

Eyes Over Puget Sound

Start here

Flight log

Water column

Aerial photos

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Guest Contribution:
Brandon Sackmann

Surface Conditions Report January 15, 2013

We have a new website (http://www.ecy.wa.gov/programs/eap/mar_wat/) [Start here](#)

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report February 26, 2013

Guest: Ardi Kveven, State of Possession Sound Cruise

We have a new website (http://www.ecy.wa.gov/programs/eap/mar_wat/) [Start here](#)

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

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Surface Conditions Report March 25, 2013

We have a new website (http://www.ecy.wa.gov/programs/eap/mar_wat/) [Start here](#)

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

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Surface Conditions Report April 8, 2013

We have a new website (http://www.ecy.wa.gov/programs/eap/mar_wat/) [Start here](#)

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

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Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report May 20, 2013

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

2013 Review

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report June 17, 2013

Visit our website (http://www.ecy.wa.gov/programs/eap/mar_wat/) [Start here](#)

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report, July 15, 2013

Guest contribution by the: Encyclopedia of **PUGET SOUND** (page 3) [Start here](#)

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report, August 21, 2013

Featured Report: The Marine Waters 2012 Overview Report, (go here) [Start here](#)

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report September 11, 2013

Ozone sensors on board: Donovan Rafferty, Ecology Air Quality Program (here) [Start here](#)

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report October 28, 2013

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

Eyes Over Puget Sound

Flight log Weather Water column Aerial photos Ferry and Satellite Moorings

Surface Conditions Report November 21, 2013

[Start here](#)

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

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

Flight log

-

Water column

Aerial photos

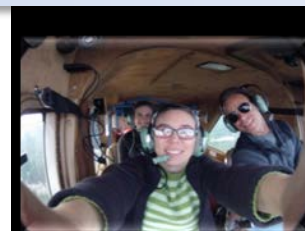
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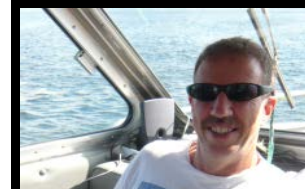
LONG-TERM MARINE MONITORING UNIT, ECOLOGY

Total downloads of EOPS since Jan 2011
Downloads = 954,997 (as of 12/6/2013)

