2.2 First Time Use

The Smart Buoy may be shipped with the saltwater sensor screw covered with tape. **Remove the tape** before deploying the buoy. Do not remove the screws underneath.

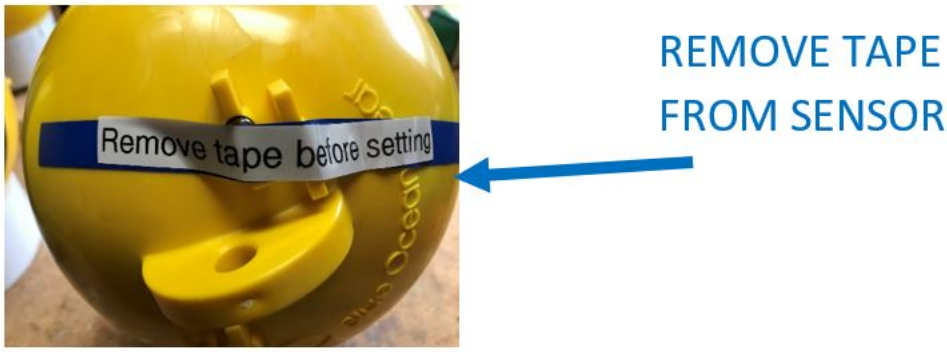

Figure 3: Tape to remove off of sensor before use.

When the Smart Buoy is in the water, it should float with the waterline around the center of the clamp in the middle of the buoy, with the logo sticker in the air, as shown:

Figure 4: Smart buoy correct orientation while floating.

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Farallon Smart Buoy Components and Function

3 Farallon Smart Buoy Component Capability

GPS

The Smart Buoy is equipped with an internal GPS receiver to provide location information.

Depth Sensor

The Smart Buoy is equipped with a depth sensor to provide information regarding buoy submergence.

If possible, prior to deploying please add a few drops of mineral oil into the cavity with the depth sensor.

Temperature Sensor

Surface water temperature is recorded by the buoy using it's temperature sensor.

Saltwater Sensor

The saltwater sensor allows the buoy to turn on when it detects that it is in salt water. The buoy will turn on when it has been in water for at least 15 minutes and will turn itself off when it has been out of the water.

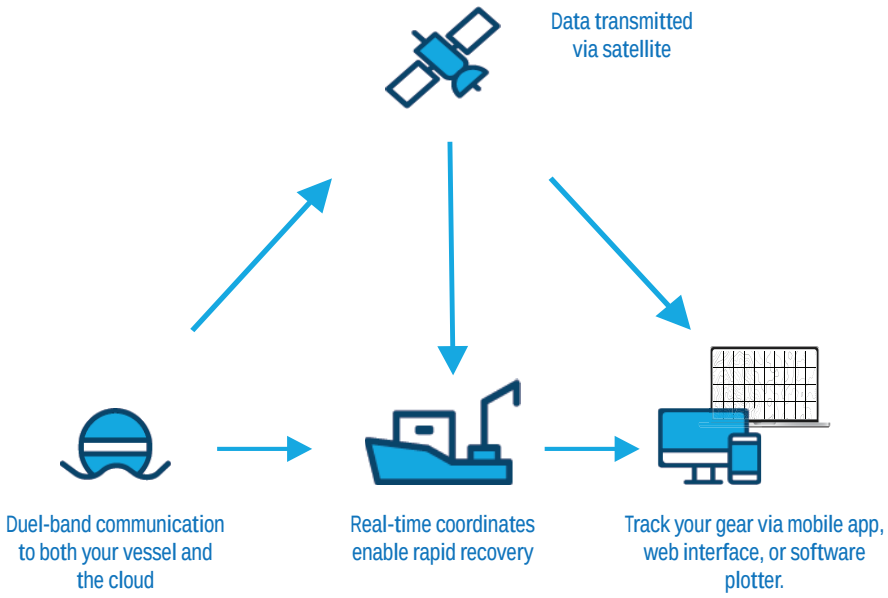
To avoid activating the buoy, take care to not touch both terminals simultaneously when handling the buoy, and avoid placing on surfaces that may be conductive.

The saltwater sensor should be rinsed monthly to clear away biofouling or other growth. This will ensure the correct operation of the sensor.

! Do not power wash or use chemicals to clean the Saltwater, Temperature, or Depth Sensors.

4 Communications

The Smart Buoys are equipped with satellite transmission capability via the Iridium satellite network, as well as radio listening capability.



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5 Basic Functionality and Performance

Once deployed, the Smart Buoy will float upright in the water, with the top half of the buoy (with vacuum port) above the waterline. This allows the internal antennae to remain pointed upward.

Long Life Mode:

- Depth and acceleration of the Smart Buoy are measured periodically at the Slow Sensor Rate.
- Smart Buoy location is determined/recorded if on the water surface to measure drift at the Slow GPS Rate.
- Smart Buoy location is transmitted at the Slow Transmission Rate under nominal conditions (where buoy drift has not exceeded any thresholds). Location will be displayed as a green marker on the map display.
- If the Smart Buoy location is beyond the Position Threshold from its last position, it will transmit its location. The marker on the web interface will turn red.
- If the Smart Buoy is submerged lower than 1m depth, it will transmit location, depth and dive time data upon surfacing. The marker on the web interface will turn blue.
- When retrieving gear, the Smart Buoy will send a message after removal from the water if a clear view of the sky is available. If it remains out of the water, it will turn itself off. It may be necessary to dry the saltwater sensor terminals off to ensure this response.

Note: To facilitate retrieval of gear, Smart Buoys can be individually commanded via the mobile app (or communication with Blue Ocean Gear personnel) to operate with Fast Update Mode, which will transmit data more often. This change must be commanded at in advance according to the Transmission Timing Rate for the specific Smart Buoy.

Fast Update Mode:

- Depth and acceleration of the Smart Buoy are measured periodically according to its Fast Sensor Rate.
- Smart Buoy location is determined/recorded at the Fast GPS Rate if on the water surface.
- Smart Buoy location is transmitted at the Fast Transmission Rate under nominal conditions (where buoy drift has not exceeded any thresholds). Location will be displayed as a green marker on the map display.
- If the Smart Buoy is submerged, it will transmit location, depth, and time submerged data within 5 minutes upon re-surfacing.
- Smart Buoy will send a message upon retrieval or removal of gear from the water if it has a clear view of the sky. If it remains out of the water, it will turn itself off. It may be necessary to dry the saltwater sensor terminals off to ensure this response.
  - Once it is reset in the water, the Smart Buoy will revert to the slower, Long Life Mode with no external command required.
- If the gear is not retrieved right away, the Fast Update Mode will last a maximum of Fast Time Period, after which the Smart Buoy will revert to Long Life Mode with no external command required.
- At any point within the Fast Timeout Period, the Smart Buoy can be commanded back to Long Life Mode by the user via the mobile app (if, for instance, it was determined that the particular buoy would not be hauled right away).
  - There may be a delay of an hour (maximum) between the command sent and the buoy changing to the Long Life Mode. This means you may see buoy data come in for maximum an hour after sending the message.

! It is recommended to only use this mode for retrieval, as remaining in Fast Update Mode will reduce battery life significantly.

Note: Sensor timing, transmission timing, and position threshold values can now be modified remotely. To change any of these settings, please contact Blue Ocean Gear Support at support@blueoceangear.com.

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6 Battery Life

The Farallon buoy system uses a NiMh battery. As with any rechargeable battery system, care should be taken to prevent complete discharge.

Complete discharge of the battery can cause permanent damage to the cells and may require service/replacement. While the Farallon buoy has some protections against operation at low charge it is ultimately up to the user to help prevent a complete discharge.

We recommend the following guidelines to ensure maximum battery life while deployed:

- Always charge the buoy just prior to use
- Charge the buoy before storing and avoid storing for extended periods in sub-freezing temperatures
- After 4 months without use, charge the buoy

Note: If the battery is allowed to completely discharge, the cells may get damaged. The costs for repair and/or shipping will be the responsibility of the user if this occurs.

! Battery discharge related expenses are not covered by the warranty.

Battery life is now displayed on both oh our mobile app (version 2.1.6 or later) as well as the Bluevue web interface. On the Buoy Locator mobile app, the battery icon is displayed in the upper right corner:

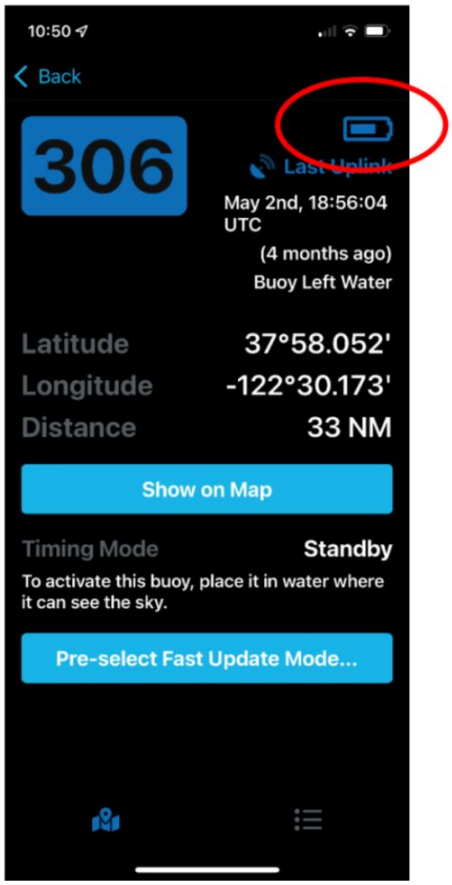

Figure 5: Battery level indicator on mobile Blue Ocean Gear app

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When the battery level is low enough that it needs to be charged, the icon will turn red:

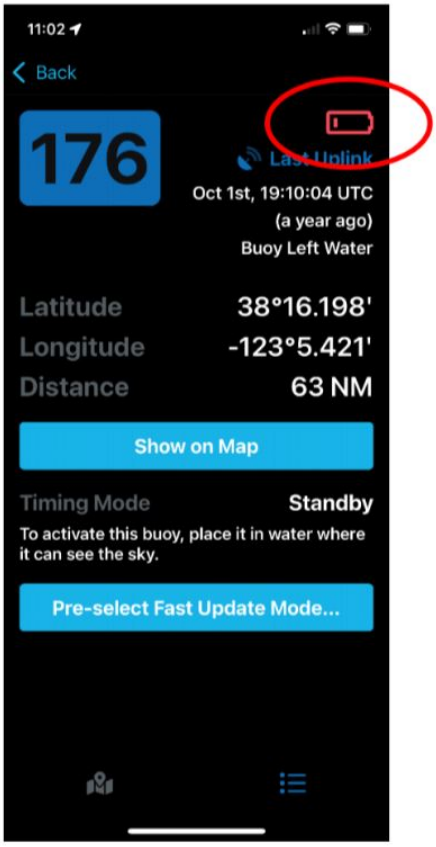

Figure 6: Red battery indicating buoy needs to be charged

Please note that the battery level indicates the status as of the last time the buoy transmitted. As the battery pack can still passively discharge while in storage, the battery level status may be lower than indicated after it has been removed from the water. Please continue to charge buoys every 4 months as previously indicated. On the Bluevue web interface, the battery level icon is displayed when the buoy marker is clicked upon.

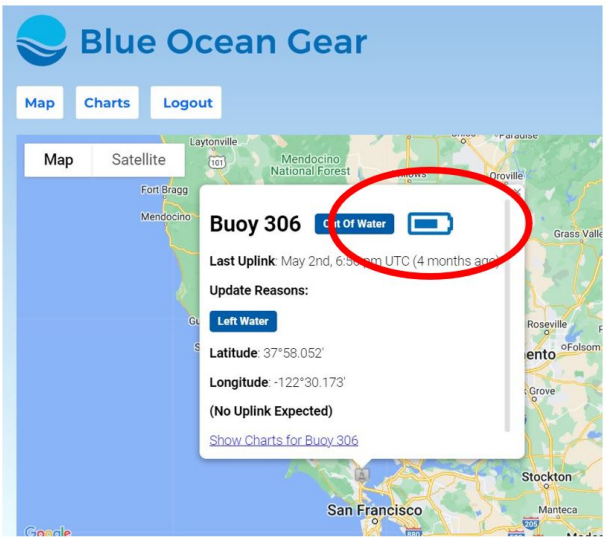

Figure 7: Battery level indicator on web application

Setting Up Your Smart Buoy Online

7 Your Blue Ocean Gear Account

7.1 Setup

You will receive an email to your registered address, with subject "Welcome to Blue Ocean Gear". This email will contain your username and a link to set your password. If you have not received this email, please contact support@blueoceangear.com.

7.2 Password Reset

To reset your password, please contact us at support@blueoceangear.com and a reset link will be sent to you.

8 Buoy Locator Maps and Data

8.1 Website

https://bluevue.boggroup.net/

8.2 Buoy Identifiers

Each Buoy is given an identifier that will be provided separately.

8.3 Map Display

The Smart Buoy web interface can be found at https://bluevue.boggroup.net/

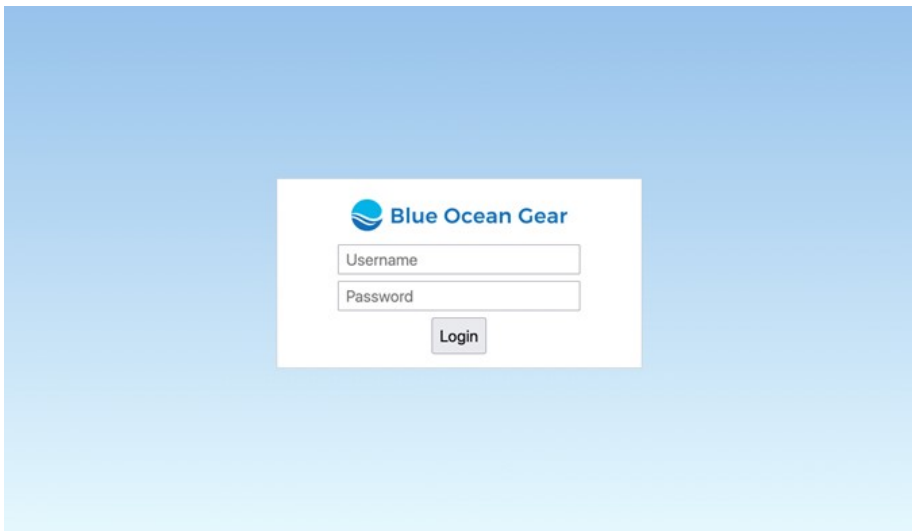

Figure 8: Credential information login page

On the login page, enter username and password (case-sensitive). See "Your Blue Ocean Account" above for your login details.

The display defaults to a map display of all Smart Buoys assigned to a unique user as shown:

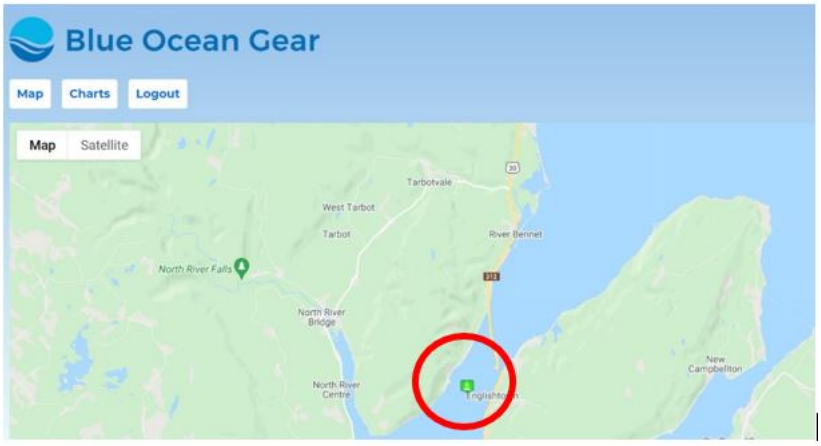

Figure 9: Map display of buoys

The + and – indicators at the lower right of the display can be used to zoom in and zoom out to scale the display view.
The marker color indicates the following:

- Green: Nominal update for active buoy in the water
- Red: The buoy has moved beyond the threshold from its last position fix. If viewing the Buoy Locator App on iPhone, red indicators also represent buoy that has recently resurfaced from a dive.
- Blue: The buoy has just resurfaced from being submerged
- Grey: The buoy has not transmitted in >24 hours or is in Standby mode (out of the water)

Clicking on the Smart Buoy marker on the map display will cause a pop-up display box to appear:

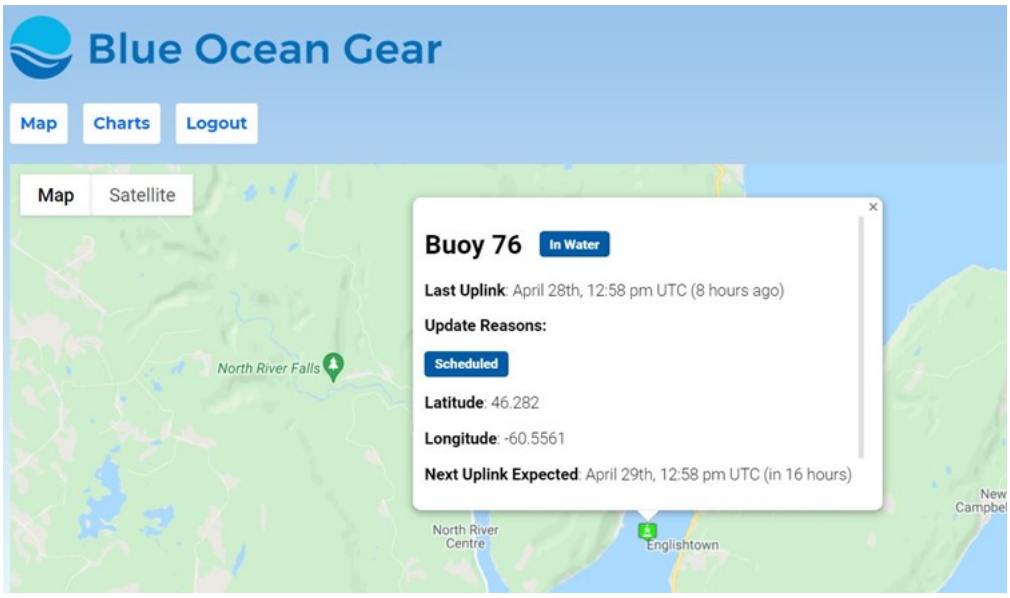

Figure 10: Map display of buoy detail

Displayed data includes:

- Buoy ID: Buoy identification number

- Buoy is in or out of water
- Date/Time Last Data Received
- Latitude: latitude coordinates
- Longitude: longitude coordinates
- Date/Time Next Data Expected
- Link to Charts page for that buoy

8.4 Charts

At the top of the page, a bar indicates available pages for 'Map' and 'Charts':

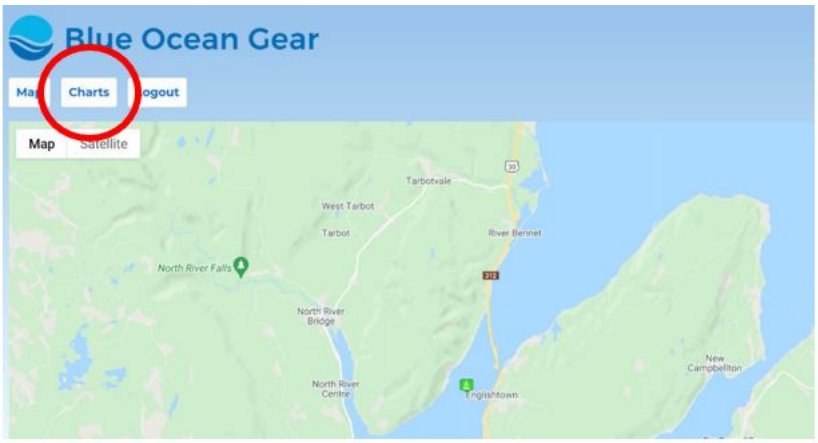

Figure 11: Locating the 'Charts' tab on map display

Clicking on the "Charts" box will bring up the display of Smart Buoy sensor data.

The drop-down menu allows selection of the particular Buoy ID to display.

The check boxes allow the user to select which charts to display.

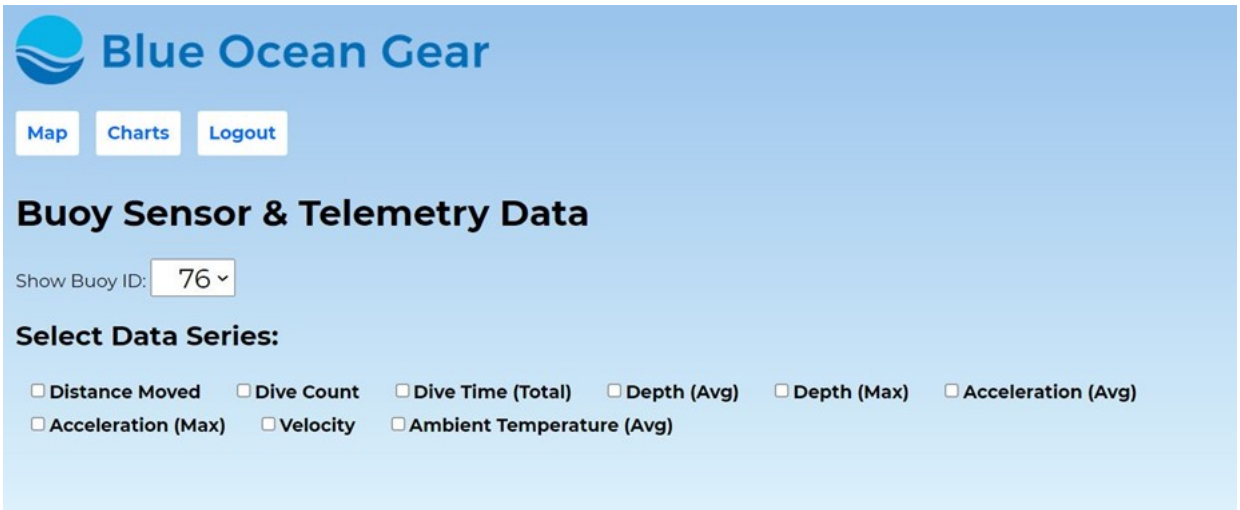

Figure 12: Category data to select to view

Displayed Parameters:

Distance Moved: Displays the distance that the Smart Buoy has been displaced from its previous detected location, in meters.

Dive Count: Displays the number of times that Smart Buoy has been submerged since being deployed.

Dive Time: Displays the amount of time the Smart Buoy has been submerged in seconds, if it has recently surfaced. After the first transmission after surfacing, the value is reset to zero until the next time the buoy submerges.

Average Depth: Displays the average depth in fathoms that the Smart Buoy has experienced, if it has been recently submerged. After the first transmission after surfacing, the value is reset to zero until the next time the buoy submerges.

Maximum Depth: Displays the maximum depth in fathoms that the Smart Buoy reached if it has recently been submerged. After the first transmission after surfacing, the value is reset to zero until the next time the buoy submerges.

Average Acceleration: Displays the average acceleration (in meters/second-squared) that the Smart Buoy has experienced since its last transmission.

Maximum Acceleration: Displays the maximum acceleration (in meters/second-squared) that the Smart Buoy has experienced since its last transmission.

Velocity: Displays the Smart Buoy instantaneous velocity in knots.

Ambient Temperature: Displays the mean surface water temperature outside the buoy since the buoy last transmission.

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9 iPhone Application

The Buoy Locator app can be downloaded from the iOS app store:

Buoy Locator App
https://apps.apple.com/us/app/buoy-locator/id1531520692

The app can also be found by searching for 'Blue Ocean Gear' or 'Buoy Locator' in the app store.
See "Blue Ocean Account" above for details of your login credentials.

The initial page displays a map with buoy locations indicated by pins. The pin will be green for data received in the past 24 hours. If data has not been received in over 24 hours, the pin will turn grey. The blue pin indicates the location of the user's iPhone, if location information has been turned on. Clicking on the pin will display the buoy ID and its last data transmission time:

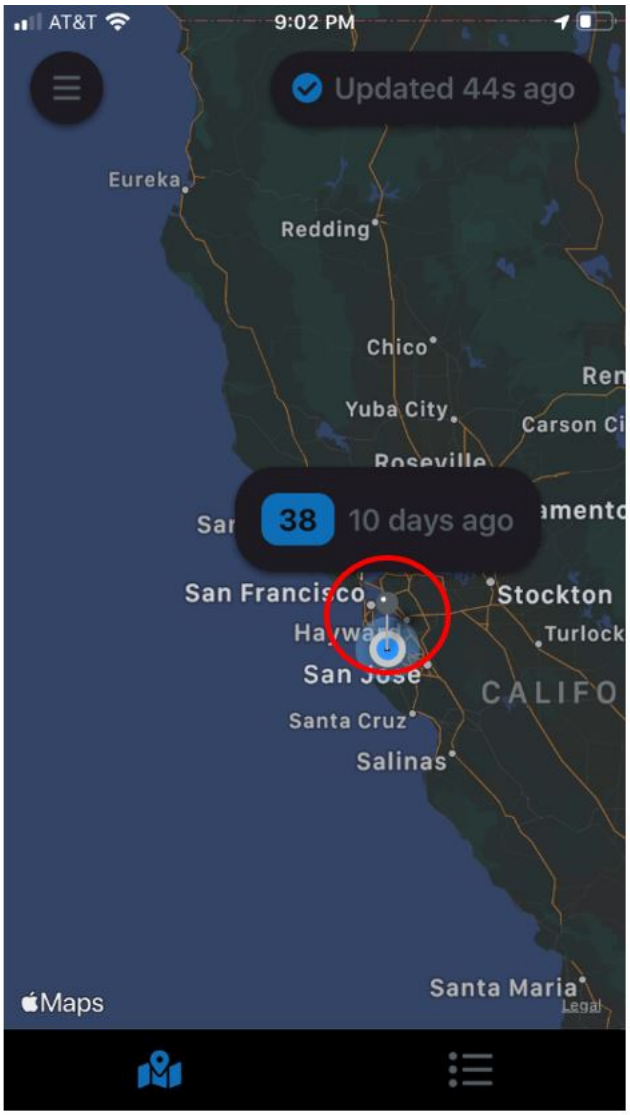

Figure 13: Category data to select to view

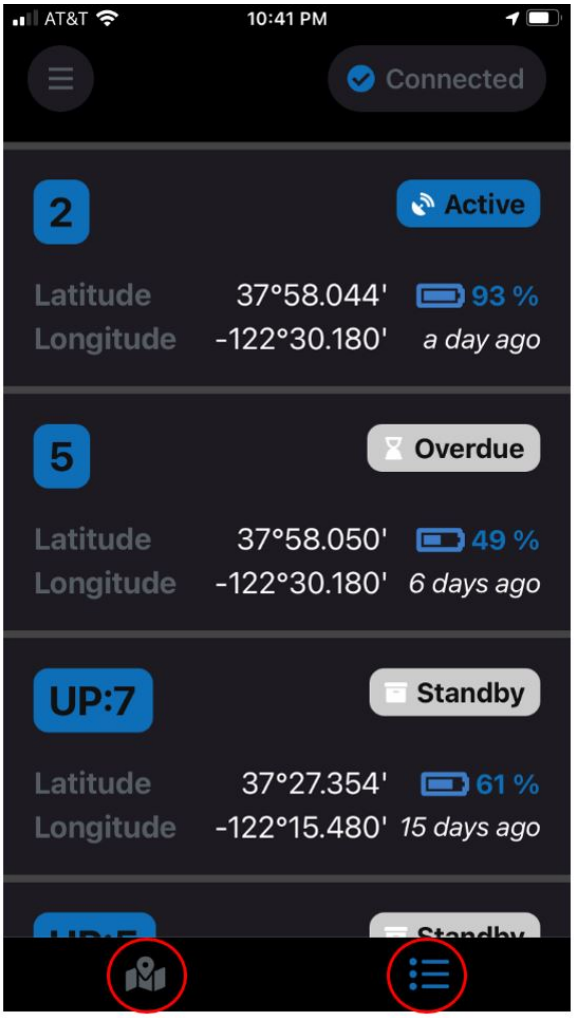

Figure 14: Clicking on the icon on the lower right of the app will display a list of all buoy coordinates. Clicking on the lower left of the app will return to the map display.

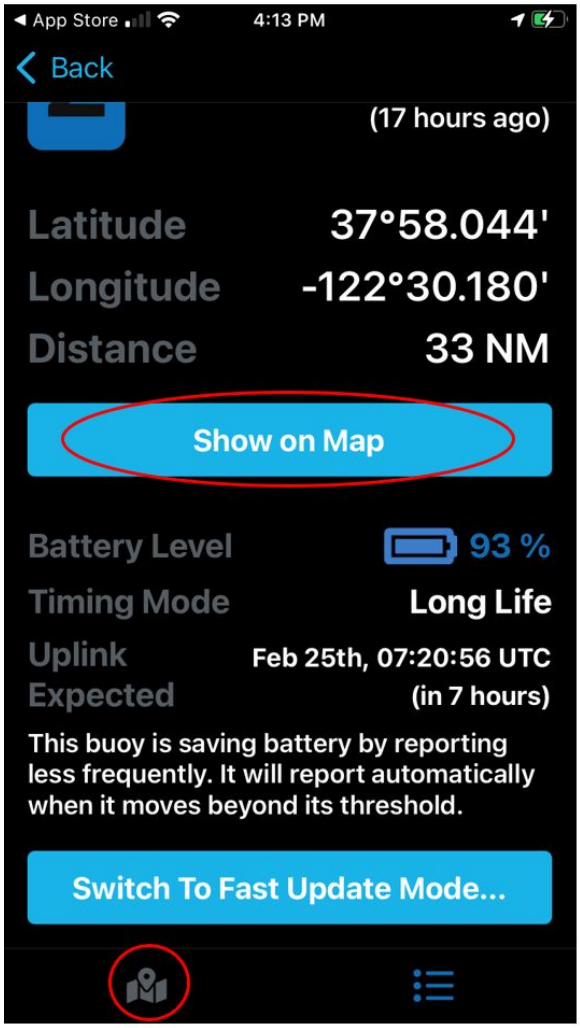

Figure 15: Clicking on the pop-up box on the map display, or on the buoy in the list view will display the buoy coordinates and distance to the buoy from the user's iPhone.The user can switch back to the map application by either clicking the 'Show on Map' button, or by clicking on the icon on the lower left.

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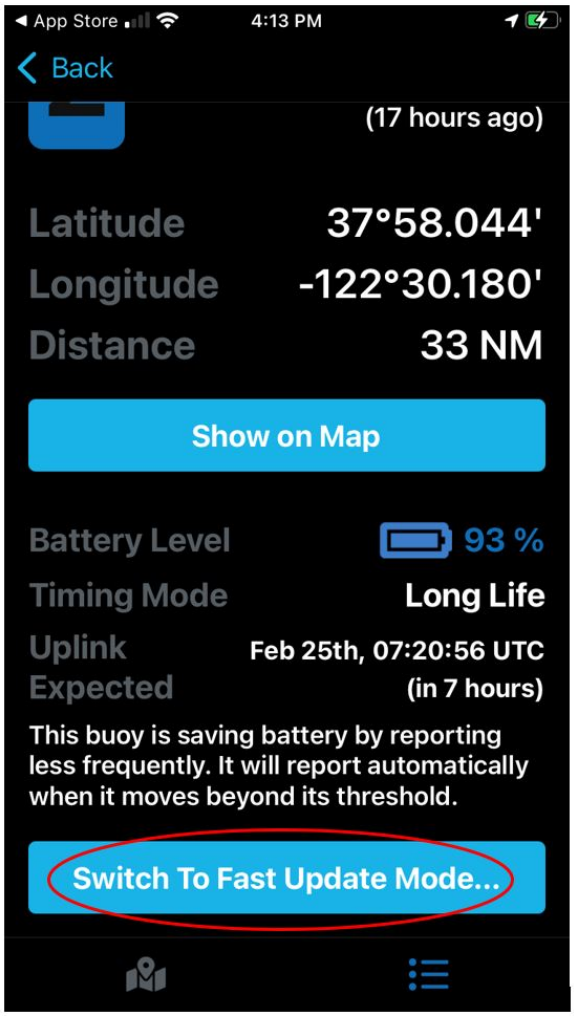

Figure 16: When in Long Life Mode, clicking on the 'Switch to Fast Update Mode' button will switch the Smart Buoy to send data hourly.

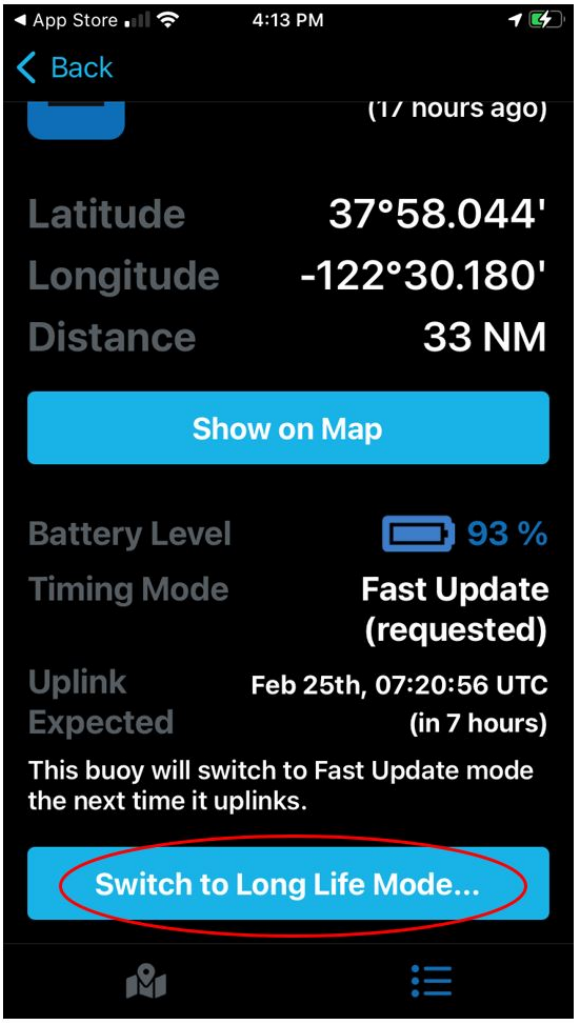

Figure 17: When in Fast Update Mode, clicking the 'Switch to Long Life Mode' button will switch the Smart Buoy back to sending data daily:

9.1 SMS Alerts

You can receive real-time SMS alerts to your cellphone or Iridium/Inmarsat device when your buoys trigger certain conditions:

- Entered / Left Water
- Moved beyond threshold
- Resurfaced after dive

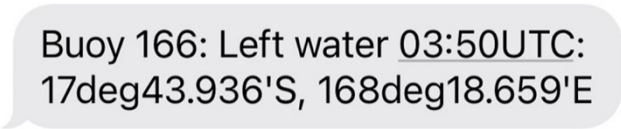

Figure 18: Example SMS message

To set up SMS alerts, please contact Blue Ocean Gear support at support@blueoceangear.com with your SMS number, and details of which buoys and alert conditions.

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10 TimeZero Integration

Smart Buoy current and historical positions are now available for viewing in Time Zero (TZ Professional). Please contact Blue Ocean Gear support at support@blueoceangear.com for setup instructions.

11 Blue Ocean API

The data from your buoys is available in real-time from our API, for integration with your existing tools and workflows. Please see the documentation available at https://blueapi.boggroup.net/docs/.

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Contact Information

12 Blue Ocean Gear Contact Information

If you have any questions about the use of your Smart Buoy Charger please contact:

support@blueoceangear.com

(650) 823-1704

Whatsapp: +1-(650) 823-1704

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.
The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux flux RSS exemptés de licence d'Innovation, Science et Développement économique Canada. L'opération est soumise aux deux conditions suivantes:

(1) Cet appareil ne doit pas provoquer d'interférence; et

(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

This equipment complies with the IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Énoncé d'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements ioniques RSS-102 Pour un environnement incontrôlé. Cet équipement doit être installé et utilisé avec un Distance minimale de 20 cm entre le radiateur et votre corps.

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