IRLS 2.0 USER GUIDE

This guide is an introduction to IRLS 2.0 and provides an overview of the interface, organizational elements, and many features available in the application. We hope that it will provide valuable information that will help you make the most of IRLS 2.0 and your time offshore with ROPOS.

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Revision History

Date	Description
March 14th, 2011	Original Version
June 21st, 2011	Minor edits

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Introduction

The Integrated Real-time Logging System (IRLS) 2.0 release is a logging tool offered by the Canadian Scientific Submersible Facility (CSSF) to organize and document all of the activities of ROPOS dives in an interactive logbook.

IRLS 2.0 is a powerful annotation tool that brings together framegrabs, digital still pictures, and many other files with flexible organizational elements with a goal of creating a dataset that is tailored to specific user's needs.

This guide is an introduction to IRLS 2.0 and provides an overview of the interface, organizational elements, and many features available in the application. We hope that it will provide valuable information that will help you make the most of IRLS 2.0 and your time offshore with ROPOS.

We are confident that you will find that IRLS 2.0 will make it easier to log ROPOS activities in a way that facilitate review and post-expedition analysis. With this in mind, we would also like to say that we welcome all suggestions to make IRLS 2.0 an even better tool for you.

IRLS 2.0: At-a-Glance

An interactive logbook

In its simplest form, IRLS 2.0 can be thought of as a web-based logbook where every observation is automatically annotated with time, position, and vehicle attitude. It however offers much more such as:

- Several loggers to work together by entering data simultaneously from various stations in a conversation-style interface.
- Observations to be classified with data tags as well as specific dive activities such as samples, video transects, or any type of time series.
- Add descriptive framegrabs from any ROPOS camera or other user-uploaded files such as PDF documents and images that can enhance observations.

Throughout a dive, IRLS 2.0 is continually capturing data from a variety of ROPOS systems and making it available to facilitate the loggers' task of creating a complete and descriptive logbook of the ROPOS dives.

Organize and document all activities of a ROPOS dive

As seen in Figure 1, one of the most powerful feature of IRLS 2.0 is its ability to use several organizational elements and the relationships between them to give the users the ability to clearly represent all of the ROPOS activities during a dive.

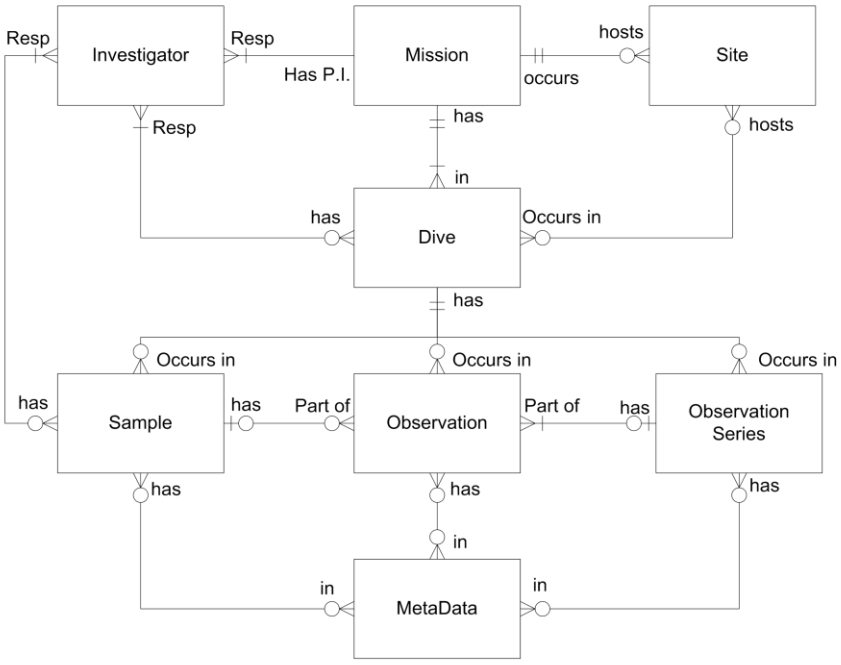

Figure 1: Organizational elements and their relationships.

Getting ready for an expedition

A little planning will go a long way in creating a useful and powerful logbook using IRLS 2.0. While it is possible to use IRLS 2.0 log observations in a simple sequential manner, it does have a variety of organization elements that can truly represent all of the activities you plan on doing with ROPOS.

For example, you may plan an expedition where every dive has several objectives from physical sampling and instrument deployments to video transects. With IRLS 2.0 it is possible to use organizational elements, as seen in Figure 1, to create observation sets containing information pertinent to each activities or research goal. This then allows an investigator the option to find only the observations that are important to him/her without having to scroll through hundreds of other observations taken during that dive or the thousand more taken during the expedition.

Before an expedition, we recommend the creation of a logging strategy that the chief scientist would share with all individuals logging observations. This strategy should clearly explain how the IRLS 2.0 organizational elements would be used during the expedition. Some examples:

- Every descent and ascent is to be logged in an observation series with name “ascent” or “descent” accordingly. Descents end as soon as the bottom is in view; Ascents being as soon as ROPOS leaves the bottom.
- Any observations relating to the deployment or maintenance of an instrument must be tagged with the “Instrument” metadata tag.
- A sample should be created for every suction sample taken. Care should be taken to include as many observations as possible on how the suction sample was taken and what was visibly part of the sample.
- Every sample should be associated with the scientist that requested it.
- Every dive should be associated with all of the sites it visited.

Along with a logging strategy, the chief scientist should compile lists of sites, scientists, metadata, and the various naming schemes to use during the expedition. CSSF can then incorporate these lists into IRLS prior to your expedition.

Please note that the CSSF team can also help you by reviewing your logging strategy, providing suggestions, and answering any questions.

IRLS 2.0: A Closer Look

IRLS 2.0 Interface Overview

IRLS 2.0 is a web-based application. This type of interface is beneficial as it is familiar to any user that has browsed the web before. The main IRLS interface consists of the following main components as seen in Figure 2:

1. The main menu block is always available to navigate the IRLS system.
2. The header with a search box that is always available to search the expedition's observations.
3. The main display area displays the requested data.
4. The secondary information and relationship area shows pertinent information and provides the action shortcuts for editing and deleting elements.
5. The displayed time zone is a reminder that all times are in UTC.
6. The logged-in user displays the user credentials that are currently in use.

