Publication No. 12-03-077

DEPARTMENT OF ECOLOGY State of Washington

Eyes Over Puget Sound

Surface Conditions Report

August 27, 2012

Start here

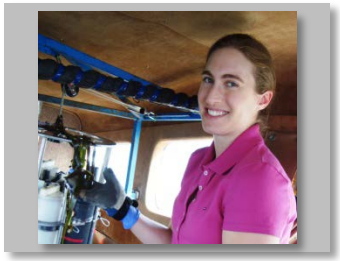
We have a new website (take a look)

Up-to-date observations of visible water quality conditions in Puget Sound and the Strait of Juan de Fuca

Marine conditions from 8-27-2012 at a glance

LONG-TERM MARINE MONITORING UNIT

Laura Friedenberg



Personal flight impression p. 3

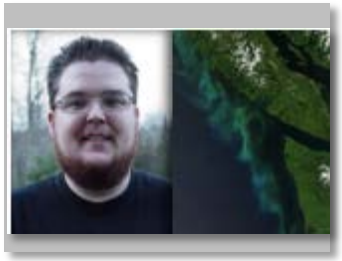
Jellyfish are on the loose in Budd Inlet, large vortex in Rich Passage.

Dr. Christopher Krembs

Aerial photography p.5-23

High abundance of marcoalgae aggregations in Central Sound. Red-brown blooms in South Sound Inlets and parts of Central Sound. Jellyfish patches numerous and increasing in size in Sinclair and Budd Inlets.

Dr. Brandon Sackmann



Ferry and satellite p. 24-26

Low-Moderate fluorescence and turbidity in Main Basin and Admiralty Inlet. Temperatures in Main Basin drop below 15 °C, near-surface salinity >28 PSU

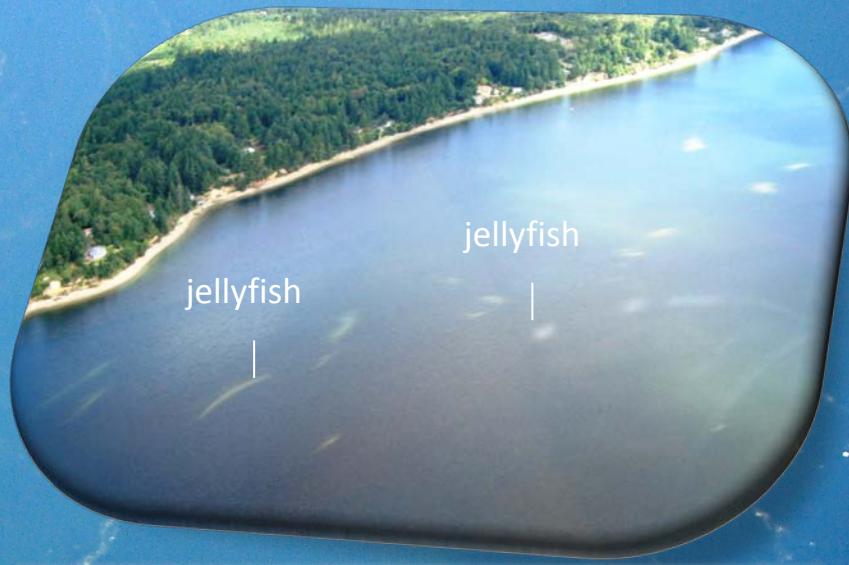
Previous Eyes Over Puget Sound reports: www.ecy.wa.gov/programs/eap/mar_wat/eops/

Marine Flight 3 (Central Sound)

Another successful flight with pilot Joe Leatherman

During the Central Sound flight a very interesting algal vortex caught our eye. It was located in Rich Passage and looked like a green, spiral-shaped bloom. Because we have never seen anything this large on previous flights, it was a great opportunity to take pictures.

Budd Inlet was also very biologically active. We saw numerous patches of jellyfish and thick algal blooms in shades of red and brown.



Jellyfish are on the loose in Budd Inlet

Background image: Vortex of algae rich water in Rich Passage

New Long-term Marine Waters Monitoring Unit Website

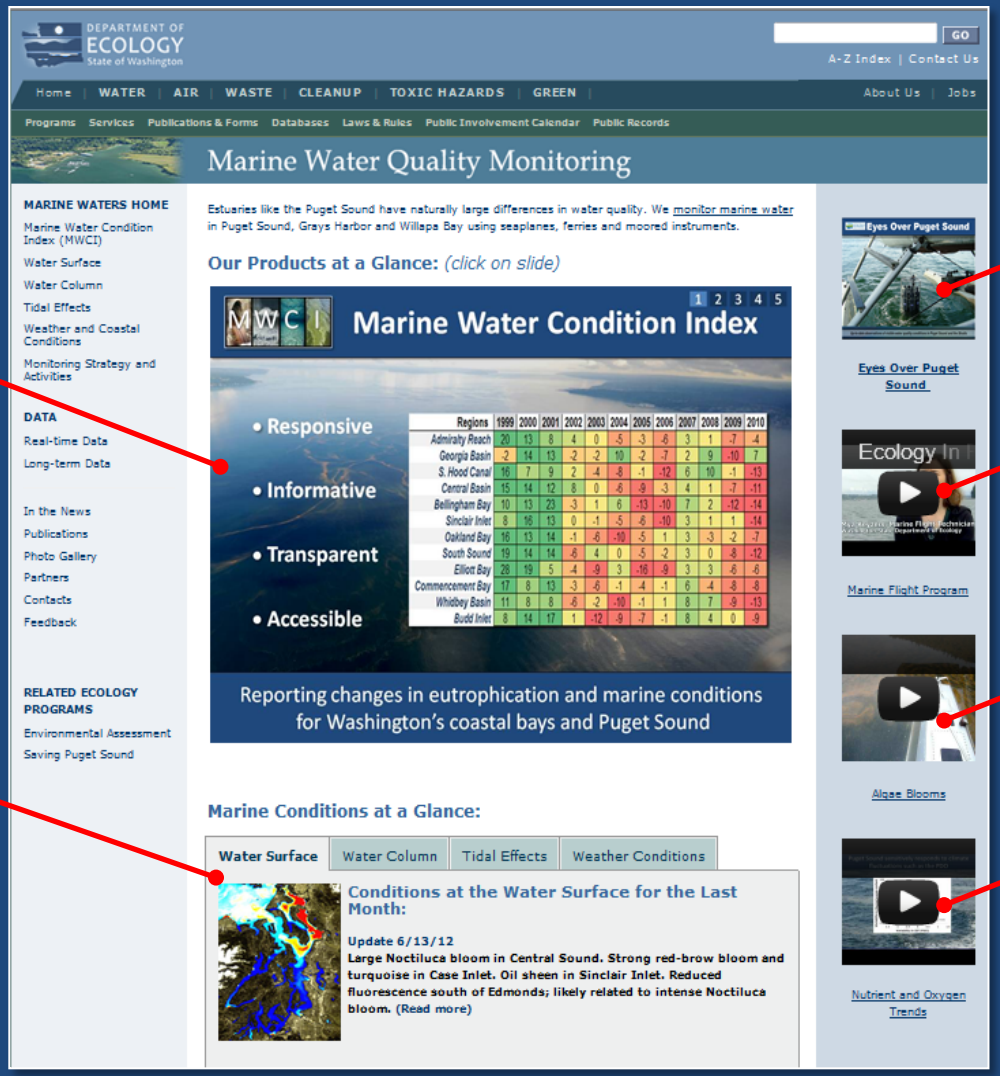
Field log | | Water column | Aerial photos | Ferry and Satellite | |

Combined reporting of long-term monitoring products and present conditions

Go to website

Slideshow highlighting data products and the Marine Water Condition Index (MWCI)

Find past conditions for the water column, surface and mooring sites



EOPS releases

Video of the Marine Waters Unit activities

Video and information on algal blooms

Video of long-term nutrient trends

Summary: Aerial photography 8-27-2012

High abundance of marcoalgae aggregations in Central Sound. Red-brown blooms in South Sound Inlets and parts of Central Sound. Jellyfish patches are numerous and increasing in size in Sinclair and Budd Inlets.

