Calibrated CTD salinity and oxygen and Niskin bottle water samples from the R/V Ka'imikai-o-Kanaloa KOK1108 cruise in June 2011 in the Northwest Pacific Ocean (Fukushima Radionuclide Levels project)

Website: https://www.bco-dmo.org/dataset/3566
Version: 20 October 2011
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Project
» Establishing Radionuclide Levels in the Atlantic and Pacific Oceans Originating from the Fukushima Daiichi Nuclear Power Facility (Fukushima Radionuclide Levels)

Contributors	Affiliation	Role
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Dataset Description

Calibrated CTD measurements of salinity and oxygen at water sample depths and Niskin bottle water samples of salinity and oxygen.

Potential temperature and density were derived from calibrated CTD measurements.

Data Processing Description

Salinity samples were analyzed using a salinometer.

Oxygen samples were analyzed using Winkler titration method.

Measurements were merged with CTD measurements recorded at the same depth.

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Data Files

File
Niskin_bottle_samples.csv (Comma Separated Values (.csv), 96.57 KB) MD5:782bcf7a05d2b16cc4cb3b8016283437 Primary data file for dataset ID 3566

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Parameters

Parameter	Description	Units
sal_cal	salinity from CTD sensor calibrated to Niskin water samples	PSU
O2_cal	oxygen from CTD sensor calibrated to water samples	milliliters/liter
temp	temperature	degrees C
potemp	potential temperature	degrees C
press	pressure	decibars
depth	sample depth	meter
o2_nis	Dissolved oxygen from Niskin bottle sample	milliliters/liter
sal_nis	Salinity from Niskin bottle sample	PSA
sigma_0	potential density	kilograms/meter^3
cast	cast number	dimensionless
event	Event id	dimensionless
date	Date of cast. format: YYYYmmdd	unitless
time	Time of cast	hhmm
lat	latitude of cast	degrees
lon	longitude of cast	degrees
prmax	maximum pressure recorded during cast	decibars
bot_Nis	Niskin bottle number	dimensionless

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Instruments

Dataset-specific Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

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Deployments

KOK1108

Website	https://www.bco-dmo.org/deployment/58727
Platform	R/V Ka`imikai-O-Kanaloa
Report	http://bcodata.whoi.edu/Fukushima/Fukushima_KOK1108_dailyBlog.pdf
Start Date	2011-06-04
End Date	2011-06-19
Description	The purpose of the 16 day KOK1108 cruise aboard the University of Hawaii research vessel Ka'imikai-o-Kanaloa was to study the fate of radiation released into the ocean from the Fukushima Daiichi nuclear power plant that was badly damaged by a tsunami on March 11, 2011.

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Project Information

Establishing Radionuclide Levels in the Atlantic and Pacific Oceans Originating from the Fukushima Daiichi Nuclear Power Facility (Fukushima Radionuclide Levels)

Website: http://www.whoi.edu/page.do?pid=67796

Coverage: Northwest Pacific Ocean

The March 11, 2011 earthquake in Japan and the subsequent tsunami damaged and disrupted cooling systems at the Fukushima Daiichi nuclear power facility causing contamination of land and seas surrounding the site, as well as food supplies and drinking water. Small but measurable quantities of radioactivity have been detected in the atmosphere over the United States, including aerosol samples collected at the Woods Hole Oceanographic Institution, where I-131 was seen to increase to detectable levels as of March 21-22, 2011.

With major funding from the Moore Foundation, as well as a contribution from the National Science Foundation through a 2011 Grant for Rapid Response Research (RAPID) and support from the Woods Hole Oceanographic Institution, collaborating investigators from the United States, Japan, Spain, Monaco, and the United Kingdom were able to obtain samples off Japan for an early assessment of impacts.

From June 4 through June 19, 2011, a research cruise was carried out aboard the RV Kaimikai-O-Kanaloa, a research vessel operated by the University of Hawaii. During the cruise, hundreds of samples were collected in an area off the coast of Japan as close as 30 kilometers from the Fukushima Nuclear Power Plant and extending as far out as 600 kilometers off shore. The essential components of the program include: radionuclide measurements of water and particles; a radioecological study of biota, especially species at the base of the food chain and key fish species and a physical oceanographic study to characterize transport and water masses. A baseline radionuclide data set for the Atlantic and Pacific was obtained along an east to west network of sampling stations. Three hundred sampling events took place at thirty major stations for a total of more than 1500 samples. Along with 41 CTD stations, bottle samples of salinity, oxygen, radionuclides, and particulates were taken to depths of about 1000 meters. A list of the radionuclides sampled and a sampling summary map is available. One hundred net tows resulted in approximately fifty pounds of biological samples, including plankton and small fish. Daily samples of aerosol were also taken.

Early investigation following an accidental release of man-made radionuclides is key to understanding the magnitude of the release and the relationship to public health issues The research results also set the stage for the use of the longer lived radionuclides as tracers in subsequent studies by the community to understand ocean processes.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1136693
Gordon and Betty Moore Foundation (GBMF)	unknown Fukushima Radionuclide Levels Moore

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