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Bay of Fundy



On a flood tide, 160 billion tonnes of seawater flows into the Bay of Fundy — more than four times the estimated combined flow of all the world’s freshwater rivers during the same 6-hour interval.

The vertical tidal range can be over 16 metres — giving the Bay of Fundy the highest tides in the world. The horizontal range can be as much as 5 kilometres, exposing vast areas of ocean floor.

The tidal currents in the Bay of Fundy are fast, reaching 10 knots (5.1 m/s) at peak surface speed.

Research from California-based Electric Power Research Institute (EPRI) identifies the Bay of Fundy as potentially the best site in North America for tidal power generation, with a world-class resource close to an existing electricity grid.

In the Minas Passage alone, EPRI estimated a nearly 300 megawatt potential (equal to enough power for about 100,000 homes).

More recent research suggests there is more than 7,000 megawatts of potential in the Minas Passage, 2,500 megawatts of which can be extracted without significant effects. Models indicate upwards of 50,000 megawatts of energy exists in the entire Bay of Fundy.

The *Guinness Book of World Records* states the world’s highest average tides are in the Bay of Fundy, where the mean spring range in the Minas Basin is 14.5 metres (47.6 feet). The highest tide on record

in the Bay was 21.6 metres (70.9 feet) in 1869.

Tidal Energy Technology

Design	<p>An in-stream tidal turbine, also called a tidal current turbine, works a lot like an underwater windmill. In-stream technology is designed to use the flow of the tides to turn an impellor, just like a windmill uses the flow of air to turn its blades. Each turbine technology deals with this challenge differently, but each uses the rotation of a turbine to turn an electrical generator.</p> <p>Some of the technology being explored house the impellers in a shroud or duct, to accelerate the flow of water over the blades, and improve the efficiency of the units. Others are using two reversing pitch propellers, just like a conventional wind turbine, and uses the design of their blades to maximize efficiency.</p>
Operation	<p>The turbines are designed to operate in the open flow of water. In the Minas Passage, they must operate in a range of speeds from zero to 8 knots, depending on where they are sited and how deep they are positioned. Water speed is fastest at the surface and slowest near the sea floor. Tidal power output is very sensitive to water speed, just as windmills are to wind speed. For example, if the water speed doubles, the turbine will produce eight times more power!</p>
Test Centre	<p>FORCE is designed to accommodate three turbines at this time (or up to 5 megawatts in total). Once the underwater cable is installed, the electricity will be transferred to the shore and connected to the Nova Scotia electricity grid.</p>

Quick stats: FORCE

- 50,000 MW of energy potential in Bay of Fundy
- 7,000 MW of energy potential in Minas Passage
- 2,500 MW estimated extractable from Minas Passage without significant effects
- 13 meter tidal range
- Peak surface speed of 5 meters/second



Depth: 0-60 m

Setting: Bay of Fundy

Studies: Currently tidal conditions, weather. Future will include currents, hydrophones, scanning sonars and others

Site Fly-through:



The Fundy Standard (<http://vimeo.com/90381276>) from **FORCE** (<http://vimeo.com/fundyforce>) on Vimeo.

Observatories

» Arctic

- » Cambridge Bay
- » Arctic Drifter Buoys

» Atlantic

Bay of Fundy

- » Newfoundland SmartAtlantic Buoys

» Pacific

» British Columbia North Coast

- » Kitamaat Village
- » Prince Rupert

» Northeast Pacific Ocean

- » Barkley Canyon
- » Cascadia Basin
- » Clayoquot Slope
- » Endeavour
- » Folger Passage
- » Middle Valley

» Salish Sea

- » Strait of Georgia
- » Mill Bay
- » Saanich Inlet

» Vancouver Island

- » Campbell River

» Mobile Platforms

Infrastructure

- » Data Facilities
- » Platforms
- » Devices & Sensors

» [Cables & Connectors](#)

