



Our Reply to a Climate-Alarmist Newspaper Editorial

Volume 6, Number 30: 23 July 2003

On 17 July 2003, Drs. Tim Barnett and Richard Somerville of the Scripps Institution of Oceanography had an editorial published in the *San Diego Union-Tribune* entitled "The Bush Administration Versus Global Warming." We do not normally take this space to reply to such polemics; but as their opinion piece was so riddled with untruths and highly debatable implications, we felt it important to provide another point of view that is more in line with current scientific understanding.

With respect to climate model predictions of CO₂-induced global warming, Barnett and Somerville begin by saying that high-quality scientific studies "already have detected the predicted warming signals in the world's oceans, atmosphere and ice with a high degree of statistical confidence." Nothing, however, could be further from the truth.

In the case of the world's *oceans*, Bryden *et al.* (2003) note that "with so few repeat observations, there has been a tendency to treat any observed change in water mass properties or circulation as an indicator of ocean climate change." In a compelling exercise that demonstrates the great danger of this tendency, they compare five Indian Ocean hydrographic sections across 32°S that were made between 1936 and 2002. Their results indicate "there has been an oscillation in the water mass properties of the upper thermocline waters with ... the properties observed in 2002 close to those observed in 1936 and 1965." These changes, in their words, demonstrate "there can be substantial oscillations over decadal time scales," and that "without regular observations, oceanographers have little understanding of the scales of variability in water mass properties." Indeed, they note that the most recent change "almost entirely reverses the observed freshening of mode waters from the 1960s to 1987 that has been interpreted to be the result of anthropogenic climate change on the basis of coupled climate models."

In the case of the world's *atmosphere*, the well-known satellite record of tropospheric temperature up to 30,000 feet shows very little warming since data collection began in 1979; yet this is the part of the atmosphere where climate models predict there should have been an even more dramatic warming than at the earth's surface (Christy *et al.*, 2003). Balloon data also show only a slow warming of the bulk of the atmosphere over this period and longer, as has additionally been demonstrated to be the case by Kalnay and Cai (2003). [See our 2003 Editorials of [7 May](#), [28 May](#) and [4 June](#) for more details on these points.]

In the case of the world's *ice*, Munk (2003) notes that "surveys of glaciers, ice sheets, and other continental water storage can place only very broad limits of -1 to +1 mm/year on sea level rise from freshwater export," which essentially means we haven't a clue as to what is really happening in the area of overall cryospheric response to putative global warming. He also notes that "polar melting would result in movement of water mass toward the equator, causing a decrease in the rate of Earth's rotation," but he reports that "observations show a (nontidal) increase in Earth's rotation (attributed to a movement of mass toward the poles in response to the unloading of ice mass since the last glacial maximum)," which again leaves us guessing as to the net effect of the modest global warming of the past century on the world's store of ice.

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Barnett and Somerville next claim "the observational evidence for *human-caused* [our italics] climate change is overwhelming." We find it amusing they are so adamant on this point, when the evidence we have just cited directly challenges the even more basic assumption of significant climate change *per se* over the past quarter-century, or even over the last seven decades [see, for example, our 2000 Editorials of [15 June](#), [1 July](#), [15 July](#) and [2 August](#)].

The Scripps scientists also talk of the warming of the Arctic that has been predicted by climate models as having already occurred; yet this claim too is refuted by real-world data. Przybylak (2000), for example, used the mean monthly temperatures of 37 Arctic and 7 sub-Arctic stations, as well as the temperature anomalies of 30 grid-boxes from the updated data set of Jones, to derive a spatial and temporal history of Arctic near-surface air temperature over the last 70 years. The results of this analysis revealed that "in the Arctic, the highest temperatures since the beginning of instrumental observation occurred clearly in the 1930s." Even in the 1950s, Przybylak notes "the temperature was higher than in the last 10 years." In fact, he reports that "the level of temperature in Greenland in the last 10-20 years is similar to that observed in the 19th century."