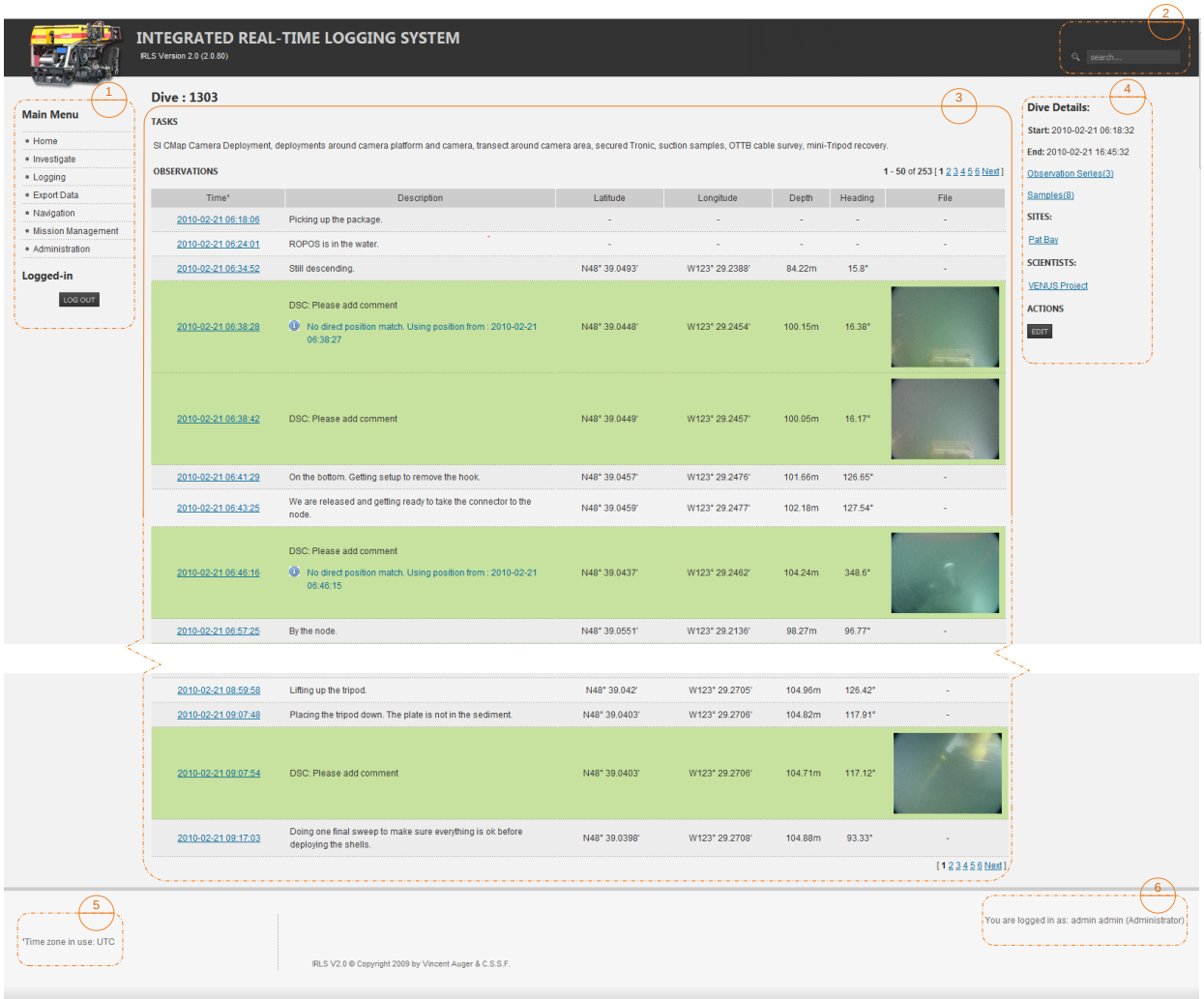

Figure 2: IRLS 2.0 Interface overview. This example uses the dive investigation page.

Organizing Data

Dives

As its name infers, a dive represents a ROPOS dive and is a container that provides all pertinent information on a specific dive. A dive element has the following key attributes: (1) dive number, (2) start and end date, and (3) a brief description of the tasks accomplished during the dive.

A dive can be associated to many scientists and many sites and can contain observations, observation series, and samples.

Sites

A site is a defined work area. For flexibility, a site represents an area of any size and has the following attributes: (1) name, (2) description, and (3) a position (latitude, longitude, and depth).

Using sites can be very useful to identify all dives that took place at a pre-defined site. This is especially useful when looking for information that is pertinent to a specific site.

Sites can be thought of as a geographical metadata tag for the dives. It is possible to use sites in any way that will make data analysis easier for you. For example, it is possible to create a general site, several sites that are contained within that general site or both.

Scientists

The scientist element defines an individual that can be associated to dives and samples. It uses the following attributes: (1) name, (2) address, (3) email, (4) organization, and (5) phone number.

Using scientists is useful when there are several stakeholders in an expedition or dive. For example, several scientists share ROPOS dives during an expedition. During investigation, each scientist could choose to see only the dives that were associated with their name.

Metadata

Metadata element is the simplest element within IRLS. It can be associated with observations, samples, and observations series. The Metadata element consists of two attributes: a (1) name and (2) a description.

As with sites, it is possible to use metadata tags in a variety of ways. A common misstep is to use metadata to tag a group of sequential observation such as a dive descent or ascent; these types of events could often use observation series instead. The observation series can then associate to a single “descent” or “ascent” metadata tag.

Observations

Observations are the core element of IRLS; they represent a point in time observation. An observation consists of two attributes: (1) time taken, and (2) description. IRLS also automatically tags each observation with ROPOS’s position and attitude.

Optionally, an observation can also be associated with a file. Files can be framegrab from any of the connected ROPOS camera or a user-uploaded file such as a PDF or CTD data file.

Files

Files as their name indicate are general digital files such as framegrabs, digital stills, PDFs, binary date, etc… The IRLS system generates several files automatically and allows a logger to associate them with an observation.

It is possible to upload files manually. This is useful in a variety of ways. For example, if you would like to keep a record of the official dive plan, you can attach it as a PDF to an observation at the beginning of every dive. You could also attach a CTD data file to the last observation of a sample, etc…

Observation Series

An Observation series is a group of sequential observations. It can represent a variety of dive activities such as video transects, cable lays, transits, surveys, etc… In its simplest form, observation series create dive subsets containing topic related observations.

Observation series contain the following attributes: (1) date created, (2) date completed, (3) user-defined type, and (4) name. Observation series can be associated with scientists and metadata.

The chief scientist should provide a list of the activities that will be contained within observation series, as well as their associated user-defined types (optional), metadata tags, and the naming scheme prior to the expedition. It is also valuable to establish what kind of observations the loggers must insert for each type of activities represented in a series (e.g., off track, on track, etc...)

Samples

As with observation series, Samples are a container for a subset of observations but they are meant to represent sampling activities only. Samples use the following attributes: (1) sample number, (2) date created, (3) date completed, (4) user-defined quality indicator, and (5) user-defined method.

IRLS assigns a naming scheme for samples; it consists of the dive number and a sequential numerical identifier, e.g., R1213-002. A logger can easily change this name when creating a new sample, it is there for convenience only.

As with Observation series, the chief scientist should identify the activities that will qualify as samples, as well as their associated user-defined methods (optional), quality indicators, metadata tags, and their naming scheme prior to the expedition.

Users

To increase data security the IRLS system has an authentication system comprised of four privilege groups as described in Table 1. At the start of each expedition all chief scientist, loggers, and other IRLS users will need to create an IRLS account to use during a cruise.

Further to providing access to the system, the user account identifies the author of observations and other entries throughout the system. Therefore, if you would like to be able to distinguish the loggers when reviewing the data, avoid sharing a single user account between all users.

Table 1: IRLS 2.0 User Privileges

Privileges group	Privileges
Investigator	Can review all data but is not allowed to modify or delete any
Logger	Investigator privileges and: Can create, modify, and delete: • Observations • Observation series • Samples
Principal Investigator	Logger privileges and: Can create a new dive Create, modify, and delete: • Metadata tags • Scientists • Sites Can export data in CSV, Google KMZ, Zip, and HTML formats
Administrator	Principal Investigator privileges and: IRLS user management Merge or delete dives Other administrative tasks

Activities

This section gives a brief overview on how to perform various activities using the IRLS 2.0 user interface. This section is a "getting started" guide and does not have complete usage procedures.

Since IRLS 2.0 is a web application it is important to be careful when navigating between pages, whenever possible use the provided IRLS 2.0 links over the browser's back and forward buttons.

