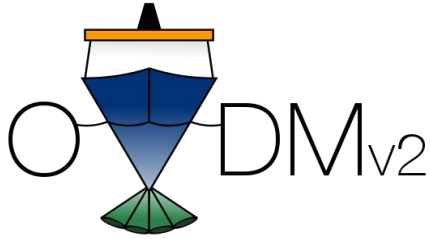




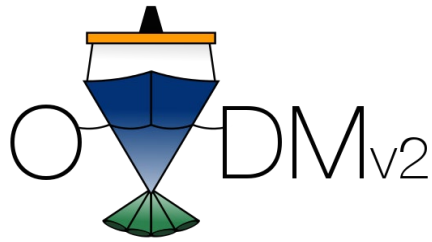
Open Vessel Data Management v2



# Overview

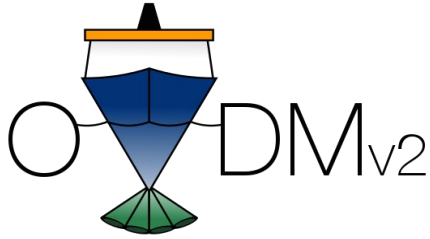
OpenVDM is **NOT** a Data Acquisition System (DAS) i.e. SCS, LDS, UHDAS, Winfrog, OpenRVDAS, SeaSave, SIS, etc

**OpenVDM is a Data Management System**  
It helps marine technicians manage data created by DAS and disseminate that data to scientists and other data consumers



# Core Functionality

- Pulls data files from data acquisition systems located across the vessel to central server.
- Provides to scientists and technicians with safe access to data via SMB and http.
- Creates backup copies of cruise data for scientists, host institutions and archival facilities
- Helps enforce standardized directory structures and file naming conventions
- Informs marine technicians when data problems arise.



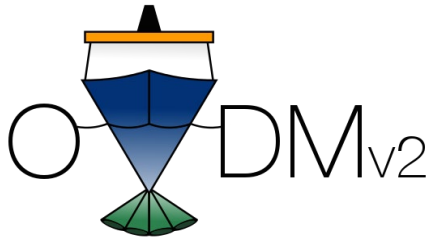
# In a Telepresence Context

## **From the UNOLS presentation on "What it takes to do telepresence":**

- Not enough bandwidth/time to send the raw data.
- Send information, not data.
- Send information needed to make an operational decision that keeps the vessel productive