Start here

Algal mats off Delano Road KP S – Carr Inlet

Bloom in Eagle Harbor – Bainbridge Island

Front

Mixing and Fronts: 1 2 11 12

Fronts in Elliot Bay, Sinclair Inlet, Tacoma Narrows and Quartermaster Harbor.

Plume

Suspended sediment: 5 6 11 12

Sinclair Inlet, Tacoma Narrows, Case Inlet Budd Inlet and Commencement Bay.

Bloom

Visible blooms: 1 2 3 4 5 6 7 8 9 10 11 13 14 15

Red-brown: Sinclair, Case , Budd, Eld, Henderson Inlets, Squaxin Island and Quartermaster Harbor.

Olive to green: Elliot Bay, Port Madison, Sinclair Inlet, Quartermaster Harbor, Eagle Harbor, Jarrel Cove (Pickering Passage).

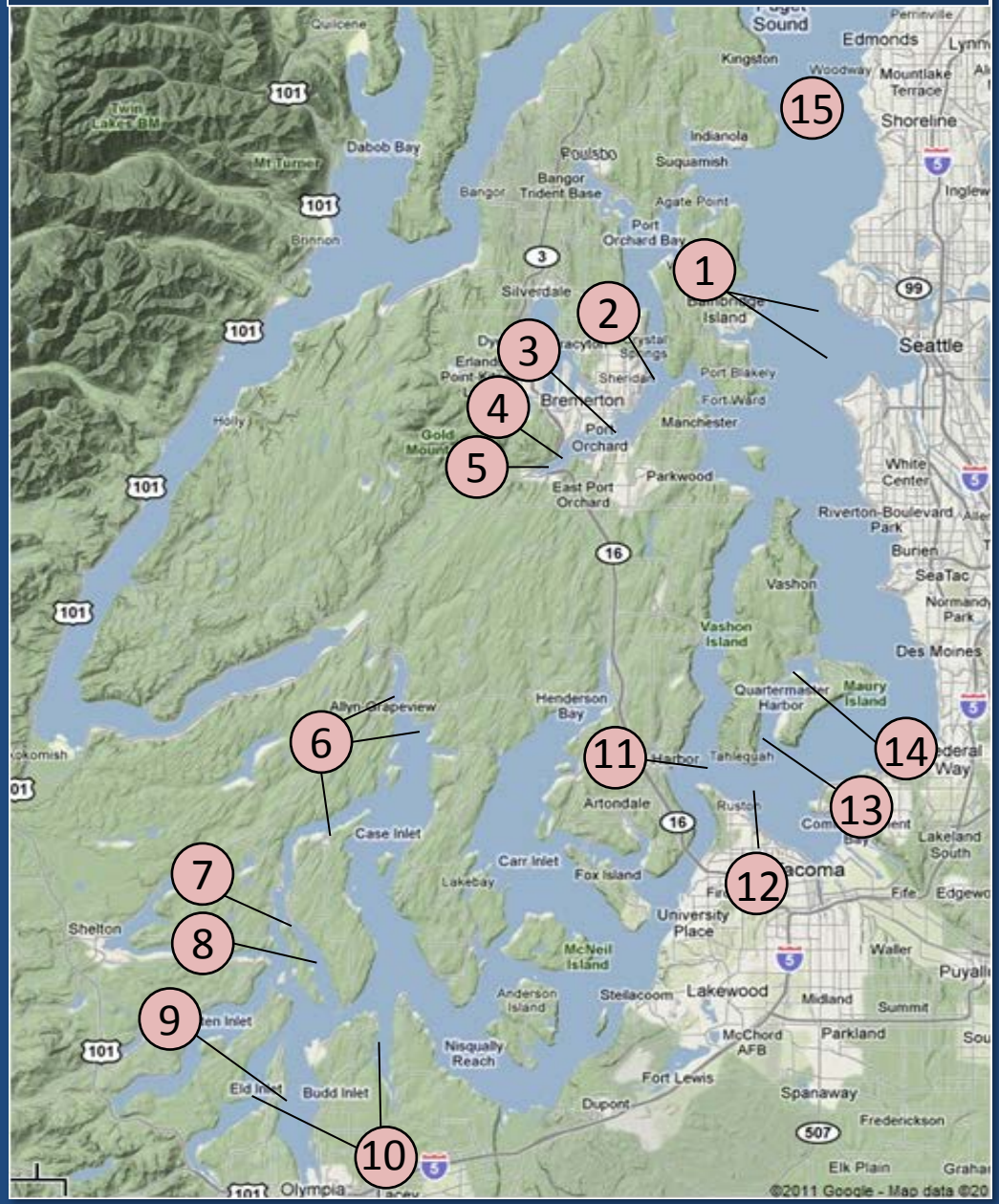
Macroalgae : Central Sound.

Debris

Debris (unidentified) 2 3 8 9 11 12

Abundant in Central Sound and usual locations in South Sound (Squaxin Passage, Case & Carr Inlets).

