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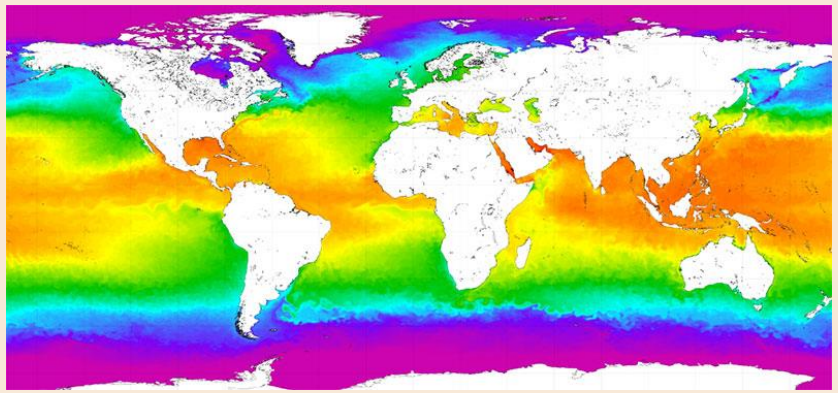
Being in Hot Water has a Whole New Meaning

Much of the focus in the climate community is on atmospheric temperatures.

But perhaps we should be paying more attention to ocean temperatures.

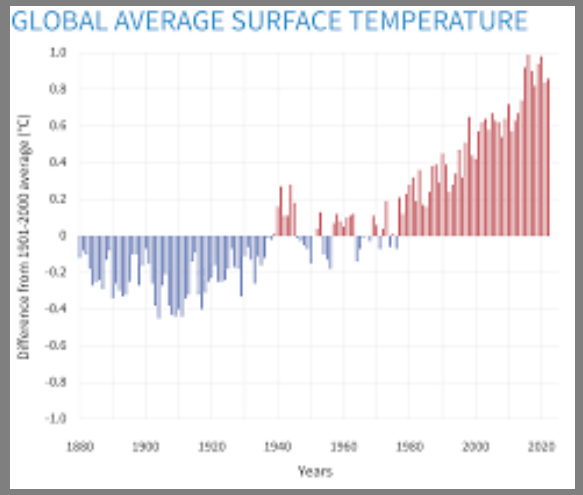
We breath the air, but the air “breaths” the oceans

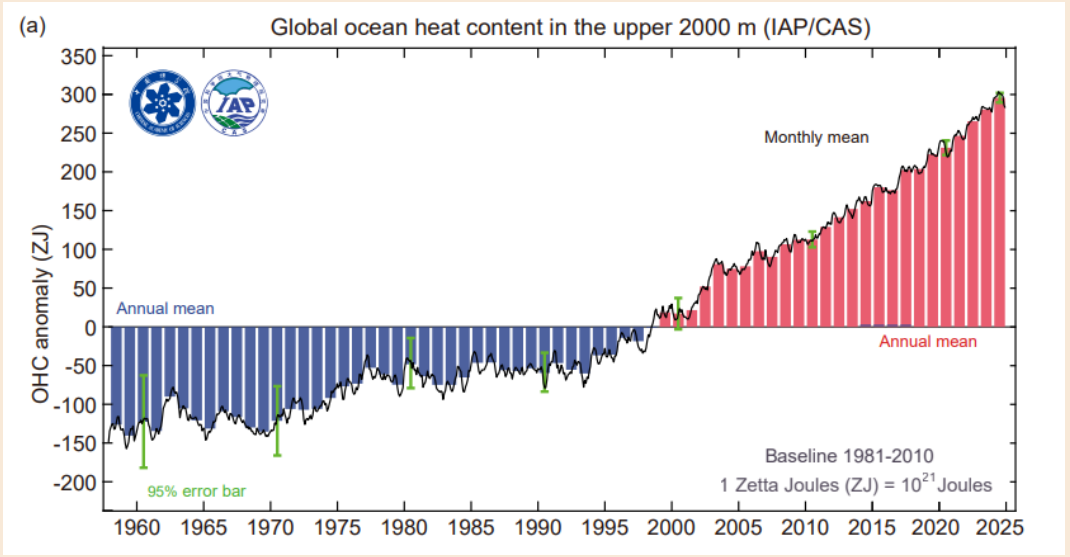


This map of sea surface temperature illustrates how heat is distributed across the global ocean.