Expeditions

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Notices

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Tweets

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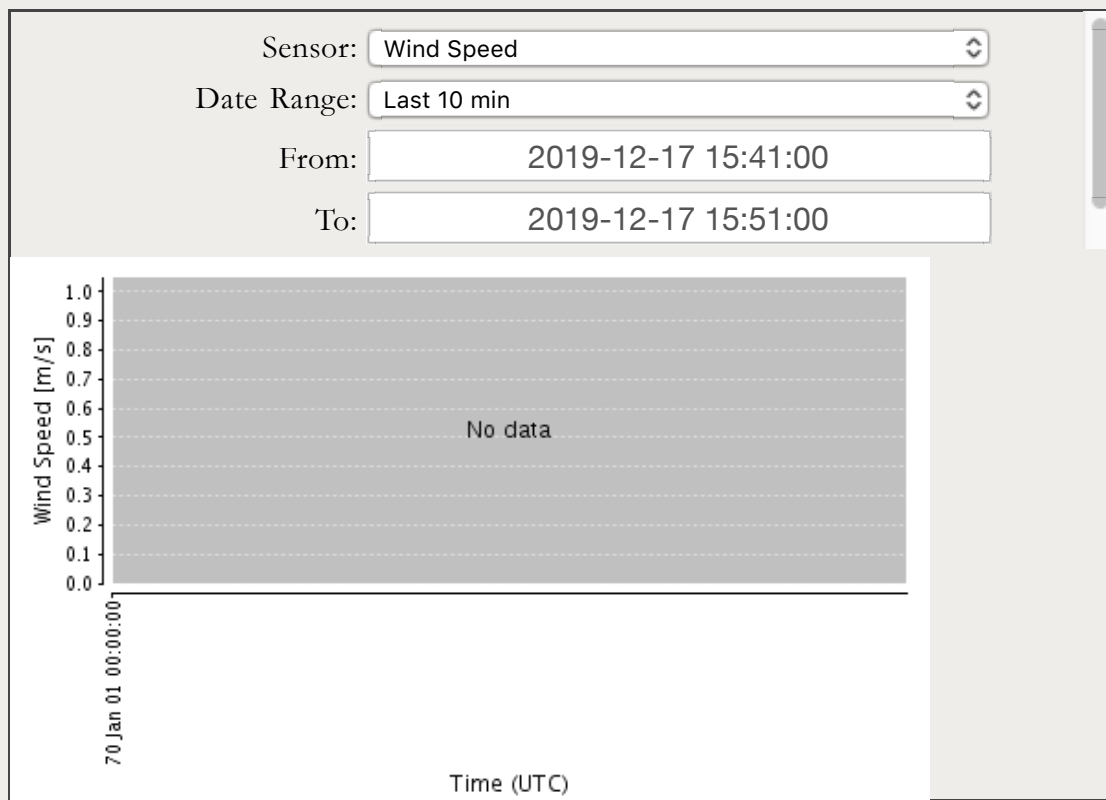
Bay of Fundy Latest Readings

Sensor Name	Reading	Last Updated (UTC)
Wind Speed (m/s)	1.33	06-Mar-2019 23:28:30
Wind Direction (deg)	349.79	06-Mar-2019 23:28:30
Air Pressure (hPa)	1007.51	06-Mar-2019 23:28:30
Air Temperature (°C)	-8.51	06-Mar-2019 23:28:30
Relative Humidity (%)	62.84	06-Mar-2019 23:28:30
Solar Radiation (W/m ²)	0	06-Mar-2019 23:28:30
Absolute Pressure (decibar)	14.43	26-May-2018 15:06:20
Water Temperature (°C)	7.99	26-May-2018 15:06:20
Depth (m)	4.27	26-May-2018 15:06:20
.....		
Significant Wave Height (m)	0.2	12-Jul-2016 01:05:18
Maximum Wave Height (m)	0.42	12-Jul-2016 01:05:18

Mean Wave Direction (deg)	300.97	12-Jul-2016 01:05:18
Significant Wave Period (s)	0	12-Jul-2016 01:05:18
Maximum Wave Period (s)	0	12-Jul-2016 01:05:18
Mean Current Speed (m/s)	1.99	12-Jul-2016 01:05:18

Convert UTC time to local time (<http://www.worldtimebuddy.com/?pl=1&lid=100,6324729,6174041&h=100>).

