

# Ferry Ocean Colour Observation Systems – FOCOS, Ferry Box/ONC, and Satellites Strait of Georgia, BC

Maycira Costa, UVic  
maycira@uvic.ca

WOC-MEOPAR, Montreal, May 2014

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Fisheries and Oceans  
Canada



HAMP



# ONC/VENUS (Victoria Experimental Network Under the Sea)

## Ferry Box systems



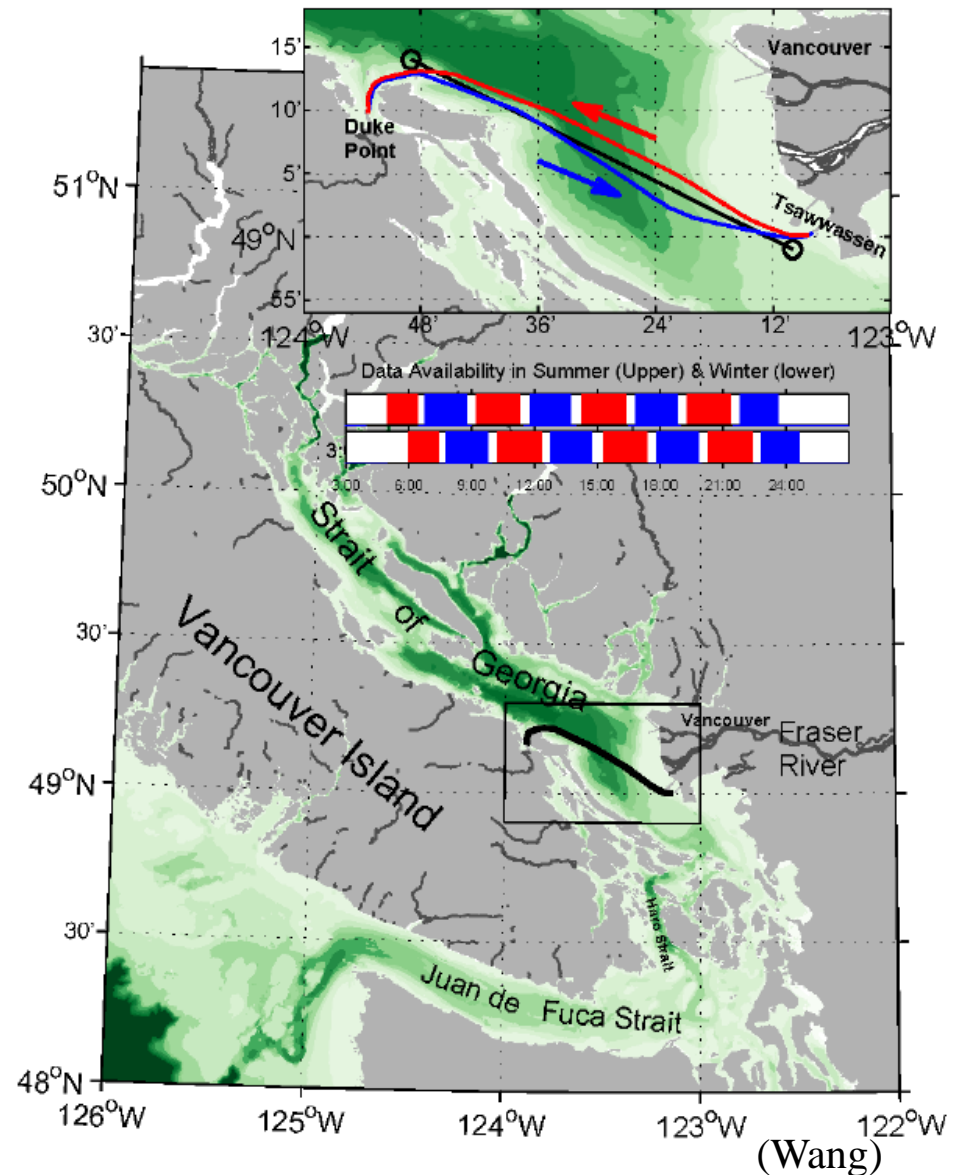
**Network of sensors:**  
**Chla, DOM, O<sub>2</sub>, S, T, turbidity,**  
**Wind speed/direction, humidity,**  
**solar radiation**