Mission Management

Accessing the Mission Management Window

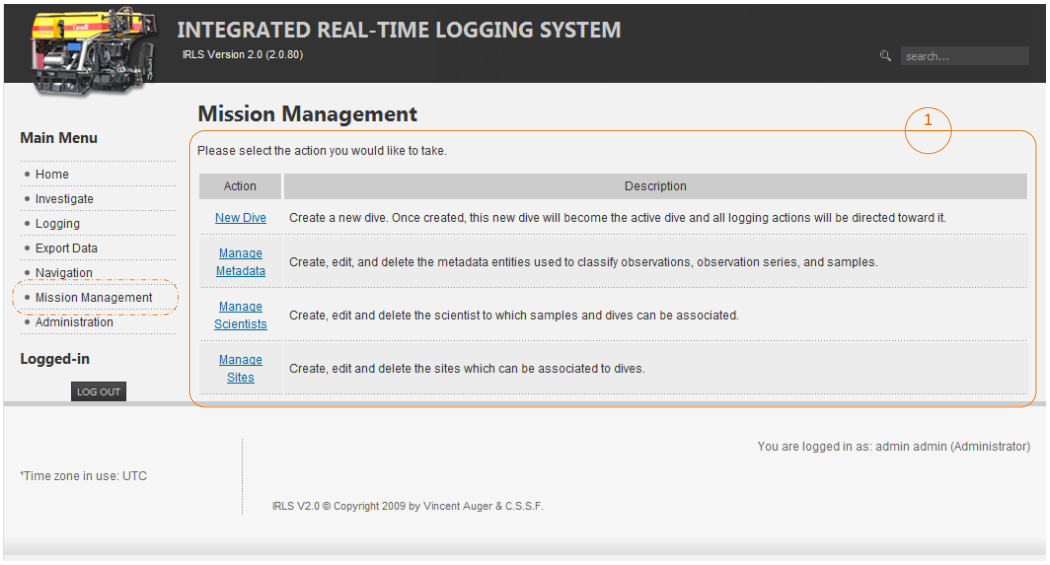

Figure 3: Mission Management

1. Click Mission Management in the main menu as seen in Figure 3.
2. Select the action you would like to take:
    a. New Dive
    b. Manage Metadata
    c. Manage Scientists
    d. Manage Sites

Creating a new Dive

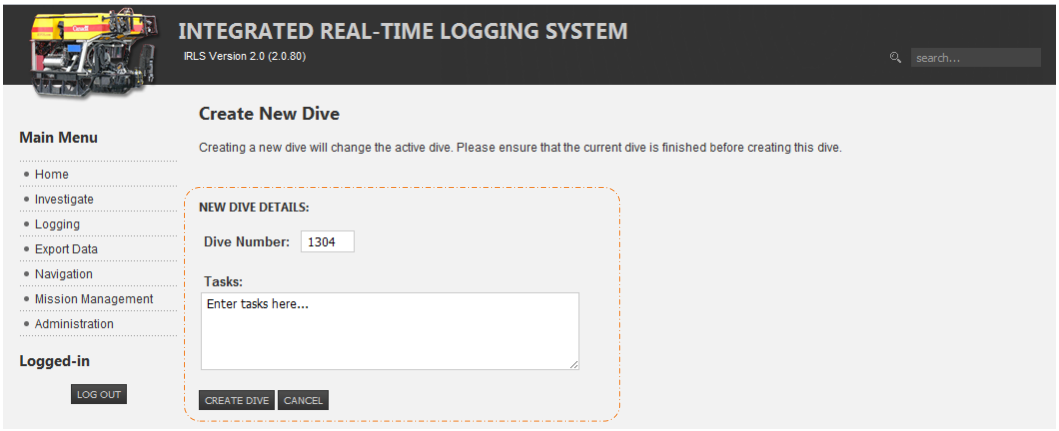

Figure 4: Creating a new dive

1. Ensure that the dive number shown is correct by asking someone from the ROPOS team.
2. Enter the planned tasks for the dive. You can always change this information later.
3. Click on “Create Dive”, this will make all new logging entries divert to the new dive.

Manage Metadata

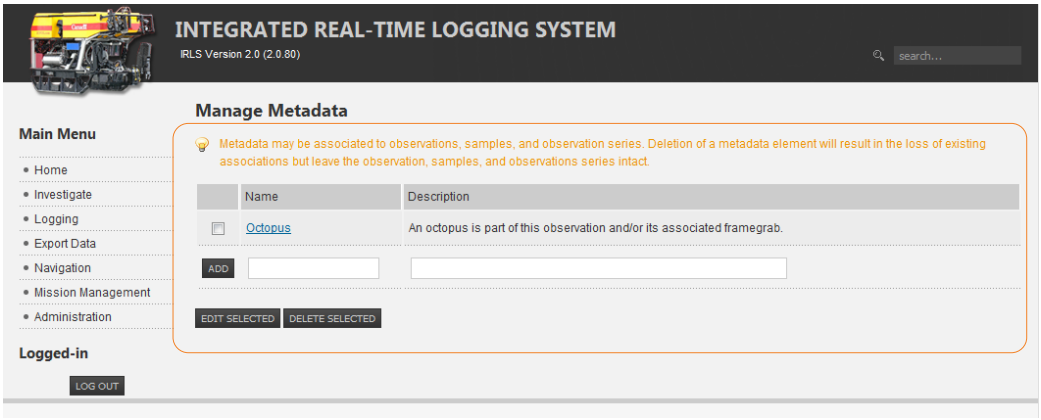

Figure 5: Manage Metadata

1. To create a new metadata tag:
    a. Add a name and description in the text fields
    b. Click on “Add”
2. To Edit existing metadata tags:
    a. Select all tags to edit
    b. Click on “Edit Selected”
    c. Edit the fields
    d. Click on “Save Changes”
3. To delete existing metadata tags:
    a. Select tags to delete
    b. Click on “Delete Selected”

Manage Scientists

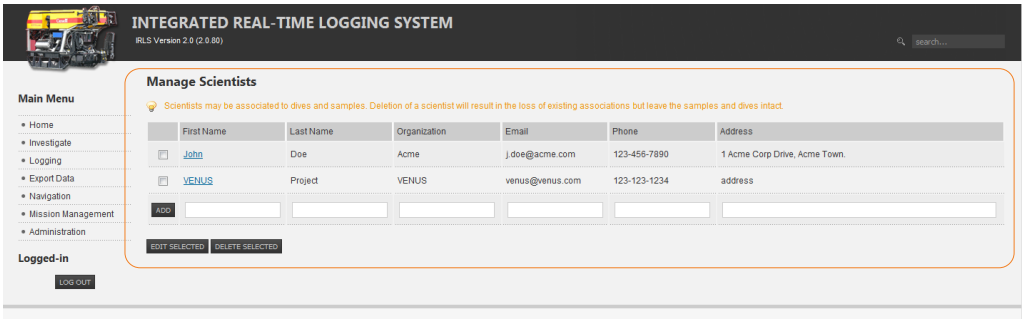

Figure 6: Manage scientists

1. To create a new scientist
    a. Fill in the information in the text fields
    b. Click on “Add”
2. To edit scientist(s)
    a. Select the scientist(s) you would like to edit
    b. Click on “Edit Selected”
    c. Edit the fields
    d. Click on “Save changes”
3. To delete scientist(s)
    a. Select the scientist(s) you would like to delete
    b. Click on “Delete selected”

    Note: You cannot download the scientist that is responsible for the expedition.

