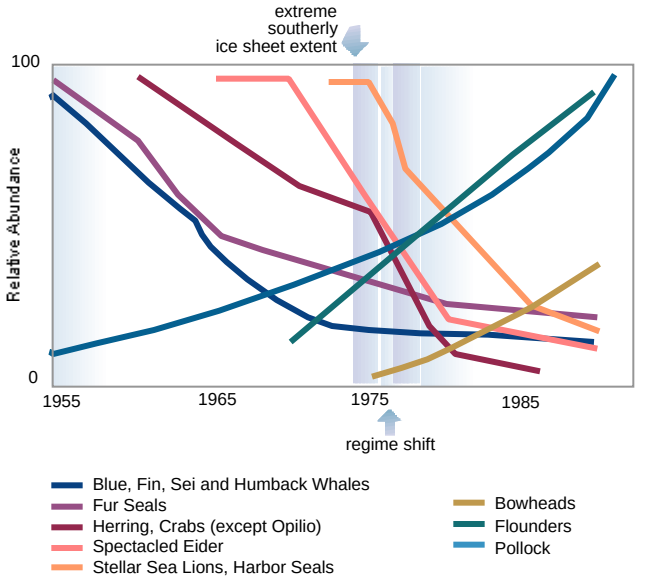

Figure 16: The climatic regime shift of the late 1970s caused large-scale reorganization of the Bering Sea ecosystem. Source: simplified from NRC (1996).

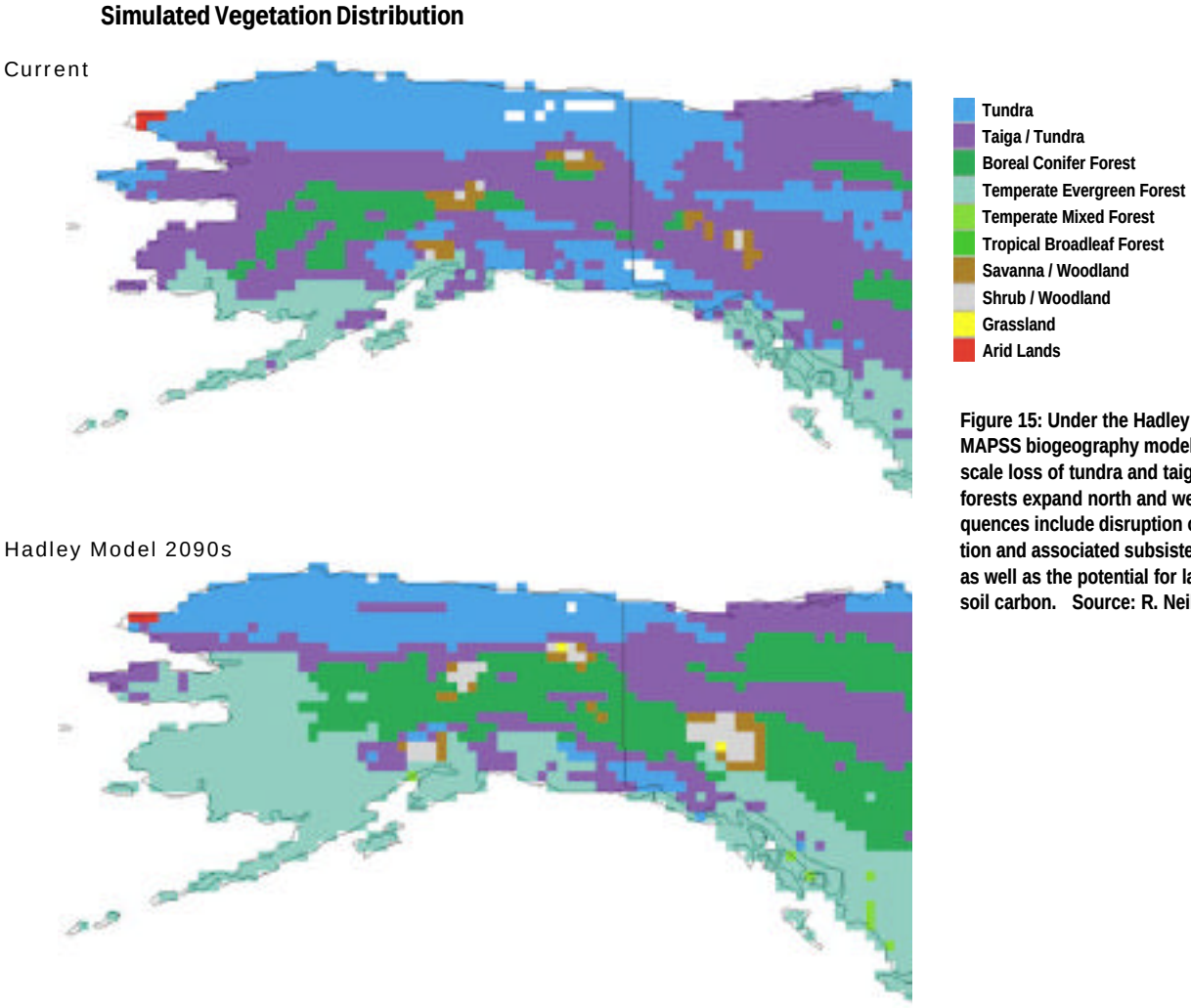

Figure 15: Under the Hadley scenario, the MAPSS biogeography model projects large-scale loss of tundra and taiga ecosystems as forests expand north and west. Likely consequences include disruption of wildlife migration and associated subsistence livelihoods, as well as the potential for large releases of soil carbon. Source: R. Neilson et al, 1998.