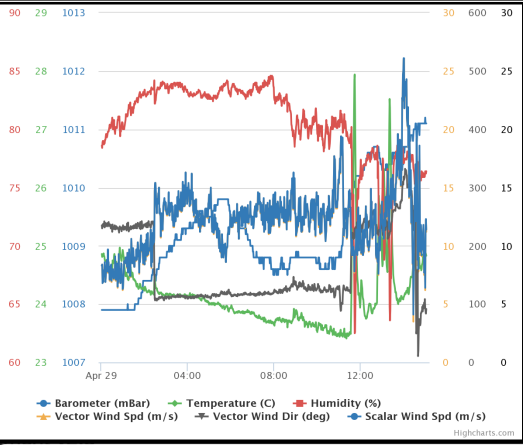
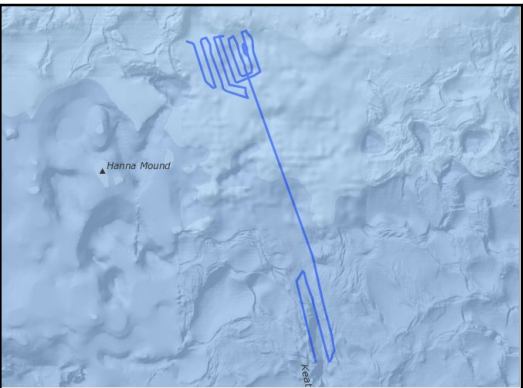
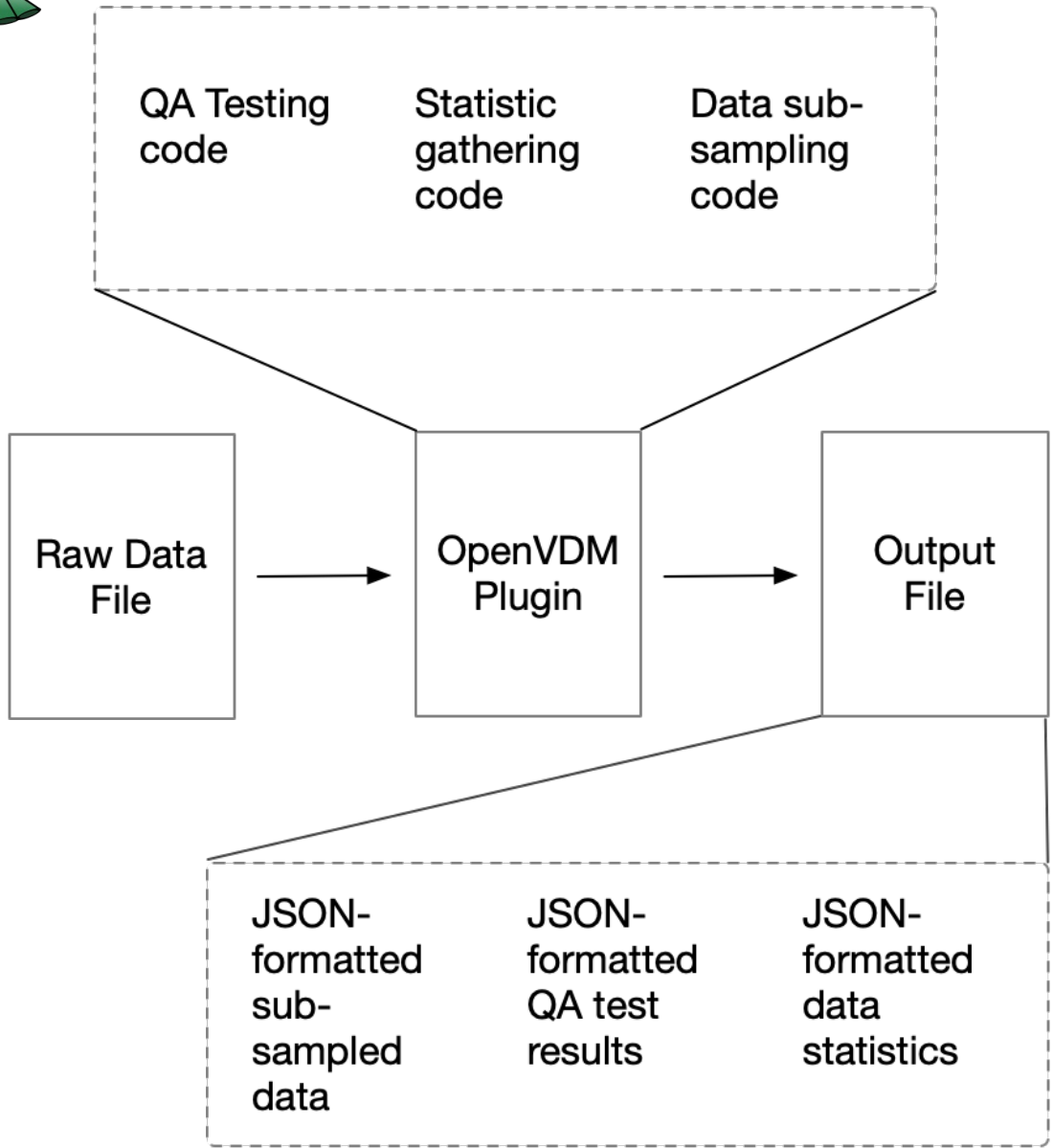
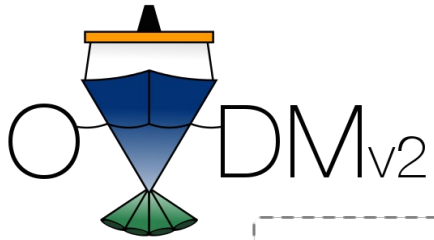
## **What is information and what is data?**

- Data is: the raw files
- Information is: maps, charts, reports, statistics, QA test results