Manage sites

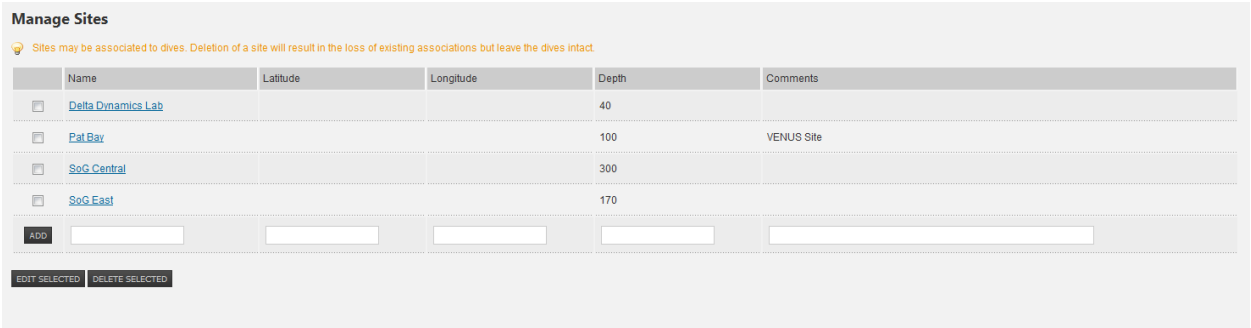

Figure 7: Site Management

1. To create a new site
    a. Fill in the information in the text fields. Latitude and Longitude should be in decimal degrees and depth in meters
    b. Click on “Add”
2. To edit site(s)
    a. Select the site(s) you would like to edit
    b. Click on “Edit Selected”

c. Edit the fields
d. Click on “Save changes”

3. To delete site(s)
    a. Select the site(s) you would like to delete
    b. Click on “Delete selected”

Logging

Main logging Page

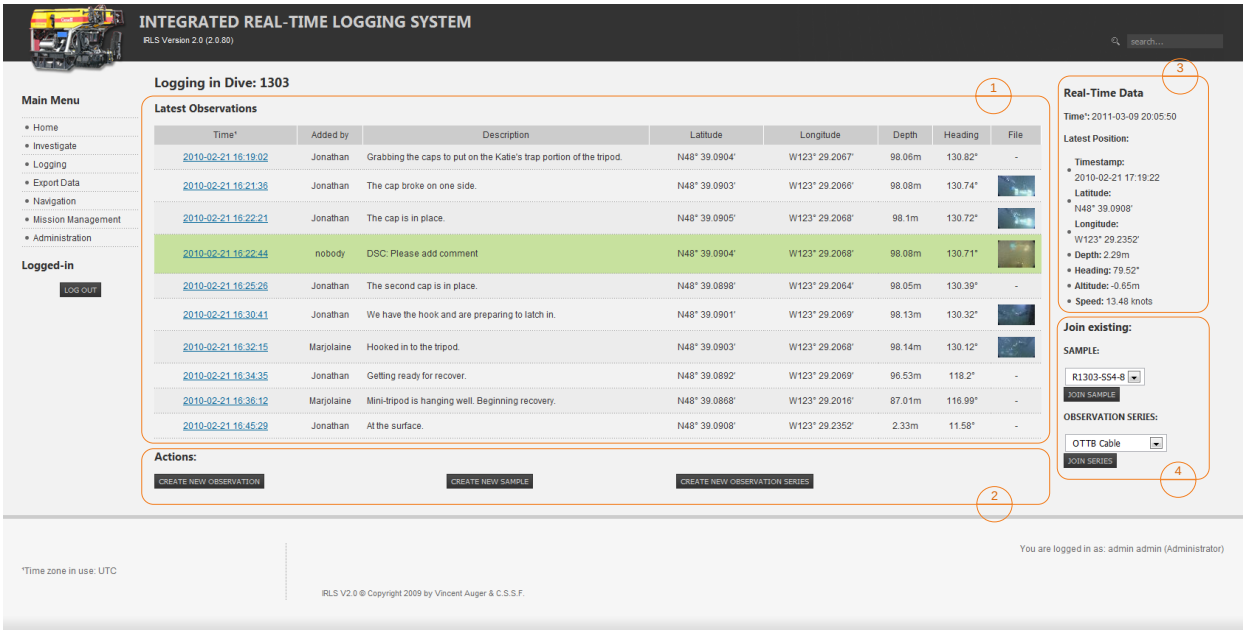

Figure 8: Logging main page

1. The latest observation area is updated automatically with new observations as loggers or other systems, such as the DSC monitor, create them. The observations are displayed in a chat styled flow where the latest observation is at the bottom of the list.
2. The action area changes according to what mode is currently in used. (e.g., observation, sample, or observation series).
3. The real-time data area shows the latest information from the ROV navigation system, it updates every second.
4. The Join area allows the logger to join an existing sample or observation series. This is especially useful for long-term samples started at the start of a dive and stopped at the end, e.g., CTD. It is also beneficial during a logger shift change so that a newly logged-in logger can continue a sample or series started by their counterpart.

