

## DEBRIS: Bigger problem of ocean junk unresolved

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the ocean currents from the Navy have helped NOAA researchers create various models to predict where the tsunami debris is heading, Watabayashi told conference attendees.

But the 1.5 million tons swept from Japan into the world's largest ocean included everything from soccer balls to telephone poles to refrigerators — spreading out the debris field considerably and ultimately leaving researchers unable to say where it will all make landfall, he added. He showed various models of the same, ominous black cloud of debris mapped against the Pacific, traveling out in various ways.

"It's a big ocean out there," Watabayashi said.

Despite all the uncertainty, most of the tsunami's so-called "high-floating objects" — such as boats and buoys — have already washed ashore, mostly on the West Coast, Watabayashi said. The taller the debris, the more easily the wind can catch it, so it travels more quickly, he explained.

Officials estimate the tsunami swept 4 million to 5 million tons of debris into the sea, but about 70 percent sank off the Japanese coast.

The NOAA researcher did not provide specific details on how much debris has come ashore in Hawaii, other than to say the total will make up a "very small percentage" since the islands contain such little land mass.

Masaru Tanaka, a Japanese researcher with the Tottori University of Environmental Studies, said some scientists predict 97 percent of the tsunami

debris will wind up in the "Great Pacific Garbage Patch," a massive vortex of flotsam, while less than 3 percent will wash up on the West Coast.

But all of the modeling and predictions seem dubious to Chris Pallister, president of the Gulf of Alaska Keeper. The Alaska-based nonprofit has helped lead cleanup efforts along Alaska's coast and encountered "billions of pieces" of debris that researchers never projected to land there, he said.

"Everyone expected Washington, Oregon, California to get slammed. They didn't," Pallister said Monday. "Every model I've looked at was wrong."

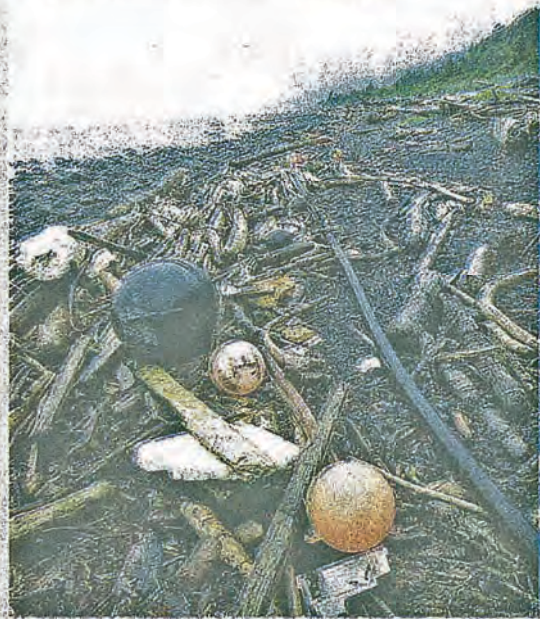
More dollars should be invested in tsunami cleanup efforts than trying to predict the debris' course, Pallister said.

The idea for the Pacific Rim Marine Debris Conference came from Hawaii fishermen who wanted to pick up floating debris generated by the tsunami, said Linda Paul, director of the Ocean Law and Policy Institute at the Pacific Forum, a Honolulu-based think tank.

The meeting will look at root causes and ultimate solutions, Paul said.

"I pick up trash on the beach, too, but it just keeps coming," Paul said during a break in the discussions. She said she hopes the conference will produce the beginnings of an international plan for dealing with marine debris.

It comes the same week that a longtime yachtsman's account of a "dead" and "broken" Pacific Ocean, published in the Newcastle (England) Herald, went viral across social media platforms.



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**Buoys, foam and other debris from the 2011 Japanese tsunami are strewn about on a beach on Kayak Island, Alaska.**

### DIFFERENT DEBRIS

Researchers typically categorize tsunami debris based on how far it sticks out of the water. That helps determine how easily the wind will catch it and how quickly it might travel.

- >> Subsurface (80 percent submerged): Driftwood, lumber
- >> Standard (50 percent submerged): Refrigerators, tires, containers
- >> Floating (10 percent submerged): Drifting ships, buoys, foam

Source: Masaru Tanaka, Tottori University of Environmental Studies

In the Oct. 18 piece, Newcastle-based Ivan Macfayden recounted hundreds of power poles, thousands of buoys and other widespread debris during his latest voyage from Osaka, Japan, to San Francisco.

Where he had previously encountered turtles, dolphins, sharks, Macfayden said he found only trash, plastic and other debris.

"On the bow, in the waters above Hawaii, you could see right down into the depths. I could see that the debris isn't just on the surface, it's all the way down," Macfayden

told the Herald. "And it's all sizes, from a soft-drink bottle to pieces the size of a big car or truck."

Chris Havel, a spokesman for the Oregon Parks and Recreation Department who's attending the conference, said the "very small silver lining" of the tsunami is that it has generated more awareness of marine debris.

"We need to start stepping up the game a little bit now that the problem is hot," he said.

The Associated Press contributed to this report.