

SeaGlider dive data from the Oxygen Minimum Zone off Concepcion Chile; 2009-2011 (MI-LOCO project)

Website: <https://www.bco-dmo.org/dataset/485534>

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Project

» [Microbial Initiative in Low Oxygen areas off Concepción and Oregon](#) (MI-LOCO)

Contributors	Affiliation	Role
Pizarro, Oscar	Universidad de Concepcion (UdeC)	Principal Investigator
Ramirez, Nadin	Universidad de Concepcion (UdeC)	Contact
Nahorniak, Jasmine	Oregon State University (OSU-CEOAS)	Data Manager
Gegg, Stephen R.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

Glider dive profile data from the oxygen minimum zone off the Chilean coast

Glider deployments all start near station 18 (-36.513 N, -73.129 E)

dive, date, time, lat, lon, press, temp, sal, sigma_t, cond, O2, chl_a, turb

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Data Files

File
GLIDER_CHILE_DIVES.csv (Comma Separated Values (.csv), 160.16 MB) MD5:7f6a35311504af9bb902694449167098
Primary data file for dataset ID 485534

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Parameters

Parameter	Description	Units
Deployment_Id	Glider Deployment Id	text
dive	dive number	dimensionless
date	date (GMT)	YYYYMMDD
time	time (GMT)	HHMM
lat	latitude (negative denotes South)	decimal degrees
lon	longitude (negative denotes West)	decimal degrees
press	pressure	decibars
temp	temperature	degrees Celsius
sal	salinity	dimensionless
sigma_t	sigma-t (density)	kilograms / meter ³
cond	conductivity	siemens/meter
O2	dissolved oxygen concentration	milliliters/liter
chl_a	chlorophyll a	micrograms/liter
turb	turbidity	Nephelometric Turbidity Units
Glider	Name of the deployed Seaglider	text

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Instruments

Dataset-specific Instrument Name	Seagliders Violeta and Gladis
Generic Instrument Name	Seaglider
Dataset-specific Description	Seaglider Image 1 Seaglider Image 2
Generic Instrument Description	The Seaglider is an autonomous underwater vehicle developed through a collaboration between The Applied Physics Laboratory -University of Washington and the University of Washington School of Oceanography. These small, free-swimming vehicles can gather conductivity-temperature-depth (CTD) data from the ocean for months at a time and transmit it to shore in near-real time via satellite data telemetry. Seagliders make oceanographic measurements traditionally collected by research vessels or moored instruments. They can survey along a transect, profile at a fixed location, and can be commanded to alter their sampling strategies throughout a mission.

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Deployments

glider_Chile_201006

Website	https://www.bco-dmo.org/deployment/59065
Platform	Seaglider Gladis
Start Date	2010-06-26
End Date	2010-07-09
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201009

Website	https://www.bco-dmo.org/deployment/59066
Platform	Seaglider Gladis
Start Date	2010-09-25
End Date	2010-10-06
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201011

Website	https://www.bco-dmo.org/deployment/59067
Platform	Seaglider Gladis
Start Date	2010-11-05
End Date	2010-11-26
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201101

Website	https://www.bco-dmo.org/deployment/59069
Platform	Seaglider Violeta
Start Date	2011-01-19
End Date	2011-02-03
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201103

Website	https://www.bco-dmo.org/deployment/59070
Platform	Seaglider Violeta
Start Date	2011-03-25
End Date	2011-04-12
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201107

Website	https://www.bco-dmo.org/deployment/59071
Platform	Seaglider Violeta
Start Date	2011-07-30
End Date	2011-08-15
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

glider_Chile_201212

Website	https://www.bco-dmo.org/deployment/59068
Platform	Seaglider Gladis
Start Date	2012-12-04
End Date	2012-12-12
Description	One in a series of Chile glider deployments associated with the MI-LOCO Project

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Project Information

Microbial Initiative in Low Oxygen areas off Concepción and Oregon (MI-LOCO)

Website: <http://mi-loco.coas.oregonstate.edu/>

Coverage: Along the Oregon Coast, USA (44.25 N, 124.25 W), and off the coast of Concepción, Chile (36.513 S, 73.129 W)

Two Oxygen Minimum Zones are studied in this project. One is along the Oregon Coast, USA (44.25°N, 124.25°W), and the other is off the coast of Concepción, Chile (36.513°S, 73.129°W).

