

Press Release

February 11, 2014

Castaway fisherman's drift matches currents and winds

The fisherman's improbable 13-month voyage from Mexico westward across the Pacific agrees with simulations of a computer model developed at the University Hawaii Manoa International Pacific Research Center. Senior Scientist Nikolai Maximenko and Scientific Programmer Jan Hafner placed 16 tracers into their ocean model 200 nautical miles southwest of the coastal fishing village Chiapas, Mexico, on December 20, 2012, around the time that Jose Salvador Alvarenga says he was blown off shore.

Figure 1 shows the track of these tracers over the 13 months, the length of Alvarenga's stated voyage. The blue circles represent the end points of the trajectories on January 31, 2014, around the time that Alvarenga was found on Ebon Atoll in the Marshall Islands. Figure 2 shows the winds at the beginning of model simulation.

The animation displays the movements of the tracers in the model. After their release, the particles are quickly driven offshore by very strong winds and by wind-induced currents. Small initial differences scatter the tracers with time and thus they become exposed to different wind and ocean currents: some move faster and overshoot the Marshall Islands over the 13 months (black dot indicates approximate place where Alvarenga was found), others have not yet reached the islands.

Overall, however, the 16 tracers show a remarkably narrow path over this long period of time, given the satellite daily wind and current variability that drove the model. The paths of the tracers passing by, or nearing, Ebon Atoll span not more than 2 degrees latitude, or about 120 miles.

Alvarenga's claim that he had been adrift for 13 months and that he came from Mexico, therefore, falls well within the model's limits and is consistent with the prevailing pattern of wind and ocean currents during his ordeal.

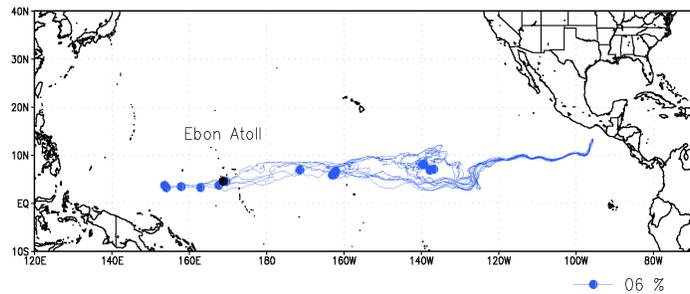


Figure 1. Path of the 16 tracers in the model from December 20, 2012, to February 1, 2014, driven with 06% wind force. The black circle is where Alvarenga was found end of January 2014 and the blue circles mark where the tracers were located then. [Click here or on image for animation.](#)

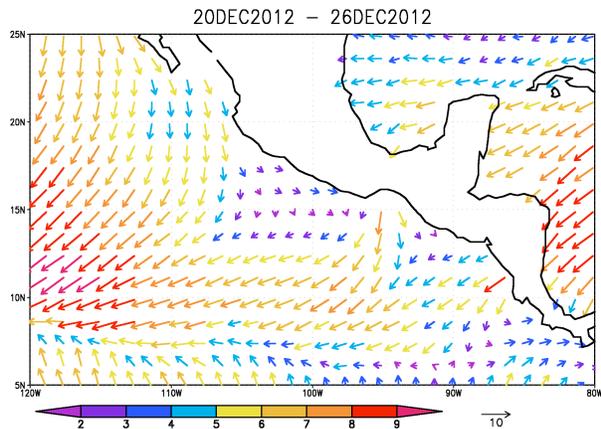


Figure 2. The winds, in m/sec, during the week of 20, 2012, the approximate date when Alvarenga was blown off shore.

The mathematical computer model was originally developed by Maximenko and Hafner from paths of actual drifters with 15-m deep drogues. The initial purpose had been to chart the varying ocean surface circulation.

“When the devastating tsunami happened in 2011 in Japan, the model was adapted to track different types of tsunami driftage by adding different strengths of direct wind-force to the model,” Maximenko recalls. “Details of our model are on our IPRC Marine and Tsunami Debris website.”

“The experience with capsized fishing boats from the tsunami that reached the shores of Hawaii 1½ to 2½ years later guided us in using realistic model parameters to simulate the fisherman’s boat drift from Mexico,” explained Jan Hafner.

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The International Pacific Research Center (IPRC) of the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawaii at Manoa, is a climate research center founded to gain greater understanding of the climate system and the nature and causes of climate variation in the Asia-Pacific region and how global climate changes may affect the region. Established under the "U.S.-Japan Common Agenda for Cooperation in Global Perspective" in October 1997, the IPRC is a collaborative effort between agencies in Japan and the United States.