Fact or Fiction?

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Sea Level Change

"Sea level has risen because of climate change, but it has risen, at best, only a few inches. In fact, there's no evidence that the rate of sea level has changed at all, despite a surface temperature that has warmed, cooled, and warmed again in the last 100 years," reports Patrick Michaels.[1]

Nevertheless, many folks worry about a sea level rise of an inch or so every 10 years, due to global warming. No debate the Earth knows humans live here and have some influence, yet Mother Nature showed us she is still in charge. A series of tsunamis produced waves as high as 30 feet in a matter of minutes in Southeast Asia in December 2004.[2] Clearly an inch or so every 10 years pales by comparison.

The multiple tsunamis were not a "weather event" in even the slightest degree.[3] The tsunamis were caused by an earthquake. Yet some environmental activists quickly blamed the Southeast Asia tsunamis on global warming. Friends of the Earth Director Tony Juniper was quoted as saying, "Here again are yet more events in the real world that are consistent with climate change predictions." Greenpeace's Brad Smith added, "Development of roads, shrimp farms, ribbon development along coasts, and tourism are eroding natural defenses in Asia." Steven Milloy counters, "Actually, sea levels in the region have been declining; according to satellite data and the long-term record of sea level changes for Bombay, India, that city's sea level has dropped one inch during the past 50 years."[3]

Consider Tuvalu

Have you heard about Tuvalu? This is a remote island nation consisting of a fringe of atolls covering just 25.9 sq km (10 sq miles), with the highest point no more than five meters (17 ft) above sea level, but most a mere two meters (6.5 ft) midway between Hawaii and Australia.[4] Government officials in Tuvalu claim it is drowning because of global warming. Michaels quotes Tuvalu's prime minister saying in the early 1990's that Tuvalu was "the world's first victim of climate change," and that "the greenhouse effect and sea level rise threaten the very heart of our existence."[5] In spite of all the press supporting this claim, sea levels have been falling in that region, not rising.

In October 2001, Cecile Cabanes and her colleagues reported in *Science* on the rate of sea level change in the world's oceans from 1993 (the first complete years of satellite data) to 1998. Guess what? Tuvalu was at the center of where sea level was falling. That's not all. In another part of their paper, they reported on sea level changes since 1955. Once again, Tuvalu was located in a region where sea level had declined for nearly 50 years.[6]

Yet as recently as August 2004, a featured article in the *Smithsonian* discussed Tuvalu disappearing beneath the sea because of global warming.[4] Noticeably missing was any reference to the work of Cabanes and her colleagues. After all, why let some real science get in the way of one of the better "if it bleeds it leads" stories of our time.

Other Examples

Citizens of Galveston, Texas could claim that global warming has caused a change in sea level of nearly four feet during the past 100 years. However, like Tuvalu, the land is sinking. Extraction of fossil fuels, the area's geology and the Mississippi River are the culprits. Only a maximum of seven percent of the four feet total can be ascribed to global warming.[7,8] Many tide-gauge stations around Alaska are recording rapid sea level drops because of tectonic uplifts.[9]

In the 1830s off the east coast of Tasmania, near the town of Port Arthur, a local government official named Thomas Lempiere, cut a benchmark into the stone and erected a plaque indicating the date and time of the marking so one could record tide gauge readings. Essex and McKitrick report, "What the Lempiere benchmark apparently shows is that the surface of the southern oceans has fallen about a foot since 1841, which contradicts the commonly held impression that they have risen by about 15 cm."[10]

The UN Intergovernmental Panel on Climate Change (IPCC), largely considered to be the definitive scientific assessment of climate change, used computer models in 1980 to predict that the polar ice sheets would melt, causing a catastrophic 25 foot rise in sea level. As their computer models became more sophisticated, projections of rising sea levels became much smaller. The 25 foot increase in 1980 fell to three feet by 1985 and then to one foot by 1995.[11]

Sea levels in Stockholm have fallen about 15 inches over 100 years according to records based on observation; but the IPCC's Third Assessment Report shows sea levels rising rather than falling. This is due to a phenomenon known as the Post Glacial Rebound (PGR) which is the result of the earth's solid crust rebounding upward because the weight of the ice from the last ice age is no longer holding it down. Adjacent areas adjust downward to compensate for this upward thrust of the Earth's crust. The rising waters in Venice, touted as demonstrating the effect of global warming, are due to the PGR effect and subsidence. Subsidence is another factor that distorts visual observations. Many of the tide gauges are located near cities where the weight of the cities is causing them to sink. This results in observations that show rising sea levels.[12]

These are a few examples of why the sea level rise over the past century, as deter-

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up much floor space. When spent, the supplier can dispose of cartridges, sometimes directly to a certified destruct facility.