Creating an Observation

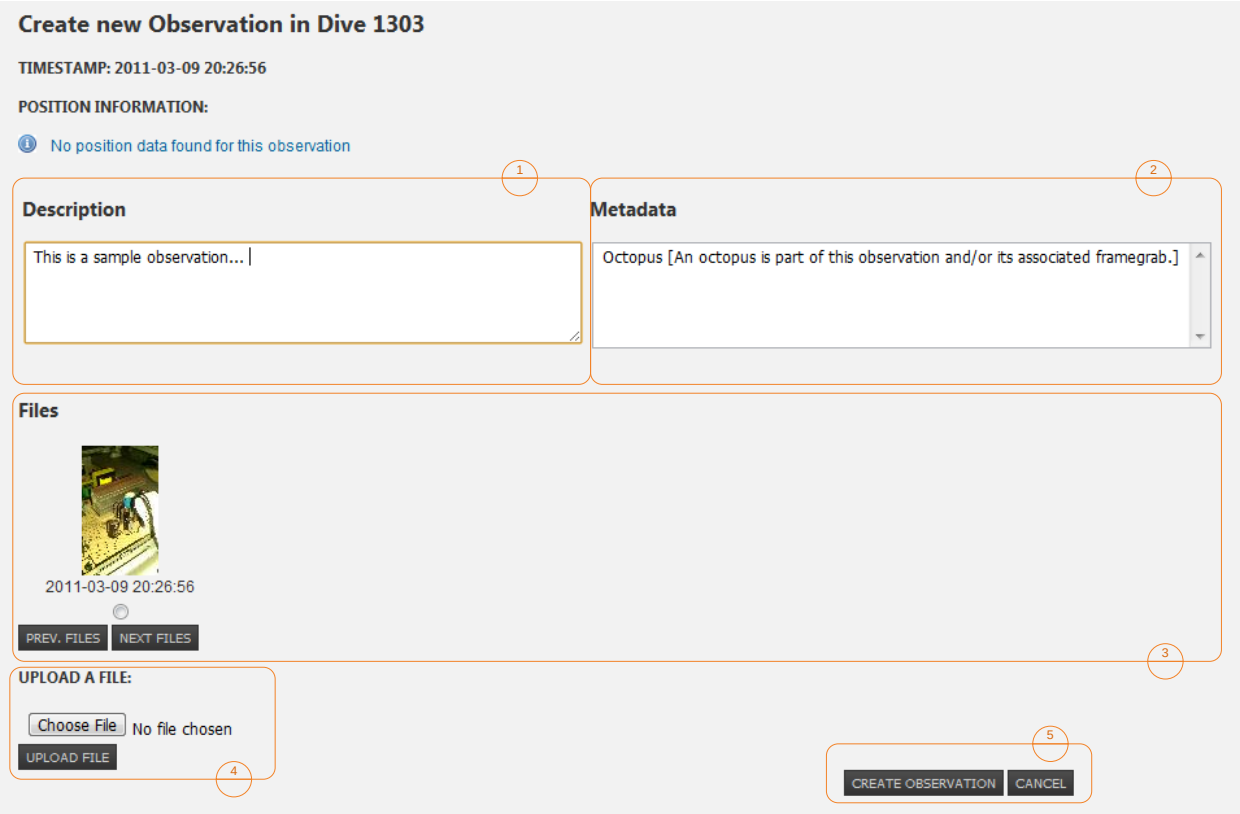

Figure 9: Create observation

1. Enter your observation in the “description” field.
2. Select the metadata for this observation. To select more than one metadata element, use the CTRL key to toggle each metadata row on and off.
3. The file area allows the selection of a file to attach with this observation. The files displayed are within 10 seconds of the timestamp for this observation. It is possible to browse back and forth in time by clicking “Prev. Files” and “Next Files”.
4. It is possible to upload a file (e.g., dive plan, instrument photo, etc…) by:
    a. Click on “Choose file”
    b. Select file the through dialog, click on “Open” to select
    c. Click on “Upload file”
    d. The file is now available in the “Files” list. IRLS should have also given a message at the top of the page with the follow text:

- **The *fileIMAG0033.jpg* has been uploaded**
- **The file was successfully added to the database**

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    e. Select the file within the file area.
5. Click “Create Observation” to create the observation.

Creating a sample

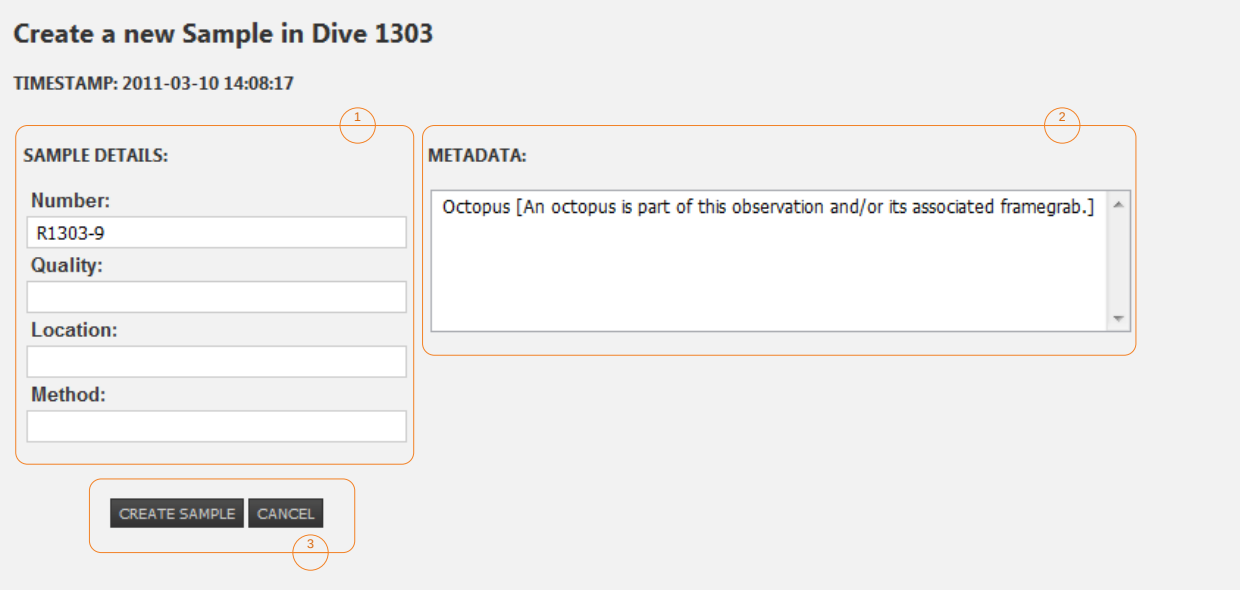


Figure 10: Creating a new Sample

1. Fill-in the sample details:
    a. The Number is automatically generated with "R1303" which represents the dive number while "9" means it is the ninth sample of the dive. This field can be changed manually to fit any convention you would like to use.
    b. The Quality, Location, and Method indicators are there as optional metadata. The chief scientist should have a procedure on how the loggers will use them. Note that is it is possible to change these fields during or after a sample is taken.
2. Choose the applicable metadata. To select more than one, use the CTRL key while clicking on the metadata rows.
3. Click on "Create Sample"
4. You will now be taken back to the main logging page and the following message will appear at the top:

> • **You are now logging in the following sample: R1303-9**

5. Add observations by clicking on "Append observation to sample".
6. Stop the sample by clicking on "End Sample".
7. Remember that you can always re-enter a sample from the "Join Existing" area of the main logging page.

A sample should have at least one observation associated to it. The goal should be to provide enough observations on the sample to create an accurate records of the conditions in which the sample was taken.

Creating an Observation Series

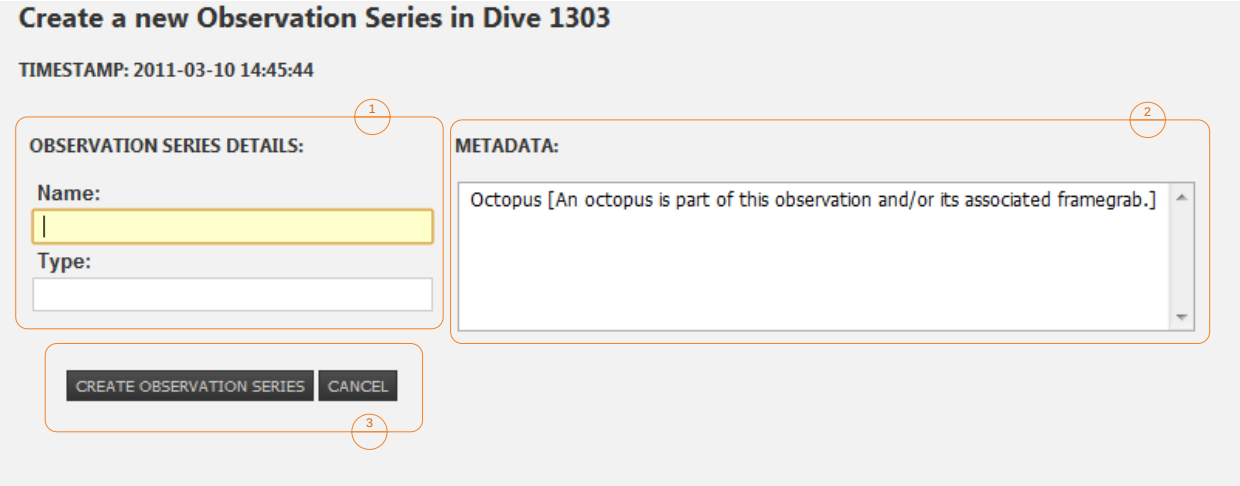


Figure 11: Create a new observation series

1. Fill-in the observation series details according to the naming convention provided by the chief scientist.
2. Choose the applicable metadata. To select more than one, use the CTRL key while clicking on the metadata rows.
3. Click on "Create observation series".
8. You will now be taken back to the main logging page and the following message will appear at the top:

> - **You are now logging in the following observation series: Video Transect NW 45**

9. Add observations by clicking on "Append Observation to Series".
10. Stop the sample by clicking on "End Observation Series".
11. Remember that you can always re-enter a sample from the "Join Existing" area of the main logging page.