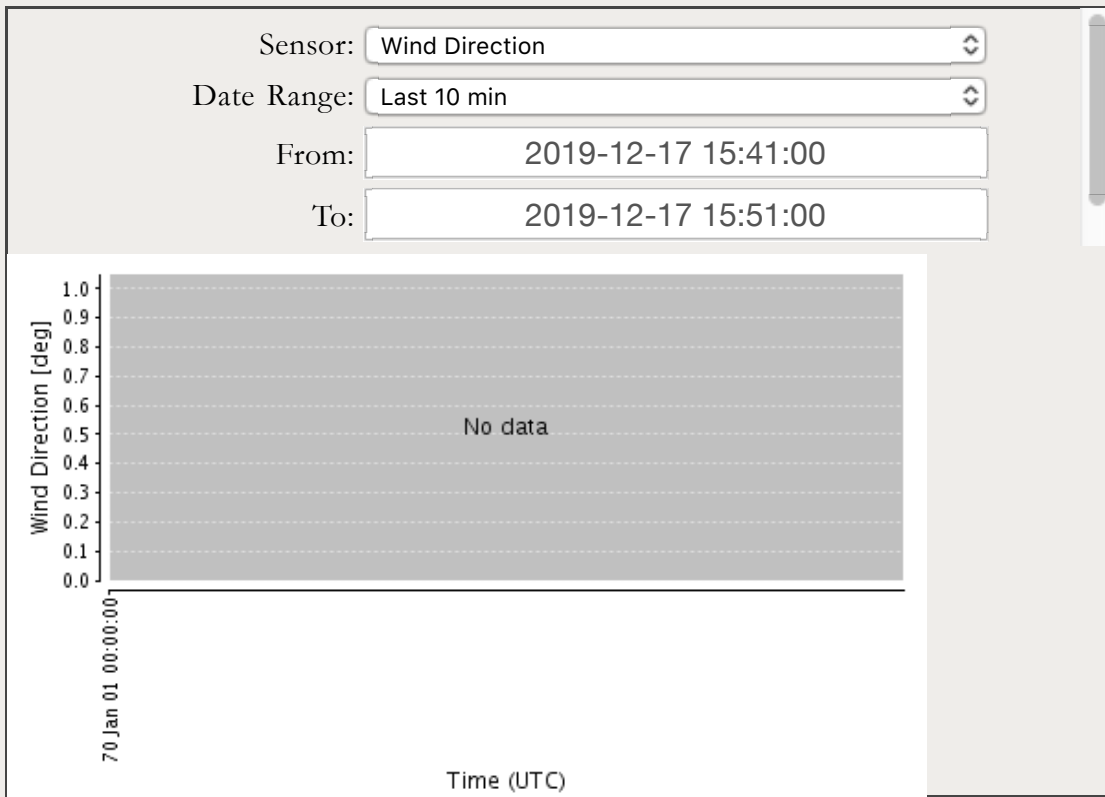
Wind Speed



Save plot

as [png](#) file. [View this in Plotting Utility.](#) [Embed this.](#)

