IAP releases datasets of frequent marine heatwaves in most ocean regions over two decades

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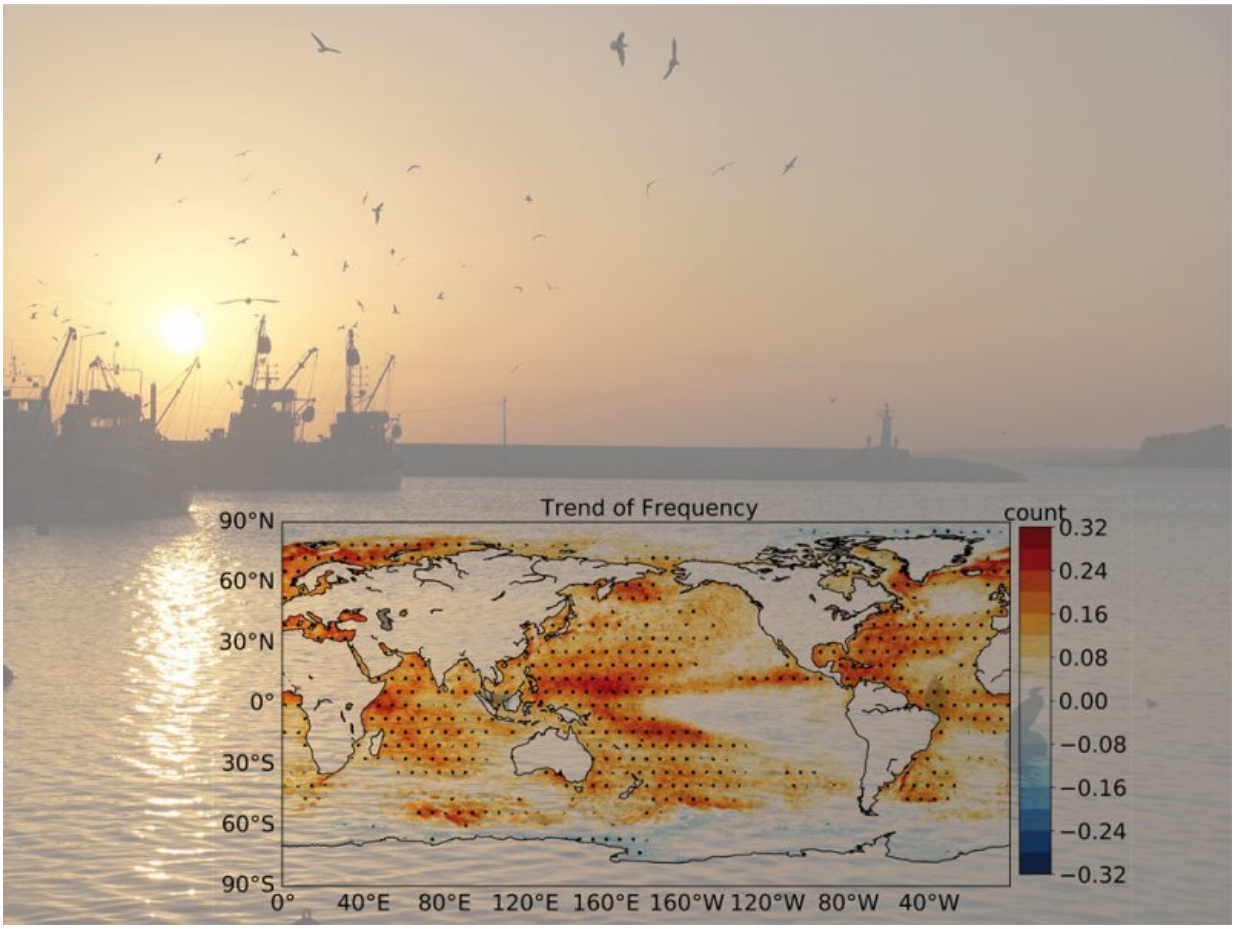

The linear trend of global MHWs frequency from 1982 to 2020. Credit: Zheng Fei

Heatwaves are extreme climatic events that occur in the atmosphere and even the oceans. Recent research indicates that marine heatwaves (MHWs) will become more frequent and intense under global warming conditions.

This situation will likely push marine organisms and ecosystems to their resilience limits and possibly beyond, which may cause irreversible changes and damage.

Recently, a study by scientists from the Institute of Atmospheric Physics (IAP) of the Chinese Academy of Sciences (CAS) breaks down a real-time updated high-resolution (0.25°) global MHW dataset, which includes accessibility, content, characteristics, and potential applications of MHWs.

The study was published in *Advances in Atmospheric Sciences* on May 14.

"MHWs have occurred more frequently in most ocean regions in the past two decades," said Dr. Zheng Fei, corresponding author of the study and a professor at IAP.

The researchers first analyzed the MHW dataset's reliability. They demonstrated that the MHW dataset could accurately detect abnormal warm water events, and could be used to analyze different attributes of MHWs.

Further analysis of the dataset showed a linear increased frequency of MHWs in most ocean regions of the world as well as significant interdecadal changes.

The researchers also studied the effects of MHWs on the world's four most productive fishing grounds, or regions. "Analyses results showed that three of the fishing grounds had significant MHW growth trends in

recent decades," said Dr. Zheng.

In contrast, the growth of MHWs in the Peru Fishing Grounds was not significant, indicating that regional ocean upwelling might slow down the production of MHWs.

This dataset could help climatologists to study the seasonal and decadal changes in extreme ocean events, and explore the effects of global warming on the oceans' surface layers during the last 40 years.

More information: Xiaojuan Zhang et al, Observed Frequent Occurrences of Marine Heatwaves in Most Ocean Regions during the Last Two Decades, *Advances in Atmospheric Sciences* (2022). DOI: 10.1007/s00376-022-1291-3

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