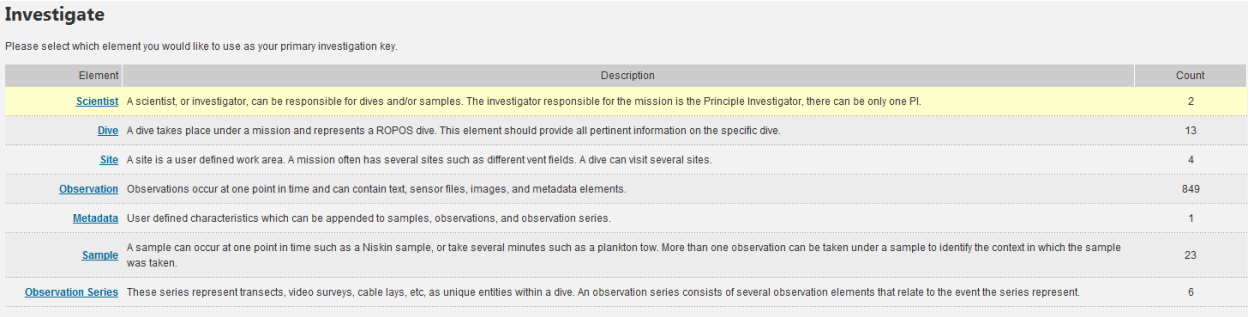
Observations can later be added to or removed from both samples or observation series by opening an observation and going into editing mode by clicking "Edit".

Logging Keyboard shortcuts

1. Added shortcut keys in logging system
    a. In main logging page
        i. Alt-O (Create a New observation)
        ii. Alt-S (Create a new Sample)
        iii. Alt-Z (Create a new Observation Series)
    b. In New Sample, Observation Series, and Observation
        i. Alt-N (Create object)

Investigation

To enter the investigation page seen in Figure 12, simply click on “Investigate” on the main menu. Once there, it is possible to browse the data using all of the IRLS organizational elements. For example, if you click on “Site” you will be given a list of all the sites and the number of associated dives. You can then click on individual sites to see a list of these dives.



Investigate

Please select which element you would like to use as your primary investigation key.

Element	Description	Count
Scientist	A scientist, or investigator, can be responsible for dives and/or samples. The investigator responsible for the mission is the Principle Investigator, there can be only one PI.	2
Dive	A dive takes place under a mission and represents a ROPOS dive. This element should provide all pertinent information on the specific dive.	13
Site	A site is a user defined work area. A mission often has several sites such as different vent fields. A dive can visit several sites.	4
Observation	Observations occur at one point in time and can contain text, sensor files, images, and metadata elements.	849
Metadata	User defined characteristics which can be appended to samples, observations, and observation series.	1
Sample	A sample can occur at one point in time such as a Niskin sample, or take several minutes such as a plankton tow. More than one observation can be taken under a sample to identify the context in which the sample was taken.	23
Observation Series	These series represent transects, video surveys, cable lays, etc, as unique entities within a dive. An observation series consists of several observation elements that relate to the event the series represent.	6

Figure 12: Main Investigation page

Since all of the IRLS elements work on similar principles, we will use Samples as an example.

Investigate an organizational element [Sample]

There are several ways to investigate samples and all other organizational elements in IRLS.

For example:

You can investigate all of the cruise samples through the following procedure:

1. Click on “Sample” from the main investigation page
2. All of the cruise samples will be shown in chronological order, click on the one you want to see.

Alternatively, you can see only the samples associated with a scientist:

1. Click on “Scientist” from the main investigation page
2. Click on the scientist name you want to investigate
3. You will be shown all of the samples and dives associated with this scientist, click on the sample you would like to see.

Alternatively, you can see only the sample taken in a certain dive:

1. Click on “Dive” from the main investigate page
2. Click on the Dive number you would like to use
3. In the dive page, as seen in Figure 13, you can see all associated elements in the “Dive Details” area.

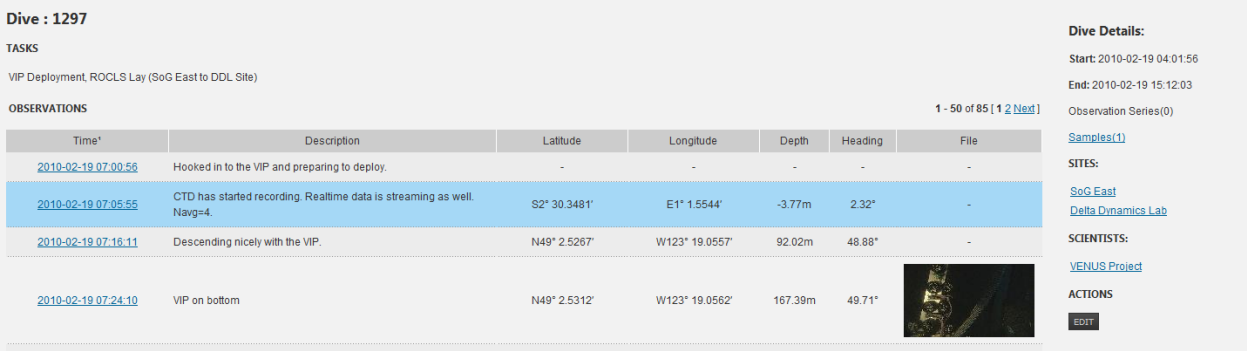


Figure 13: Dive Page

4. Click on the "Samples(1)" link to open a list of all of the samples associated with the dive
5. Click on the sample you would like to see.

You could also do the same thing by searching for samples with specific metadata. The investigation system is designed so that you can quickly create subsets of data so that you can hopefully quickly and easily find the specific data you required.

Editing elements

If you have logger (or above) privileges, it is often possible to edit the content of the elements you are seeing by clicking on the "Edit" as seen in Figure 13. This will enable the "Editing Mode" where most of the association and fields can be edited.

