Fukushima Dai-ichi and the Ocean:
10 years of study and insight

Cesium isotope monitoring in the central North Pacific and the Hawaiian Islands

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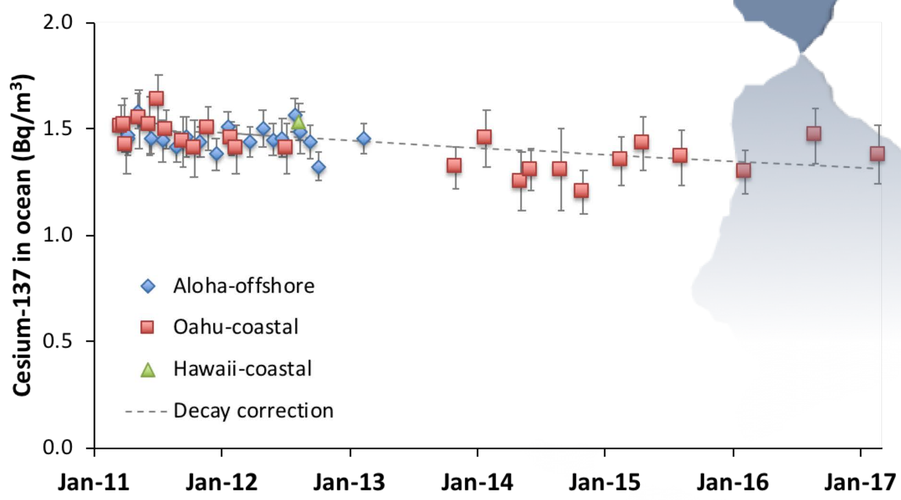
In our radionuclide studies on and around the Hawaiian islands we looked at several vectors of transport of Fukushima Dai-ichi Nuclear Power Plant (FNPP)-derived ^{134}Cs and ^{137}Cs. We analyzed whether radionuclides are reaching the islands by air masses, ocean currents, incorporated in biota, or on tsunami debris.

OCEAN

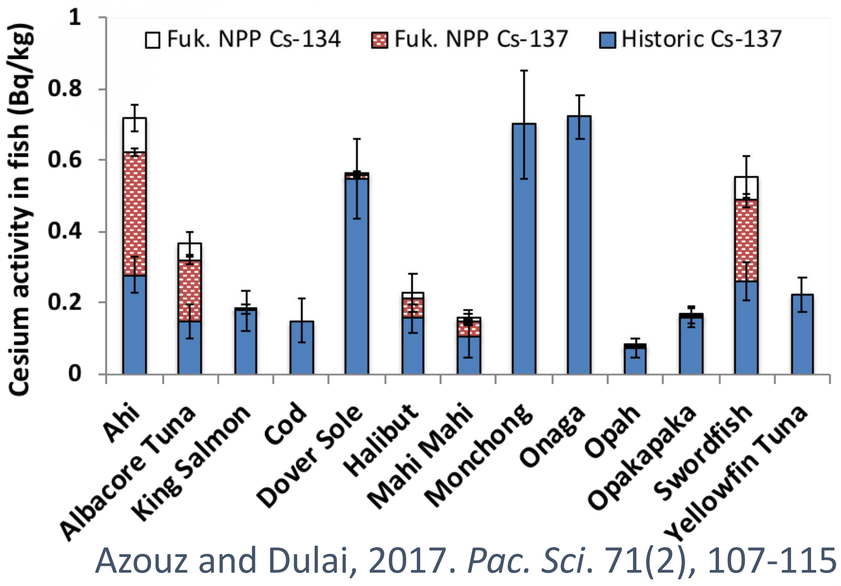
^{134}Cs was not detected in any coastal samples collected on Oahu and Hawaii between March 2011 and February 2017. ^{137}Cs activities were 1.4-1.6 Bq m^{-3}, same as the pre-2011 baseline of ^{137}Cs in the central North Pacific.



Kamenik et al., 2013, *Biogeosciences*, 10, 6045-6042.

