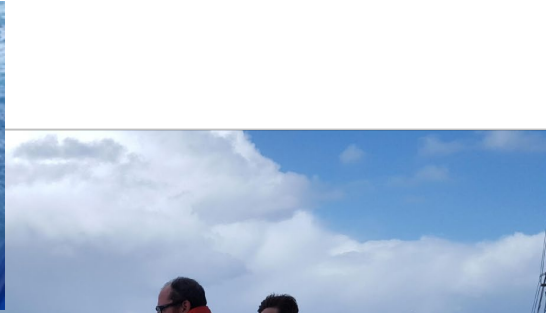




# Sharing Drifting Buoy Data on GTS and WIS2.0



**DBCP**  
**Capacity Building**  
**Workshop**  
 Jakarta, Indonesia  
 6 August, 2024



Presented By  
 Mr. Lance Braasch  
 Research and Development Engineer IV  
 Lagrangian Drifter Laboratory  
 Scripps Institution of Oceanography

DBCP Vice-Chair, DBCP TT-Data Management Co-Chair



Scripps Institution of Oceanography's

**LAGRANGIAN DRIFTER**  
**LABORATORY**

# The Lagrangian Drifter Lab

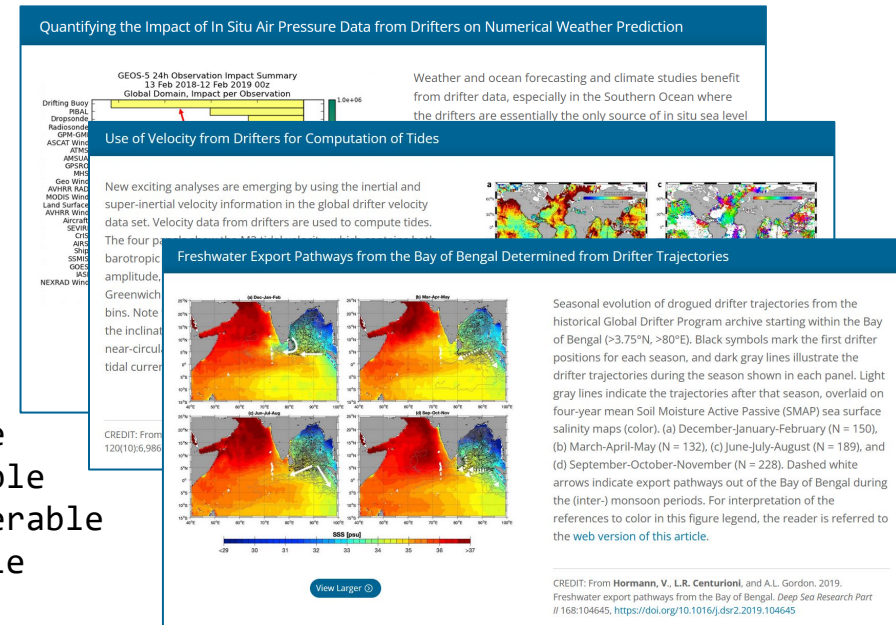
Director: Dr. Luca Centurioni, PI of the Global Drifter Program

The Lagrangian Drifter Laboratory (LDL) is a team of Scientists, Engineers, Technicians, Coordinators, students and external collaborators in support of the end-to-end use of Lagrangian Drifter Technology and for promoting the advancement of air-sea interaction science (1,200+ paper published resulting from the FAIR-O data approach)

## ACTIVITIES

Generation of scientific publications and products; Scientific advancements and applied science; Education and Outreach

- Development of new and existing drifter technologies
- Organization of scientific field campaigns
- Data management and analysis
- Peer-reviewed publications with associated DOI and FAIR-O dataset



Findable  
Accessible  
Interoperable  
Re-usable  
Open

### SURFACE VELOCITY PROGRAM BAROMETER (SVPB) DRIFTER

**Technical Description**

- 35 cm sphere surface float
- GPS-based tracking
- Iridium Short Burst Data (SBD) telemetry
- Sea surface temperature ( $\pm 0.05$  K accuracy)
- Sea level barometric pressure sensor ( $\pm 0.4$  hPa accuracy)
- Holey sock drogue centered at 15 m depth
- Variable sampling rate down to 5 minutes
- Two-year lifespan

> Download technical illustration (312 KB pdf)

