OCEAN HEALTH INDEX

http://www.oceanhealthindex.org/

A healthy ocean sustainably delivers a range of benefits to people now and in the future. The Ocean Health Index is the comprehensive framework used to measure ocean health from global to local scales.

SEA LEVEL RISE (SLR) is a major global concern and a pressure for several goals of the Ocean Health Index. Its ultimate cause is the rise in global temperature caused by release of carbon dioxide and other heat-trapping gases as a result of fossil fuel combustion. The warming atmosphere transfers heat to the ocean's surface waters. Some of the heat slowly penetrates into deeper waters. The "temperature" of water describes the average velocity of the water molecules.

At higher temperature, the molecules move faster and take up more room: their volume increases. The warmer ocean's increased volume can't spread outwards, because the shape of the ocean is relatively constant on short time scales. The only place it can go is up, as an increase in sea level. Global warming is also melting mountain glaciers and continental ice caps, and increasing flow of meltwater into the sea from those sources is also causing global sea level to rise.

On average, global sea level is rising slightly more than 3 mm per year, which equals slightly more than 1 inch per decade. Increased warming will would accelerate that rate. Though each year's rise is small, SLR is steady, cumulative and relentless, and is already causing serious socioeconomic consequences. Current and predicted damage includes: coastal flooding, erosion, saltwater penetration into coastal groundwater and wells and potential damage or destruction of infrastructure such as roads, rail lines, subways, ports and airports. Some low lying coastal or island nations are making plans to evacuate portions of their populations.

METHODOLOGY.

The method used to measure sea levels, sea temperatures and overall health are described on the website cited above. “Lack of global data prevented inclusion of SLR in the 2012 Index, but it was added as a new data layer beginning in 2013. Exact details for computation are shown in the 2013 Ocean Health Index Supplementary Online Material.”

REFERENCES.

Nicholls and Cazenave, 2010, http://www.aviso.oceanobs.com/en/news/ocean-indicators/mean-sea-level.html