# ONC/VENUS (Victoria Experimental Network Under the Sea)

Ferry Box system

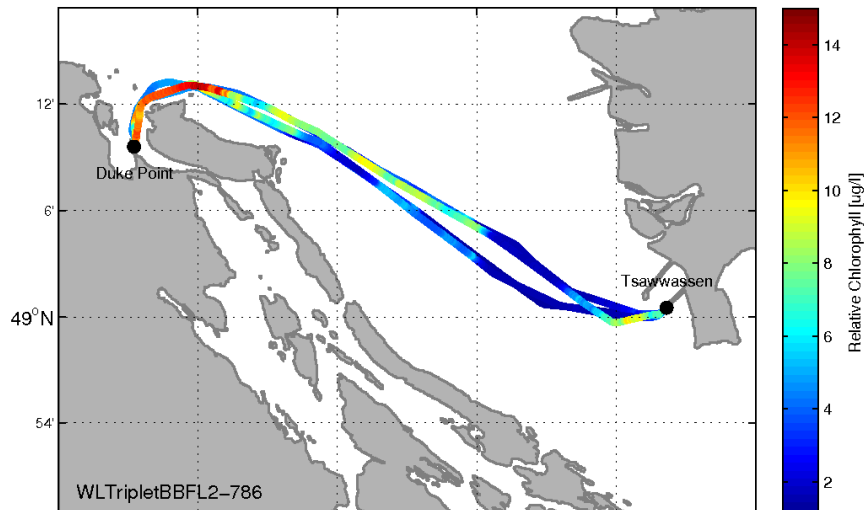
Queen of Alberni

May 2012



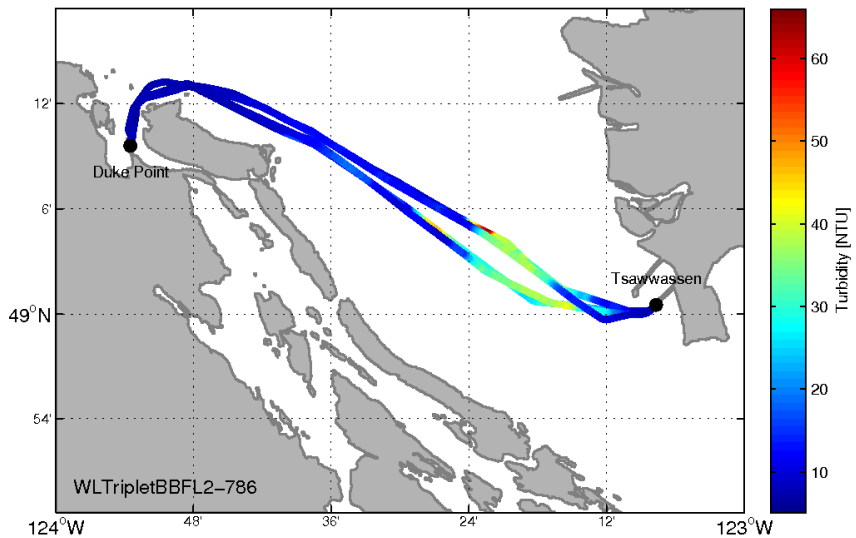
# FeeryBox– seawater properties

VSG Ferry Route: Vancouver–Nanaimo (Tsawwassen–Duke Point): Relative Chlorophyll



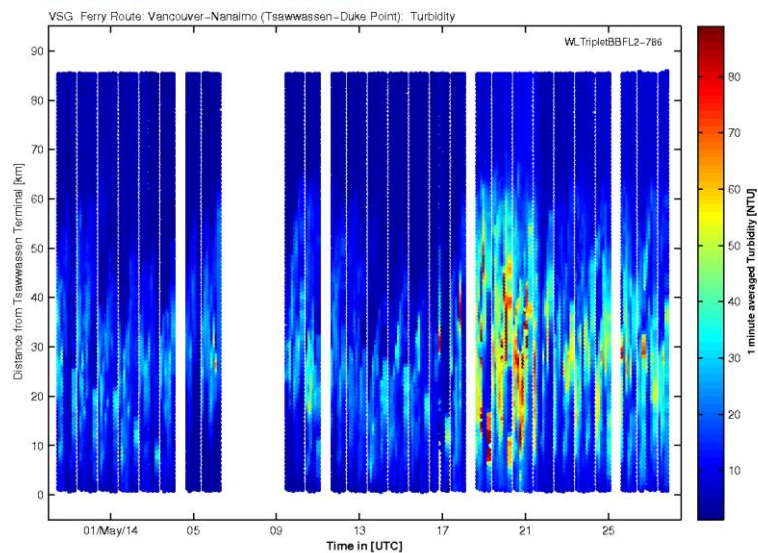
May 2014

VSG Ferry Route: Vancouver–Nanaimo (Tsawwassen–Duke Point): Turbidity