High tides : 12:48 AM 3:43 PM, Low tides: 7:56 AM, 9:05 PM



Aerial photography navigation guide

8-27-2012

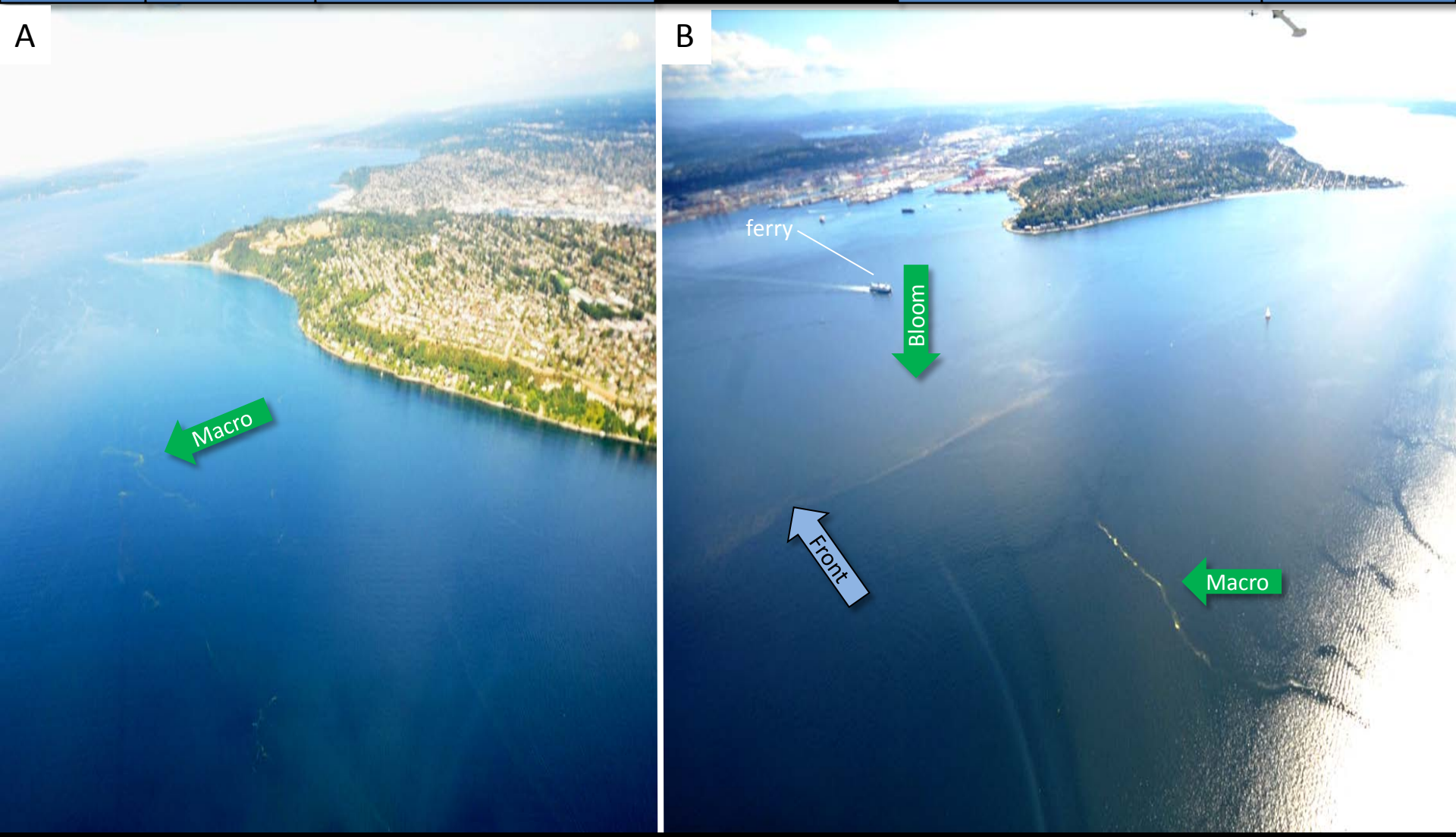
Click on numbers

Flight Information:

- **Afternoon flight (round trip):** High visibility, windy, broken cloud cover and reflections on the water.

Observation Maps:

click here



Macroalgae. Location: Between Elliott Bay and Sinclair Inlet (Central Sound), 2:18 PM.
A) Looking north towards Discovery Park. B) Looking south towards West Seattle.

Green bloom. Fronts from different water masses and Dyes Inlet.

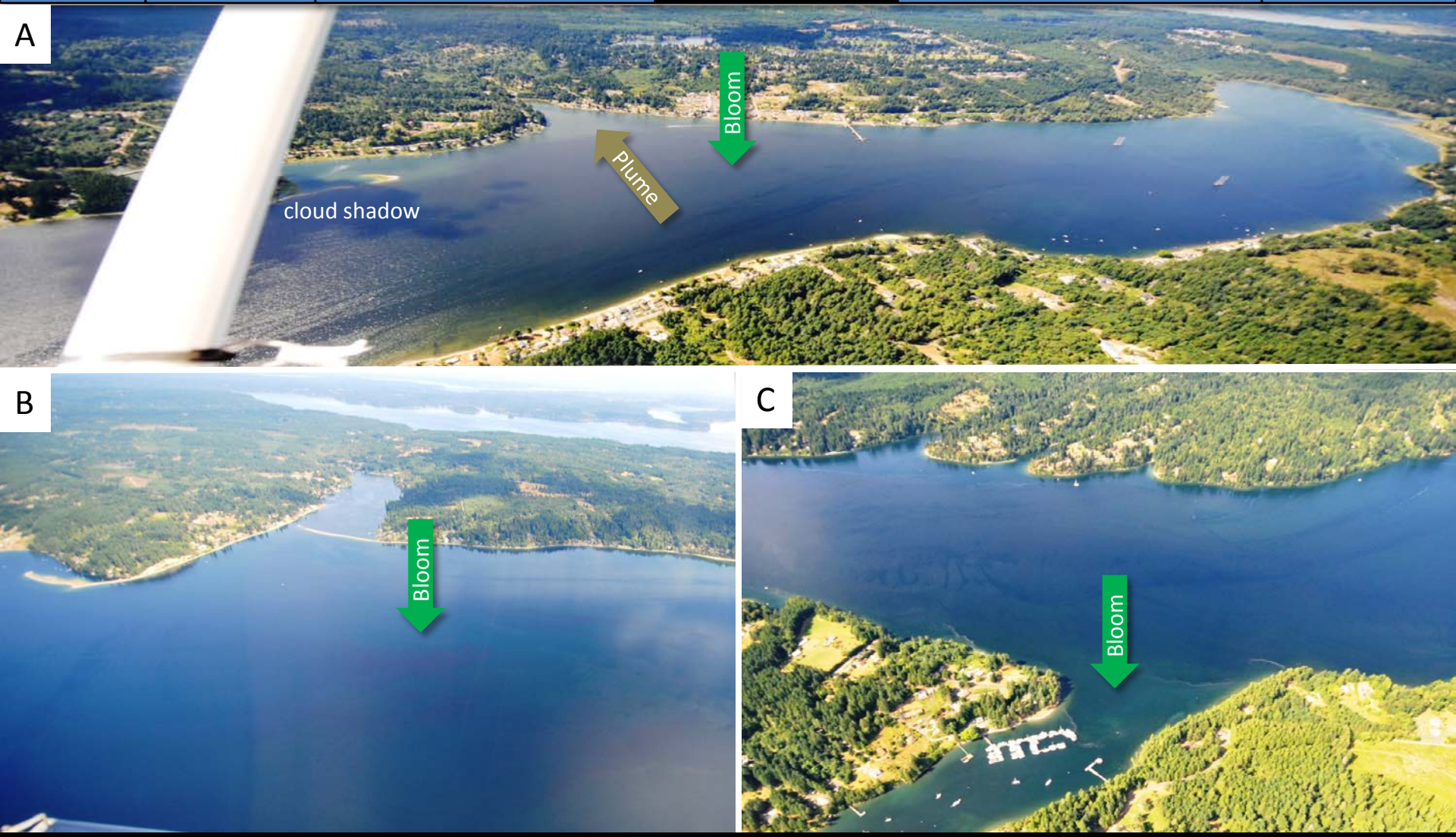
Location: Sinclair Inlet (Central Sound), 2:24 PM.

Red-brown and turquoise bloom. Location: Sinclair Inlet (Central Sound), 2:26 PM.

