FOR JOURNALISTS: TIPS ON TALKING WITH CLIMATE SCIENTISTS

This resource was compiled by members of the Energy & Resources Group at the University of California, Berkeley, in collaboration with the Berkeley Graduate School of Journalism. As the Copenhagen negotiations bring worldwide attention to climate change issues, we have drawn on the collective wisdom of leading climate scientists and science journalists to create this list of recommendations, as well as an accompanying set of Tips for Scientists.

KNOW WHO'S WHO. You can learn what prominent scientists have been thinking and writing about climate science and climate policy by reading the news columns of leading scientific journals, such as *Science* and *Nature.* Major scientific societies can direct you to researchers who can help place new findings in a fuller context. Many of these societies also provide scientific news alerts, conference abstracts and proceedings, and opportunities to meet researchers face-to-face at annual meetings.

NOT ALL PHD'S ARE CREATED EQUAL. Just because someone has a PhD does not mean they are qualified to comment as an expert on all topics. One method of gauging expertise is to look at what papers a scientist has published recently on the topic. Were these scientific journal articles, white papers, or jottings on a web site? Journalists provide a service by inquiring about funding sources and noting potential conflicts of interest.

"WEATHER IS NOT CLIMATE" AND OTHER CONFUSIONS. Climate science is complex and often expressed in technical language, ambiguous language, and scientific shorthand that can lead to confusion. Journalists should be aware of potential confusions in order to help clarify these issues for the public.

- ***Weather is not climate:*** Climate is the long-term average of weather. A single year's weather does not indicate a climate trend, and a single event cannot be attributed to climate change. Climate change could, however, alter the frequency of extreme weather events, such as heat waves.
- ***Global warming is not just about warming:*** Rising average temperatures constitute just one aspect of climate change. By focusing solely on average temperatures, many other important dimensions of climate change may be overlooked. These include rising sea levels, ocean acidification, and greater water supply variability. Collectively, these changes will likely have more significant impacts on human society than changes in average temperature alone.
- ***Global averages do not reflect local changes:*** Climate change will not affect all regions in the same way. Although global average temperatures are often used to characterize the magnitude of climate change, these averages mask the regional variability of changes observed to date, as well as those projected for the future. Some regions, like the Arctic, are projected to experience more warming than others.
- ***Stabilizing GHG emissions will not stabilize GHG concentrations:*** Climate policies are sometimes characterized in terms of stabilizing atmospheric greenhouse gas (GHG) concentrations (frequently given in parts per million of carbon dioxide-equivalent or ppm CO_2e). Stabilizing atmospheric GHG concentrations will require reducing GHG emissions because greater amounts of greenhouse gases are entering the atmosphere than are leaving it. The atmosphere is sometimes likened to a bathtub that is filling with water faster than it is draining; if the faucet is not turned down, the water level in the bathtub will continue to rise.
- ***Carbon intensity differs from carbon emissions:*** Carbon intensity refers to carbon emissions per unit of activity, typically economic activity measured in gross domestic product. Changes in carbon intensity are not equivalent to changes in carbon emissions because carbon intensity is affected both by changes in carbon emissions *and* changes in the amount of activity. For example, if a country's economy grows faster than its carbon emissions, carbon intensity will decline even as emissions increase.

KNOW WHAT A THEORY IS. In colloquial use, "theory" connotes an unsubstantiated opinion; this is *not* how the term is used in the scientific community. In science, a theory explains a set of measurements, observations, and other forms of data. Scientists can never definitively prove a theory; however, the better the theory explains existing data, the more well-established it becomes in the scientific community.

THE UNDERLYING PHYSICS OF CLIMATE CHANGE IS WELL-ESTABLISHED. Current research builds on the well-established understanding of climate science by investigating cutting-edge questions. Consequently, scientists may focus discussion on areas of uncertainty rather than underlying fundamental principles. This may lead to the misperception that scientific knowledge of climate change is less certain than it is. When discussing a new scientific result, invite the scientist to clarify how and to what extent this result could change the scientific community's broader understanding of climate science.

PUT NUMBERS IN CONTEXT. Climate change is frequently presented in numbers and metrics that, without context, are meaningless to most people. Numbers can be made more meaningful by relating them to some other relevant quantity or explaining their significance to society. For example, provide context for GHG emissions from country X or industry Y by comparing them to global emissions. To give social significance, include information on the likelihood and severity of resulting impacts when reporting projected changes in atmospheric GHG concentrations or global average temperatures.

CHECK YOUR UNITS. Talk apples-to-apples on emissions and concentrations of greenhouse gases. GHG emissions are often characterized in units that *sound* similar [carbon (C), carbon dioxide (CO_2), and carbon dioxide-equivalent (CO_2e)] but differ in meaning. A few simple pointers for getting units right:

- Always clarify whether someone is talking about carbon emissions, CO_2 emissions, or CO_2e emissions.
- Keep in mind that carbon dioxide is not the only greenhouse gas. Other greenhouse gases, such as methane, behave differently in the atmosphere. "Carbon dioxide-equivalent" (CO_2e) is a unit that allows different greenhouse gases to be compared based on their relative warming effect over a given period of time, usually 100 years.
- Convert quantities (of mass) of carbon to quantities of CO_2 by multiplying by 3.7.
- Check your "tons" — short tons (commonly used in the US and UK) are different than metric tons (or tonnes).

UTILIZE AVAILABLE RESOURCES. A few useful resources on climate science include:

- AGU Climate Science Q&A for Copenhagen: www.agu.org/cop15science/
- News University Online Climate Journalism Course: http://www.newsu.org/courses/course_detail.aspx?id=internews_climateChange09
- Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report: www.ipcc.ch
- NASA's Global Climate Change website: http://climate.nasa.gov/
- Society of Environmental Journalist's Climate Science Expert Rolodex: http://www.sej.org/publications/climate-change/50-really-serious-scientist-sources-climate

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