Data Time Range: 2014-05-27T12:00:00.000 to 2014-05-28T07:59:59.000 UTC

OCEAN NETWORKS CANADA VENUS

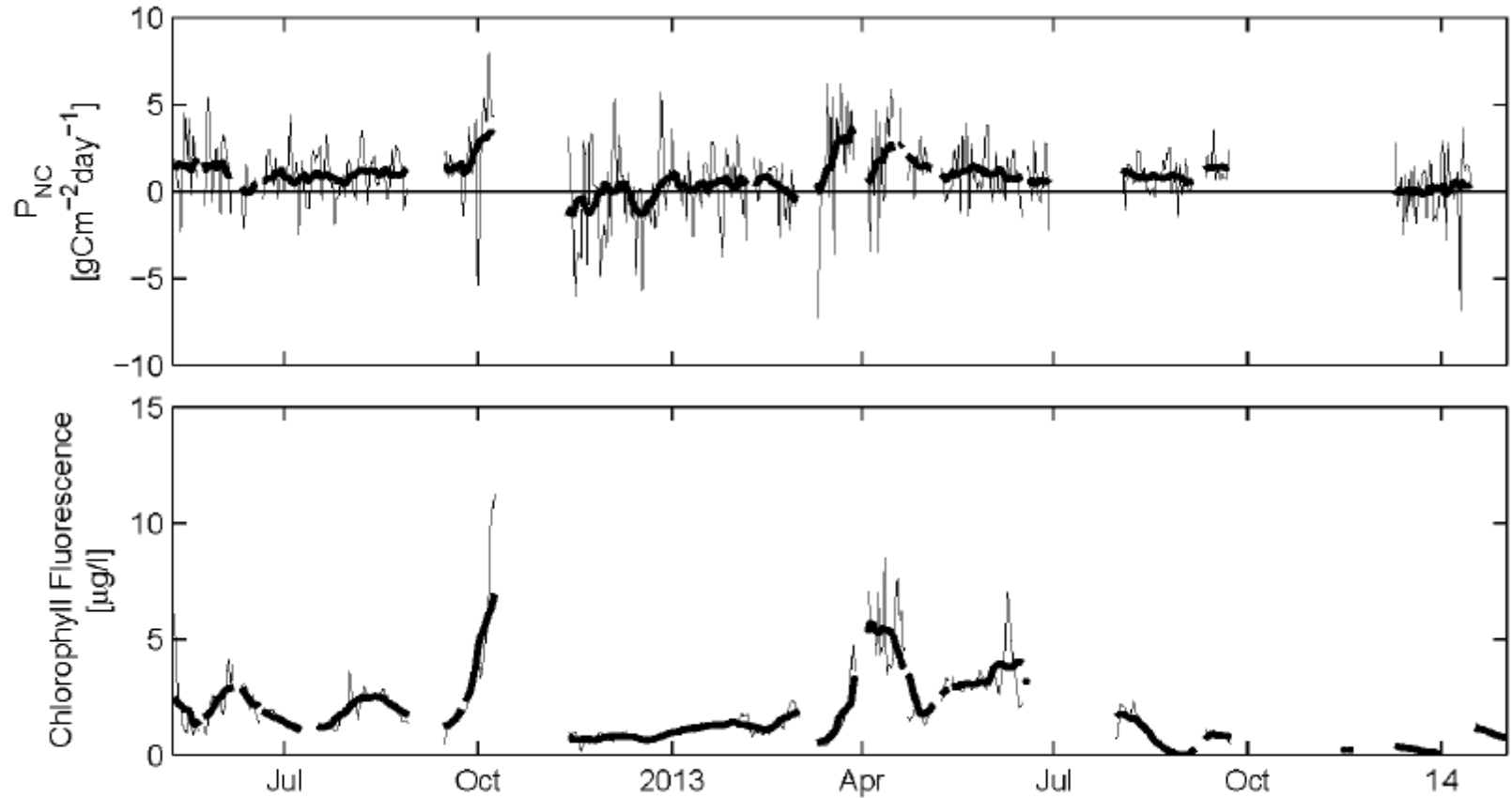


Plot creation date: 27-May-2014 17:05:33 PDT

# FeeryBox– biogeochemistry

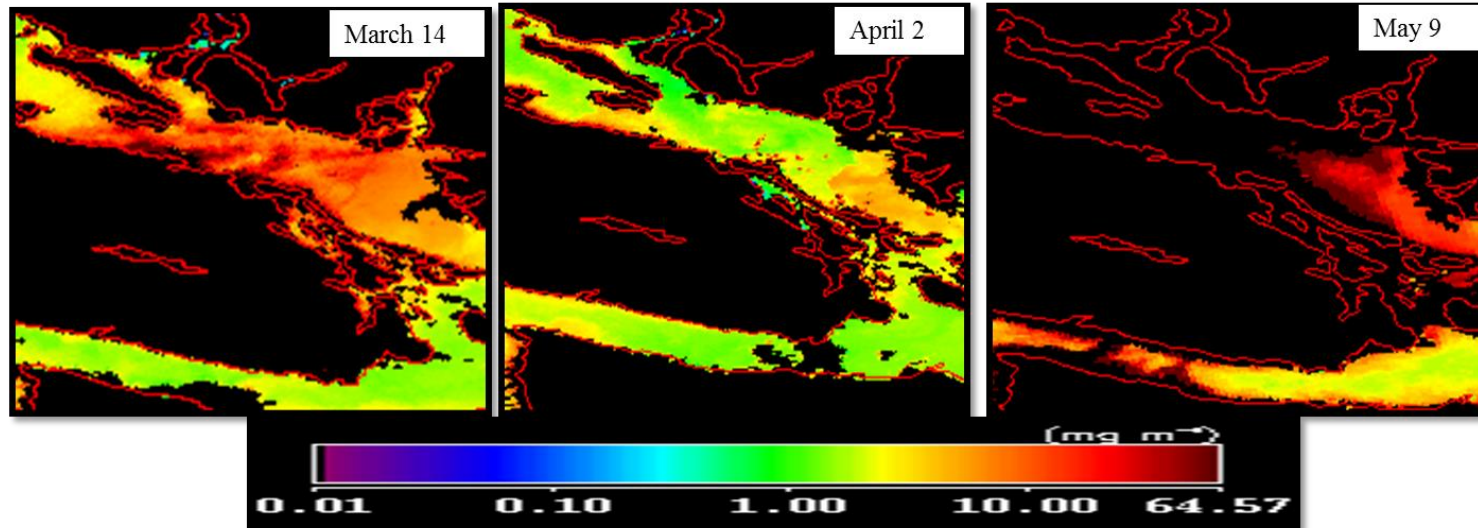
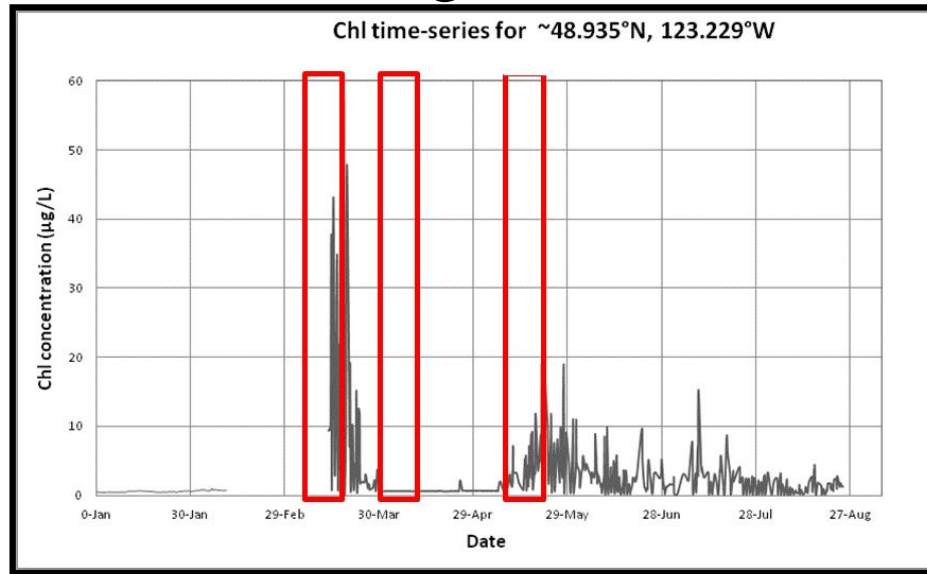
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## Net Community Productivity