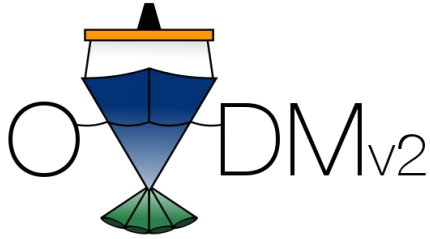
## How OpenVDM can help

- Hooks that allow vessel operators to link data processing subroutines at key milestones throughout a cruise.
- Plugins for reducing complex datasets into simple web-based visuals, for running in-situ QA tests and for collecting file-level statistics
- Priority-based transfers of user-defined files to a shore-based server
- Can be 100% installed, configured and managed over port 80 (http) and port 22 (ssh)



**Stats for POSMV-GGA\_20120428-000000.Raw**

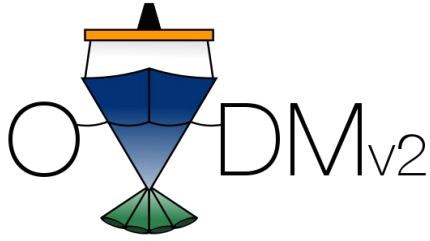
Row Validity:	Valid rows: 100%
Geographic Bounds:	North: 27.633 ddeg, East: -93 South: 26.584 ddeg, West: -9
Velocity Bounds:	Min: 0 kts, Max: 14.4 kts
Velocity Validity:	Valid data values: 99.9983%
Distance Traveled:	202.85 nm
Temporal Bounds:	Start: Sat, 28 Apr 2012 00:00 End: Sat, 28 Apr 2012 23:59:
Delta-T Bounds:	Min: 0.27 seconds, Max: 0.72
DeltaT Validity:	Valid data values: 100%
Number of Satellites:	Min: 5 sats, Max: 11 sats
Horizontal Degree of Precision:	Min: 0.7 , Max: 2.2



# In a Data Archival Context

## **From the RVTEC R2R presentation:**

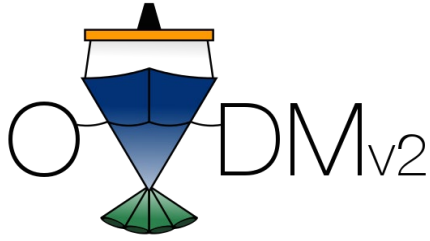
- Consistency in directory structure
- Consistency in file names
- Separated Documentation
- Only contain data from the cruise
- QA Tests
- MD5 checksums
- Removal of sensitive science data



# How OpenVDM can help

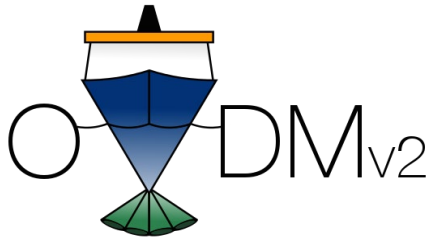
- Consistency is OpenVDM job #1
- Creates the desired cruise data directory structure
- Enforces user defined file naming conventions
- Configure transfers to only pull data files created between specified start/stop dates





## How OpenVDM can help

- QA Tests can be incorporated in to plugins and done in-situ
- Automatically builds MD5 checksums
- Provisions for where scientists should put their potential sensitive data.
- Provisions for automatically building archival copies



# Who is using it?

- R/V Endeavor (URI/GSO) 5yrs
- R/V Falkor, ROV SuBastian (SOI) 5yrs
- R/V Atlantic Explorer (BIOS) 3yrs
- R/V OceanXplorer1/Chimaera ROV (OceanX)  
- Just installed!!!