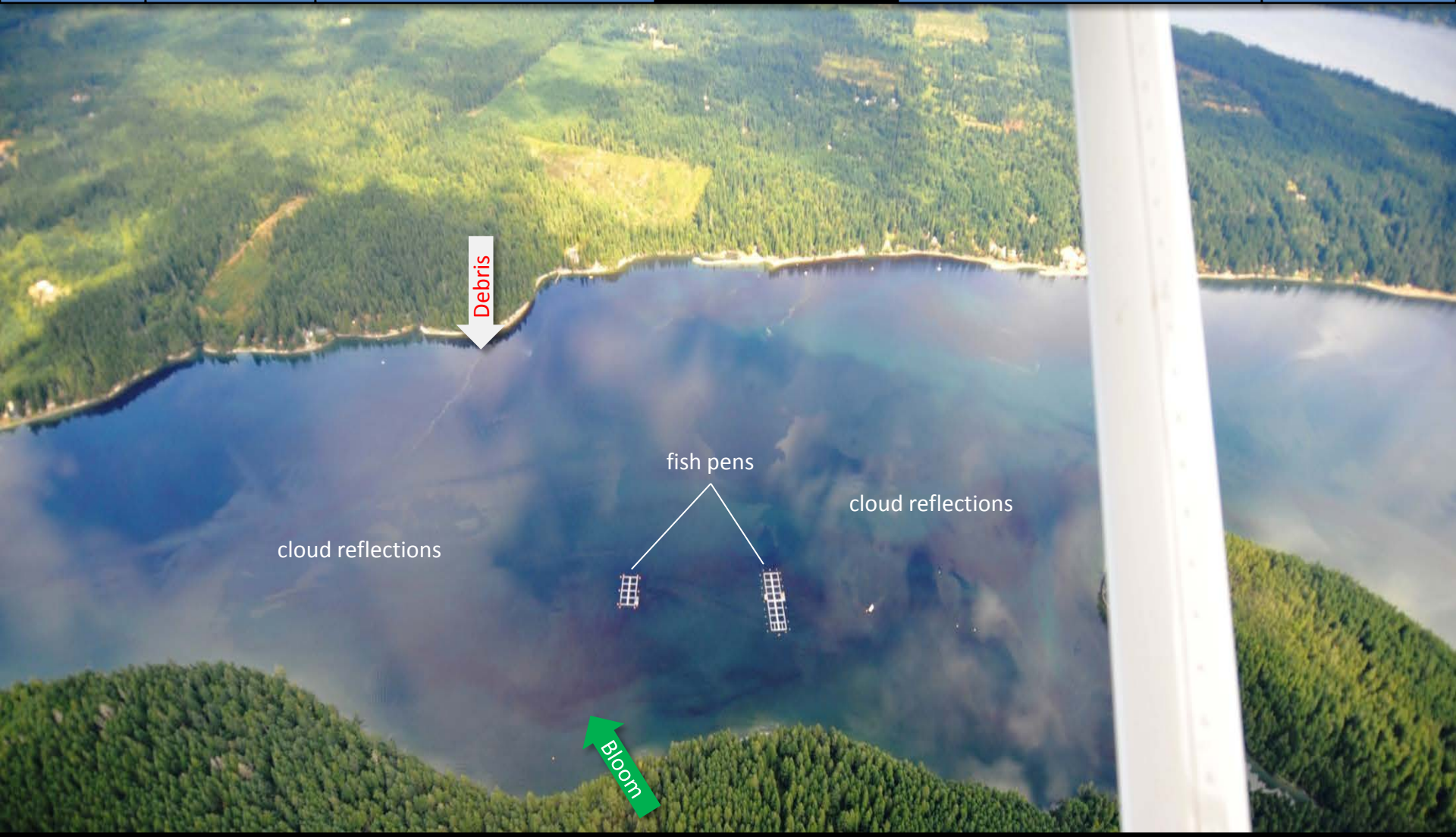
Red-brown, brown and turquoise bloom. Location: Sinclair Inlet (Central Sound), 2:26 PM.

Jellyfish, red-brown and turquoise bloom. Location: Sinclair Inlet (Central Sound), 2:26 PM.

Aerial photography 8-27-2012

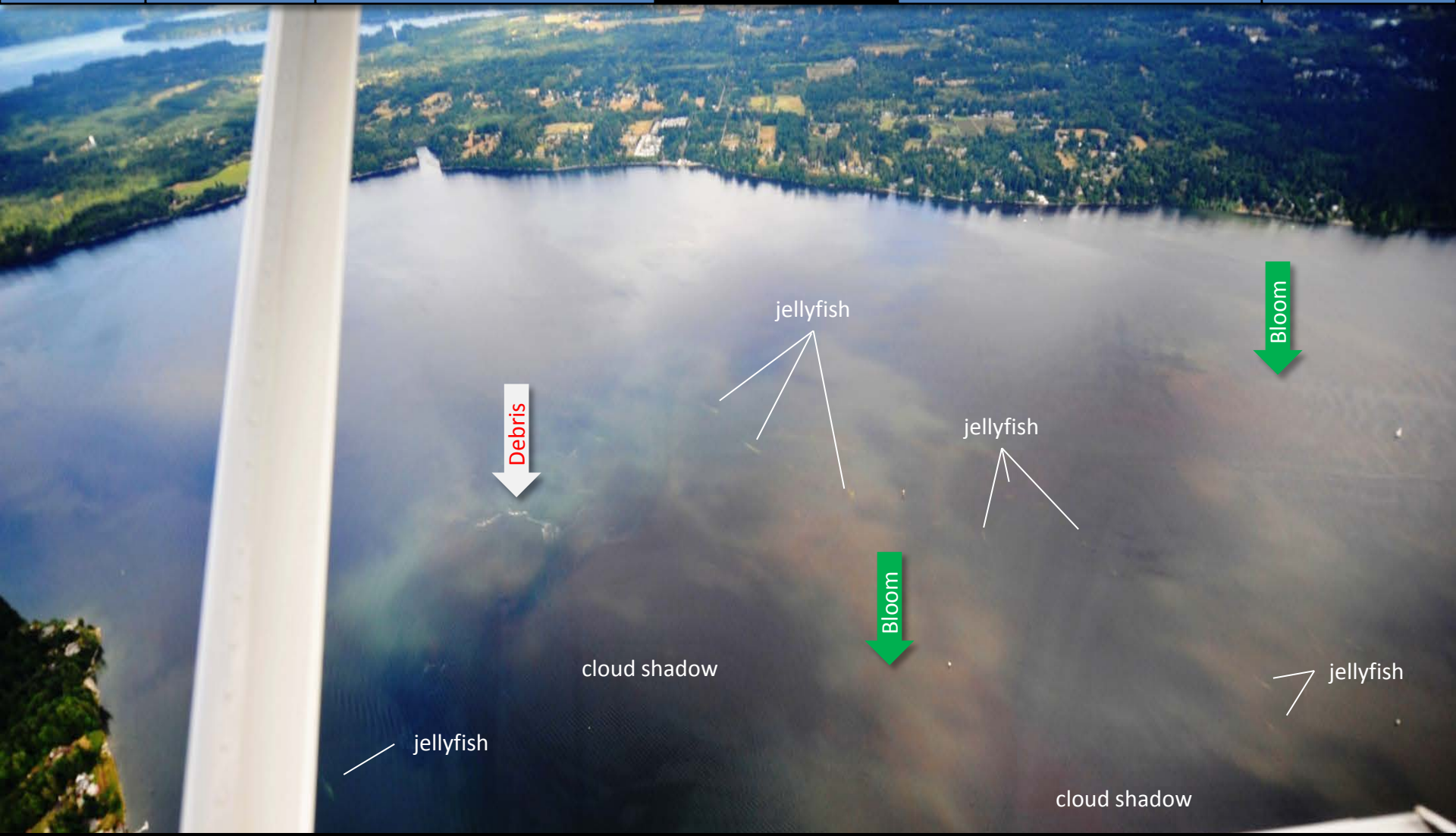


Red-brown bloom. Location: A) North Bay, B) Rocky Bay, C) Jarrell Cove, Case Inlet (South Sound), 2:37 PM.