*Mya Keyzers
Laura Friedenberg
Joe Leatherman*



*Skip
Albertson*



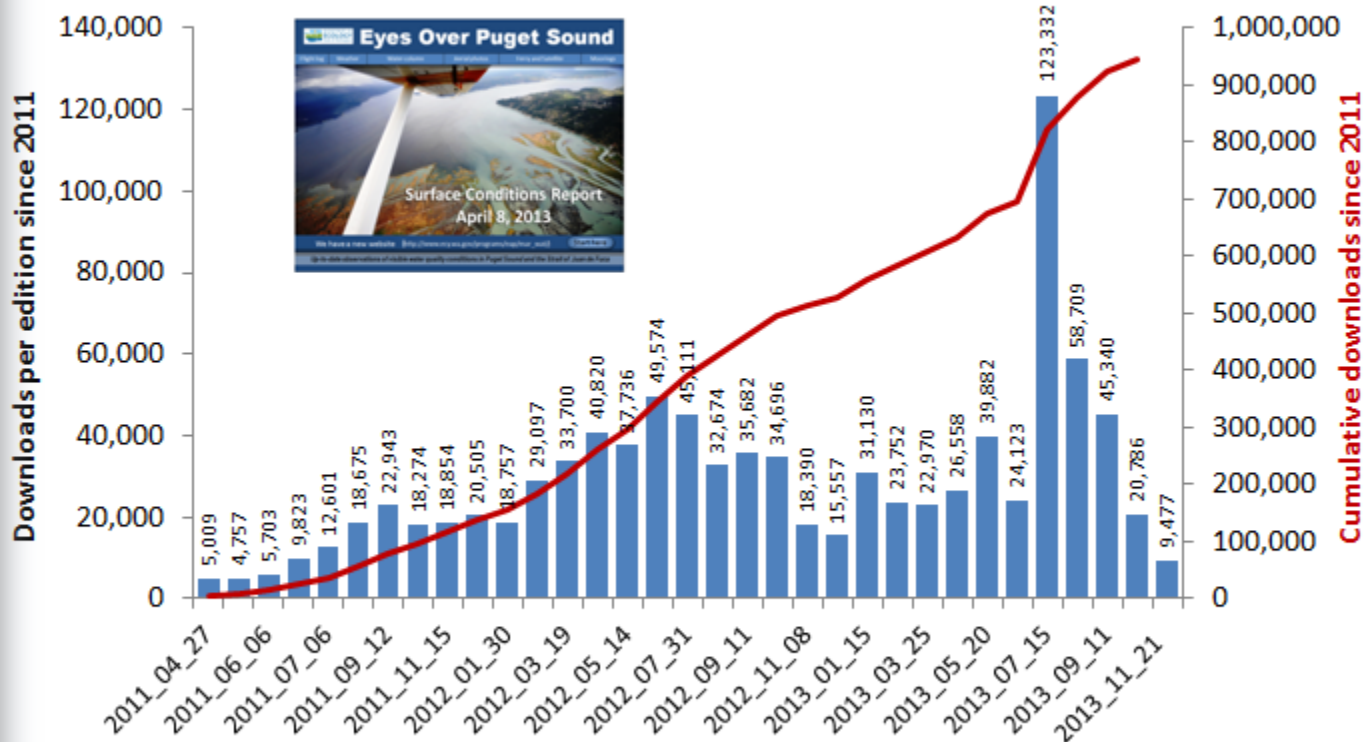
*Julia Bos
Suzan Pool*



*Dr. Christopher
Krembs*



*Dr. Brandon
Sackmann*



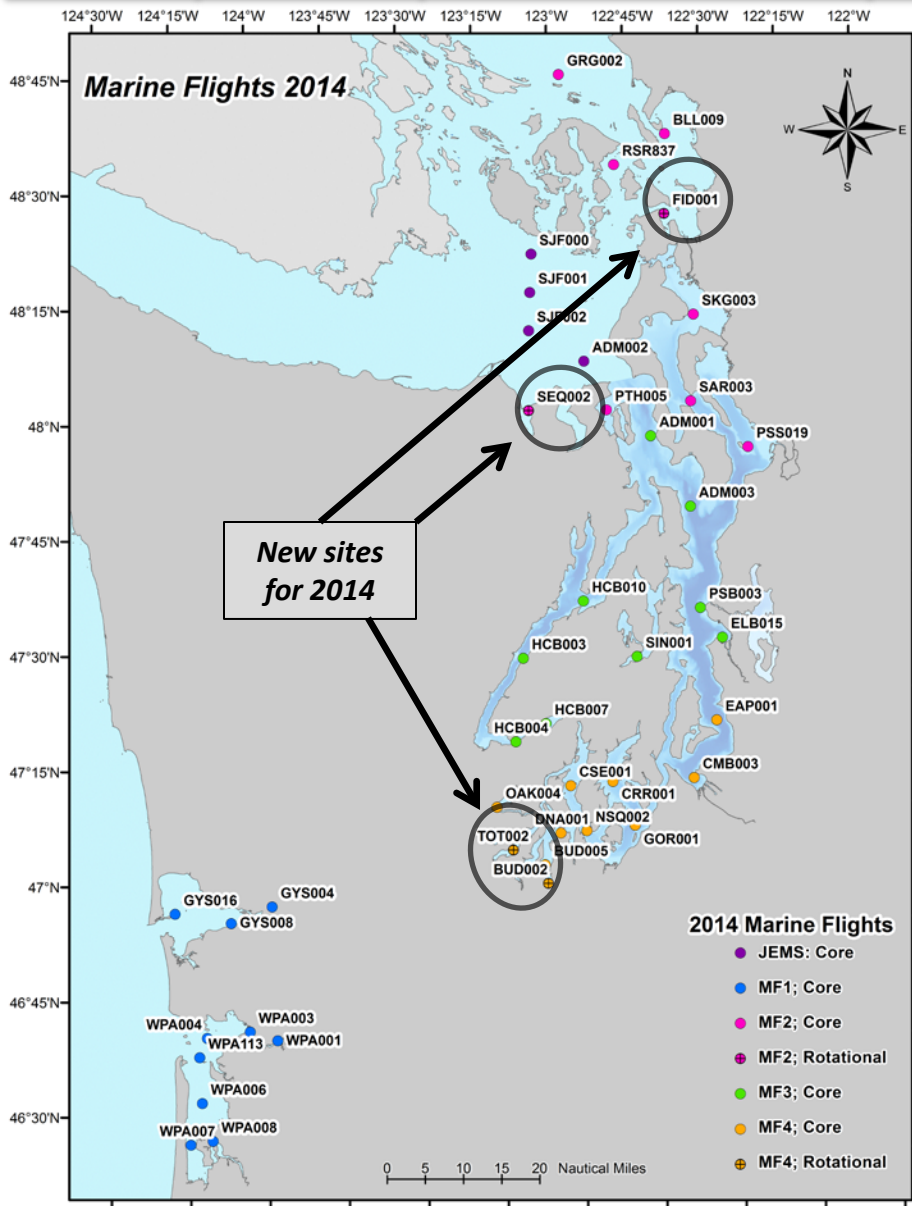
Thanks to interested viewers we are approaching 1 Million downloads