Going back still further in time, a number of studies have demonstrated it was warmer in the Arctic than it is currently during the Medieval Warm Period of a thousand years ago (Arseneault and Payette, 1997; Dahl-Jensen *et al.*, 1998; Moore *et al.*, 2001; Wagner and Melles, 2001; Jiang *et al.*, 2002) - when there was nearly 100 ppm less CO₂ in the air than there is now [see Carbon Dioxide (History - [The Last 1,000 Years](#)) in our Subject Index] - while still others have found nothing unusual about late 20th century Arctic warming (Naurzbaev and Vaganov, 2000) or no Arctic warming at all during this period (Kasper and Allard, 2001) or even *cooling* (Vaganov *et al.*, 2000; Comiso *et al.*, 2001; Zeeberg and Forman, 2001).

The next undocumented claim of Barnett and Somerville is that "mountain glaciers globally are melting at unprecedented rates, and many are disappearing." Somewhere, no doubt, this may well be occurring, but not *everywhere*, or even, necessarily, *in the mean*. The full and correct story must begin with a clear recognition of just how few glacier data exist. Of the 160,000 glaciers presently in existence, only 67,000 (42%) have been inventoried to any degree (Kieffer *et al.*, 2000); and there are only a tad over 200 glaciers for which mass balance data exist *for but a single year* (Braithwaite and Zhang, 2000). When the length of record increases to five years, this number drops to 115; and if both winter and summer mass balances are required, the number drops to 79. Furthermore, if *ten* years of record is used as a cutoff, only 42 glaciers qualify. This lack of glacial data, in the words of Braithwaite and Zhang, highlights "one of the most important problems for mass-balance glaciology" and demonstrates the "sad fact that many glacierized regions of the world remain unsampled, or only poorly sampled," suggesting that we really know very little about the true state of most of the world's glaciers. In fact, in the words of Braithwaite (2002), "there is no obvious common or global trend of increasing glacier melt in recent years."

As for the Arctic, where Barnett and Somerville erroneously claim the warming predicted by computer models has already occurred, Dowdeswell *et al.* (1997) found that of the 18 glaciers with the longest mass balance histories, just over 80% have indeed displayed negative mass balances over their periods of record. *However*, they additionally report that "almost 80% of the mass balance time series also have a positive trend, toward a *less negative* mass balance [our italics]." Hence, although these Arctic glaciers continue to lose mass, as they have probably done since the end of the Little Ice Age, they are losing smaller amounts each year, in the mean, which is hardly what one would expect in the face of what climate alarmists incorrectly call the "unprecedented" warming of the latter part of the twentieth century.

Barnett and Somerville go on to say "the hydrological cycle is changing now in the Western United States," and that within a few decades "California will probably be unable to meet current water needs." Of course, climate is *always* changing, on one timescale or another; but to imply that CO₂-induced global warming will bring drought to a specific region the size of California is going far beyond what even most climate modelers would be comfortable predicting. In addition, paleoclimate data suggest that drought is much more apt to occur during *cooler* conditions in this part of the world.

Benson *et al.* (2002), for example, developed continuous high-resolution $\delta^{18}\text{O}$ records from cored lake sediments, which they used to construct a 7600-year history of droughts throughout northern California and Nevada. Over the most recent 2740 years of this period, drought durations ranged from 20 to 100 years, whereas historical droughts have typically lasted less than a decade. Using a different approach, Ni *et al.* (2002) developed a 1000-year history of cool-season precipitation for each climate division in Arizona and New Mexico from a network of 19 tree-ring chronologies, finding evidence of major droughts over the time intervals 1570-97, 1664-70, the 1740s, the 1770s, and the late 1800s," when, of course, it was much cooler than it is now. They also noted that the 1950s drought "was large in scale and severity, but it only lasted from approximately 1950 to 1956," whereas the "16th century mega drought" lasted more than four times longer. Hidalgo *et al.* (2000) employed a variant of this approach to reconstruct a history of streamflow in the Upper Colorado River Basin based on information obtained from tree-ring data. Complementing the earlier findings of Stockton and Jacoby (1976), they too observed "a near-centennial return period of extreme drought events in this region" going all the way back to the early 1500s.