# Requirements

Operating System: Ubuntu 18.04 LTS

Software Languages: PHP7, Python2.7, JavaScript

Frameworks: NOVA (MVC), Leaflet (GIS), Highcharts (web-charting)

Other software: Gearman (job broker), Supervisor (process manager), MapProxy (map tile proxy)

Can be remotely installed, configured and managed over ports 80 (http) and 22 (ssh)



# How to get it

Source and installation instructions available at:

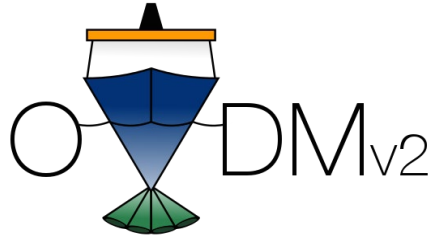
<https://github.com/webbpinner/OpenVDMv2>

My email:

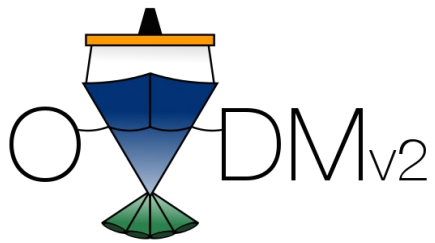
[webbpinner@gmail.com](mailto:webbpinner@gmail.com)

Demo:

<http://openvdm.oceandatarat.org/OpenVDMv2>



# Screenshots



# Main Page

Dashboard - Open Vessel Data ...

138.197.8.27/OpenVDMv2/

Open Vessel Data Management v2.2

Home  
Data Dashboard  
Configuration  
Links

**On** System Status  
**CS1601** Cruise ID  
**143.20 MB** Cruise Size  
**10.57 GB** Free Space

**Incorrect Filenames Detected**

**XBT**

- Vessel/RAW/XBT/CS1401\_XBT05\_130612.EDF
- Vessel/RAW/XBT/CS1401\_XBT05\_130612.RDF

**XBT3**

- Vessel/RAW/XBT\_sshAuthentication/CS1401\_XBT05\_130612.EDF
- Vessel/RAW/XBT\_sshAuthentication/CS1401\_XBT05\_130612.RDF

**XBT2**

- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT05\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT05\_130612.RDF

**Recent Shipboard Data Transfers**

**XBT3 - 2016-10-30 13:47:18 UTC**

- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT001\_130611.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT001\_130611.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT002\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT002\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT003\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT003\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT004\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT004\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT006\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT006\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT007\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT007\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT008\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT008\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT009\_130612.EDF
- Vessel/RAW/XBT\_anonymousRsync/CS1401\_XBT009\_130612.RDF
- Vessel/RAW/XBT\_anonymousRsync/test/CS1401\_XBT001\_130611.EDF
- Vessel/RAW/XBT\_anonymousRsync/test/CS1401\_XBT002\_130612.EDF

**Collection System Transfer Status**

EM302 Multibeam Mapping System (authenticated SMB)	Idle
SCS Underway Data Logger (guest SMB)	Idle
Sippican MK21 XBT (authenticated rsync)	Idle
Sippican MK21 XBT (anonymous rsync)	Idle
Sippican MK21 XBT (ssh server)	Idle

**Cruise Data Transfer Status**

Shoreside Data Warehouse	Idle
Shipboard NAS (SMB Share)	Idle
USB HDD for P.I. (Local Directory)	Idle



# Main Configuration

The screenshot displays the Open Vessel Data Management v2.2 web interface. The browser address bar shows the URL `138.197.8.27/OpenVDMv2/config`. The page title is "Open Vessel Data Management v2.2".

**System Status:** On

**Cruise ID:** CS1601

**Cruise Size:** 143.20 MB

**Free Space:** 10.57 GB

**Navigation:** Home, Data Dashboard, Configuration, Main, Collection System Transfers, Extra Directories, Cruise Data Transfers, Ship-to-Shore Transfers, System, Links.

**Cruise Control:**

- Setup New Cruise
- Run End-of-Cruise Tasks
- Edit Current CruiseID/Start Date

**Maintenance Tasks:**

Task	Action
Rebuild MD5 Summary	Run
Rebuild Data Dashboard	Run
Rebuild Cruise Directory	Run
Re-export the OpenVDM Configuration	Run
Copy PublicData to Cruise Data	Run