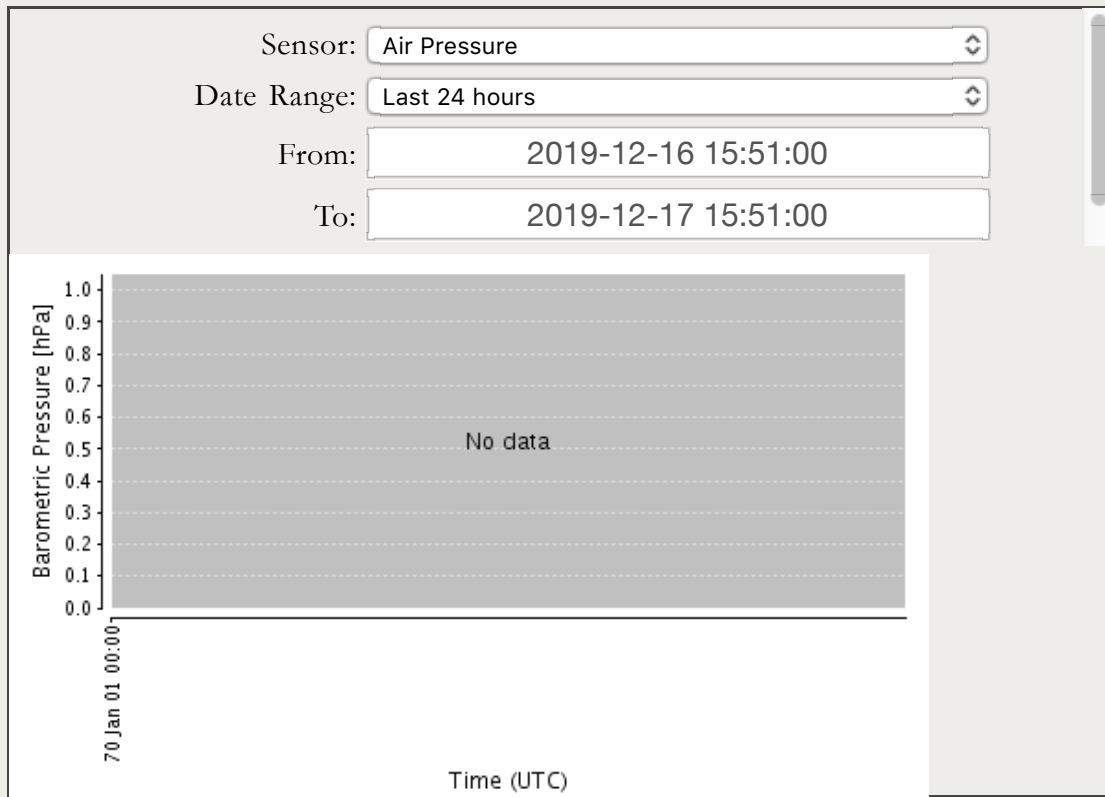
Wind Direction



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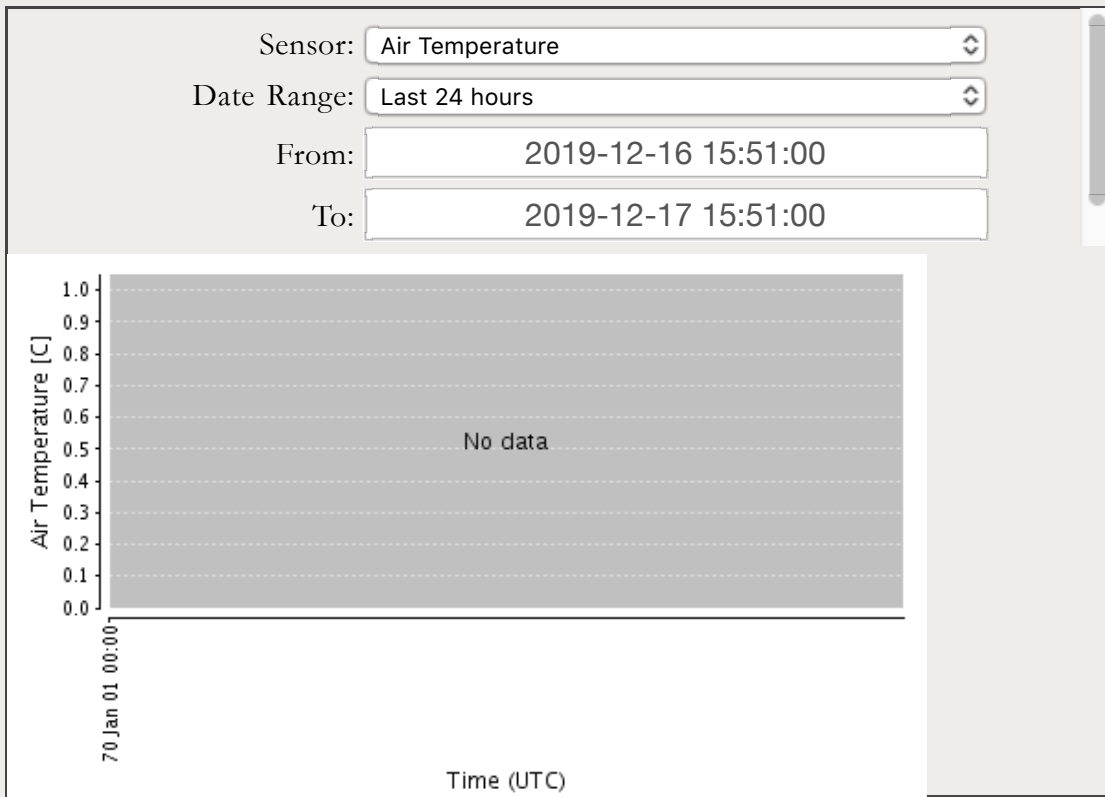
Barometric Pressure Data