Perhaps one of the best perspectives on these huge Little Ice Age droughts was provided by Stahle *et al.* (2000), who developed a long-term history of drought over North America from reconstructions of the Palmer Drought Severity Index based on analyses of many lengthy tree-ring records. They determined that the 1930s Dust Bowl drought in the United States - which was the nation's most severe, sustained, and wide-spread drought of the past 300 years - was eclipsed in all three of these categories by the 16th century "megadrought." This drought persisted "from the 1540s to 1580s in Mexico, from the 1550s to 1590s over the Southwest, and from the 1570s to 1600s over Wyoming and Montana" and "extended across most of the continental United States during the 1560s." It also recurred with greater intensity over the Southeast during the 1580s to 1590s. So horrendous was this climatic event, the authors unequivocally state that "the 'megadrought' of the 16th century far exceeded any drought of the 20th century." In fact, they say that "precipitation reconstruction for western New Mexico suggests that the 16th century drought was the most extreme prolonged drought in the past 2000 years."

Barnett and Somerville next state that "the measured increase in ocean heat content in the last 40 years is massive but entirely consistent with global warming simulated in computer models." As noted earlier in this editorial, this statement is just another example of what Bryden *et al.* (2003) have said is an unjustified "tendency to treat any observed change in water mass properties or circulation as an indicator of ocean climate change" by people who do not understand "there can be substantial oscillations over decadal time scales" that are totally natural but have "been interpreted to be the result of anthropogenic climate change on the basis of coupled climate models," which clearly do not represent reality.

The Scripps scientists then go on to say that "corals, the oceanographic canary in the coal mine, are under stress globally from increasing water temperature, and many have died." What they

fail to mention within this context is that corals are under many other stresses that have developed in tandem with the explosion of human numbers and activities over the course of the Industrial Revolution. As we have described in several Editorials [[12 Sep 2001](#), [19 Sep 2001](#), [23 Jan 2002](#), [6 Mar 2002](#), [26 Mar 2003](#)], it is likely the combined effect of all these other assaults upon their watery environment that is making corals ever more sensitive to high temperature, which appears to be the final "straw" that is breaking, not the oceanographic *canary's*, but the aquatic *camel's*, back.

A few sentences later the Scripps duo says the government of the United States is "allying itself with scientifically discredited greenhouse skeptics." We wonder, first of all, who specifically they have in mind when they use the appellation "scientifically discredited." Second, we wonder what criteria are used to determine if a person truly is "scientifically discredited." Third, we wonder who has made this determination, if indeed it has been made at all; and, fourth, we wonder by what authority the judging party has rendered this verdict. That is to say, we wonder if this is some sort of officially sanctioned determination or nothing more than a "sour grapes" type of attitude on the part of the scientists who proclaim it - presumably falsely - as fact.

Barnett and Somerville go on to likewise claim that "our government is playing politics with climate change at the expense of our Earth's future well-being and that of our descendants," noting that "the children and grandchildren of today's Bush administration members will experience the climatic consequences of this government's short-sighted and misguided policies," especially by not taking actions "that would benefit current and future generations by reducing the risk of dangerous climate change." Although we cannot speak for our government in this regard, we can speak for ourselves in saying this charge is totally untrue and could better be applied to Barnett and Somerville.

We note, for example, that climate alarmists seem unable to acknowledge the truly great challenge of the future: feeding our still-expanding population *a mere fifty years hence* [see our Editorials of [1 Oct 1999](#), [1 Nov 2000](#), [15 Nov 2000](#), [19 Mar 2003](#), [9 Apr 2003](#)] without appropriating *all* of the globe's land and fresh water resources to accomplish this objective [see our Editorials of [21 Feb 2001](#), [2 May 2001](#), [13 Jun 2001](#)] and thereby destroying essentially all of the planet's natural ecosystems [see our Editorials of [2 May 2001](#), [4 Sep 2002](#), [14 May 2003](#)]. The only way this most important of all environmental goals can be realized is to let the air's CO₂ content continue its natural upward course, which will significantly increase both the productivity and water use efficiency of all of earth's plants.

In conclusion, we note that it is sad, indeed, when two well-respected scientists so readily dismiss so great a body of scientific work that stands in opposition to what they proclaim as factual - but which is, in fact, false - and when they designate those who disagree with them as "scientifically discredited." We hope that what we have written in this editorial will help them and others to more thoroughly consider all the many aspects of this great debate and the voluminous evidence pertaining to it before making a final judgment on how anthropogenic CO₂ emissions may affect the human condition and the ecological economy of the planet.

Sherwood, Keith and Craig Idso

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