1. DATA AND INFORMATION TYPES
A. Provide a contextual description of the data stream.

Glider observations are supported collaboratively by MBARI, Scripps Institute of Oceanography and CeNCOOS with funding from NOAA and the State of California. CeNCOOS has four actively deployed gliders, and eight completed glider missions.

Four active gliders are maintained through the CeNCOOS Data System: 66.7, 56.7, Trinidad Head, Spray, and Nemesis. Each of these are described below.

Glider 66.7

A glider continuously transects CalCOFI Line 66.7 between Monterey Bay and 500 km offshore to the southwest. Gliders have been collecting observations along this track since 2007.

Glider 56.7 (Pt. Arena)

A glider continuously transects CalCOFI Line Line 56.7 (Pt. Arena) between Bodega Bay and 500 km offshore to the southwest. Gliders have been collecting observations along this track since 2019.

Trinidad Head

The Trinidad Head glider line is operated by Oregon State University and is jointly funded by CeNCOOS and NANOOS. This glider continuously transects from approximately 10km offshore of Trinidad Head to about 300 km offshore, repeating the line every 15-20 days. Gliders have been collecting observations along this track since late 2014.

SPRAY

The Naval Postgraduate School SPRAY glider has been deployed for short-term and ongoing experiments in Monterey Bay. The U.S. Navy funds for these glider deployments and they are deployed by the Naval Postgraduate School (NPS) . The data processing is handled by Scripps Institute of Oceanography and is published by them to the IOOS Glider DAC.

Nemesis

This glider transects offshore of Monterey Bay with a variable track. The glider is sporadically deployed, with the latest deployment from November 2017 to January 2018. This glider is funded by Teledyne Webb. Data were supplied to CeNCOOS and CeNCOOS publishes the data to the IOOS Glider DAC.

UCSC

These historic gliders were used by the University of California, Santa Cruz in the Monterey Bay in coordination with MBARI as part of the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) project. Data were provided to CeNCOOS, published

the data to the IOOS Glider DAC. These were funded by UCSC and MBARI. NOAA ECOHAB project NA11NOS4780030

B. How many station locations are there for this data stream?
There are four active gliders with the following deployments:

Mission	Location	Begin	End
Line 66.7	Monterey Bay / Offshore	2007	Ongoing
.Line 56.7	Bodega Bay/ Offshore	2019	Ongoing
Trinidad	Trinidad Head / Offshore	2015	Ongoing
NPS Spray G34	Monterey Bay Area	April 2017	Ongoing
NPS Spray G29	Monterey Bay Area	April 2017	Ongoing

Complete glider missions:

Mission	Location	Begin	End
UCSC 294	UCSC 294 ECOHAB / CANON	2015-05	2015-06
UCSC 260	UCSC 260 ECOHAB / CANON	2015-05	2015-06
NPS SPRAY Glider 34	Monterey Bay Area	2013-08-29	2013-10-27
NPS SPRAY Glider 29	Monterey Bay Area	2013-08-29	2013-10-27
BENEX SPRAY 2011	Monterey Bay Area	2011-08-16	2011-10-27
Nemesis	Monterey Bay Area	2017-11	2018-10

C. What are the specific variables of the data.
The glider variables depend upon the payload. All gliders include time, sea_water_electrical conductivity, sea_water_practical_salinity, sea_water_velocity_u_component, sea_water_velocity_v_component, latitude, longitude, sea_water_pressure, sea_water_depth. A glider may also include mass_concentration_of_oxygen_in_sea_wate, mass_concentration_of_chlorophyll_in_sea_water, acoustical backscatter and optical backscatter at various wavelengths.

D. Provide information about the sampling platform or instrumentation.
The Line 66.7and 56.7 gliders were developed by the Scripps Institute of Oceanography at the University of California, San Diego. The gliders are equipped with a Seabird conductivity, temperature, and depth (CTD) instrument, a fluorometer, a dissolved oxygen

sensor, and an acoustic doppler current profiler (ADCP). [More information about Spray gliders.](#)

The Naval Postgraduate School deployments use a Spray gliders is equipped with a Seabird CTD. The gliders are currently episodically deployed by MBARI as research and development platforms for pH sensors.

The Trinidad line uses a seaglider developed by the Applied Physics Lab (APL) at the University of Washington. This glider is equipped with a Seabird CTD, dissolved oxygen sensor, and WET labs fluorometer and optical backscatter sensor. [More information about Seaglider](#).

The Nemesis deployments use a Teledyne Webb Slocum glider, equipped with a CTD, dissolved oxygen sensor, and a fluorometer and optical-backscatter sensor.
The UCSC deployments used a Teledyne Webb Slocum glider, equipped with a CTD and a three-wavelength fluorometer. [More information about Teledyne Slocum gliders.](#)

2. DATA PATHWAY

A. Is a data sharing agreement required?

The data may be used and redistributed for free but is not intended for legal use, since it may contain inaccuracies. Neither the data Contributor, ERD, NOAA, nor the United States Government, nor any of their employees or contractors, makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness, of this information.