Previous Eyes Over Puget Sound reports:

www.ecy.wa.gov/programs/eap/mar_wat/eops/



Flight log	-	Water column	Aerial photos	-	-
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NEW Flight and Station Map

We have selected four rotational stations to sample in 2014 in addition to our long-term monitoring effort.

The rotational stations for 2014 are:

- Fidalgo Bay (FID001)
- Sequim Bay (SEQ002)
- Totten Inlet (TOT002)
- Budd Inlet (BUD002)

Fidalgo Bay (FID001) – This site was last visited in 1997. A major cleanup project took place in the summer of 2013 where contaminated sediments and toxics-leaching pilings were removed from a former Custom Plywood mill site.

Sequim Bay (SEQ002) – Sampled most recently in 2000, this location has historically had low dissolved oxygen problems and contaminated sediments. The bay has also had some issues with harmful algal blooms.

Totten Inlet (TOT002) – Last sampled in 2011, this site is an important area for growing oysters and mussels.

Budd Inlet (BUD002) – This station was sampled in 2002 and has been known to have low dissolved oxygen and contaminated sediments. This will be the second site in Budd Inlet to be sampled in 2014.

Our long-term marine monitoring stations in Washington



Flight log

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Water column

Aerial photos

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-



- North Sound / San Juan Isl.
- Central Sound
- Whidbey Basin
- Hood Canal
- South Sound
- Grays Harbor & Willapa Bay

Stations:

ADM002

PTH005

ADM001

HCB010

HCB003

HCB007

HCB004

CSE001

OAK004

GYS004

GYS016

GYS008

WPA003

WPA004

WPA113

WPA001

WPA006

GRG002

BLL009

RSR837

SJF000

SJF001

SKG003

SJF002

SAR003

PSS019

ADM003

PSB003

ELB015

SIN001

EAP001

CMB003

CRR001

GOR001

NSQ002

DNA001

BUD005

Stations are sampled monthly by region using four independent flights. The float plane is equipped with a CTD package