Microbial Initiative in Low Oxygen areas off Concepción and Oregon

Although Eastern Boundary Current Ecosystems (EBCE) represent less than 5% of the ocean's surface, they

support regions of high biological activity that contribute significantly to global elemental cycles. Of particular interest in these regions is the strong role that microbial assemblages play in the production and transport of organic matter from the well-lit surface layers into the deeper ocean environment where it is remineralized.

Naturally occurring regions of hypoxia found along the EBCE support microbial communities that strongly affect marine and global biogeochemical cycles. Some of these largest regions, also known as Oxygen Minimum Zones (OMZs), are found in the upwelling areas of these EBCE along the North and South Pacific Ocean where their intensity, thickness, and temporal stability varies as a function of latitude.

With the support of the Gordon and Betty Moore Foundation (GBMF, Palo Alto, California), a project was proposed to study the OMZ along the coast of Oregon-USA and Concepción-Chile.

With this study we will understand the spatial and temporal variability of the OMZ along both the Oregon and Concepción regions, and their associated mechanisms, by integrating Physical, Biogeochemical, Microbial, and Paleo-oceanography. The outcome of the proposed effort will allow us to identify similarities and distinctions between the microbial assemblages inhabiting both regions, characterize physical and biogeochemical seasonal patterns in the development and maintenance of hypoxic zones over both shelves, and determine the long term changes in the seasonal fluctuation of oxygen concentration over the shelves with the use of paleo proxies.

Our study is aimed at developing databases to:

- compare the marine microbial assemblages associated with the seasonal hypoxia observed on the continental shelf off Concepción, Chile, and Oregon, USA, and
- assess potential use of paleoceanographic approaches to characterize the interannual and long-term variability in local oceanographic physical, chemical, and biological conditions driving the development of these hypoxic coastal environments.

This project is an integrated effort between researchers at Oregon State University (OSU), Universidad de Concepción (UdeC), Aarhus University (AU), Massachusetts Institute of Technology (MIT), and the University of Pennsylvania (Penn). Results from this proposed effort will significantly complement ongoing marine microbial and biogeochemical studies supported by the Agouron Institute in the permanent OMZ off northern Chile and Peru ([ESP-OMZ Website](#)).

Centro de Estudios Oceanográficos en el Pacífico Sur-oriental ([COPAS Website](#))

El Laboratorio de Procesos Oceanográficos y Clima ([PROFC Website](#))

Funding:

Gordon and Betty Moore Foundation (GBMF) Grant # 1661 (11/01/2008 to 11/01/2012)

Justification for using OCE-1260164 for COPAS and MILOCO Written by Ricardo Letelier:

There are two connections from OCE that support the inclusion of COPAS and data in BCO-DMO, as the data relates to OCE. Because COPAS is one of the longest oceanographic biogeochemical/physical time-series in South America, the data generated by this program is useful for time-series comparative studies. As such, some of us - myself included - are interested in comparing general temporal patterns and trends. Hence, we could use our present HOT time-series grant to support this effort in order to access the data.

The second one is the connection with the work of Ed Delong as part of MI_LOCO and C-MORE. The microbial diversity analysis, as a function of biogeochemical gradients is an integral part of both projects. One of the C-MORE cruises took place in the OMZ off Chile and the data collected by MI-LOCO allows us to place our results into a broader temporal context.

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Funding

Funding Source	Award
Gordon and Betty Moore Foundation (GBMF)	GBMF1661

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