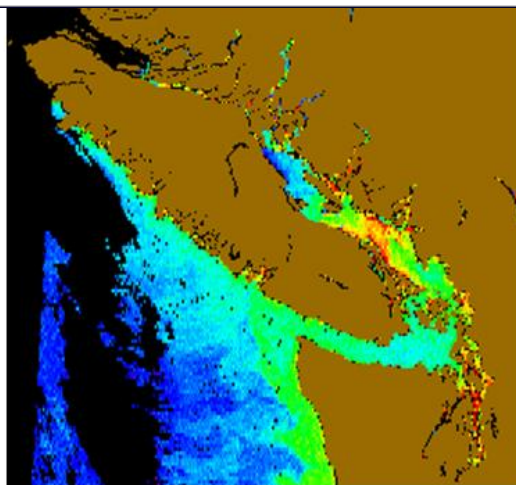
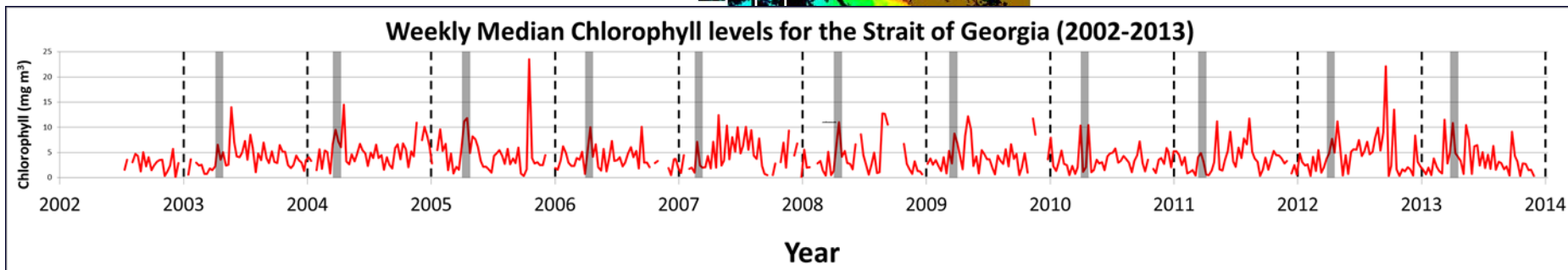
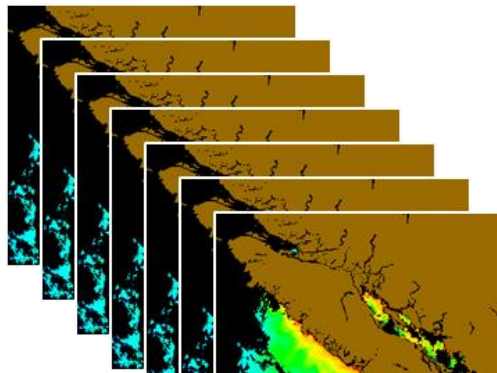
(Wang and Pawlowicz)

# FerryBox - MODIS Imagery and Fisheries Management



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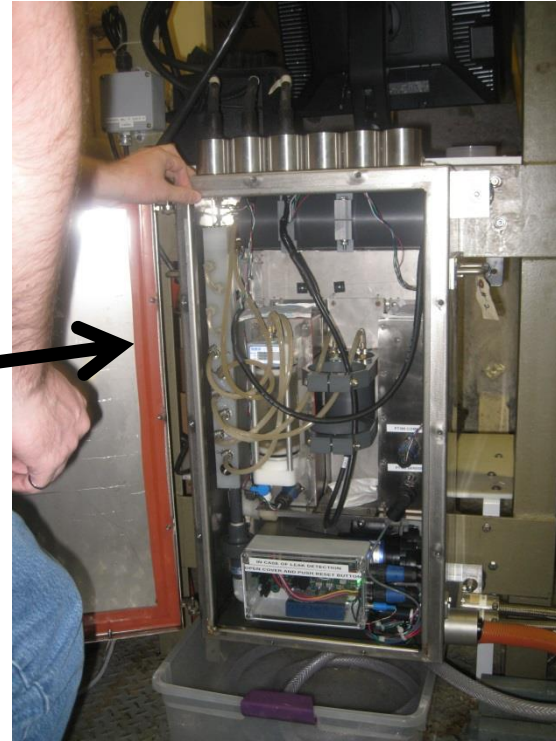
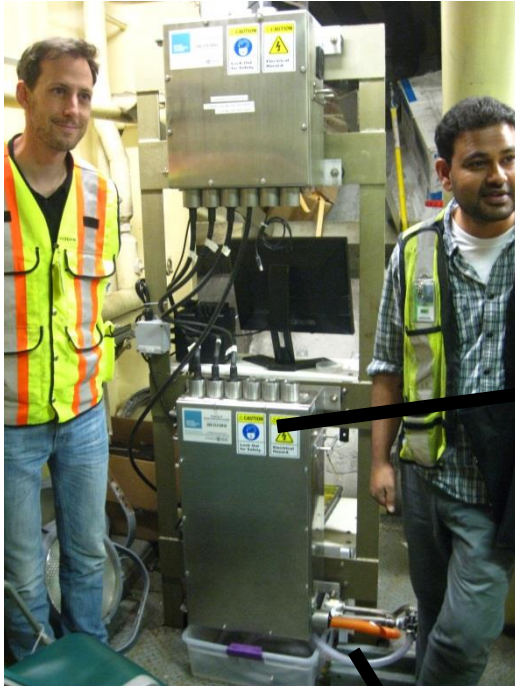
Spring Bloom and sockeye salmon



(Carswell and Costa)

