

Scripps News

SCRIPPS INSTITUTION OF
OCEANOGRAPHY

SEARCH:



[Home](#) | [News Archives](#) | [Photo Gallery](#) | [Contact](#) | [Explorations](#) | [UCSD News](#) |



[Email Release »](#)

Contacts

Mario Aguilera or Robert
Monroe

Phone:
scrippsnews@ucsd.edu

Related Links

[Integrative Oceanography
Division \(IOD\)](#)

[Scripps Home](#)

[Prospective Students](#)

[ScrippsNews Home](#)

Share This Story



Wednesday, March 2, 2011

Scripps Oceanography Researchers Discover Arctic Blooms Occurring Earlier

Phytoplankton peak arising up to 50 days early, with unknown impacts on marine food chain and carbon cycling

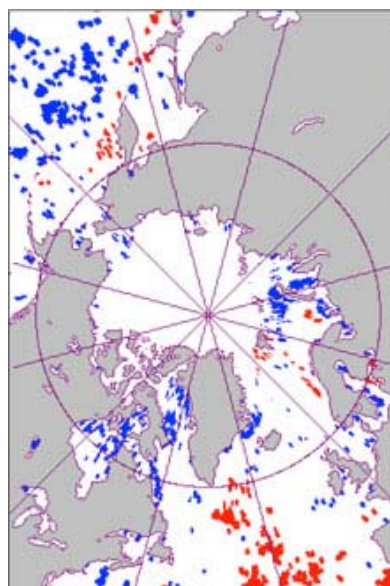
Scripps Institution of Oceanography / University of California, San Diego

Warming temperatures and melting ice in the Arctic may be behind a progressively earlier bloom of a crucial annual marine event, and the shift could hold consequences for the entire food chain and carbon cycling in the region.

Scientists at Scripps Institution of Oceanography at UC San Diego, along with colleagues in Portugal and Mexico, plotted the yearly spring bloom of phytoplankton—tiny plants at the base of the ocean food chain—in the Arctic Ocean and found the peak timing of the event has been progressing earlier each year for more than a decade. The researchers analyzed satellite data depicting ocean color and phytoplankton production to determine that the spring bloom has come up to 50 days earlier in some areas in that time span.

The earlier Arctic blooms have roughly occurred in areas where ice concentrations have dwindled and created gaps that make early blooms possible, say the researchers, who publish their findings in the March 9 edition of the journal *Global Change Biology*.

During the one- to two-week spring bloom, which occurs in warm as well as cold regions, a major influx of new organic carbon enters the marine ecosystem through a massive peak in phytoplankton photosynthesis, which converts carbon dioxide into organic matter as part of the global carbon cycle. Phytoplankton blooms stimulate



Significant trends toward earlier phytoplankton blooms (blue) were detected in about 11 percent of the area of the Arctic Ocean closest to the North Pole, delayed blooms (red) were evident to the south.

production of zooplankton, microscopic marine animals, which become a food source for fish.

Mati Kahru, lead author of the study and a research oceanographer in the Integrative Oceanography Division at Scripps, said it's not clear if the consumers of phytoplankton are able to match the earlier blooms and avoid disruptions of their critical life-cycle stages such as egg hatching and larvae development.

"The spring bloom provides a major source of food for zooplankton, fish and bottom-dwelling animals," he said. "The advancement of the bloom time may have consequences for the Arctic ecosystem."



Mati Kahru

Such a match or mismatch in timing could explain much of the annual variability of fish stocks in the region.

"The trend towards earlier phytoplankton blooms can expand into other areas of the Arctic Ocean and impact the whole food chain," say the authors, who used satellite data from 1997-2010 to create their bloom maps.

The NASA Ocean Biology and Biogeochemistry Program and the

National Science Foundation provided financial support for the research. The satellite data were provided by the NASA Ocean Biology Processing Group, ESA GlobColour group, the National Snow and Ice Data Center and the Japan Aerospace Exploration Agency.

Kahru's coauthors include Greg Mitchell, a Scripps Oceanography research biologist, Vanda Brotas of the University of Lisbon in Portugal and Marlenne Manzano-Sarabia of Universidad Autónoma de Sinaloa in Mexico.

###

Note to broadcast and cable producers: University of California, San Diego provides an on-campus satellite uplink facility for live or pre-recorded television interviews. Please phone or e-mail the media contact listed above to arrange an interview.

About Scripps Institution of Oceanography

Scripps Institution of Oceanography at University of California, San Diego, is one of the oldest, largest and most important centers for global science research and education in the world. Now in its second century of discovery, the scientific scope of the institution has grown to include biological, physical, chemical, geological, geophysical and atmospheric studies of the earth as a system. Hundreds of research programs covering a wide range of scientific areas are under way today in 65 countries. The institution has a staff of about 1,400, and annual expenditures of approximately \$170 million from federal, state and private sources. Scripps operates robotic networks, and one of the largest U.S. academic fleets with four oceanographic research ships and one research platform for worldwide exploration. Birch Aquarium at Scripps serves as the interpretive center of the institution and showcases Scripps research and a diverse array of marine life through exhibits and programming for more than 415,000 visitors each year. Learn more at scripps.ucsd.edu.



About UC San Diego

Fifty years ago, the founders of the University of California, San Diego, had one criterion for the

campus: It must be distinctive. Since then, UC San Diego has achieved the extraordinary in education, research and innovation. Sixteen Nobel laureates have taught on campus; stellar faculty members have been awarded Fields Medals, Pulitzer Prizes, McArthur Fellowships and many other honors. UC San Diego-recognized as one of the top ten public universities by U.S. News & World Report and named by the Washington Monthly as number one in the nation in rankings measuring "what colleges are doing for the country"- is widely acknowledged for its local impact, national influence and global reach. UC San Diego is celebrating 50 years of visionaries, innovators and overachievers.

50th.ucsd.edu

© Scripps Institution of Oceanography, University of California, San Diego 2011. All Rights Reserved