### DIRECTIONAL WAVE SPECTRA BAROMETER DRIFTER (DWSBD)™

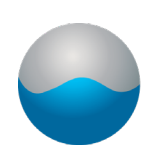
**Technical Description**

- 35 cm sphere surface float
- GPS-based tracking and wave engine
- Iridium Short Burst Data (SBD) telemetry
- Onboard datalogger with up to 16 GB of storage
- Fourier coefficients  $a_0, a_1, b_1, a_2, b_2$
- 1/256 Hz bandwidth from 0.03-0.50 Hz
- Sea level barometric pressure sensor ( $\pm 0.4$  hPa accuracy)
- User-programmable sampling window
- Sea surface temperature ( $\pm 0.05$ °C accuracy)
- Freely drifting or restrained mooring configurations
- One-year lifespan

> Download technical illustration (312 KB pdf)  
> Download data sheet (657 KB pdf)



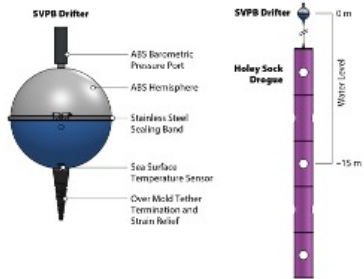
Scripps Institution of Oceanography's  
**LAGRANGIAN DRIFTER  
LABORATORY**



# What Kind of Data and Metadata?

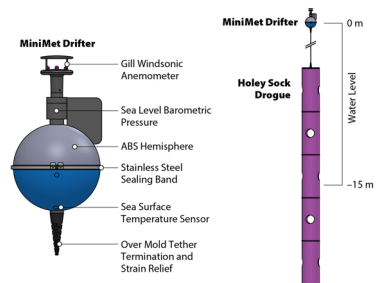
- Off-shore wave conditions
- Ocean surface velocity
- Mixed-layer structure
- Sea level pressure
- Surface winds
- Sea surface temperature