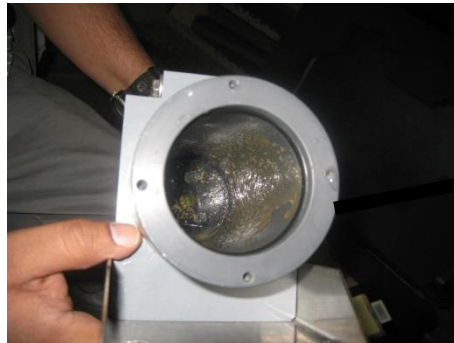
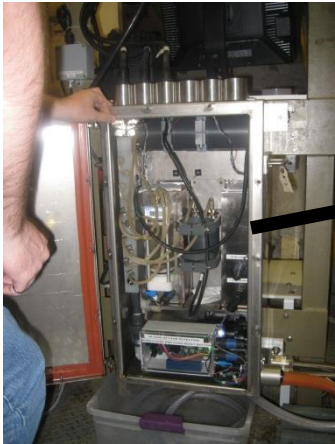
# FerryBox and data quality

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# FerryBox and data quality

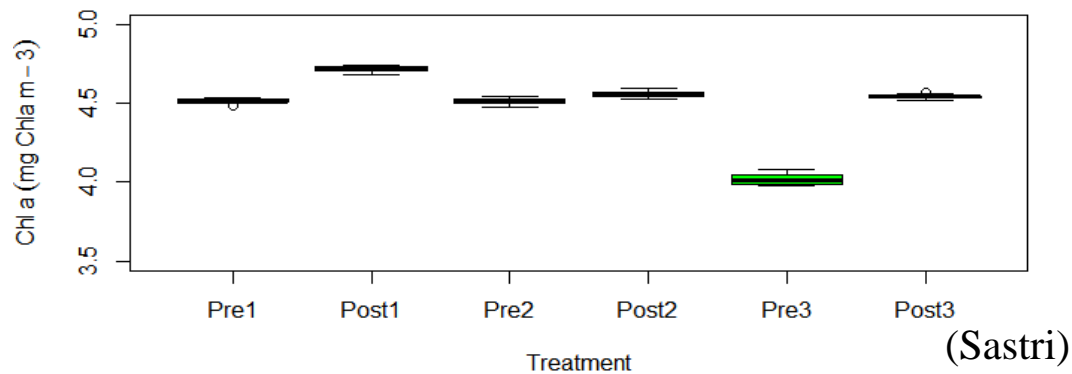
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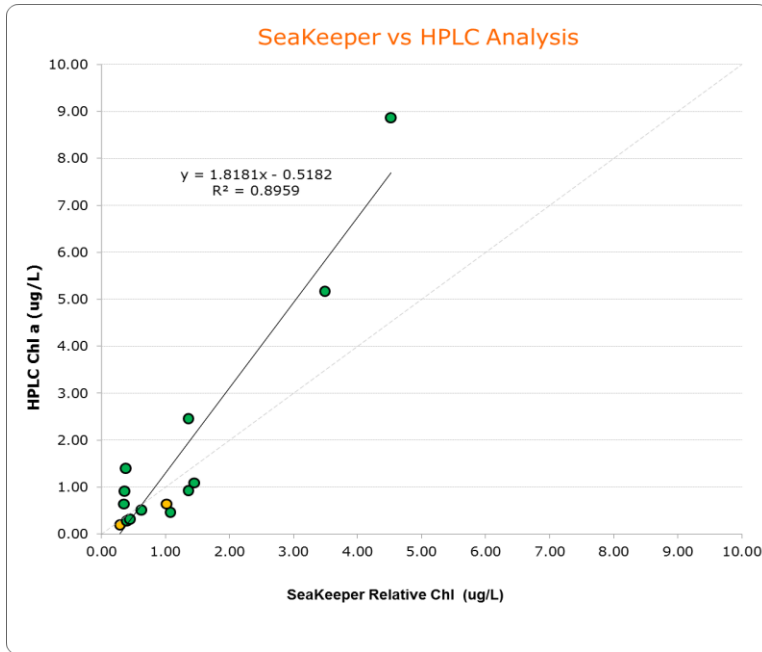
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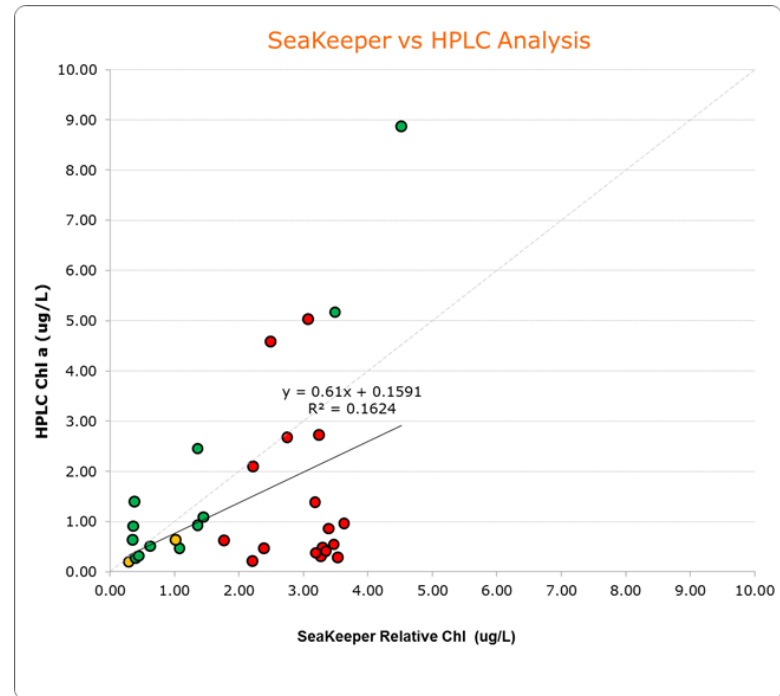
Fluorescence of Diet Coke