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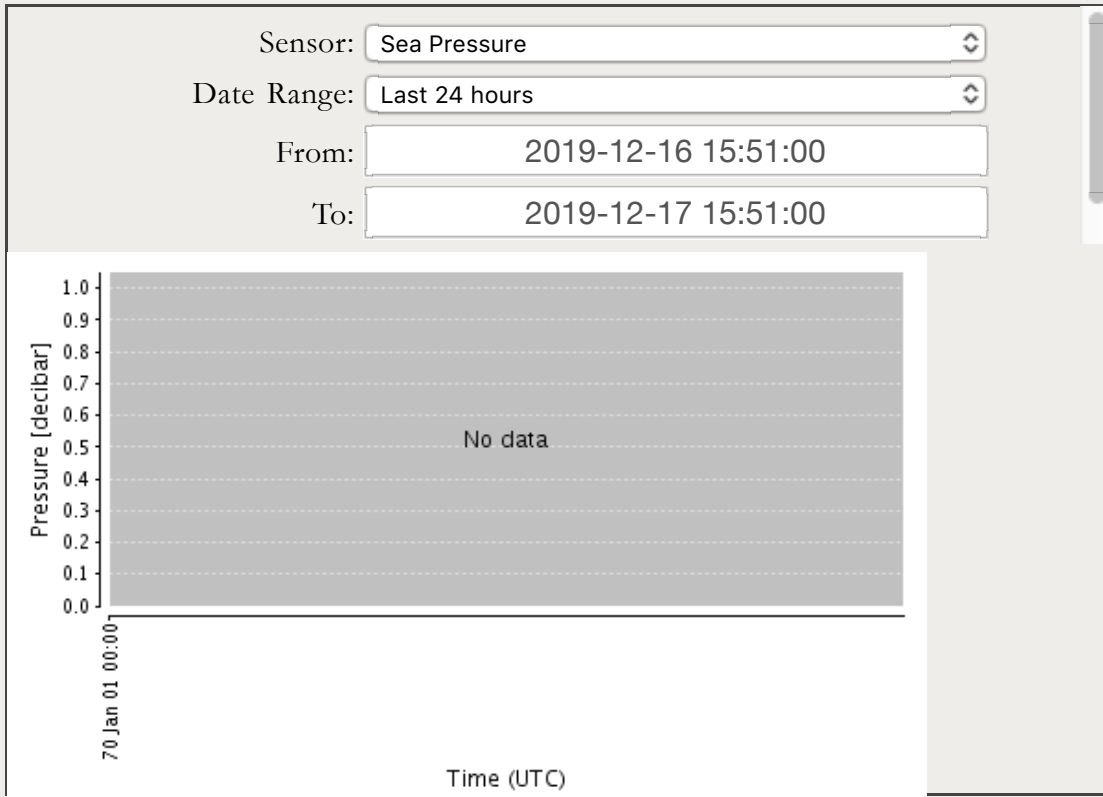
Weather Station Data