Oil Absorbing Filter. This unit consists of an enclosed housing that contains polypropylene baskets containing special oil absorbing plastic type media. The cleaner is pumped through the enclosed system, where the media absorbs oils and grease. The saturated media is replaced as needed.

Bag and Indexing Fabric Filters. The cleaner is pumped through a large filter chamber where oil, grease, and particles are retained. Takes up large floor space. It is a decent filtration system, but not applicable to systems cleaning large volumes of very oily parts.

Ultrafiltration. This is an interesting technology, using a somewhat permeable membrane system. The soiled cleaner is pumped through the (ceramic) membrane tubes. Molecules of sizes larger than water are blocked from passing through, diverted to a discharge. The aqueous cleaner solution passes through and returns to the process tank. Ultrafiltration provides a rapid, very dramatic filtering action. Of the examples given, ultrafiltration is by far the more expensive (approximately $20,000 and up). Considering a flexible or mobile unit that can be used to treat several cleaner tanks can offset the application, or rental as required.

Filtration can be supplemented by the application of mechanical oil removal devises. These units are quite cost effective and can be used in-tank. An overflow weir or side tank can collect cleaner solution, which cools down about 10–20°F below the temperature of the cleaner while oils separate to the top. The oils can be skimmed off using a disk or belt. A coalescer is another oil removing device. It channels the flow of cleaner, separating the aqueous from oily solution.

A final consideration to assist in the filtering of cleaners would be to consider the type of cleaners to be used. Displacement cleaners remove and release the oils for quick removal by the filter or separator. Another type of cleaner is what I refer to as the "mini emulsion." Oils are kept emulsified as long as the cleaner is agitated (such as barrel soak cleaning). When the solution settles in dead zones or in a side tank, oils are released for suitable removal. Another choice is the emulsion cleaner that releases significant quantities of oils by simple cooling (*eg.,* from 160°F down to 120°F). A chemical additive can also be used for certain cleaner formulations. The mixture of agents selectively emulsifies the oils in favor of the heated cleaner, splitting out in mass with the oils.

Filtering cleaners offers the metal finisher several benefits. They include: quality, economics, productivity, compliance, and safety. The available filtration equipment provides the degree of treatment or sophistication that is preferred. Cleaning is the first step—in fact, the most important step—in a finishing cycle. By effectively filtering the cleaner, buildup of contaminating soils is kept at a minimum, or controlled. Subsequently, rinses and process tanks down the line are kept relatively free of contaminated cleaner solution drag-in.

Filtering cleaners—make the wise choice your choice. ***P&SF***

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mined by the IPCC, is very suspect. Sea levels may not have risen anywhere near the level established by the IPCC using its computer programs.

Christopher Stone observes that the fear that the concentrated warming in high latitudes will melt the ice caps, thereby inundating land masses has a counterintuitive response. He says, "the better betting seems to be that global warming would thicken the ice caps and tend to lower sea levels. To understand, one has to appreciate the fact that the polar regions are so cold that an increase of even 10° or 20°C is not about to melt the ice sheets, anyway." He adds that Russian academician, A. Yanshin, who has been watching the Western hubbub from the sidelines, has been trying to remind anyone who will listen that the thick glacial shield of the Antarctic appears to have formed 30 millions years ago and withstood several epochs of climatic warming well beyond the upper range of the predicted greenhouse effect.[13]

Lastly, from John Christy, "Science is clear that, just as with climate, there is no law that states sea level should remain stationary. During the last major ice age, 25,000 years ago, the sea level was more than 300 feet lower than today, so a considerable amount of rise has already occurred naturally. In the past 6,000 years, the sea rose about two inches per century, but the rate increased around 1850 to six inches per century, a rate change occurring before humans could have had any influence. Sea level changes naturally."[1]

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