**Collection System Transfer Status:**

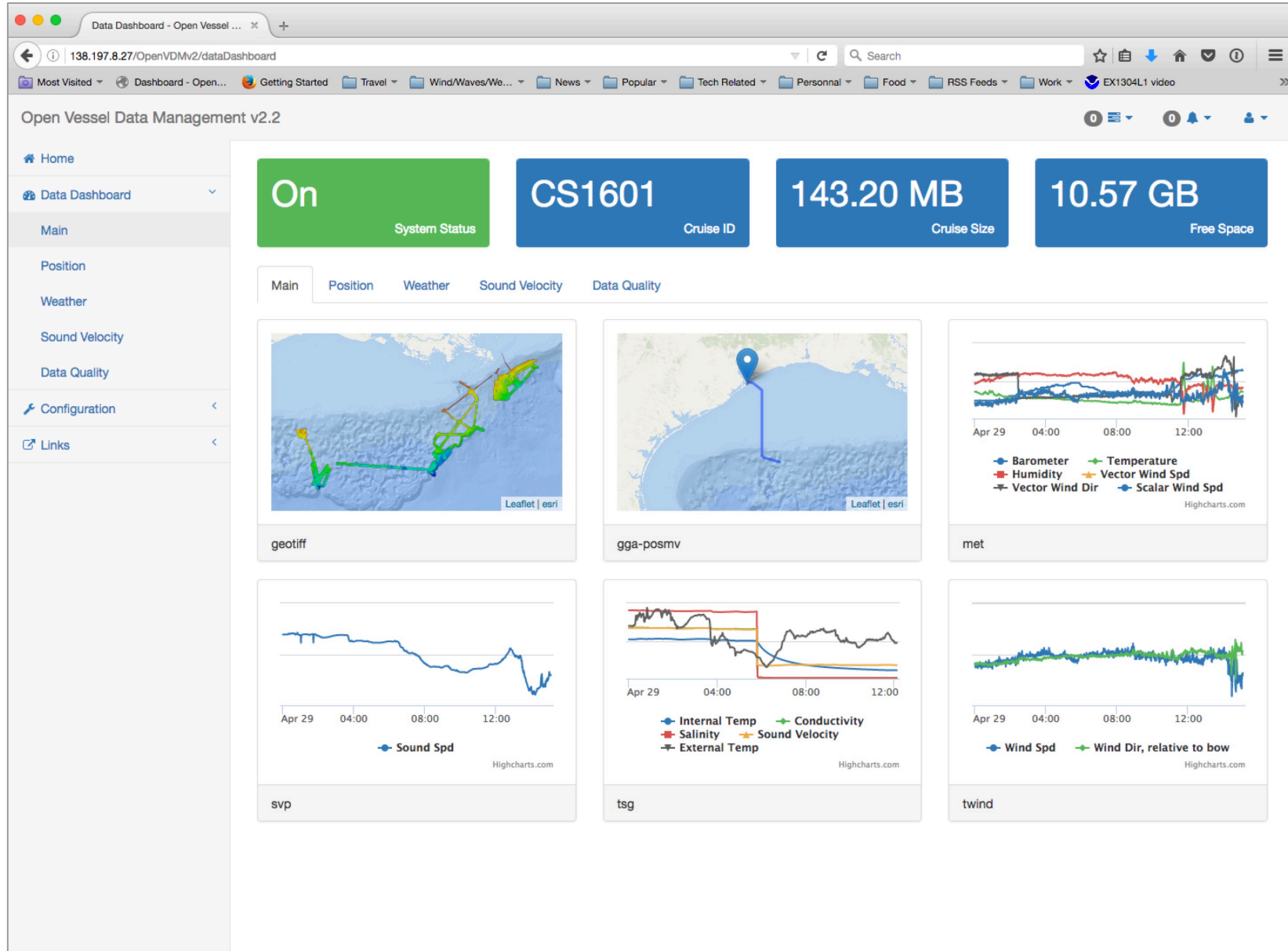
System	Status
EM302 Multibeam Mapping System (authenticated SMB)	Idle
SCS Underway Data Logger (guest SMB)	Idle
Sippican MK21 XBT (authenticated rsync)	Idle
Sippican MK21 XBT (anonymous rsync)	Idle
Sippican MK21 XBT (ssh server)	Idle