Red-brown and turquoise bloom. Location: Between Squaxin and Harstine Island (South Sound), 2:43 PM.

Red-brown and turquoise bloom. Location: Between Squaxin and Harstine Island (South Sound), 2:43 PM.



Red-brown bloom, jellyfish and turquoise water (+ cloud reflections). Location: Budd Inlet (South Sound), 2:52 PM.

Aerial photography 8-27-2012

Red-brown bloom and turquoise bloom (+ cloud reflections). Location: A) Eld Inlet, B) Henderson Inlet (South Sound), 2:52 PM.

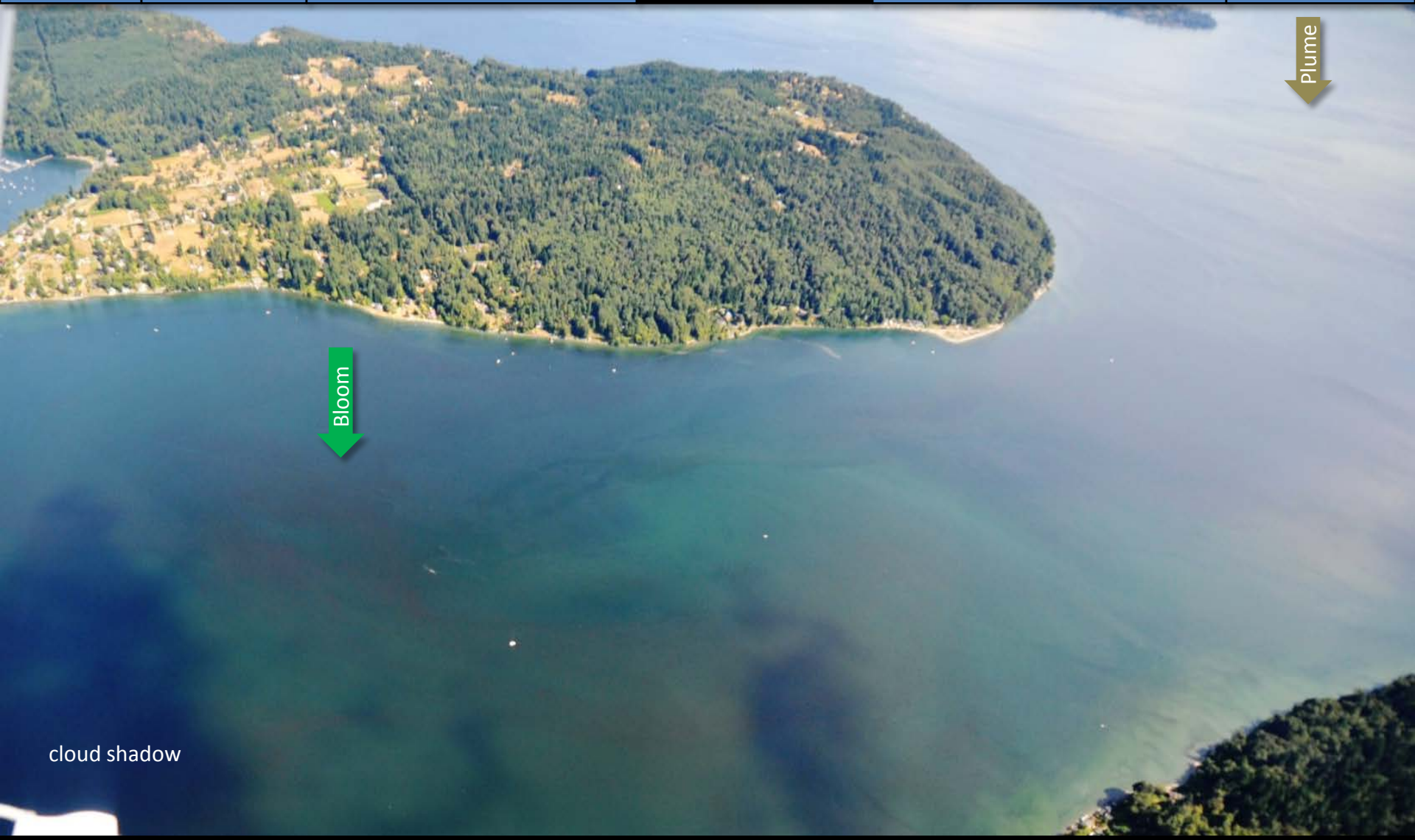
Aerial photography 8-27-2012

Structured surface water with distinct fronts. Puyallup plume appears south of Point Defiance.

Location: Tacoma (Central Sound), 3:10 PM.

Puyallup River plume. Location: Commencement Bay, Tacoma (Central Sound), 3:11 PM.

Aerial photography 8-27-2012



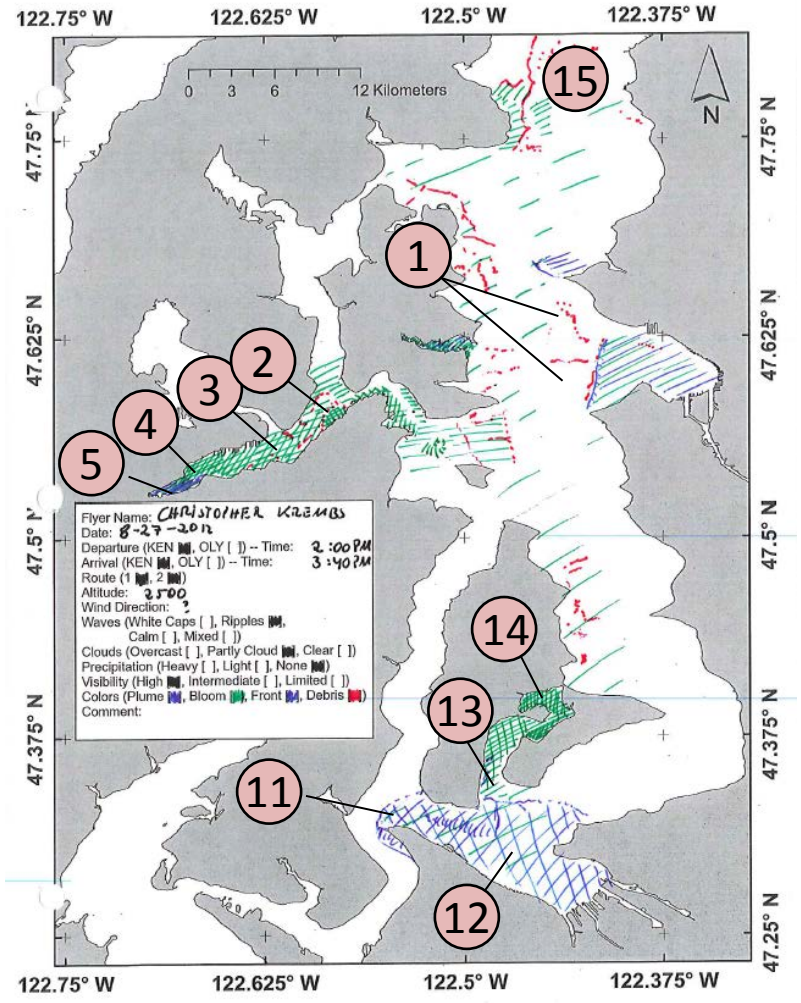
Red-brown and green bloom. Location: Quartermaster Harbor - Vashon Island (Central Sound), 3:13 PM.