- The oceans are a massive heat sink for the atmosphere. According to the National Oceanic and Atmospheric Administration (NOAA), oceans absorb 91% of the excess heat generated by greenhouse gas emissions.
- And given water covers more than 70% of the planet’s surface, the oceans are the largest solar energy collector on Earth.
- For a moment, ponder the role oceans play:
  - Ocean currents move water throughout the world including to and from the equator and the poles. Outside of the equatorial areas, these currents drive weather patterns.
  - When ocean water evaporates it alters the temperature and humidity of the surrounding air, which in turn results in rain and storms.
  - And did you know that almost all the rain that falls on land starts off in the ocean?

It's not just the air that's heating up





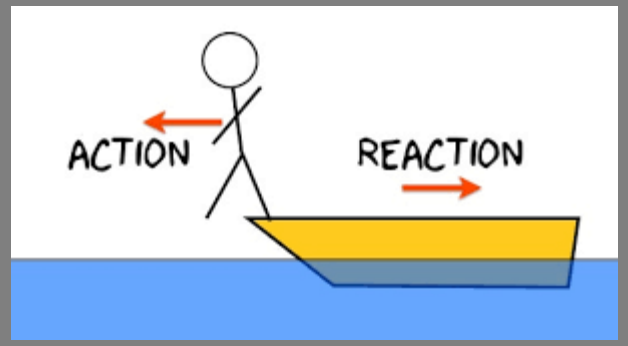
It's no coincidence that the chart of ocean temperatures over the last 65 years looks like a mirror image of the chart for global surface temperatures.

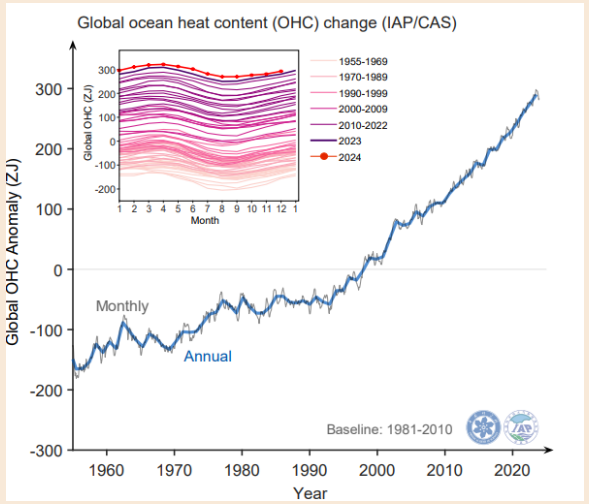
- 2024 didn't only mark the hottest year on record, it was also the hottest year on record for the upper 2,000 meters (6,254 feet) of oceans.
- Again, not surprising, but new data in a study published the journal *Advances in Atmospheric Sciences* finds that from 2023 to 2024 ocean heat increased by about the same amount as it did in the past five year.
- The energy in that heat equaled 16 zettajoules.

What's a zettajoule?

- One zettajoule equal one joule multiplied by 1,000,000,000,000,000,000,000.
- That amount of energy equals more than 100 times the amount of worldwide electricity generation in 2023. In other words – it's a lot.

Oceans deserve “equal billing” to air





How accurate is the study?

- The study’s author’s claim a confidence level of 95% on the data.
- The study’s results were also confirmed by two other sources:
  - The Copernicus Marine data updated to November 2024
  - The CIGAR-RT reanalysis data.

Why focus on water temperatures versus air temps?

According to the study’s co-author John Abraham, ocean heat content (OHC) is a less “noisy” metric for climate change and helps avoid “the ups and downs of air temperatures.”

- The Indian Ocean, Tropical Atlantic, Mediterranean Sea, North Atlantic, North Pacific, and Southern Ocean all experienced record-high ocean heat content values in 2024.

Rising ocean temperatures cause glaciers to melt increasing sea levels, bleach coral reefs, and magnify hurricanes. Warmer oceans impact marine life in multiple ways including altering migration patterns and overall health from reduce oxygen levels.

Given the Earth is made up mostly of water, it seems we should pay closer attention to the impact of rising ocean temperatures and ensure we adequately understand and communicate all the action-reaction downsides.

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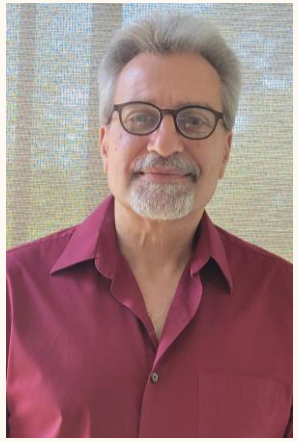

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Unbiased and Unfiltered

- An honest assessment of the climate change effort.
- I cover what's working – but more important - the issues/roadblocks that the industry would prefer to ignore.
- A must-read for anyone with a desire to understand what's really going on with renewable energy and climate change.

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