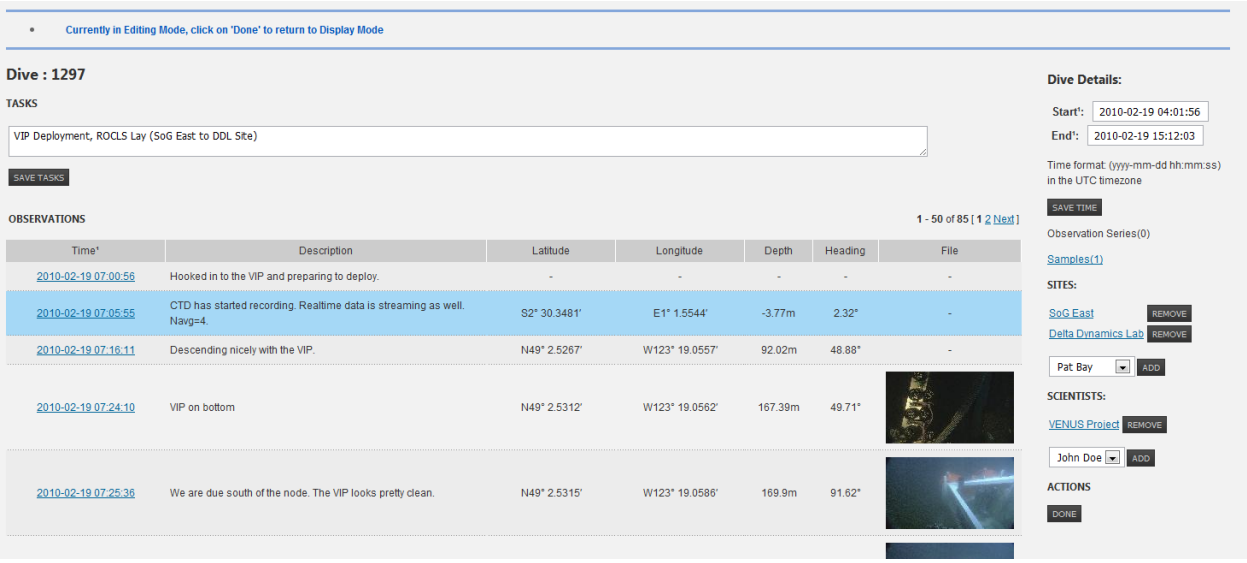


Figure 14: Editing mode

It is important to click on "Save Tasks" to apply a change to a text field. If you only click "Done" your text changes will be discarded.

Navigation

The navigation section gives the IRLS loggers a quick overview of the SeaScape™ navigational aids generated by the ROPOS navigator. For example, Figure 15 shows that the result of looking at the waypoint page versus the waypoints loaded into the navigation computers should be the same.

To access the navigation area, click on “Navigation” in the main menu and select the navigational aid you would like to view.

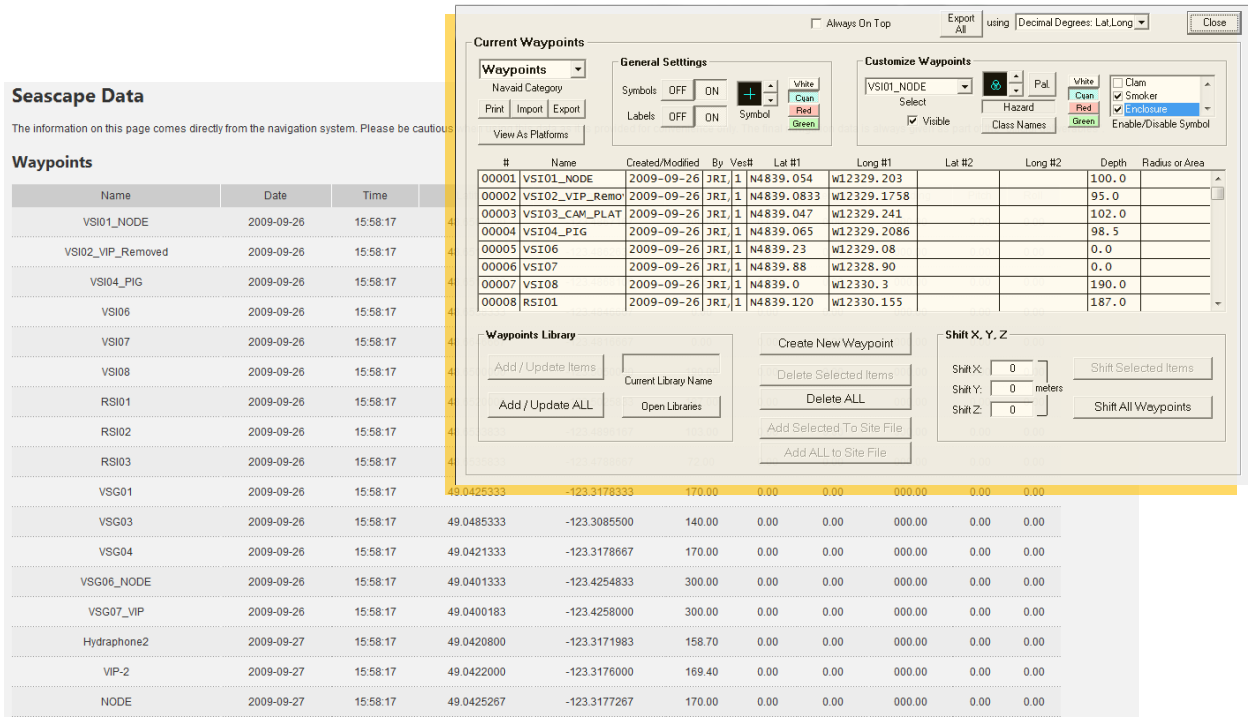


Figure 15: IRLS and Seascape waypoints

This feature is there as a real-time reference only and will only work while SeaScape™ is running. The final navigation is always given as part of the official deliverables.

The data in the navigation area is a real-time instance of the data currently available in the navigation system. The navigators create new session for every dive that only contains the pertinent waypoints, track lines, area circles, etc.. In short, do not expect the data found under navigation to be static.

Export Data

While it is always possible to save an IRLS 2.0 page or print it for later reference, IRLS 2.0 users with principal investigator privileges can also export dive data in various formats. The export area, seen in Figure 16, can be found by clicking on “Export Data” on the main menu.

Export : Dive

Please select which dive you would like to export. Files will take some time to generate, please be patient and only click once.

Dive	Tasks	CSV (Dive Only)	Files Only (Zip)	Google KMZ	Static HTML
1291	ROPOS Test Dive.	CSV: 1291	ZIP: 1291	KMZ: 1291	HTML: 1291
1292	Recover entire camera platform.	CSV: 1292	ZIP: 1292	KMZ: 1292	HTML: 1292
1293	Place Plankton Tripod, Recover VIP	CSV: 1293	ZIP: 1293	KMZ: 1293	HTML: 1293
1294	Retrieve VIP-4 (Battery instruments, not cabled.) 49 05.4733 123 19.1442	CSV: 1294	ZIP: 1294	KMZ: 1294	HTML: 1294
1295	Recover VIP-2	CSV: 1295	ZIP: 1295	KMZ: 1295	HTML: 1295
1296	Recover VIP-3	CSV: 1296	ZIP: 1296	KMZ: 1296	HTML: 1296
1297	VIP Deployment, ROCLS Lay (SoG East to DDL Site)	CSV: 1297	ZIP: 1297	KMZ: 1297	HTML: 1297
1298	Let's go get ROCLS	CSV: 1298	ZIP: 1298	KMZ: 1298	HTML: 1298
1299	Deploy VIP-4 at DDL site, recovered due to failed SIIM.	CSV: 1299	ZIP: 1299	KMZ: 1299	HTML: 1299
1300	Venus Central VSG07 VIP Deployment.	CSV: 1300	ZIP: 1300	KMZ: 1300	HTML: 1300
1301	Redeploy DDL.	CSV: 1301	ZIP: 1301	KMZ: 1301	HTML: 1301
1302	Deploy VIP-1, Connect the Tronic, transects of the Cyclops camera area	CSV: 1302	ZIP: 1302	KMZ: 1302	HTML: 1302
1303	SI CMap Camera Deployment, deployments around camera platform and camera, transect around camera area, secured Tronic, suction samples, OTTB cable survey, mini-Tripod recovery.	CSV: 1303	ZIP: 1303	KMZ: 1303	HTML: 1303