# FerryBox and data quality



Within one month after cleaning

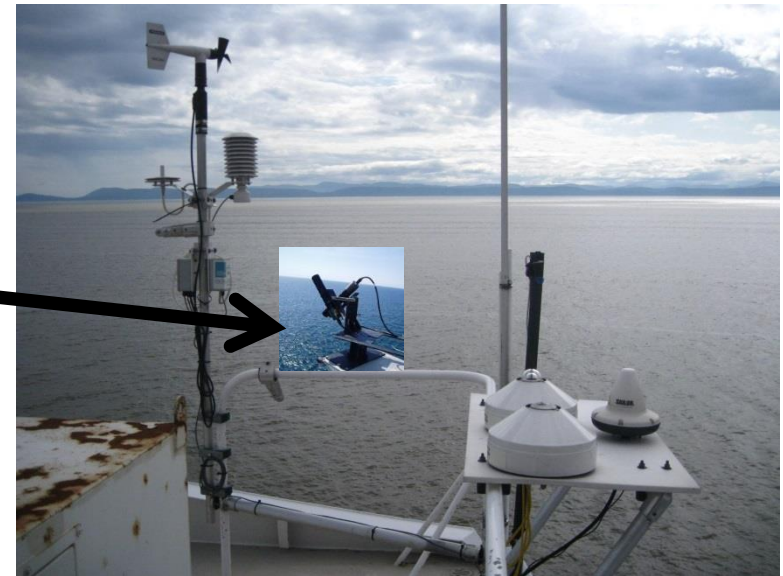


Within two month after cleaning  
(Philips and Costa)

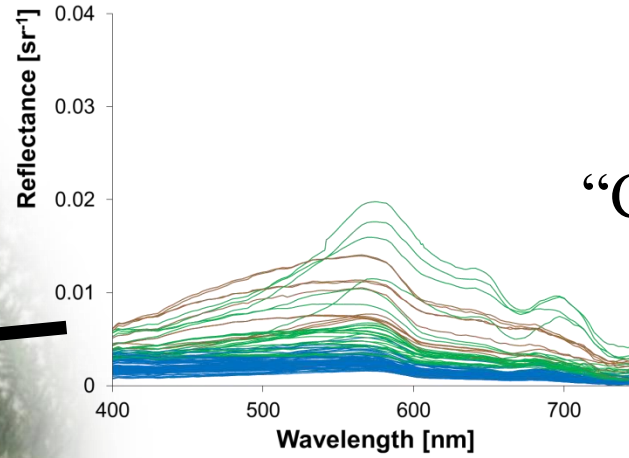
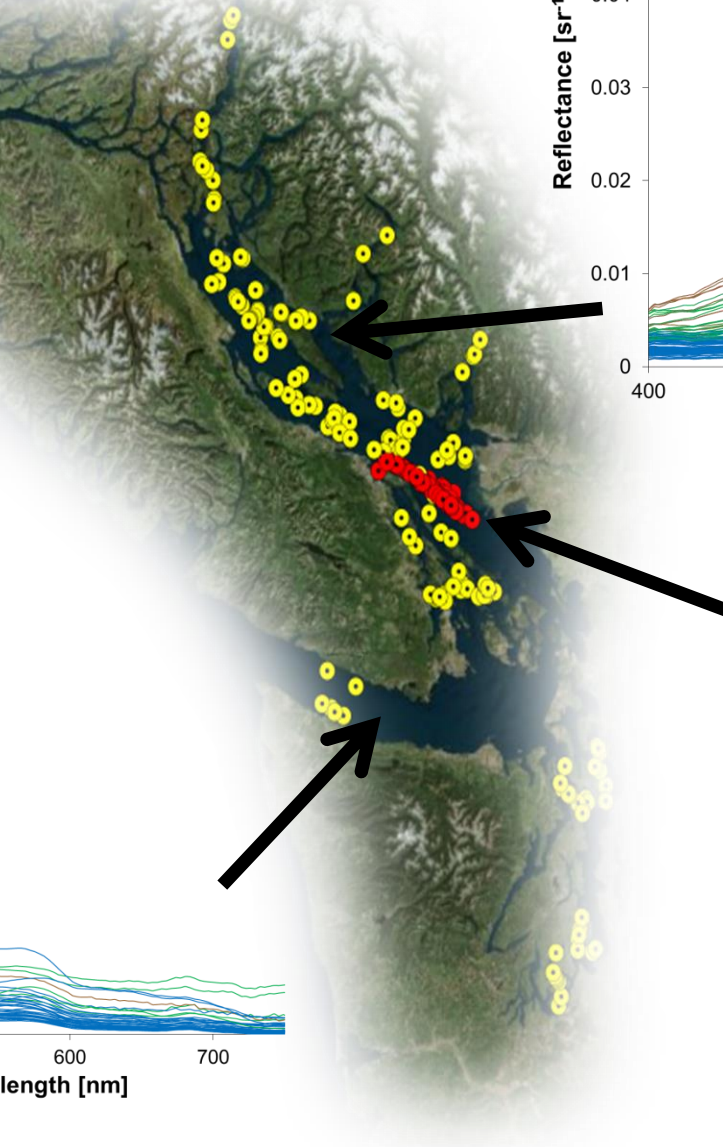
# Ferry Ocean Colour Observation Systems - FOCOS