**Cruise Data Transfer Status:**

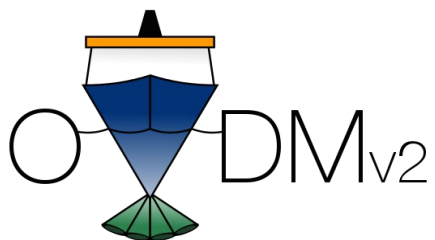
System	Status
Shoreside Data Warehouse	Idle
Shipboard NAS (SMB Share)	Idle
USB HDD for P.I. (Local Directory)	Idle



# Data Dashboard







# GIS Datasets

Position - Open Vessel Data Ma... x

138.197.8.27/OpenVDMv2/dataDashboard/customTab/position

Open Vessel Data Management v2.2

Home  
Data Dashboard  
Main  
Position  
Weather  
Sound Velocity  
Data Quality  
Configuration  
Links

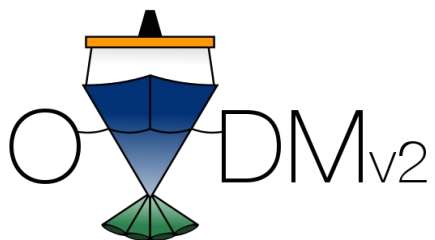
**On** System Status  
**CS1601** Cruise ID  
**143.21 MB** Cruise Size  
**10.57 GB** Free Space