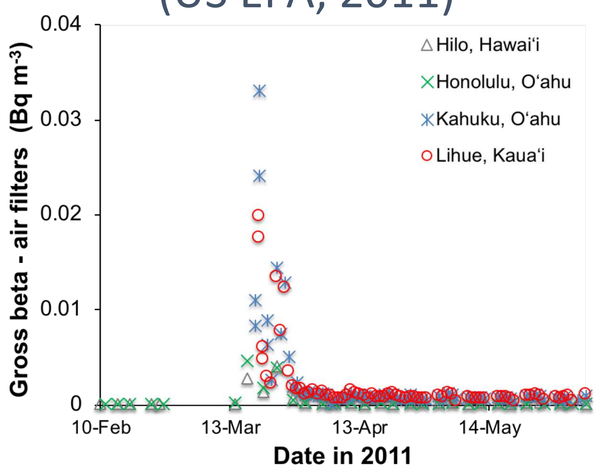
FISH

Several fish samples purchased in local stores in 2015 had ^{134}Cs present: ahi, albacore tuna, swordfish, halibut, and mahi mahi. Human consumption of these fish would contribute a committed effective dose of 1-230 nSv/yr from cesium.

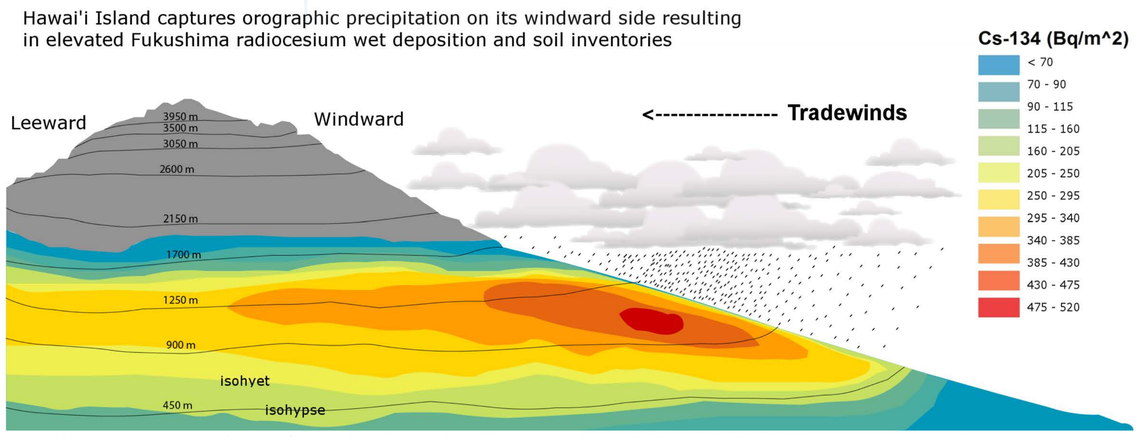


Azouz and Dulai, 2017. *Pac. Sci.* 71(2), 107-115.

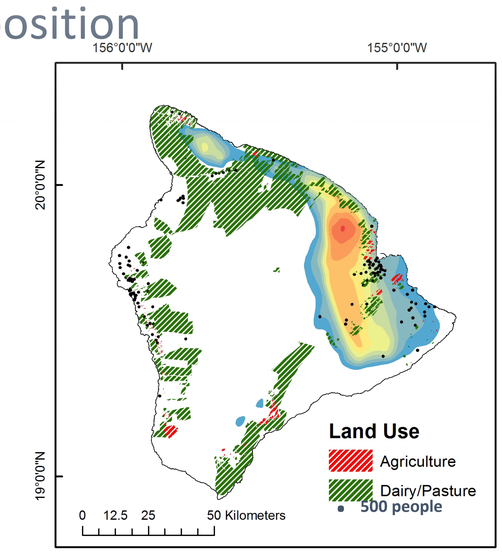
AIR Radiation on air filters (US EPA, 2011)



SOIL Cesium inventories in soil derived from wet deposition



McKenzie and Dulai, 2017, J.Env.Rad. 180, 106-113.



An estimated 9% of Hawaii's population resided in areas that had measurable radiocesium fallout in 2011. Wet deposition facilitated by rain between March 19 and April 4, 2011 was a source of cesium in soil and vegetation. ^{134}Cs was detected in local milk samples (Hawaii Department of Health, 2011), which can be explained by pastures receiving cesium from wet deposition.

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