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Temperature-Depth Logger Data



Save plot

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Video Camera

The video starts at midnight local time. (UTC/GMT -3 hours)



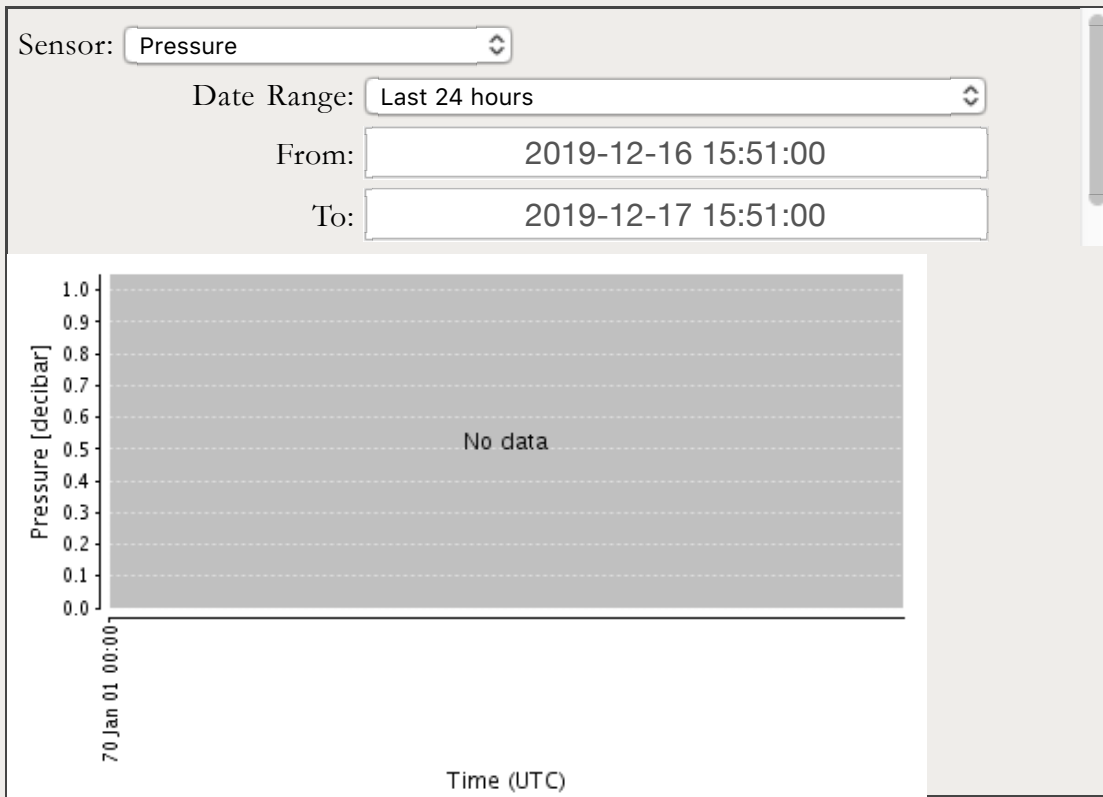
Daylight at around the 17 second mark

Video date: 2019-12-16 

This is the most recent time lapse video.