Main Position Weather Sound Velocity Data Quality

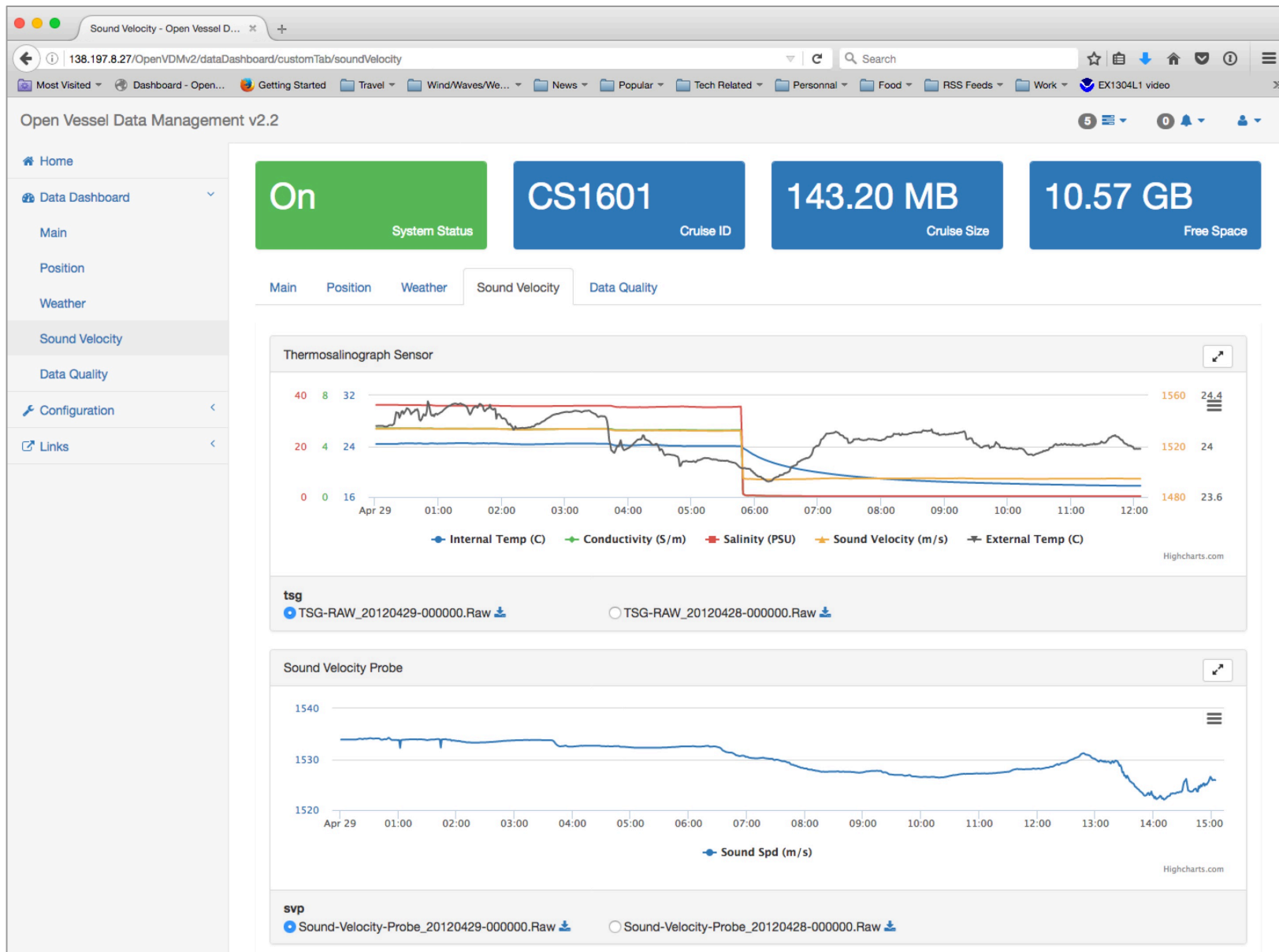
Position

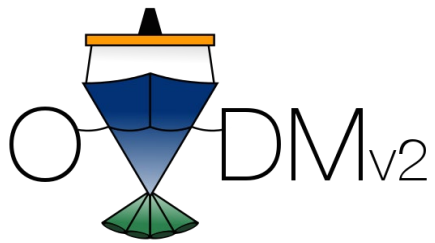
gga-posmv  
 Latest Position  
 POSMV-GGA\_20120429-000000.Raw  
 POSMV-GGA\_20120428-000000.Raw  
geotiff  
 CS1401\_MB\_DLY01\_50m\_WGS84\_20120428.tif

Select All Clear All  
Select All Clear All



# Time Series





# QA Dashboard

Data Quality - Open Vessel Data... x

138.197.8.27/OpenVDMv2/dataDashboard/dataQualityShowFileStats/CS1601/Vessel/RAW/SCS/NAV/POSMV-GGA\_20120428-000000.Raw#gga-pc

Open Vessel Data Management v2.2

- Home
- Data Dashboard
- Configuration
- Links

**On** System Status

**CS1601** Cruise ID

**143.20 MB** Cruise Size

**10.57 GB** Free Space

Main Position Weather Sound Velocity **Data Quality**

### geotiff

Filename	Stats
CS1601/Vessel/PROC/EM302/CS1401_MB_DLY01_50m_WGS84_20120428.tif	Show

Show Totals

### gga-posmv

Filename	Rows	DeltaT	Velocity	Stats
CS1601/Vessel/RAW/SCS/NAV/POSMV-GGA_20120428-000000.Raw	✓	✓	⚠	Show
CS1601/Vessel/RAW/SCS/NAV/POSMV-GGA_20120429-000000.Raw	✓	✓	⚠	Show

Show Totals

### met

Filename	Rows	DeltaT	Vector Wind Dir	Stats
CS1601/Vessel/RAW/SCS/METOC/MET-M01_20120428-000000.Raw	✓	⚠	✓	Show
CS1601/Vessel/RAW/SCS/METOC/MET-M01_20120429-000000.Raw	✓	⚠	✓	Show



# Per-file Statistics

Data Quality - Open Vessel Data... x

138.197.8.27/OpenVDMv2/dataDashboard/dataQualityShowFileStats/CS1601/Vessel/RAW/SCS/NAV/POSMV-GGA\_20120428-000000.Raw

Open Vessel Data Management v2.2

Home  
Data Dashboard  
Configuration  
Links

On

Main Position

geotiff

Filename	Stats
CS1601/Vessel/...	Show

gga-posmv

Filename	Rows	DeltaT	Velocity	Stats
CS1601/Vessel/...	✓	✓	⚠	Show
CS1601/Vessel/...	✓	✓	⚠	Show

met

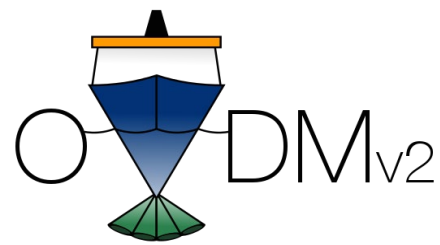
Filename	Rows	DeltaT	Vector Wind Dir	Stats
CS1601/Vessel/RAW/SCS/METOC/MET-M01_20120428-000000.Raw	✓	⚠	✓	Show
CS1601/Vessel/RAW/SCS/METOC/MET-M01_20120429-000000.Raw	✓	⚠	✓	Show