Aerial photography 8-27-2012

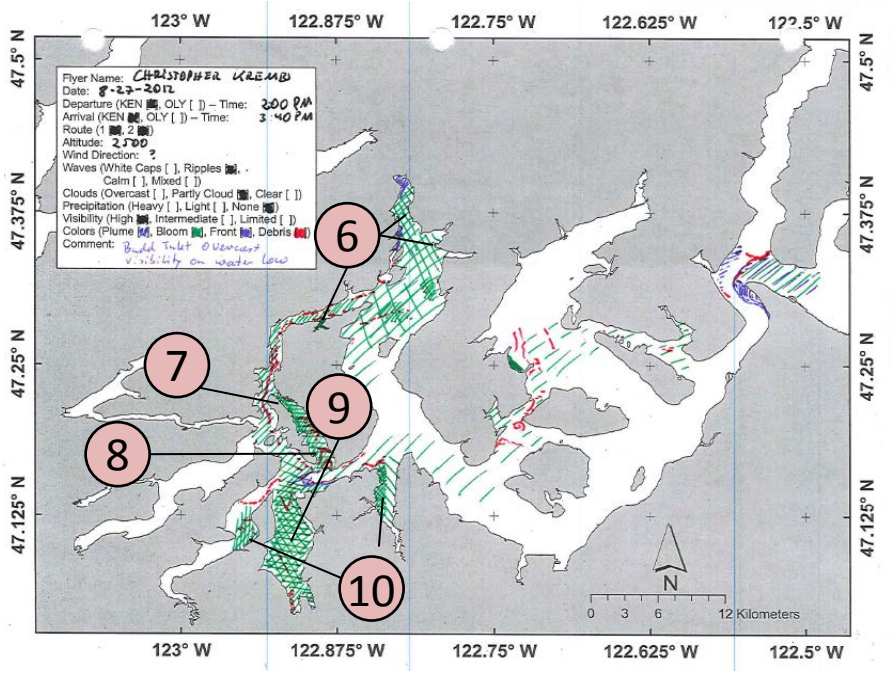
Green bloom. Location: Quartermaster Harbor - Vashon Island (Central Sound), 3:14 PM.

Large macroalgae aggregations. Location: Near Edmond (Central Sound), 3:27 PM.

Central Sound

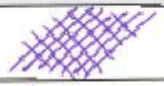
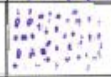


South Sound



We had the opportunity to fly a complete loop without interruption. Maps are therefore only separated by location.

Numbers on map refer to picture numbers for spatial reference.

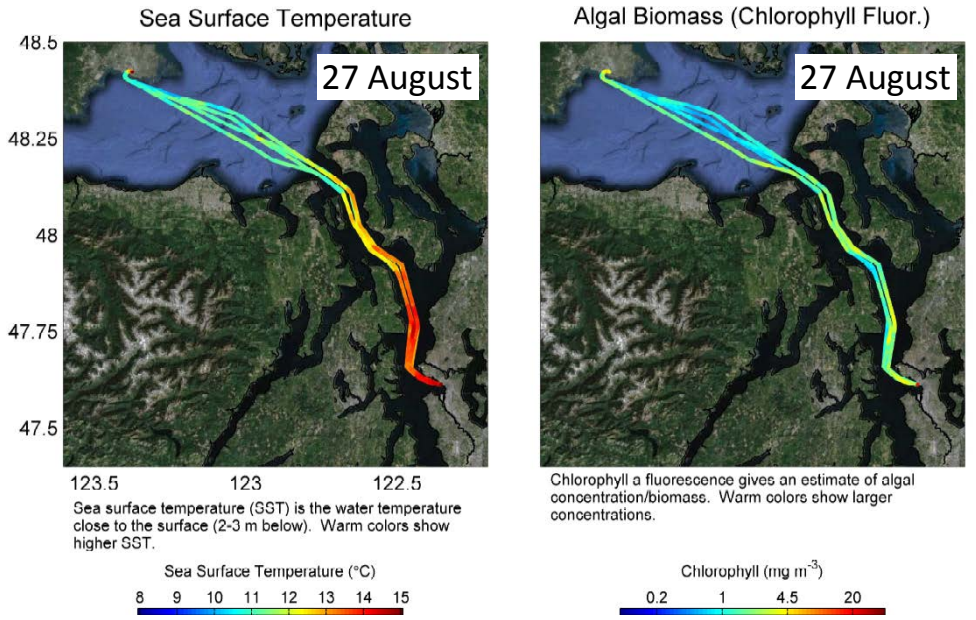
Plumes	
• Freshwater with sediment **solid**	
• Freshwater with sediment **dispersed**	
• Coastal erosion with sediment	
Blooms	
• Dispersed	
• Solid	
Debris	
• Dispersed	
• Solid	
Front	
• Distinct water mass boundaries	
• Several scattered	

Comments:
Maps are produced by observers during and after flights. They are intended to give an approximate reconstruction of the surface conditions on scales that connect to and overlap with satellite images in the section that follows.

Daily ferry and satellite observations in Central Sound, 8-27-2012

Contact: brandon.sackmann@ecy.wa.gov

MERIS True Color image used for spatial context (19 February 2011). Image is not coincident with ferry data shown on right.



Current Conditions: Low-Moderate fluorescence and turbidity in Main Basin and Admiralty Inlet. Temperatures in Main Basin drop below 15 °C, near-surface salinity >28 PSU.