B. In which format(s) was data received by CeNCOOS?

Teledyne binary files (Nemesis), netCDF(Trinidad), Postprocessed netCDF(Spray, Line 66.7)

C. How can the information be accessed?

The data are available through the CeNCOOS data portal, where it can be downloaded or explored through interactive visualizations (http://l.axds.co/2FsVzrI). Data are available for download from four unique access points:
- ERDDAP
- CSV (raw and profile)
- JSON
- NetCDF

D. What file formats will be used for sharing data, if different from original?

Data are shared through the CeNCOOS ERDDAP and available for download in CSV, JSON, or NetCDF formats. Data are also available for exploration in the CeNCOOS portals via interactive, graphical visualizations.

E. Describe how the data is ingested (e.g. the flow of data from source to CeNCOOS data portals) and any transformations or modifications made to share data in the CeNCOOS data portal.

All gliders are issued WMO numbers to permit data sharing via NOAA/IOOS. Data are telemetered via Iridium and Argos.

For Nemesis and UCSC glider deployments, data are received from Teledyne as a teledyne binary file. Binary files are transformed into a netCDF that meets the requirements to be submitted to the IOOS NGDAC.

Data are submitted via FTP to the IOOS NGDAC for real-time data assimilation, distribution, and archiving.

For Trinidad glider deployments, data are received via FTP from Oregon State University as netCDF files. Data is transformed into netCDF that meets the requirements to be submitted to the IOOS NGDAC. Data are submitted via FTP to the IOOS NGDAC for real-time data assimilation, distribution, and archiving.

SPRAY and Line 66.7 glider deployments are submitted directly to the IOOS NGDAC from University of California, San Diego to the data providers.

Following curation and quality control at IOOS NGDAC, deployments are ingested into the CeNCOOS portal from the IOOS NGDAC ERRDAP server using the .ncCF response type for visualization and presentation in the portals. Data are then hosted on CeNCOOS ERDDAP servers.

F. What metadata or contextual information is provided with the data?
Metadata is available from the glider pages in the CeNCOOS data portal. Example link:
https://erddap.sensors.ioos.us/erddap/info/sp028_20140605t170300/index.html

G. Are there ethical restrictions to data sharing?
No

   a. **If so, how will these be resolved?**
     N/A

H. Who holds intellectual property rights (IPR) to the data?

CeNCOOS and Scripps and MBARI have IPR for line 66.7 and 56.7 sprays. Navy Spray IPR is shared by Scripps, the Naval Postgraduate School and MBARI. Seaglider (Trinidad line) IPR is shared by CeNCOOS, NaNOOS, and Oregon State University. UCSC glider IPR is held by the University of California, Santa Cruz. Teledyne Webb (Nemesis) glider IPR is held by Teledyne Webb.

I. **Describe any effect of IPR on data access.**

   None, data are public.

3. **DATA SOURCE AND QUALITY CONTROL**

A. **Indicate the data source type (i.e. Federal, Non-Federal, University, State Agency, Local Municipality, Military Establishment (branch), private industry, NGO, non-Profit, Citizen Science, Private individual)**
   University (Line 66.7, 56.7, Trinidad), Federal (SPRAY), Private (Nemesis)

   a. **If Federal data source, were changes applied to the data?**
      No

   b. **If Yes, describe any changes to the data that require documentation?**
      N/A

B. **Indicate the data reporting type (e.g. real-time, historical).**
   Near real-time(NPS, Line 66.7, 56.7, Trinidad, Nemesis), Historic (UCSC, BENEX)

C. **If real-time, list the QARTOD procedures that are currently applied.**
   N/A

D. **If real-time, list the QARTOD procedures that are planned for implementation.**
   N/A

E. **What is the status of the reported data? (e.g. raw, some QC, incomplete, delayed mode processed but not QC'd)**
   Some QC (by provider or IOOS Glider DAC)

F. **Describe the data control procedures that were applied by the originator.**
   Various procedures, depending on the provider.

   The IOOS Glider DAC defaults to whatever checks the glider operator performs since they have local knowledge of the operating environment. If the providers do not perform checks and submit the glider profiles without QC, the DAC provides an automated process to do the following required checks on the Temperature and Salinity observations:

   1.Timing/Gap Test - Required
   2. Syntax Test - Required
   3. Location Test - Required
   4. Gross Range Test - Required
   5. Pressure Test - Required

   a. **Provide a link to any documented procedures.**

NGDAC Documentation

G. Describe the data control procedures that were applied by CeNCOOS.
None

    a. Provide a link to any documented procedures.
    N/A

H. List the procedures taken for data that could not be QC'd as directed.
Data are presented as they are received from the US IOOS NGDAC.

4. STEWARDSHIP AND PRESERVATION POLICIES
A. Who is responsible for long-term data archiving?
US IOOS NGDAC

B. Which long-term data storage facility will be used for preservation?
US IOOS NGDAC

C. Describe any transformation necessary for data preservation.
N/A

D. List the metadata or other documentation that will be archived with the data.
N/A