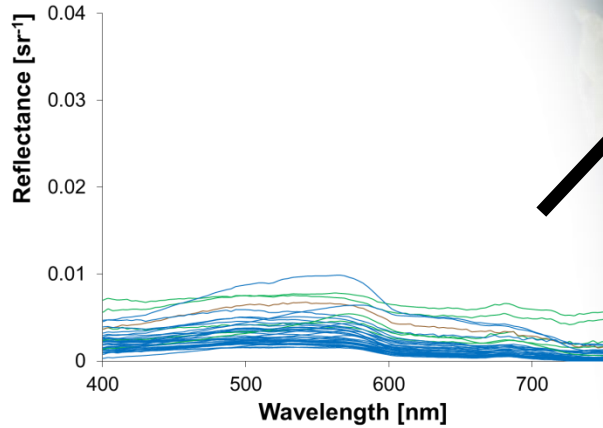
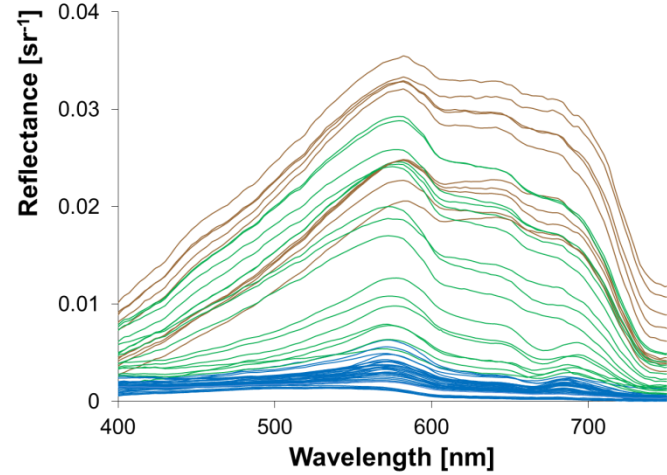
# Ferry Ocean Colour Observation Systems - FOCOS



# FOCOS - Spatial temporal water colour (reflectance)

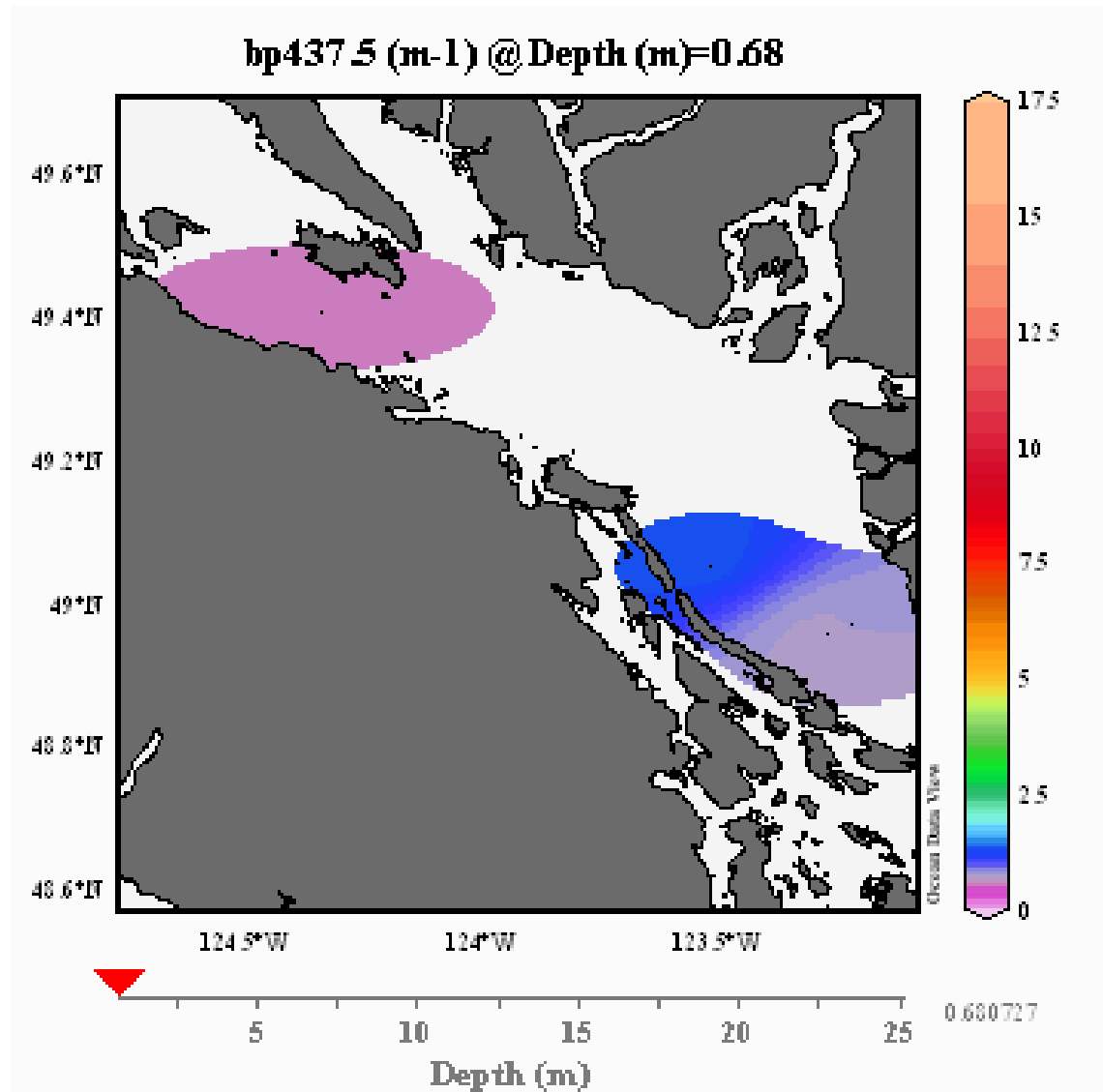


“Colour index”



(Philips and Costa)

# Turbidity plume and light scattering – in situ optics



(Loos and Costa)

# FOCOS - Spatial temporal water colour (reflectance)

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## Applications:

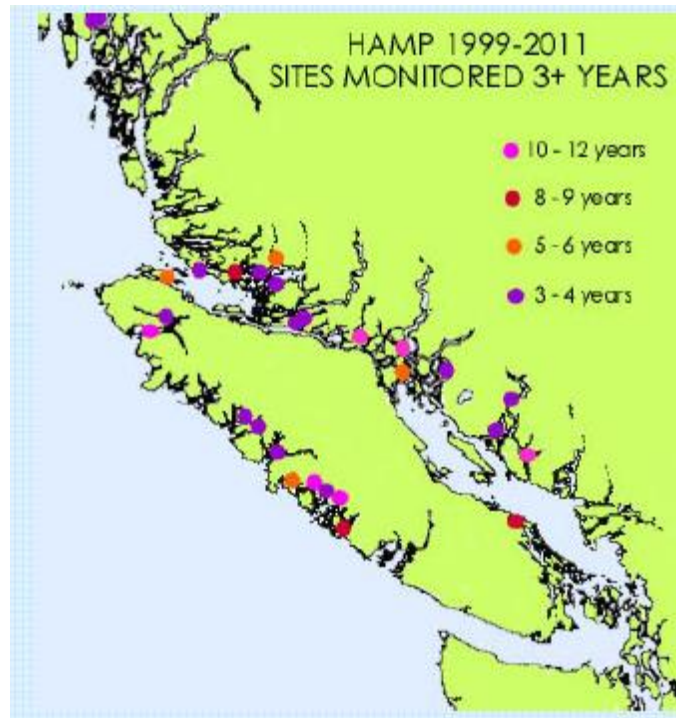
- Water quality: productivity, turbidity, HABs
- Biogeochemical processes
- Improve/validate Ocean Colour satellite algorithms

# FOCOS - Spatial temporal water colour (reflectance)

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## Applications:

- Water quality: productivity, turbidity, HABs
- Biogeochemical processes
- Improve/validate Ocean Colour satellite algorithms



(Haigh – HAMP)

# FOCOS - Spatial temporal water colour (reflectance)

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## Applications:

- Water quality: productivity, turbidity, HABs
- Biogeochemical processes
- Improve Ocean Colour satellite algorithms

## Advantage of ship-based:

- Easy access
- Spatial temporal coverage

# FOCOS - Spatial temporal water colour (reflectance)

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Issues:

- Sun glint
- Spray
- Ship shadow

# FOCOS - Spatial temporal water colour (reflectance)

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## Issues:

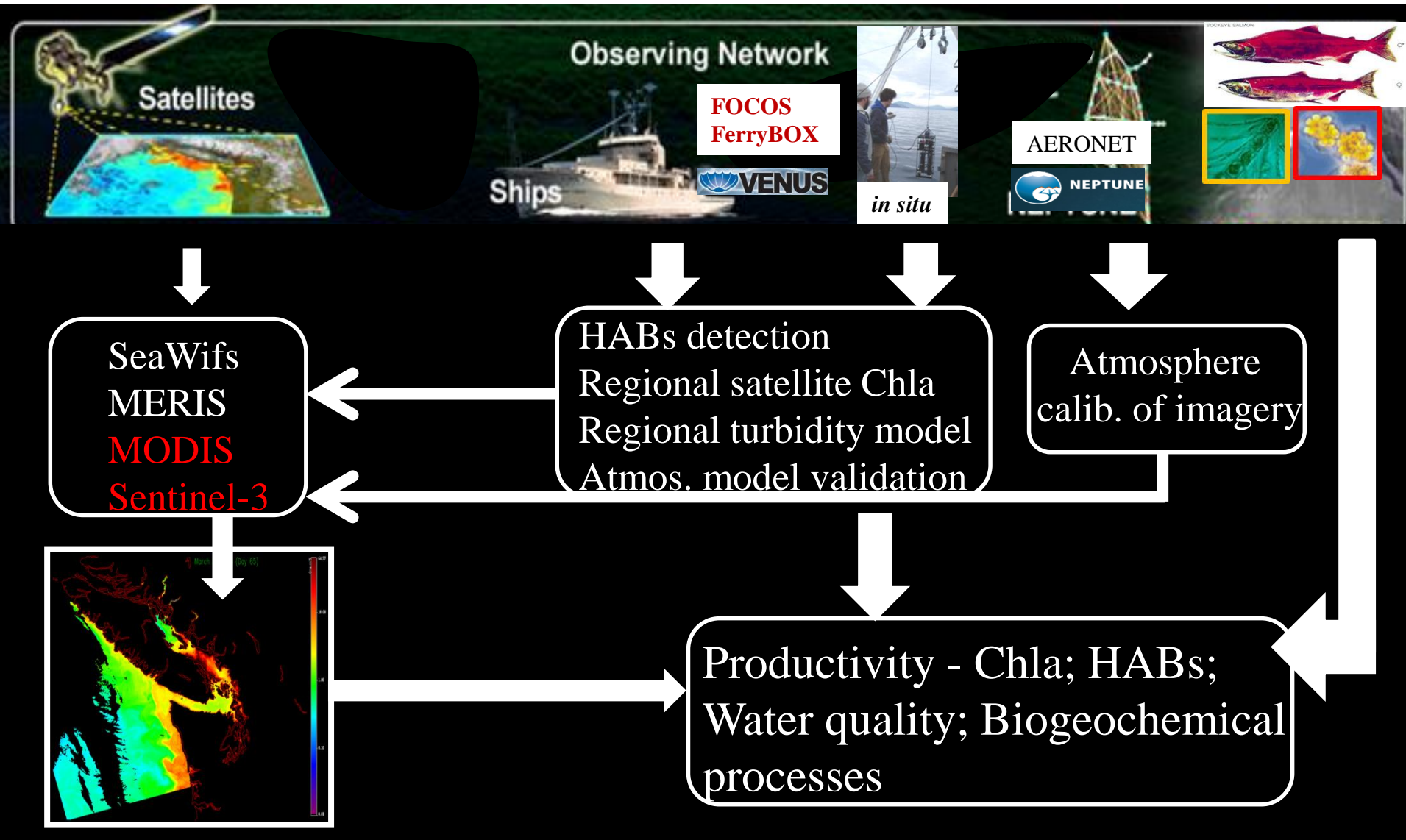
- Sun glint
- Spray
- Ship shadow

## Solutions:

- View angle
- Solar azimuth



# Network



**Thank You**

**Spectroscopy and Remote Sensing  
(SPECTRAL)**

**University of Victoria**

**maycira@uvic.ca**