--- Daily 'Quick-Look' Products Available ---

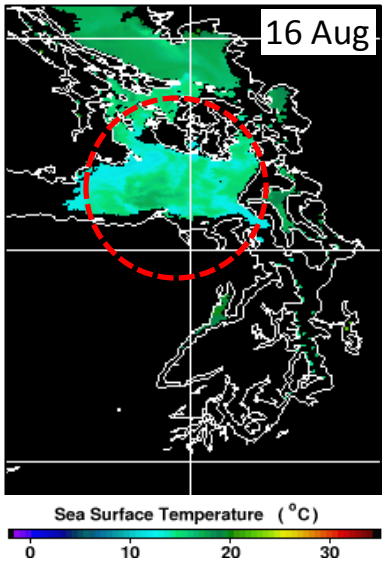
(http://www.ecy.wa.gov/programs/eap/mar_wat/eops/clipper.html)

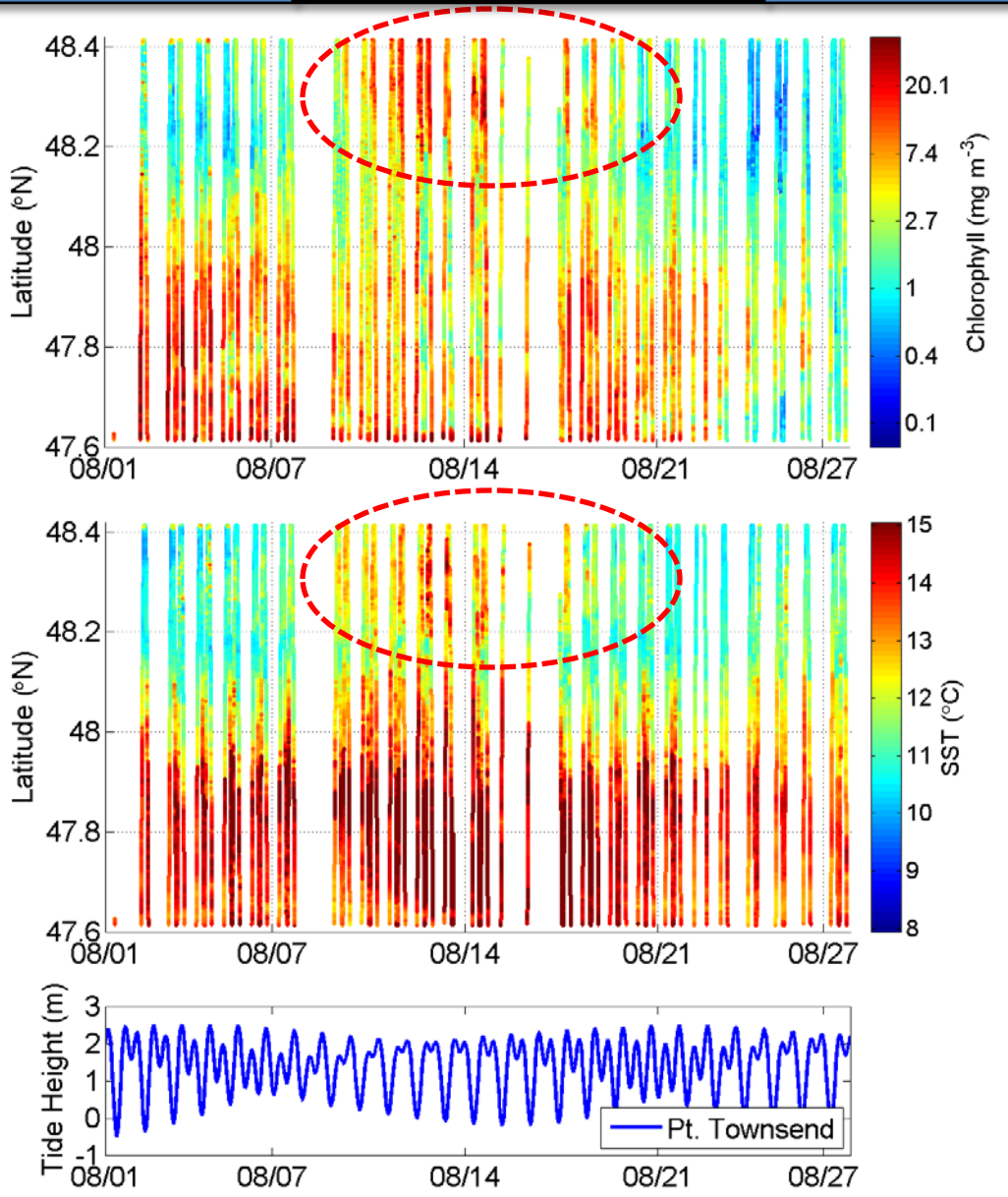
Ferry & satellite observations, 8-1-2012 to 8-27-2012

Warm near-surface temperatures in Strait of Juan de Fuca promote widespread phytoplankton bloom in mid-August.

Strong bloom in Main Basin begins to fade over last few days as temperatures drop below 15 °C.

MODIS-Aqua (Daytime SST)





Ferry & satellite observations 8-1-2012 to 8-27-2012

Warm near-surface temperatures in Strait of Juan de Fuca promote widespread phytoplankton bloom in mid-August.

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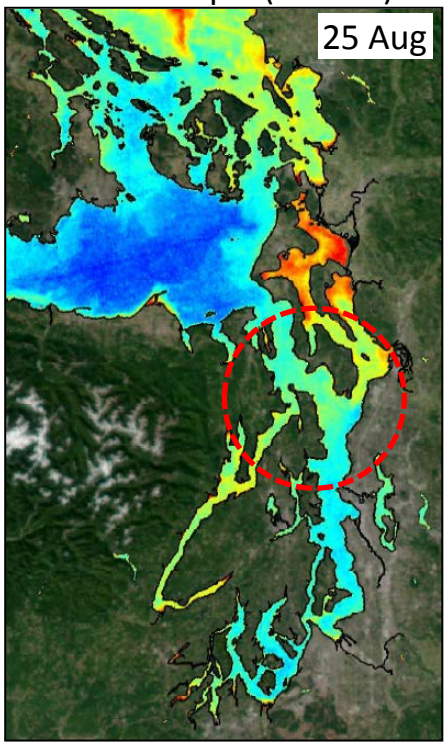
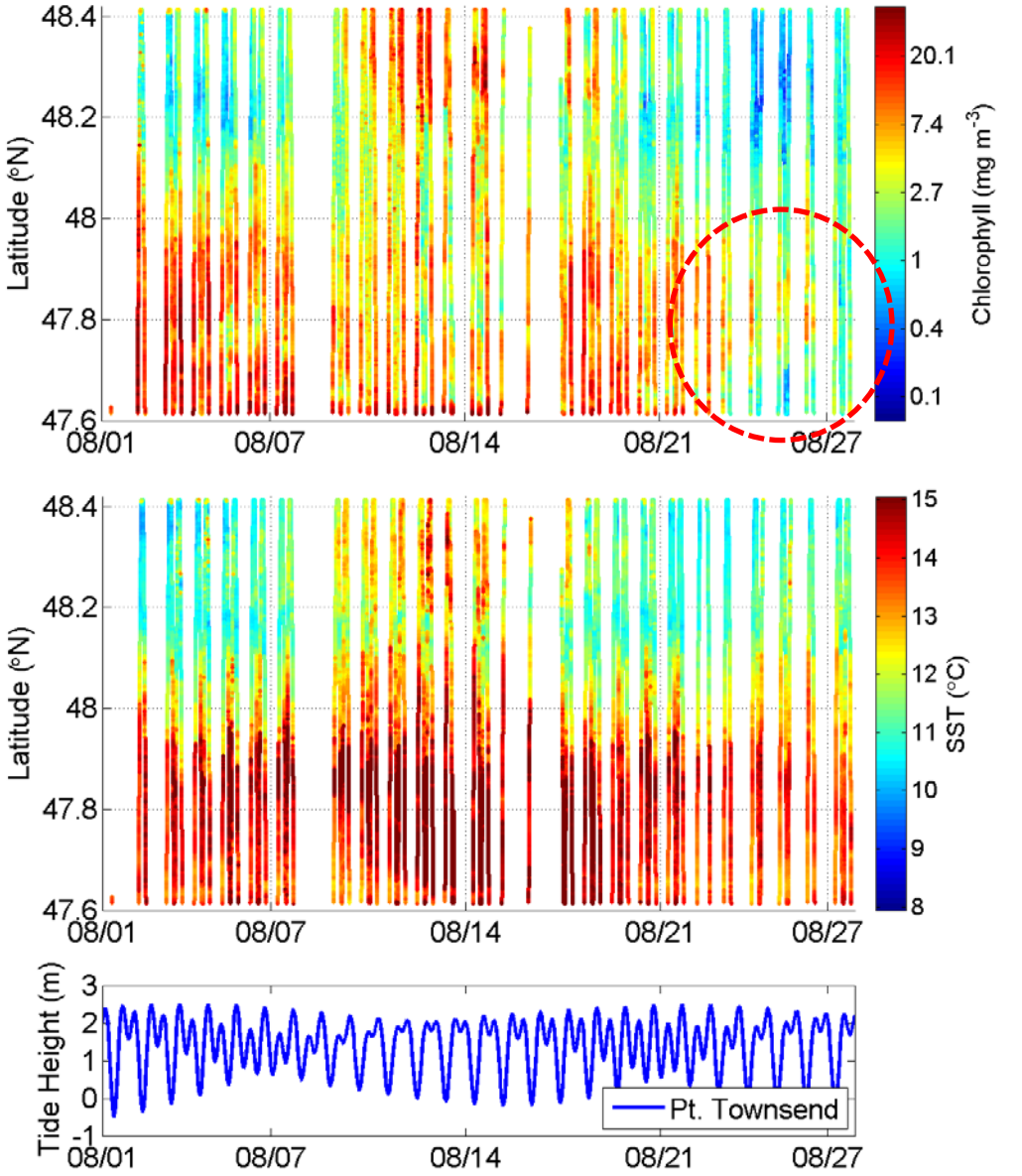
MODIS-Aqua (Chlor *a*)