Figure 16: Export data

Comma-Separated Values

The comma-separated values (CSV) files are text-based files that contain some dive metadata in the header and a list of all observations within the dive they represent.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	IRLS Dive Data CSV Export. (Version 1.0.1)														
2															
3	Dive Information:														
4	Dive Number	Tasks	Start Date	End Date											
5	1295	Recover VIP-2	18/02/2010 21:49	18/02/2010 23:26											
6															
7	Site(s):														
8	Name	Comments													
9	SoG East														
10															
11	Scientist(s):														
12	Name	Organization													
13	VENUS Project	VENUS													
14															
15	Observations:														
16	Dive Number	Date(UTC)	Observation	Latitude	Longitude	Depth(m)	Heading	Altitude(m)	Speed(knots)	File					
17	1295	18/02/2010 21:55	ROPOS is in the w	49.042365	-123.31787	2.53	277.91	61.62	19.58						
18	1295	18/02/2010 21:55	ROPOS is in the w	49.042365	-123.31787	2.53	267.03	61.62	12.83						
19	1295	18/02/2010 21:56	CTD has started. R	49.042365	-123.31787	7.46	86.51	58.67	7.72						
20	1295	18/02/2010 22:11	Node visible on SC	49.042398	-123.318	164.01	51.42	6.5	0.48						
21	1295	18/02/2010 22:14	Visibility is not gre	49.042497	-123.31778	166.79	46.45	3.57	0.19	./files/framegrabs/20100218-221438_Video3.jpg					
22	1295	18/02/2010 22:15	Tide just changed.	49.042447	-123.31782	168.25	51.3	2.13	0.11						
23	1295	18/02/2010 22:16	At the node.	49.042488	-123.31775	168.74	52.09	1.7	0.11	./files/framegrabs/2_18_2010 9_48_14 PM00000833.jpg					
24	1295	18/02/2010 22:16	We are at the nod	49.042497	-123.31775	168.92	52.23	1.73	0.02	./files/framegrabs/2_18_2010 9_48_14 PM00000836.jpg					
25	1295	18/02/2010 22:17	We plan to hook a	49.042515	-123.31768	167.97	228.07	2.1	0.19						

Figure 17: CSV file example

Files

The files export format is a quick way to download all images and uploaded files associated with a dive in a ZIP file. The ZIP file is organized with a directory structure that matches the file paths used in the file column of the CSV output.

Google© KMZ

The Google KMZ format is meant to provide a quick visual representation of a dive in Google Earth™. The KMZ file contains the dive path as well as all of the observations from the dive. Figure 18 shows an example KMZ file. The path is clipped to the ocean's bottom and the ROV altitude is used. Please note that due to the resolution of the bathymetry in Google Earth™, a hole in the ocean floor would look like a spike in altitude in the path.

Figure 18: Example KMZ file. ROCLS lay dive.

Static HTML

As the name implies, the static HTML export is a copy of an IRLS dive which is made of static HTML pages and files. Once unzipped on your computer, open the html filed called "dive_XXXX.html", where XXXX is the dive number, to start browsing the dive.

Deliverables

At the end or shortly after an expedition, CSSF will give you the expedition deliverables. Part of these deliverables will be the IRLS data you have created. While it will comprise all of the export formats for all of the dives there are also two other formats that offer a powerful way to work with the data back in your lab. These are the live copy, and the database.

Live Copy

A very powerful feature of IRLS 2.0 is that you can take it with you after you have completed an expedition with ROPOS. Since IRLS 2.0 was based on open source technology there is no software to purchase to run IRLS 2.0 in your own lab; all you need is a computer to act as the IRLS 2.0 server. Using the live copy allows you to retain all relationship and continue to modify or query the data.

Installing a live copy is simple, especially if you are familiar with web-based systems such as Wordpress or Joomla! The prerequisites are the Apache webserver, the PHP interpreter, and a MySQL server. These applications are available in several free and easy to install packages for all current operating systems.

For more information on configuring, a live copy in your lab asks CSSF and we will be glad to help.

Database

For advanced users, it is possible to query the IRLS 2.0 MySQL database directly to get your own datasets or import the data in your own data management system. For example, NEPTUNE Canada uses this method to import information into DMAS.

IRLS API

IRLS 2.0 has two API commands that can be used by third-party applications to pull IRLS 2.0 data in real-time.

Getting Latest Position

You can query the IRLS system for up to 600 of the last positions in the database using the call shown in Table 2.

Table 2: Get Last Position

Call	Options
/api/get_last_position_csv.php	number=[0 to 600]

Example

```
http://irls_machine/api/get_last_position_csv.php?number=4
```

returns (all on one line without the header definition):

```
dive #, date time (UTC), lat, long, depth, heading, altitude, fwd vel (m/s), stb vel, down vel<br />

1303,2010-02-21 17:19:22,48.651513,-123.487253,2.29,79.52,-0.65,-0.083,-6.934,-2.375<br />
1303,2010-02-21 17:19:21,48.651513,-123.487253,2.29,79.52,-0.65,-0.083,-6.934,-2.375<br />
1303,2010-02-21 17:19:20,48.651513,-123.487253,2.29,79.52,-0.65,-0.083,-6.934,-2.375<br />
1303,2010-02-21 17:19:19,48.651513,-123.487253,2.29,79.52,-0.65,-0.083,-6.934,-2.375<br />
```

Get dive observations

You can query the IRLS database for the observations used within the current dive.

Table 3: Get Last Position

Call	Options
/export/csv/get_dive_csv.php	[n/a]

Example

```
http://irls_machine/export/csv/get_dive_csv.php
```

returns (the
 tag is used to indicate a newline, output is shown as seen from a web browser):

```
IRLS Dive Data CSV Export. (Version 1.0.1)

Dive Information:

Dive Number, Tasks, Start Date, End Date
1303,"SI CMap Camera Deployment, deployments around camera platform and camera, transect around camera area,
secured Tronic, suction samples, OTTB cable survey, mini-Tripod recovery.",2010-02-21 06:18:32,2010-02-21
16:45:32

Site(s):
Name,Comments
"Pat Bay","VENUS Site"

Scientist(s):
Name, Organization
"VENUS Project","VENUS"

Observations:
Dive Number,Date(UTC),Observation,Latitude,Longitude,Depth(m),Heading,Altitude(m),Speed(knots),File
1303,2010-02-21 06:18:06,"Picking up the package.",0,0,0,0,0,0,
1303,2010-02-21 06:24:01,"ROPOS is in the water.",0,0,0,0,0,0,
1303,2010-02-21 06:34:52,"Still descending.",48.650822,-123.487313,84.22,15.8,20.47,0.06,
1303,2010-02-2106:38:28,"DSC: Please add comment",48.650747,-
23.487423,100.15,16.38,5.06,0,./files/dscs/R1303_DSC_060402_023209_00205.JPG
1303,2010-02-21 06:38:42,"DSC: Please add comment",48.650748,-
123.487428,100.05,16.17,4.98,0.03,./files/dscs/R1303_DSC_060402_023211_00206.JPG
1303,2010-02-21 06:41:29,"On the bottom. Getting setup to remove the hook.",48.650762,-
123.48746,101.66,126.65,3.38,0.12,
1303,2010-02-21 06:43:25,"We are released and getting ready to take the connector to the node.",48.650765,-
123.487462,102.18,127.54,2.58,0,
1303,2010-02-21 06:46:16,"DSC: Please add comment",48.650728,-
123.487437,104.24,348.6,0.84,0,./files/dscs/R1303_DSC_060402_024242_00207.JPG
1303,2010-02-21 06:57:25,"By the node.",48.650918,-123.486893,98.27,96.77,5.79,0.29,
```