

shorts... have you heard?

News and Events from Engineering and the Sciences at UC Santa Barbara



More than 40 percent of the world's oceans are heavily affected by human activities, and few if any areas remain untouched.

That is the conclusion reached by the first global-scale study of human influence on marine ecosystems. By overlaying maps of 17 different activities such as fishing, climate change, and pollution, researchers at UC Santa Barbara's National Center for Ecological Analysis and Synthesis (NCEAS) have produced a

to see the big picture of how humans are affecting the oceans." said lead author Ben Halpern, assistant research scientist at NCEAS. "Our results show that when these and other individual impacts are summed up, the big picture looks much worse than I imagine most people expected. It was certainly a surprise to me."

"This research is a critically needed synthesis of the impact of human activity on ocean ecosystems," said David Garrison, biological oceanography program director at NSF. "The effort is likely to be a model for assessing these impacts at local and regional scales."

The study reports that the most heavily affected waters in the world include large areas of the North Sea, the South and East China Seas, the Caribbean

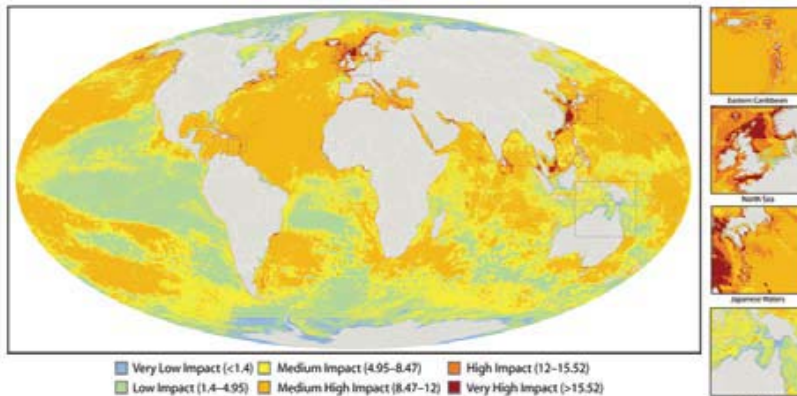
ecosystems are soft-bottom areas and open-ocean surface waters.

"My hope is that our results serve as a wake-up call to better manage and protect our oceans rather than a reason to give up," Halpern said. "Humans will always use the oceans for recreation, extraction of resources, and for commercial activity such as shipping. This is a good thing. Our goal, and really our necessity, is to do this in a sustainable way so that our oceans remain in a healthy state and continue to provide us the resources we need and want."

A new Institute for Energy Efficiency has been established at UC Santa Barbara.

The UCSB institute is under the direction of Professor John Bowers of the Electrical and Computer Engineering Department, and will involve approximately 50 faculty members from multiple disciplines on the campus.

"We're already spending more than \$10 million a year on energy efficiency research at UCSB," stated Bowers at the launch announcement. "The Institute will provide a unifying and very synergistic environment for our work, which is being conducted in many different departments and centers on our campus." Bowers went on to note, "As an institute, we will triple our research funding over the next three years, which will dramatically accelerate the development and



composite map of the toll that humans have exacted on the seas. The work involved 19 scientists from a broad range of universities, NGOs, and government agencies. It was published in the Feb. 15 issue of *Science* and presented February 14 at the American Association for the Advancement of Science (AAAS) meeting in Boston, MA. The study synthesized global data on human impacts to marine ecosystems such as coral reefs, seagrass beds, continental shelves, and the deep ocean. Past studies have focused largely on single activities or single ecosystems in isolation, and rarely at the global scale. In this study, the scientists were able to look at the summed influence of human activities across the entire ocean.

"This project allows us to finally start

Sea, the east coast of North America, the Mediterranean Sea, the Red Sea, the Persian Gulf, the Bering Sea, and several regions in the western Pacific. The least affected areas are largely near the poles.

"Unfortunately, as polar ice sheets disappear with warming global climate and human activities spread into these areas, there is a great risk of rapid degradation of these relatively pristine ecosystems," said Carrie Kappel, a principal investigator on the project and a post-doctoral researcher at NCEAS.

Importantly, human influence on the ocean varies dramatically across various ecosystems. The most heavily affected areas include coral reefs, seagrass beds, mangroves, rocky reefs and shelves, and seamounts. The least impacted



commercialization of key energy-saving technologies. This increased funding will also attract and support additional leading thinkers in energy efficiency."