
## Sea Level Rise: Climate Change and an Ocean of Natural Variability

By Steve Goreham

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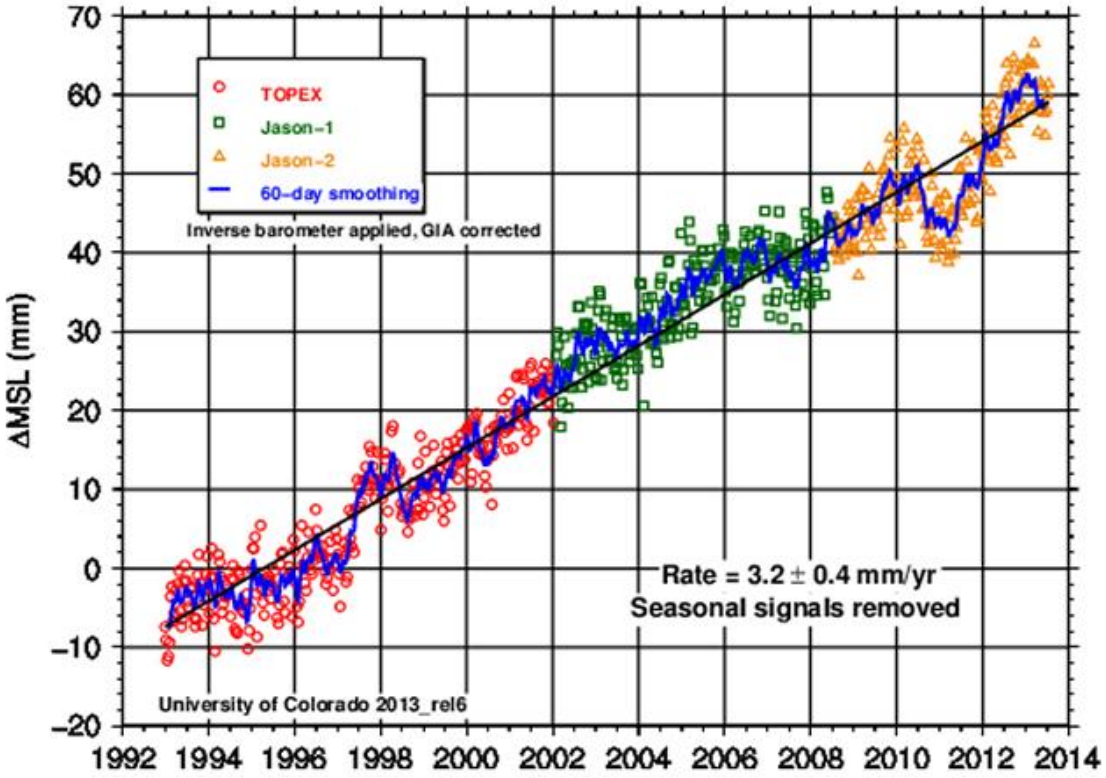
Sea level rise is the greatest disaster predicted by Climatism, the belief in catastrophic climate change. Today, leading scientific organizations support the idea that the ocean level is rising due to man-made emissions. Further, they claim to be able to measure ocean level to a high degree of accuracy. But a look at natural ocean variation shows that official sea level measurements are nonsense.

The theory of man-made climate change warns that human emissions of greenhouse gases will raise global temperatures and melt Earth's icecaps, causing rising oceans and flooding coastal cities. Former Vice President Al Gore's best-selling book, *An Inconvenient Truth*, showed simulated pictures of flooding in South Florida, the Netherlands, Bangladesh, and other world locations. Dr. James Hansen predicted an ocean rise of 75 feet during the next 100 years.

The Intergovernmental Panel on Climate Change stated in 2007, "Global average sea level rose at an average rate of 1.8 mm per year over 1961 to 2003. The rate was faster over 1993 to 2003: about 3.1 mm per year." This translates to a 100-year rise of only 7 inches and 12 inches, far below the dire predictions of the climate alarmists.

But three millimeters is about the thickness of two dimes. *Can scientists really measure a change in sea level over the course of a year, averaged across the world, which is two dimes thick?*

Today, sea level is measured with satellite radar altimeters. Satellites bounce radar waves off the surface of the ocean to measure the distance. Scientific organizations, such as the Sea Level Research Group at the University of Colorado (CU), use the satellite data to estimate ocean rise. The CU team estimates current ocean rise at 3.2 millimeters per year.




The organizations AVISO (Archiving, Validation, and Interpretation of Satellite Oceanographic Data) of France, CSIRO (Commonwealth Scientific and Industrial Research Organization) of Australia, and NOAA (National Oceanic and Atmospheric Administration) of the United States agree with the University of Colorado that seas are rising three millimeters per year. Given the huge natural variation in global sea level, the three millimeter number is incredible. The fact that four different organizations have arrived at the same number is suspect.

As Dr. Willie Soon of Harvard shows, ocean level variation is large and affected by many factors. If temperatures rise, water expands, adding to sea level rise. If icecaps melt, levels rise, but if icecaps grow due to increased snowfall, levels fall. If ocean saltiness changes, the water volume will also change.

The land itself moves continuously. Some shorelines are rising and some are subsiding. The land around Hudson Bay in Canada is rising, freed of ice from the last ice age. In contrast, the area around New Orleans is sinking. Long-term movement of Earth's tectonic plates also changes sea level.

Tides are a major source of ocean variation, primarily caused by the gravitational pull of the moon, the sun, and the rotation of the Earth. Ocean water "sloshes" from shore to shore, with tides changing as much as 38 feet per day at the Bay of Fundy in Nova Scotia. The global average tide range is about one meter, but this daily change is still 300 times the three-millimeter change that scientists claim to be able to measure over an entire year.

Storms and weather are major factors affecting satellite measurements. Wave heights change by meters each day, dwarfing the annual rise in ocean level. Winds also change the height of the sea. The easterly wind of a strong La Niña pushes seas at Singapore to a meter higher than in the eastern Pacific Ocean.

Satellites themselves have error bias. Satellite specifications claim a measurement accuracy of about one or two centimeters. How can scientists then measure an annual change of three millimeters, which is almost ten times smaller than the error in daily measurements? Measuring tools typically must have accuracy ten times better than the quantity to be measured, not ten times worse. Dr. Carl Wunsch of the Massachusetts Institute of Technology commented on the satellite data in 2007, "It remains possible that the database is insufficient to compute mean sea level trends with the accuracy necessary to discuss the impact of global warming—as disappointing as this conclusion may be."

Scientists add many "fudge factors" to the raw data. The same measurement taken by each of the three satellites, TOPEX, JASON-1, and JASON-2, differs by 75 millimeters and must be corrected. As a natural adjustment, researchers add 0.3 millimeters to the measured data, because ocean basins appear to be getting larger, able to hold more water, and reducing apparent ocean levels.

Tide gauges are also used to "calibrate" the satellite data. But gauge measurements are subject to errors of one or two centimeters, again many times more than the sea level rise to be measured.

Clearly, the official three millimeter sea level rise number is a product of scientific "group think." Not only is this number far below what can be accurately measured, but all leading organizations support this nonsense number. Could it be that our leading scientists must endorse sea-level rise to support the ideology of man-made global warming?

Steve Goreham is Executive Director of the Climate Science Coalition of America and author of the book *The Mad, Mad, Mad World of Climatism: Mankind and Climate Change Mania.*