

Lost At Sea: Over 25 Million Tons of Tsunami Debris Floating Toward U.S. Shores

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A massive floating patch of debris following the March 11, 2011, tsunami that struck Japan is floating across the Pacific Ocean, and should begin piling up on U.S. shores in increasing amounts. Wrecked cars, portions of homes, boats, furniture, human remains and more -- all swept up by the destructive, magnitude 9.0 earthquake that struck off the coast of Japan 11 months ago -- are on a slow-motion collision course with California. The magnitude-9.0 earthquake produced the sort of devastation Japan hadn't seen since WWII, leaving more than 21,000 dead or injured. The tsunami that followed engulfed the northeast and wiped out entire towns.



A Russian training ship spotted the junk — including a refrigerator, a television set and other appliances — in an area of the Pacific Ocean where the scientists from the university's International Pacific Research Center predicted it would be. The biggest proof that the debris is from the Japanese tsunami is a fishing boat that's been traced to the Fukushima Prefecture, the area hardest hit by the March 11 disaster. Jan Hafner, a scientific programmer, said that researchers' projections show the debris would reach Hawaii's shores by early 2013, before reaching the West Coast. They estimate the debris field is spread out across an area that's roughly 3,200 kilometres long and 1,600 kilometres wide located between Japan and Midway Atoll, where pieces could wash up in January. Independent models constructed by the NOAA and the University of Hawaii show a vast, loose debris field drifting inexorably toward Hawaii, California and Washington -- the first fishing buoys reached the West Coast in mid December, Ebbesmeyer wrote in his "Beachcombers Alert" newsletter. The flotsam is expected to increase, with the bulk of the debris hitting some time in 2014.

High resolution satellite cameras could pick up the scattered remains -- the houses and cars, the ruined fishing boats and oil drums. But setting such a camera to exhaustively scan the vastness of the Pacific Ocean would be tedious and expensive, he noted. Floating debris travels at about 7 mph, Ebbesmeyer said, but it can move as much as 20 mph if it has a large area exposed to the wind, according to a report in the Associated Press. Carey Morishige, the Pacific Islands Regional Coordinator for the NOAA Marine Debris Program, said radioactivity is probably not an issue, since the tsunami carried most of the debris seaward before the failure of Japan's Fukushima Daiichi nuclear reactor. Churnside plans to revisit his models of the enormous debris field next month, one year after the devastating event.

1. In appropriate paragraph form, compare and contrast the pros and cons with Americans accepting custody of the debris. Thoroughly explain your reasoning and provide specific artifacts and evidence limited solely to passage above to support your response. Create and illustrate a Venn Diagram to effectively explore relationships and patterns and to make arguments about relationships between sets. (LA.910.3.2.2; LA.910.1.6.2; MA.912.D.7.2; MA.912.A.10.1)
2. SAME-DIRECTION TRAVEL: Floating Tsunami debris departs a specific point at 0600 and at an average rate of 7 mph. Another portion of debris exposed to the wind departs the same location at 0615 on the same route at 20 mph. How much time will elapse before the second pile of debris reaches the first? Algebra Book Page 105; Ex. 3 (MA.912.A.10.1; MA.912.A.2.13; MA.912.A.3.5)
3. ROUND-TRIP TRAVEL: From a specific point in the Pacific Ocean, a fleet of dismantled Japanese homes is floating at 15 mph. Prior to striking the California coast, the debris floats back to its original point at 20 mph. The total commute is 2 hours. How long did it take the houses to float toward the coast? Algebra Book Page 106; Ex. 4 (MA.912.A.10.1; MA.912.A.2.13; MA.912.A.3.5; MA.912.A.1.4; MA.912.A.3.2)
4. OPPOSITE-DIRECTION TRAVEL: A Japanese fishing boat and a major appliance depart the in opposite directions on a straight path. The boat is floating 5 mph faster than the appliance. After 2 hours, they are 6 miles apart. Find the rate of the fishing boat as well as the appliance. Algebra Book Page 106; Ex. 5 (MA.912.A.10.1; MA.912.A.2.13; MA.912.A.3.5; MA.912.A.1.4; MA.912.A.3.2)
5. A scientific programmer notices multiple appliances are located halfway between a series of wrecked cars and dismantled houses. The houses are located halfway between the wrecked cars and the coast of California. Prove the distance between the wrecked cars and the appliances are the same as the distance between the houses and the coast of California. Geometry Textbook Page 115; Ex. 4 (MA.912.G.4.5; MA.912.G.1.2; MA.912.G.8.2; MA.912.G.8.5; MA.912.G.8.6)
6. Using contextual clues only, define the following italicized words: *engulfed*, *tedious*, *flotsam*, and *tsunami* as obtained from the passage above. Additionally, use each word in a complete sentence to demonstrate further comprehension. (LA.910.1.6.3; LA.910.1.6.1)
7. **SARASOTA MILITARY ACADEMY WORD-OF-THE-WEEK** Create a concluding paragraph aligned with the passage above using the following italicized word: *whimsical* (n.) Fanciful. Full of whims. (LA.910.1.6.1; LA.910.1.6.5)

Next Generation Sunshine State Standards adapted from floridastandards.org. Standards specifically addressed in this edition are strategically aligned with state standards and annotated adjacent to the respective inquiry.

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