Get data from Ecology's Monitoring Programs

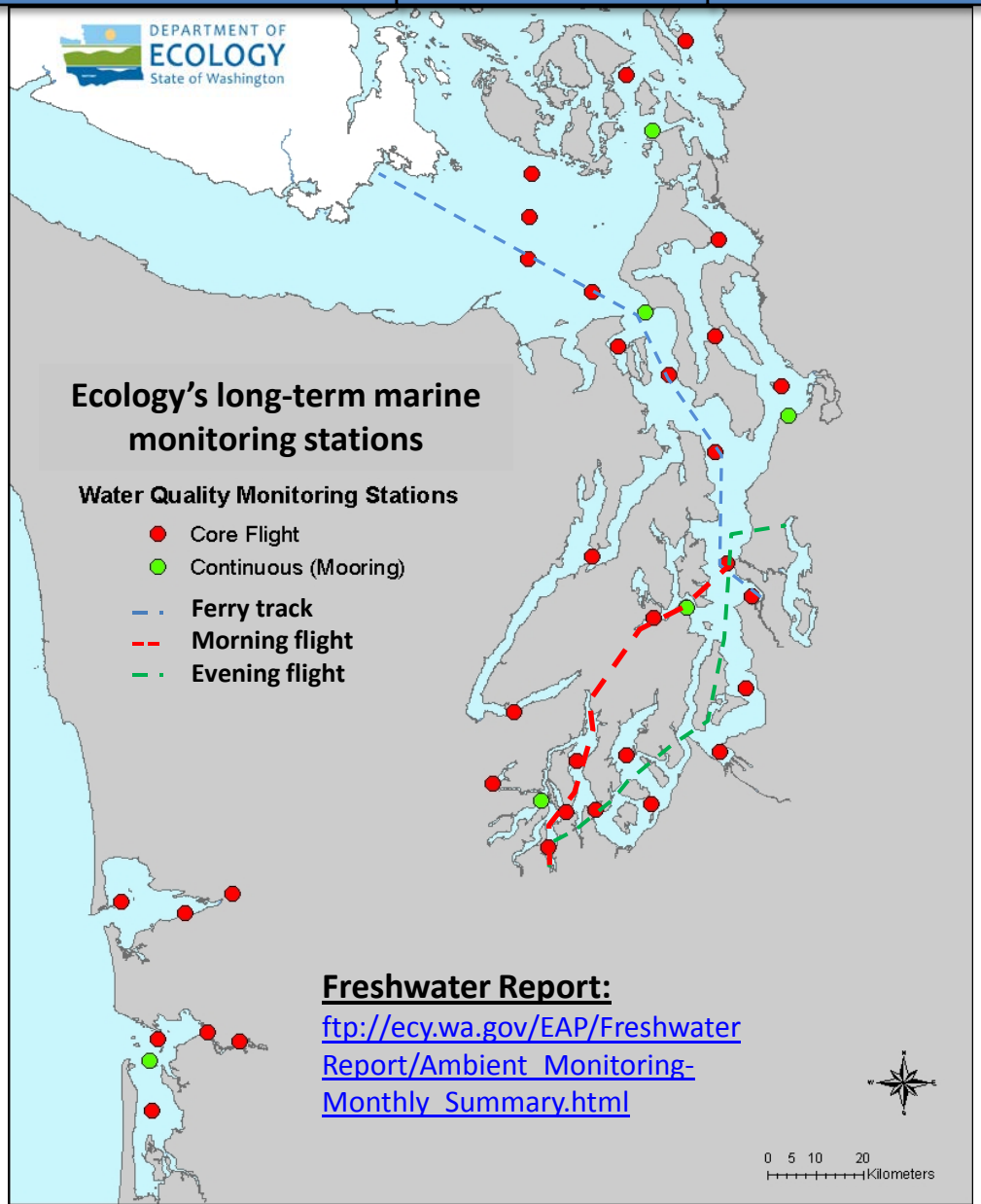
Field log		Water column	Aerial photos	Ferry and Satellite	

Long–Term Monitoring Network

christopher.krembs@ecy.wa.gov

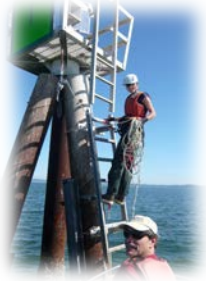
Access core monitoring data:

http://www.ecy.wa.gov/apps/eap/marinewq/mwdataset.asp



Real–Time Sensor Network

brandon.sackmann@ecy.wa.gov



Access mooring data:

http://www.ecy.wa.gov/programs/eap/mar_wat/.html

You may subscribe or unsubscribe to the Eyes Over Puget Sound email listserv by going to:
http://listserv.wa.gov/cgi-bin/wa?A0=ECOLOGY-EYES-OVER-PUGET-SOUND

We are looking for feedback to improve our products.

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Marine Monitoring Unit
Environmental Assessment Program
WA Department of Ecology

Many thanks to our business partners: Clipper Navigation, Swantown Marina and Kenmore Air.