FUNDY ADVANCED SENSOR TECHNOLOGY (FAST) PROGRAM

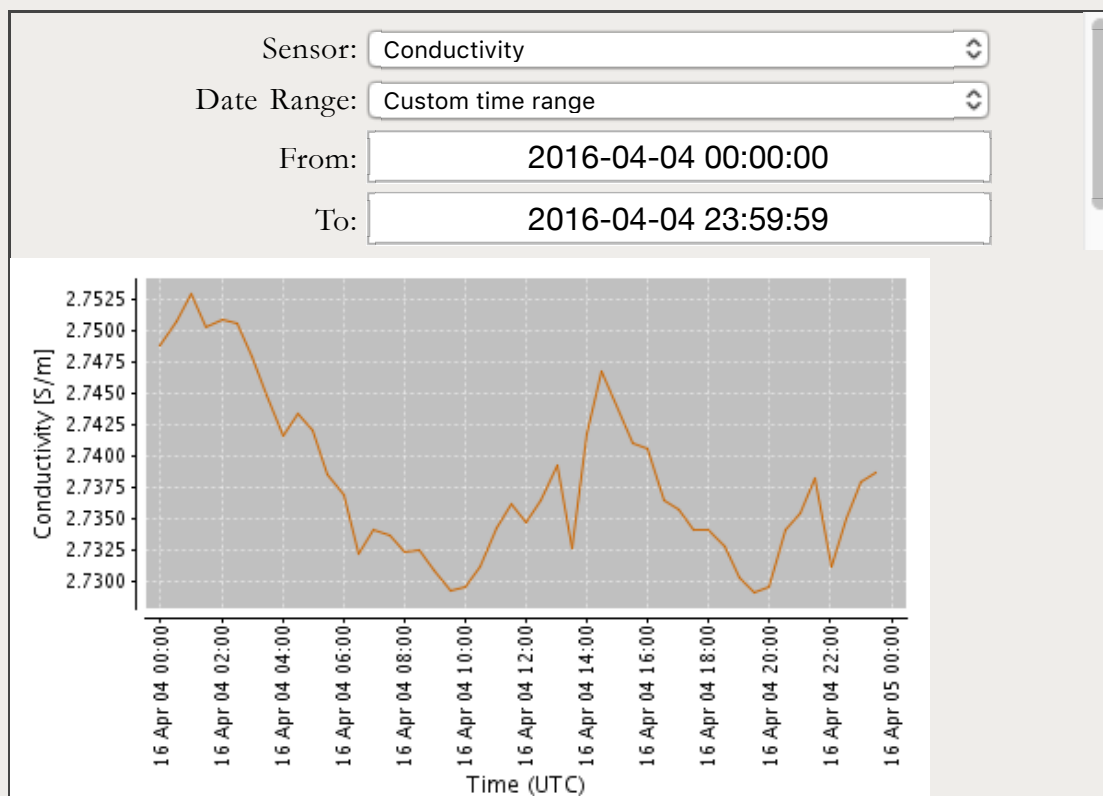
FAST-2 Nortek AWAC 400 kHz



Save plot

as: [png](#) file. [View this in Plotting Utility.](#) [Embed this.](#)

FAST-2 Sea-Bird Microcat CTD



These

sensors were operational from 2015-07-23 to 2016-04-05

Save plot as: [png](#) file. [View this in Plotting Utility.](#) [Embed this.](#)

Additional Resources

Galleries

- [Fundy Ocean Research Center for Energy \(FORCE\) videos on Vimeo](http://vimeo.com/fundyforce) (<http://vimeo.com/fundyforce>).

Useful Links

- [Fundy Ocean Research Center for Energy \(FORCE\) on Facebook](#)
- [Ocean Networks Canada photo sets](#)
- [More about the Bay of Fundy](#)

Highlights

- » [Audio](#)
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Data & Tools

- » [Apps](#)
- » [Data Plots](#)
- » [Data Search](#)
- » [Data Policy](#)
- » [Data Help](#)
- » [OPeNDAP Web Services \(http://dap.one.uvic.ca:8080/erddap/index.html\)](http://dap.one.uvic.ca:8080/erddap/index.html)


Opportunities

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This question is for testing whether or not you are a human visitor and to prevent automated spam submissions.



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Enter the characters shown in the image.

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