

Wind and ocean currents may contribute to mass dolphin strandings

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The area around Cape Cod, Massachusetts, is a hot spot for mass stranding events, in which 50–100 dolphins and other cetaceans routinely beach themselves. Although scientists aren't sure of the strandings' cause, various culprits have been proposed by scientists, from sound pollution to electrical storms to magnetic disturbances.

But uncertainty about strandings remains, as it has since at least Aristotle's time. "It is not known for what reason [dolphins] run themselves aground on dry land; at all events, it is said that they do so at times, and for no obvious reason," he noted in his *Historia animalium* (340 BCE).

Now, new research suggests that ocean currents and atmospheric patterns together could be helping drive dolphins inland. The study found that the Cape Cod hot spot area averaged 11 events per year from 1999 to 2017. In addition, Zellar et al. coupled chlorophyll, [wind](#), tide, and ocean current data from 1998 to 2018 with mass [stranding](#) events on Cape Cod. Among those, a relationship between [wind patterns](#) and stranding events stood out—[wind speeds](#) consistently increased 1 month before a stranding event.

"The annual seasonal wind data profile was the absolute most striking thing," said Ron Zellar, a mission systems engineer and researcher at NASA's Goddard Space Flight Center who led the study. While working on the project, he showed a colleague a wind plot and the pattern of strandings. "Wow, these look the same," Zellar recounted his colleague saying. He and his coauthors were amazed at the strength of the correlation—but then had to figure out why it existed.

One explanation could be that wind and currents affect the marine food web, according to the researchers. Increased seasonal wind speeds and stronger [ocean currents](#) could stir up nutrients and stimulate coastal productivity or create an environment that better suits dolphins' prey. Around a month after these events, animals higher up the food chain—such as the herring and mackerel that dolphins eat on Cape Cod—could have a boost in their food intake near the coast. Their growing populations could draw dolphins into shallower waters than they'd usually venture.

Demonstrating a relationship between prey species and strandings is one of the next steps for Zellar, and he acknowledged there are likely multiple factors that drive strandings. Still, he hopes that by studying this wind-nutrient relationship on Cape Cod and in other stranding [hot spots](#), rescuers could have a little warning for when cetaceans might get stranded.

"Most of these strandings occurred in January, February, and March," Zellar said. "The water is not warm, and these professionals and volunteers are going out in the mud with only a few hours to really help these animals." Knowing what conditions lead to strandings could help the rescue teams staff up with volunteers and be ready for quick responses.

More information: R. Zellar et al, Oceanic and Atmospheric Correlations to Cetacean Mass Stranding Events in Cape Cod, Massachusetts, USA, *Geophysical Research Letters* (2021). [DOI: 10.1029/2021GL093697](https://doi.org/10.1029/2021GL093697)

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