**+ MORE**



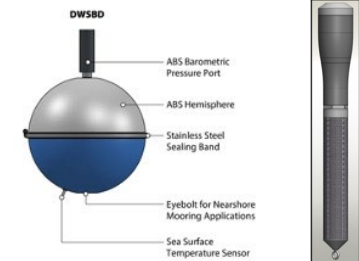
## SVP and SVP-B

Atmospheric data and currents



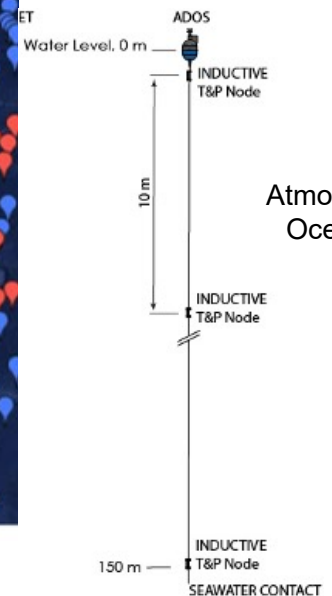
## MiniMet

Atmospheric data and currents



## DWSD-B and A-DWS

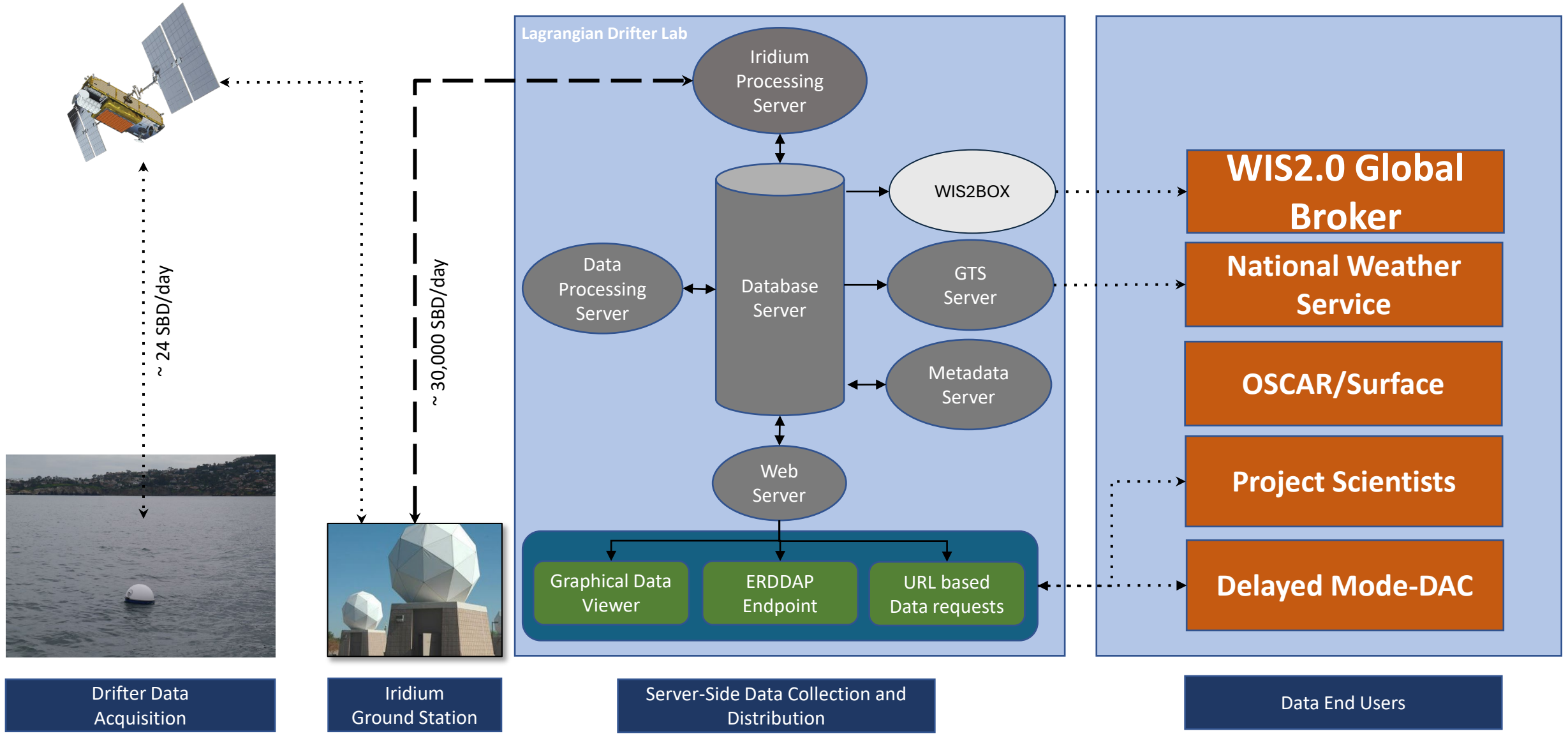
Atmospheric data and waves



## ADOS

Atmospheric and Upper Ocean Heat Content

# Lagrangian Drifter Lab is a Real-Time Data Assembly Center (RT-DAC) in MCDS





# WIS2BOX on Github

- All WIS2BOX code is open source and freely available from the WMO-Information Management's Github repository
- Discussion Forum for end-user questions and engagement with WIS2 experts
- Bug-fixes and patches implemented by WIS2BOX team

wmo-im / wis2box Public

Code Issues 65 Pull requests 5 Discussions Actions Projects Wiki Security

main Go to file Code

maikelimper Issue 641 (#715) 31d174c · last week

.github	reinit zaproxy PR (#708)	2 weeks ago
.zap	reinit zaproxy PR (#708)	2 weeks ago
docs	add GTS-headers using CSV file to ma...	2 months ago
examples	WCMP2 and internal message bus fixe...	6 months ago
grafana	add GTS-headers using CSV file to ma...	2 months ago
loki	refactor and streamline repository (#2...	last year
nginx	add GTS-headers using CSV file to ma...	2 months ago
prometheus	add GTS-headers using CSV file to ma...	2 months ago
tests	add GTS-headers using CSV file to ma...	2 months ago
wis2box-broker	Update create config + 1.0b5 updates...	last year
wis2box-management	Issue 641 (#715)	last week
wis2box-mqtt-metrics-collector	safeguard paho-mqtt to <2 (#621)	7 months ago
wis2downloader	add GTS-headers using CSV file to ma...	2 months ago
.dockerignore	Small fixes (#231)	2 years ago

About

WIS2 in a box is a reference implementation of a WMO WIS2 Node

[docs.wis2box.wis.wmo.int](https://docs.wis2box.wis.wmo.int)

wmo wis wis2

Readme Apache-2.0 license Code of conduct Security policy Activity Custom properties 37 stars 17 watching 14 forks Report repository

Releases 14

1.0b7 Latest on May 6

+ 13 releases

<https://github.com/wmo-im/wis2box>



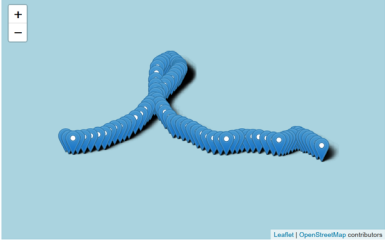
# WIS2BOX: Human and Machine Interfaces

- WIS2BOX is fully customizable by the end user. **Use as much of WIS2BOX as you require.**
- WIS2BOX may be operated by either human graphical user interfaces (GUI) or machine to machine (M2M) process
- All tools that are required for WIS2 network are included with WIS2BOX - **only requirement is a template file** to format your input data into compliant formatting known as BUFR
- Users may manually upload CSV files to the GUI or import data using command line interface automation for **full M2M implementation**

Home / Collections / LDL's drifting marine... / Items jon jsonld

LDL's drifting marine station core data (BUOY) (us-ucsd-scripps-ldl)

Items in this collection.



Warning: Higher limits not recommended!  
Limit: 500 (default) [Next](#)

id	wigos_station_identifier	phenomenonTime
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00
<a href="#">WIGOS_0-22000-0-1301748_20240707...</a>	0-22000-0-1301748	2024-07-07T00:00:00

```
features:  
  0:  
    id: "WIGOS_0-22000-0-1301748_20240707T000000-19"  
    conformsTo: [-]  
    reportId: "WIGOS_0-22000-0-1301748_20240707T000000"  
    type: "Feature"  
    geometry:  
      type: "Point"  
      coordinates: [-]  
    properties:  
      wigos_station_identifier: "0-22000-0-1301748"  
      phenomenonTime: "2024-07-07T00:00:00Z"  
      resultTime: "2024-07-07T00:00:00Z"  
      name: "quality_of_buoy_satellite_transmission"  
      value: 0  
      units: "CODE TABLE"  
      description: "GOOD (SEVERAL IDENTICAL REPORTS HAVE BEEN RECEIVED)"  
    metadata:  
      0:  
        name: "long_station_name"  
        value: null  
        units: "CCITT IA5"  
        description: "LDL DRIFTER"  
      1: {}  
      2:  
        name: "data_buoy_type"  
        value: 1  
        units: "CODE TABLE"  
        description: "STANDARD LAGRANGIAN DRIF...OBAL DRIFTER PROGRAMME"  
      3:  
        name: "data_collection_location_system"  
        value: 8  
        units: "CODE TABLE"  
        description: "IRIDIUM AND GPS"  
      4:  
        name: "time_significance"  
        value: 26  
        units: "CODE TABLE"  
        description: "TIME OF LAST KNOWN POSITION"  
    index: 19  
    fxxyy: "033022"  
    id: "WIGOS_0-22000-0-1301748_20240707T000000-19"
```

WIS2 in a box

Submit CSV Data

1 Select file 2 Preview / validate 3 Select topic hierarchy 4 Authorize / publish 5 Review

Load data

Select CSV file to upload

PREVIOUS NEXT



## Welcome to WIS 2.0 in a box!



### LDL's drifting marine station core data (BUOY) (us-ucsd-scripps-ldl)

Topic: <origin/a/wis2/us-ucsd-scripps-ldl/data/core/weather/experimental/surface-based-observations/buoy>

EXPLORE [📍](#)

OBSERVATIONS [↗](#)

DISCOVERY METADATA [↗](#)



### LDL's drifting marine station recommended data (BUOY) (us-ucsd-scripps-ldl)

Topic: <origin/a/wis2/us-ucsd-scripps-ldl/data/recommended/weather/experimental/surface-based-observations/buoy>

EXPLORE [📍](#)

OBSERVATIONS [↗](#)

DISCOVERY METADATA [↗](#)



# WIS2BOX Pilot lessons learned

## Benefits to Data Providers

- Open-source tool kit for data sharing on WIS2 network, maintained by the WMO
- Opportunity for community engagement and capacity building
- Empowers data providers to share their data
- Includes dashboard to review and plot platform data from WIS2 and access platform metadata from OSCAR/Surface

## Work for the DBCP and Data Providers

- High bar of entry for new users without platform templates
  - BUFR Templates for Moorings (TM315008), Drifters (TM315009) and First5 Waves (TM315010) data on GTS need to be adapted for WIS2.
  - Newly observed parameters may require BUFR template expansion or creation
  - Templates needed for their WIGOS metadata to fully interpret the observed sensor data.
- Detailed platform metadata can enrich existing datasets
  - DBCP GHRSSST Pilot highlighted need for detailed platform metadata and its ability to improve the value of existing datasets for end-users.