### Stats for POSMV-GGA\_20120428-000000.Raw

Row Validity:	Valid rows: 100%
Geographic Bounds:	North: 27.633 ddeg, East: -93.982 ddeg South: 26.584 ddeg, West: -93.455 ddeg
Velocity Bounds:	Min: 0 kts, Max: 14.4 kts
Velocity Validity:	Valid data values: 99.9983%
Distance Traveled:	202.85 nm
Temporal Bounds:	Start: Sat, 28 Apr 2012 00:00:00 +0000 End: Sat, 28 Apr 2012 23:59:59 +0000
Delta-T Bounds:	Min: 0.27 seconds, Max: 0.72 seconds
DeltaT Validity:	Valid data values: 100%
Number of Satellites:	Min: 5 sats, Max: 11 sats
Horizontal Degree of Precision:	Min: 0.7, Max: 2.2
Altitude:	Min: -6.42 m, Max: 2.48 m
Height WGS84:	Min: 0 m, Max: 0 m

Close

10.57 GB Free Space



# Collection System Transfers

Collection System Transfers - O... x

138.197.8.27/OpenVDMv2/config/collectionSystemTransfers/edit/1

Open Vessel Data Management v2.2

Home | Data Dashboard | Configuration | Links

On System Status | CS1601 Cruise ID | 143.20 MB Cruise Size | 10.57 GB Free Space

Main | Collection System Transfers | Extra Directories | Cruise Data Transfers | Ship-to-Shore Transfers | System

### Edit Collection System Transfer

**Name**  
SCS

**Long Name**  
SCS Underway Data Logger (guest SMB)

**Destination Directory**  
Vessel/RAW/SCS

**Include Filter**  
\*

**Exclude Filter**

**Ignore Filter**

**Skip files being actively written to?**  
 No  Yes

**Skip files last modified before cruise start date?**

### Page Guide

This form is for editing an existing Collection System Transfer within OpenVDM. A Collection System Transfer is an OpenVDM-managed file transfer from a data acquisition system to the Shipboard Data Warehouse.

The **Name** field is a short name for the Collection System Transfer (i.e. WH300). These names should NOT have spaces in them.

The **Long Name** field is a longer name for the Collection System Transfer (i.e. RDI Workhorse 300kHz ADCP ). These names can have spaces in them.

The **Destination Directory** is where the data will be stored within the cruise data directory. This can be a parent directory (i.e. WH300) or a sub-directory (i.e. ADCP/WH300). If a sub-directory is desired use the UNIX-style directory notation '/'.

The **Include Filter**, **Exclude Filter** and **Ignore Filter** are used to specify which files to/not to transfer. These filters use the standard regex structure language (i.e. \*.Raw). Use a single comma (,) to delimitate between filters when multiple filters of a specific type are required (i.e. \*.Raw \*.txt). The **Include Filter** defines what files should be transferred. If nothing is placed here OpenVDM assumes all files in the **Source Directory** should be transferred. The **Exclude Filter** is used to specify files that match the patters defined in the **Include Filter** but that should NOT be transferred. The **Ignore Filter** defines files in the **Source Directory** that should NOT be transferred and should be ignored entirely by OpenVDM.

The **Skip files being actively written to?** option instructs OpenVDM on whether to copy all files in the source directory or to skip any files OpenVDM determines may be actively written to by the data acquisition system (DAS) on the collection system workstation. This option should be selected for DAS software that does not close the active data file between writes (a.k.a. SBE Seasave).

The **Skip files last modified before cruise start date?** option instructs OpenVDM to NOT copy any files in the source directory with a modification date that preceeds the cruise start date.

The **Transfer Type** defines how OpenVDM will transfer the data from the Collection System to the Data Warehouse. **Local Directory** is a transfer of data that is located on