Global Warming/Climate Change
Should we let facts get in the way of a good story?
Headlines: Flooding/Drought

“Study: Human-caused Global Warming behind California Drought”
USA Today 3/2/2015

Global Warming Isn’t Causing California Drought? Report Trigger’s Storm
NBC News.com December 8, 2014
Headlines 2014 Temperature

- Record! 2014 was Earth’s Warmest Year - USA Today January 16, 2015

Headlines Polar Ice Caps

- New Satellite Maps Show Polar Ice Caps Melting at ‘Unprecedented Rate’
  The Guardian, Sept. 1, 2014
- Earth’s Polar Ice Melting Less Than Thought
- Antarctic Sea Ice Hit 35-Year Record High Saturday
  The Washington Post, Sept. 23, 2013
"The Debate is Settled. Climate Change is a Fact."
Let’s Define Terms

- **Global Warming**: The recent and ongoing global average increase in temperature near the Earth’s surface.

- **Climate Change**: Any significant change in the measures of climate lasting for an extended period of time. Climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

http://epa.gov/climatechange/glossary
Continental Glaciation
“Global” Temperatures Vary with Time

Loehle, C. and J.H. McCulloch, Correction to: A 2,000-year global temperature reconstruction based on non-tree ring proxies. Energy and Environment, 19, 93-100, 2008
Global Average Temperature

www.cru.uea.ac.uk
Climactic Research Unit
University of East Anglia
In Conjunction with the Hadley Center
Great Britain
Satellite Temperature Data

Global (80S to 80N)

Temperature Anomaly (K)

Years

http://www.remss.com/research/climate
Recent Divergence

Atmospheric CO$_2$ at Mauna Loa Observatory

Scripps Institution of Oceanography
NOAA Earth System Research Laboratory
CO₂ – Some Facts

Carbon Isotopes
12 Most common isotope
13 Rare (not in plants)
14 Radioactive (half-life 5,730 years)
Decreasing $\text{C}_{14}$ in Atmosphere

Measured $\Delta^{14}\text{CO}_2$ in **East Asia** and **Colorado**

Blue: Niwot Ridge Undeveloped Rocky Mountains  Red: Tae-Ahn Peninsula, South Korea

www.esrl.noaa.gov/gmd/outreach/isotopes/sampling.html
Nuclear Contribution?

Trends: A Compendium of Data on Global Change. Carbon Dioxide Information Analysis Center (Oak Ridge National Laboratory, 1994)
Ice Caps – Melting?

www.nsidc.org
Ice Caps – Melting?
Take Home Thoughts

- Increased Atmospheric CO$_2$ Concern
- Climate is Changing Naturally
- How Can We Identify Any Climate Changes Related to Anthropogenic Impact?
- What are the REAL potential problems resulting from global warming?
Wrapping Up

- Be leery of what you read in the media (no matter the source!)

- Everyone is biased, including you!
When you argue with reality, you lose, but only 100% of the time.

Byron Katie, Author of “The Work”
References: Additional Study

- National Snow & Ice Data Center, [nsidc.org/arcticseaicenews/faq/#combined](http://nsidc.org/arcticseaicenews/faq/#combined)
- [www.climate.gov (NOAA)](http://www.climate.gov)