Climate Change
In Oregon --
Another Viewpoint

George H. Taylor
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Warning!
Political incorrectness can be dangerous to your reputation!
“one of the most dangerous men in Oregon”
“You've got George Taylor fiddling while Rome burns”
“You can only come to that conclusion if you handpick the climate records”
“People will conclude it's still uncertain,” Mote says, “so we don't have to do anything.”
“He missed his calling as a used-car salesman”
OREGON'S NEW STATE FRUIT.

OREGON'S NEW STATE NUT.

HUMAN-CAUSED GLOBAL WARMING DOES NOT EXIST!

STATE CLIMATOLOGIST GEORGE TAYLOR
Mann, Bradley, Hughes, 1998
Corrected version: 20\textsuperscript{th} century no longer highest

Mann et. al. 1998 contains data errors

McIntyre-McKitrick, 2003
Oregon Strategy for Greenhouse Gas Reductions
Governor’s Advisory Group On Global Warming
Regional Climate Change Impacts in Recent Decades

Snowpack. Between 1950 and 2000, the April 1 snowpack declined. In the Cascades, the cumulative downward trend in snow-water equivalent is approximately 50% for the period 1950–1995. Timing of the peak snowpack has moved earlier in the year, increasing March streamflows and reducing June streamflows. Snowpack at low-to-mid elevations is the most sensitive to warming temperatures.

Oregon Strategy for Greenhouse Gas Reductions
Report to the Governor
The Governor’s Advisory Group on Global Warming — December 2004
“A study of springtime mountain snowpack in the Pacific Northwest showed widespread declines in snowpack since 1950 at most locations with largest declines at lower elevations indicating temperature effects.”
“Substantial declines (some in excess of 50%) were common in the Cascades, especially in Oregon.”

Snow Water Equivalent, April 1, Summit Lake SNOTEL, 1950-2005

$y = -0.2764x + 53.286$
Snow Water Equivalent, April 1, Summit Lake SNOTEL, 1950-2005

\[ y = -0.2764x + 53.286 \]

Snow Water Equivalent, April 1, Summit Lake SNOTEL, 1929-2005

\[ y = -0.0939x + 43.388 \]
Snowfall vs. Temperature and Precipitation, Govt. Camp, January

Temperature

Precipitation

\[ y = -0.0265x + 31.345 \]
\[ R^2 = 0.0782 \]

\[ y = 0.1237x + 5.67 \]
\[ R^2 = 0.5508 \]
Bumping Lake WA April 1 SWE 1915-2003


April 1 SWE (in.): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

Graph shows fluctuations in SWE from 1915 to 2003.
monthly values for the PDO index: 1900–2001
The slope of a trend line depends to a large degree on the starting and ending points of a data set.
Regional Climate Change Impacts in Recent Decades

Sea Level. Land on the central and northern Oregon coast (from Florence to Astoria) is being submerged by rising sea level at an average rate of 0.06 – 0.08 inches (1.5–2 mm) annually, as inferred from data for the period 1930–1995.

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The mean sea level trend is 1.24 millimeters/year (0.41 feet/century) with a standard error of 0.2 mm/yr based on monthly mean sea level data from 1934 to 1999.
The mean sea level trend is -1.41 millimeters/year (-0.46 feet/century) with a standard error of 0.22 mm/yr based on monthly mean sea level data from 1934 to 1999.
The mean sea level trend is -0.16 millimeters/year (-0.05 feet/century) with a standard error of 0.24 mm/yr based on monthly mean sea level data from 1925 to 1999.
The mean sea level trend is -0.48 millimeters/year (-0.16 feet/century) with a standard error of 0.23 mm/yr based on monthly mean sea level data from 1933 to 1999.
Scientific Uncertainty

An overwhelming majority of the world’s climate scientists are finding a causal link between growing concentrations of CO2 and other greenhouse gases generated from human activity (fossil fuel and other sources) and a warming of the planet – beyond levels known to prevail in pre-industrial times.
Scientific Uncertainty

Three names:
  Alfred Wegener
  J. Harlan Bretz
  Gilbert Walker
Regional Climate Change Impacts in Recent Decades

Precipitation. Since the beginning of the 20th century, average annual precipitation has increased across the region by 10% with increases of 30–40% in eastern Washington and northern Idaho.

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Temperature. Scientists are very certain that the Pacific Northwest is warming and that since 1975 the warming is best explained by human-caused changes in greenhouse gases.

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Long-term Temperature Trends in Oregon
Mean Annual Temperature, Ashland Oregon, 1889-2002
Mean Annual Temperature, Astoria, Oregon, 1867-2000
Two Primary Problems Caused by Impervious Surfaces and How to Solve Them
Mean Annual Temperature,
Portland and Corvallis, 1949-1999
Annual Average Temperature, Seattle and Long Beach, Washington

Temperature (°F)

Years: 1909 to 1989

Long Beach
Seattle
Annual Average Temperature, Bellingham and Cedar Lake, Washington
The Future

Graphs courtesy World Climate Report
Model predictions are used to estimate future climate, and yet...
How can we explain...

...all those uncertainties.
Even if we assume the global temperature trend is correct…

Global Temperature Anomalies, 1977-2005

Slope = 0.17°C/decade
Temperature Change From One Year to the Next (1978-2005)
And recognize that a 1%/yr CO2 increase is unrealistic…
We can compare observations to the model predictions…
And obtain a prediction near the bottom of the model projections,
And near the bottom of the emissions scenario projections.
Just in case you didn't know by now...

my views on anthropogenic climate change
1. The “climate” is not subject to precise definition, and its mean state cannot be measured with precision.

2. The equations of motion of the climate are unknown. The full range of natural variability is not well-known and future climate states cannot be predicted.

3. By adding to the stock of atmospheric CO2 humans have an affect on the climate which may involve a general warming, cooling or some combination of both, at the Earth’s surface, but it is unpredictable. All else being equal, increases in CO2 would cause warming, but all else is not equal.
4. The present state of the climate is consistent with natural causes and within historical variability.

5. It is very, very hard to predict the future, especially 50-100 years ahead:
   a. Population
   b. Technology
   c. Natural climate shifts
   d. Other
The End
According to climate models, the polar regions should be warming much faster than the tropics or mid-latitudes.
With the exception of the Antarctic Peninsula, the continent of Antarctica is actually cooling.
Vostok, Antarctica (Russian)

78.5S 106.9E
Antarctic sea ice is increasing

Fig. 2.16: Monthly Antarctic sea-ice extent anomalies, relative to 1973-1996. The data are a blend of National Ice Center (NIC) chart-derived data (Knight, 1984), Goddard Space Flight Center satellite passive-microwave (Scanning Multichannel Microwave Radiometer (SMMR) and Special Sensor Microwave/Imager (SSM/I)) derived data (Cavalieri et al, 1997) and National Centers for Environmental Prediction satellite passive-microwave derived data (Grumbine, 1996).
What about the Arctic?
1. Arctic climate is now warming rapidly and much larger changes are projected.

- Annual average arctic temperature has increased at almost twice the rate as that of the rest of the world over the past few decades, with some variations across the region.

- Additional evidence of arctic warming comes from widespread melting of glaciers and sea ice, and a shortening of the snow season.
In the Arctic, temperatures in recent decades have gone up.
But an examination of the entire record shows a different story: