



Model:
TZT9/14/BB



Model:
TZT12/15/BB

Utilizing Weather Forecast for Fishing and Navigation

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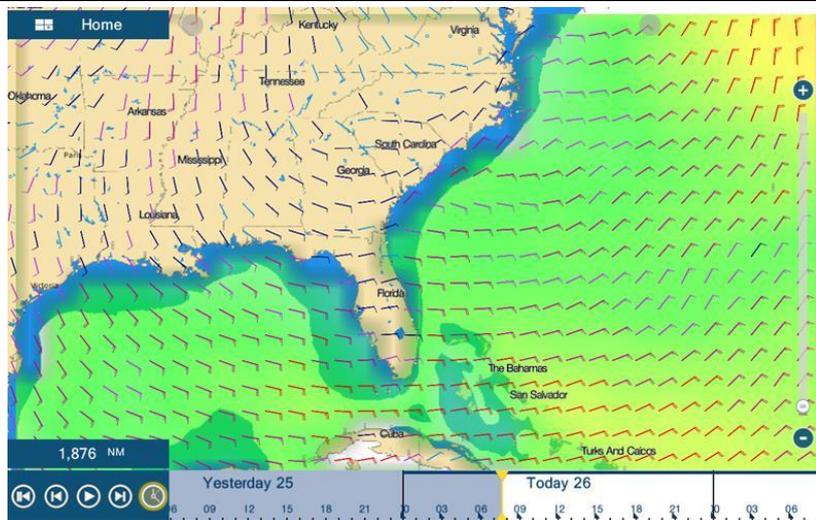
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1. Weather Forecast on MFDs

1.1. Weather Forecast on TZtouch and TZtouch2 MFDs

NavNet TZtouch (TZZ9/14/BB) and TZtouch2 (TZTL12F/15F/BB) MFDs have a useful function to **download the latest weather forecast data up to 14 days, through the Internet**. This unique feature can be utilized in several occasions to make the most appropriate plan before fishing and navigation. This document introduces the overview of available weather data type and some tips on utilizing the downloaded weather data.



1.2. Downloading Weather Forecast

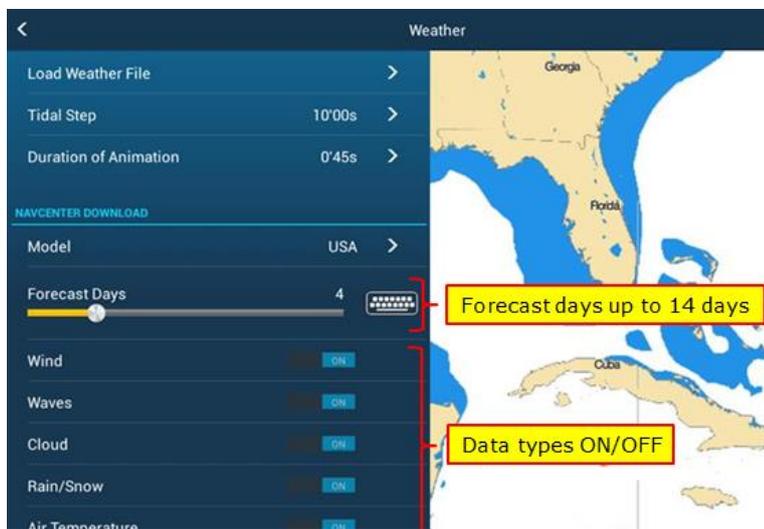
Step 1 Connect to the Internet

In [Menu] (TZZ9/14/BB) / [Settings] (TZTL12F/15F/BB) – [General] – [Wireless LAN Settings], set [Wireless Mode] – [Connect to existing LAN] and connect to an access point of the Internet.

Step 2 Preset in Weather Menu and Page

In [Menu] (TZZ9/14/BB) / [Settings] (TZTL12F/15F/BB) – [**Weather**], forecast days and downloadable weather data types can be selected.

The weather data in the area shown on the Weather page will be downloaded: Adjust the chart scale for download in the Weather page.



Step 3 Download weather in Weather page

In the Weather page, tap somewhere on the screen and select [**Get Latest Wx**] from the contextual menu. Download process will automatically starts and the progress will be shown in the bar.



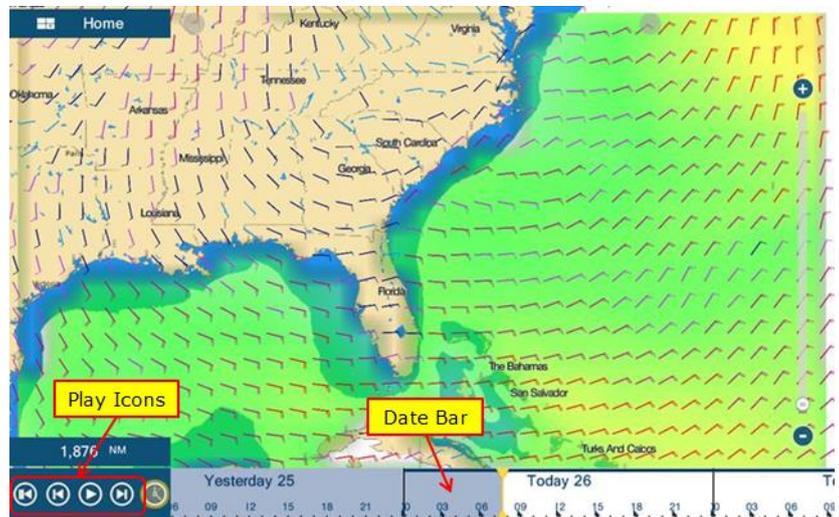
Step 4 Select the weather types

Once the weather is successfully downloaded, the data can be shown on the Weather page. Tap the screen and select [Wx Data] and turn [ON]/[OFF] for the required data types.



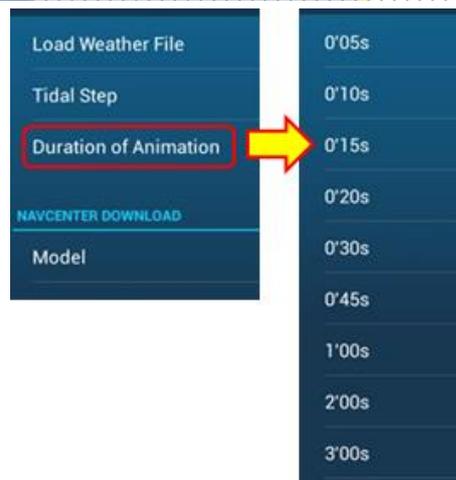
Step 5 Show and animate the weather forecast

It is more effective if the forecast data is animated on the screen to review the weather trend in each data type: Tap the Play icons at the bottom of the screen to automatically animate it or slide the date bar to manually animate it.



Tips:

The speed of automatic animation can be adjusted in [Weather] - [Duration of Animation]. The animation of forecast will finish running in the preset duration. (Default: 45 seconds, selectable from 5/10/15/20/30/45 sec and 1/2/3 min)



Step 6 Check the weather at a specific spot.

To check the forecast data at a specific spot, tap the area and see each data shown at the top of the contextual menu.



1.3. Available Weather Data Types

The following table shows the weather types available for download and other details.

No	Data	Data Resolution	Forecast Period	Update Time (UTC)	Data Source
1	Wind (Angle/Speed)	1°×1.25°	Every 6 hours toward 168 hours ahead	18:10, 00:10, 06:10, 12:10	NOAA GFS model
2	Wave (Direction/height)	1°×1.25°	Every 6 hours toward 168 hours ahead	18:10, 00:10, 06:10, 12:10	NOAA WAVEWATCH III model
3	Cloud			varies	
4	Rain/Snow			varies	
5	Air Temperature			varies	
6	Pressure	1°×1°	Every 6 hours toward 168 hours ahead	17:10, 23:45, 05:45, 11:45	NOAA GFS model
7	500 hPa	1°×1°	Every 6 hours toward 168 hours ahead	17:10, 23:45, 05:45, 11:45	NOAA GFS model
8	Sea Surface Temperature (SST)	0.075° ×0.075°	Nil	06:00	NOAA GOES satellite and USGODAE model
9	Current	0.06° ×0.08°	Every 24 hours toward 72 hours ahead	07:00	COAPS HYCOM model
10	Altimetry	0.06° ×0.08°	Nil	06:30	NASA JASON-1 satellite
11	Plankton	0.06° ×0.08°	Irregular	Irregular	NASA MODIS satellite

Tips – Difference between Weather Models

The following two (2) weather models are selectable in the Weather menu.

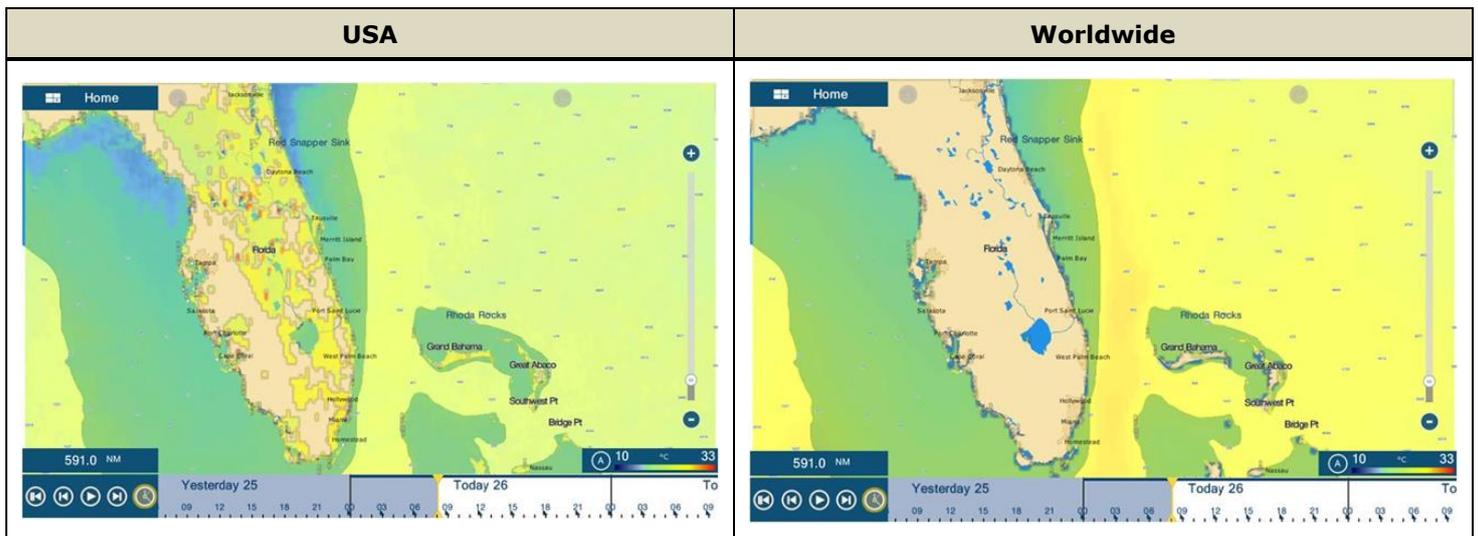
Access [Weather] – [Model] and select [USA] or [Worldwide].

USA : Weather data is measured at **satellites**.

Worldwide : Weather data is measured at **buoys**.



Different measurement sources may provide a different coverage in some data types. As an example, the following screenshots compare **SST** between USA and Worldwide models in December 2017.



2. Utilizing Weather Data

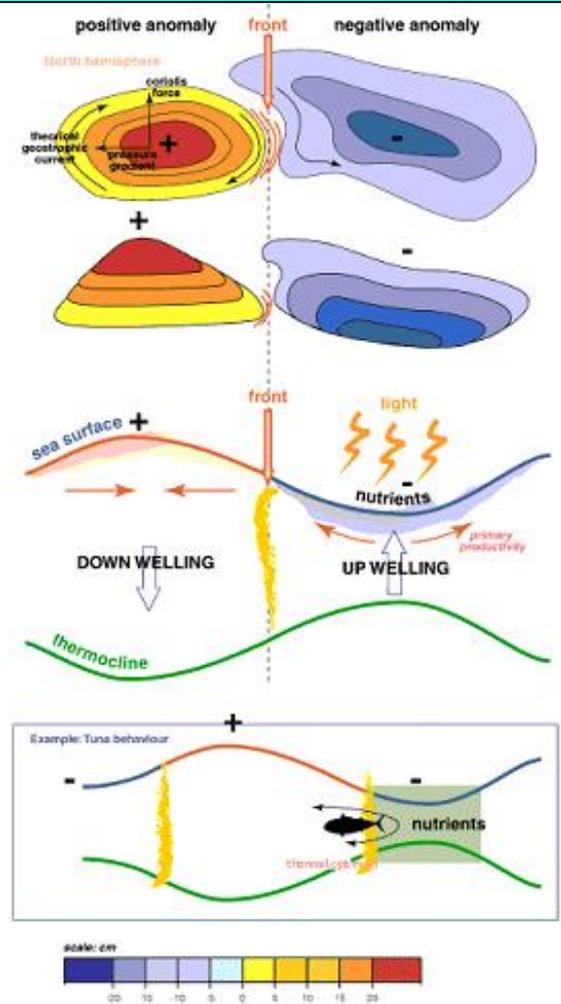
2.1. Altimetry vs. SST – Reference for Fishing

Basic Knowledge – Altimetry

This data is without doubt, one of the most important as it takes into account global phenomena (water columns and sea surface temperature only).

The sea is not flat and its surface water height varies with the temperature. Cold water masses are heavier than warm water masses. These differences in temperature create water columns of different heights. Pelagic fish are not able to pass through these rupture zones.

The front, where the height changes, are likely to shelter more schools of fish, mainly pelagic fish, than the other zones.

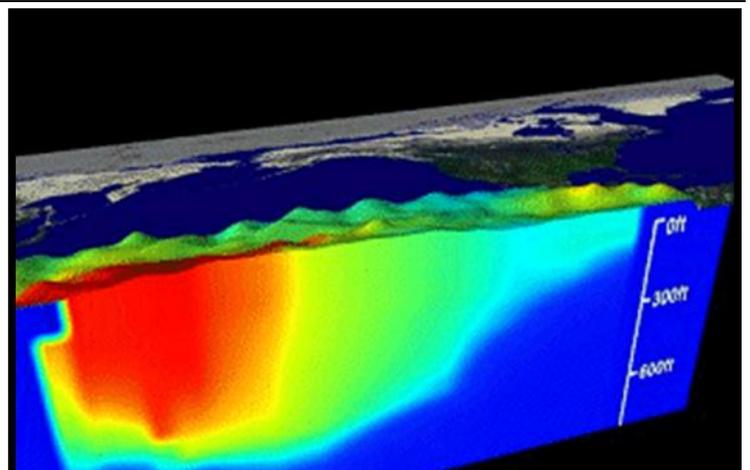


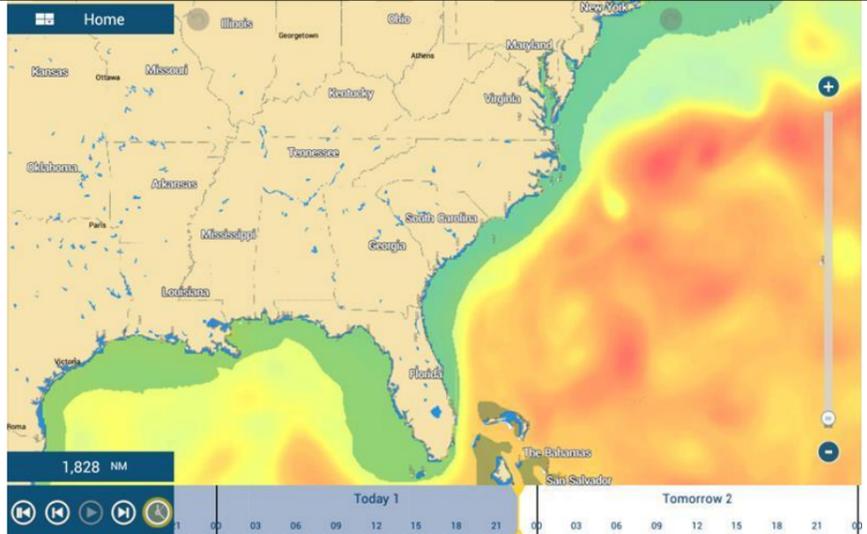
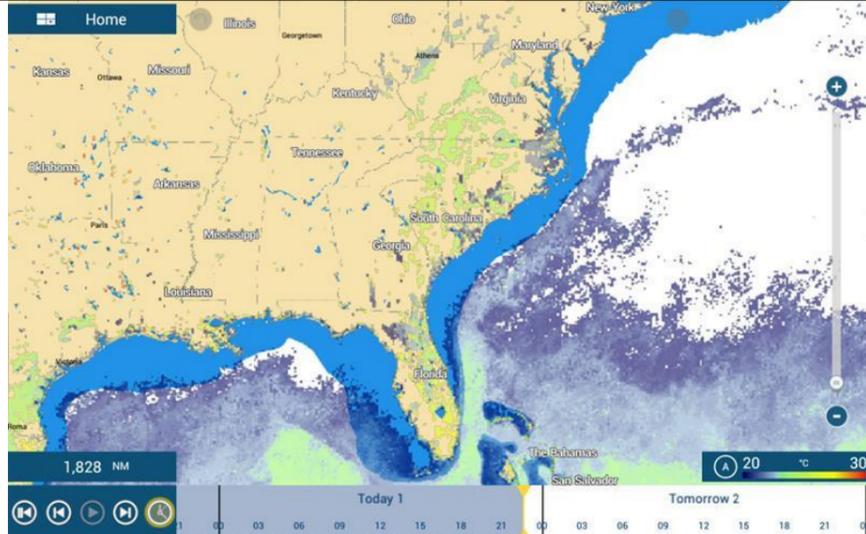
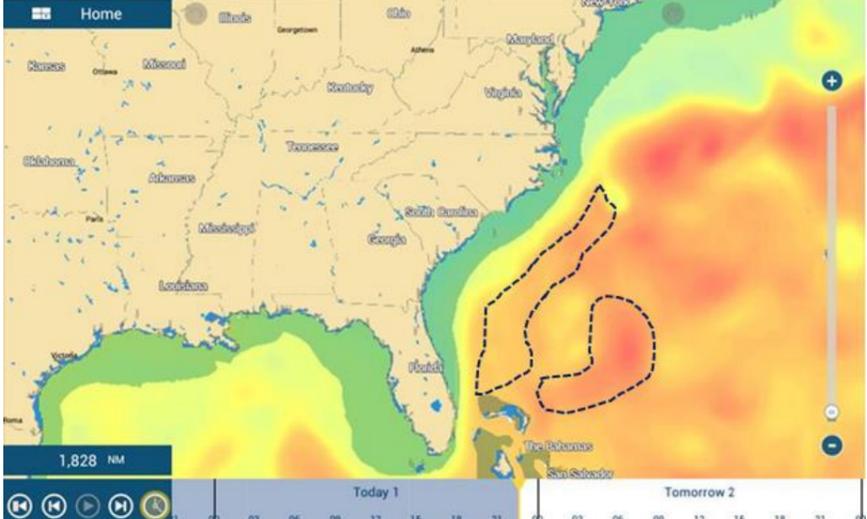
Basic Knowledge – Sea Surface Temperature (SST)

The SST available from the data source provides the **temperature up to 5 cm from the water surface.**

The temperature information could be sensitive to the environment around a buoy, or a measurement point, such as cloud over the sky.

While the fish is located at deeper than 5 cm, the most interesting information is the depth at which there is a sudden change of temperature. The picture at right shows precisely what a thermocline is.



Altimetry	SST – Manual Variation: 20 to 30°C	Descriptions
		<p>The screenshots here were taken in December 2017 to compare the Altimetry with SST data along the east coast of the US.</p> <p>Left – Altimetry: The Altimetry data is shown in variable colors: Higher level in red and lower level in yellow.</p> <p>Right – SST: The SST data is shown in incrementally variable colors by temperature: Higher temperature in red and lower in blue. The SST overlaid on the screen can be adjusted automatically or manually. In this example, the SST from 20°C (minimum) and 30°C (maximum) is overlaid on the screen, and the maximum SST is approx. 25°C.</p>
		<p>In this example, the areas with higher temperatures are manually circled.</p> <p>Left – Altimetry: The areas in dark red are circled in dot lines. The dot line areas are likely the front, i.e. between high and low altimetry.</p> <p>Right – SST: The areas in light to normal green at approx. 25°C, i.e. the highest SST, is circled. The dot line areas are likely the boarder between high (light to normal green) and lower (purple) temperatures.</p>
		<p>Overlaying the zones available from Altimetry and SST, the difference in coverage is evident.</p> <p>Tips: When looking for the area with specific SSTs, the SST data may be referred to. However, as explained in the previous page, the SST information may frequently change depending on the environmental condition at the time of measurement and around the measurement point, such as cloud over the sky. On the other hand, the availability of Altimetry information is more stable. When estimating the trend of temperature distribution, as well as locating the front between high and low altimetry zones, the <u>Altimetry</u> data is recommended.</p>

2.2. Current with Altimetry – Reference for Navigation and Fishing

Basic Knowledge – Geostrophic Current

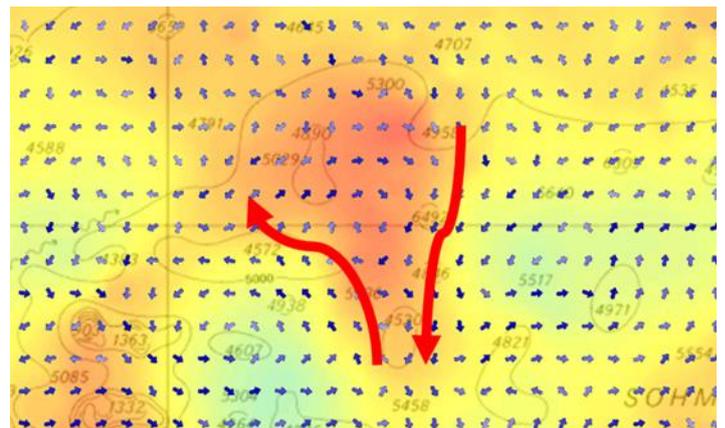
Definition by CNES partially extracted:

"A view of the global ocean circulation shows currents swirling around the hills and valleys at the sea surface. In the Northern Hemisphere, currents flow around hills in a clockwise direction and in an anticlockwise direction around valleys (the opposite occurs in the Southern Hemisphere). By measuring sea level variations, altimetry satellites enable us to observe ocean currents. Note, however, that currents determined using altimetry are calculated according to the ocean's topography (these currents are called "geostrophic"). They do not take the direct effects of wind on the masses of water into account. Geostrophic currents produced using altimetry measurements can be quite different from the "actual" current."

Current and Altimetry on Weather Page

To conclude, geostrophic currents are closely linked to altimetry and provide essential information on the degree of oceanic activity, as well as the potential direction of schools of pelagic fish such as anchovies, mackerels, sardines, tunas, swordfish, etc.

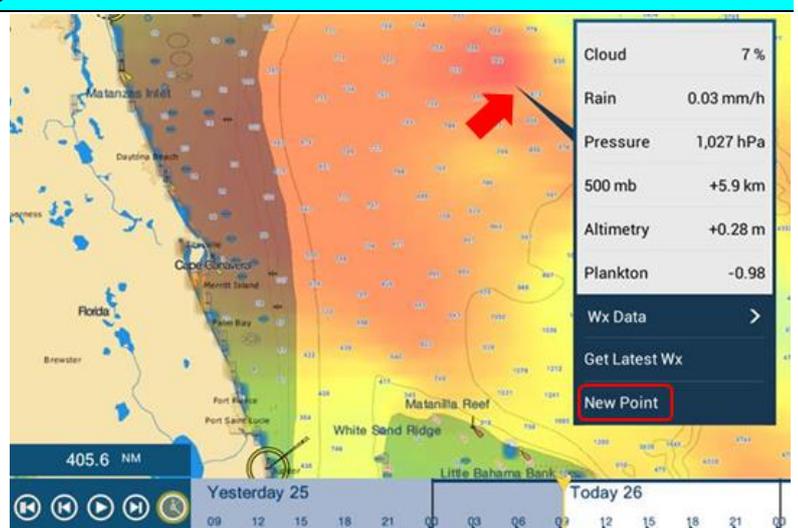
The screenshot at right shows both Current and Altimetry data. Two (2) arrows are manually drawn to show the relationship between altimetry and geostrophic currents. It is effective to show the current flow to estimate the most appropriate navigation route.



2.3. Entering Points on Weather Page

After the downloaded weather forecast is reviewed, points can be entered from the Weather page: Tap the spot, where you enter a point, and select [**New Point**] from the contextual menu.

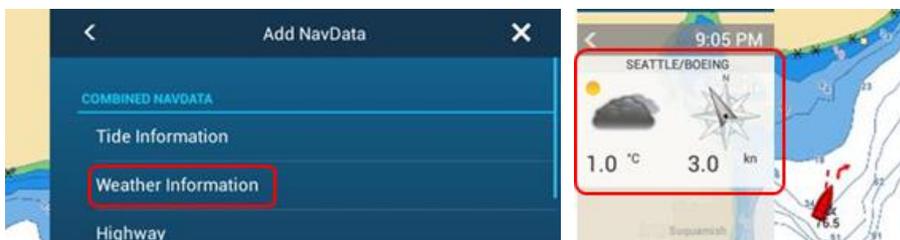
In the example shown at right, the Altimetry distribution is reviewed with the Altimetry data, and a point is entered at the edge of high altimetry zone.



2.4. Data Box for Weather – NavNet TZtouch2 Only

NavNet TZtouch2 MFDs have a unique feature to show **the latest weather in the Data Box**. While the TZTL12F/15F/BB is connected to the Internet, **the weather information at the closest measurement point to the own ship is shown and updated every 10 minutes**. If the vessel is in a condition to be connected to the Internet via VSAT, etc., this function can be utilized.

Tap the Data Box and select **[Weather Information]** to show the Weather Information box in the Data Box.



Weather Information Box

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