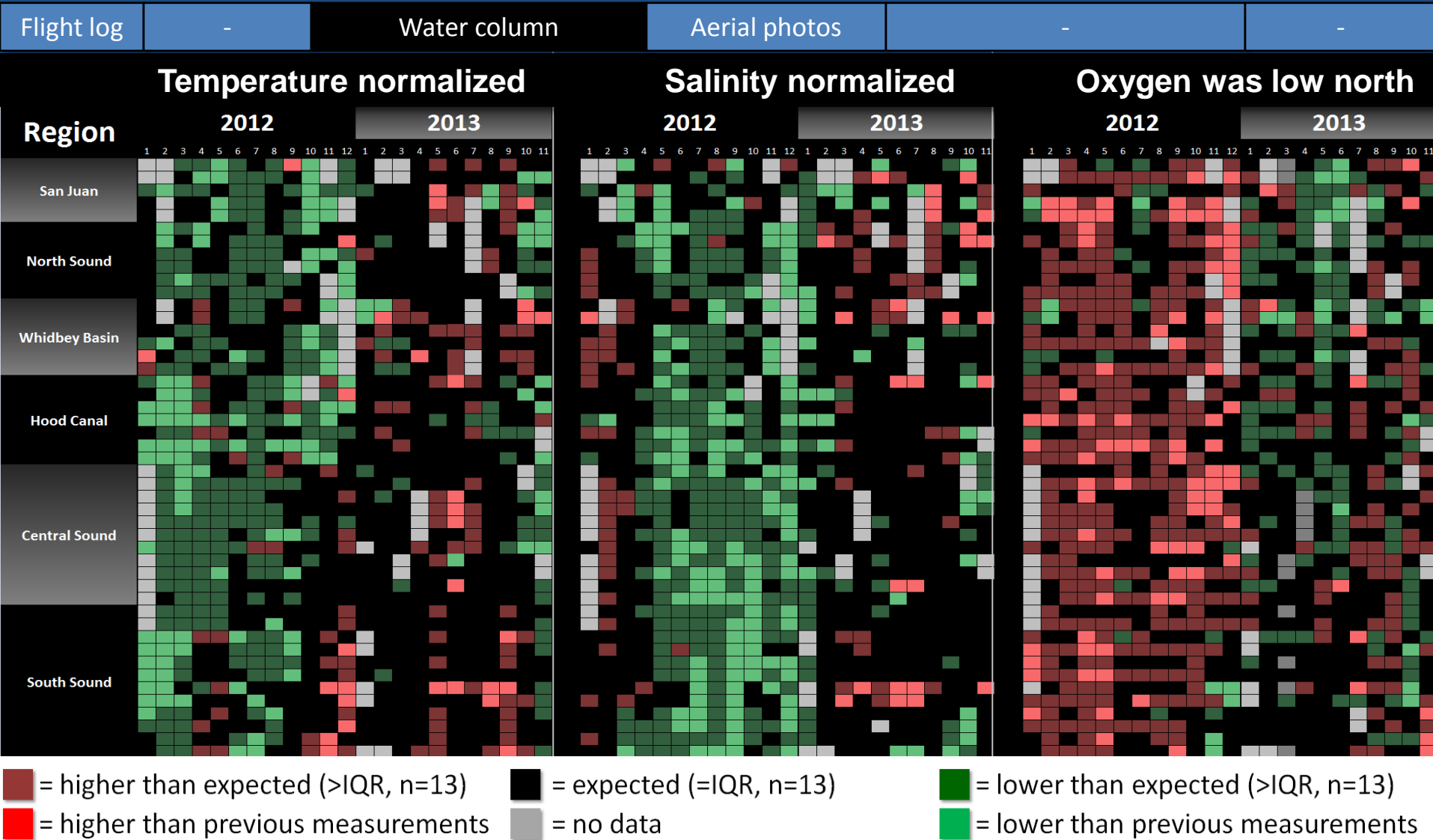
We use a chartered float plane to access our monthly monitoring stations most cost effectively.

Start here

We communicate data and environmental marine conditions using:

1. Marine Water Condition Index (MWCI)
2. Eyes Over Puget Sound (EOPS)
3. Anomalies and source data

2013 was different from previous years at our stations



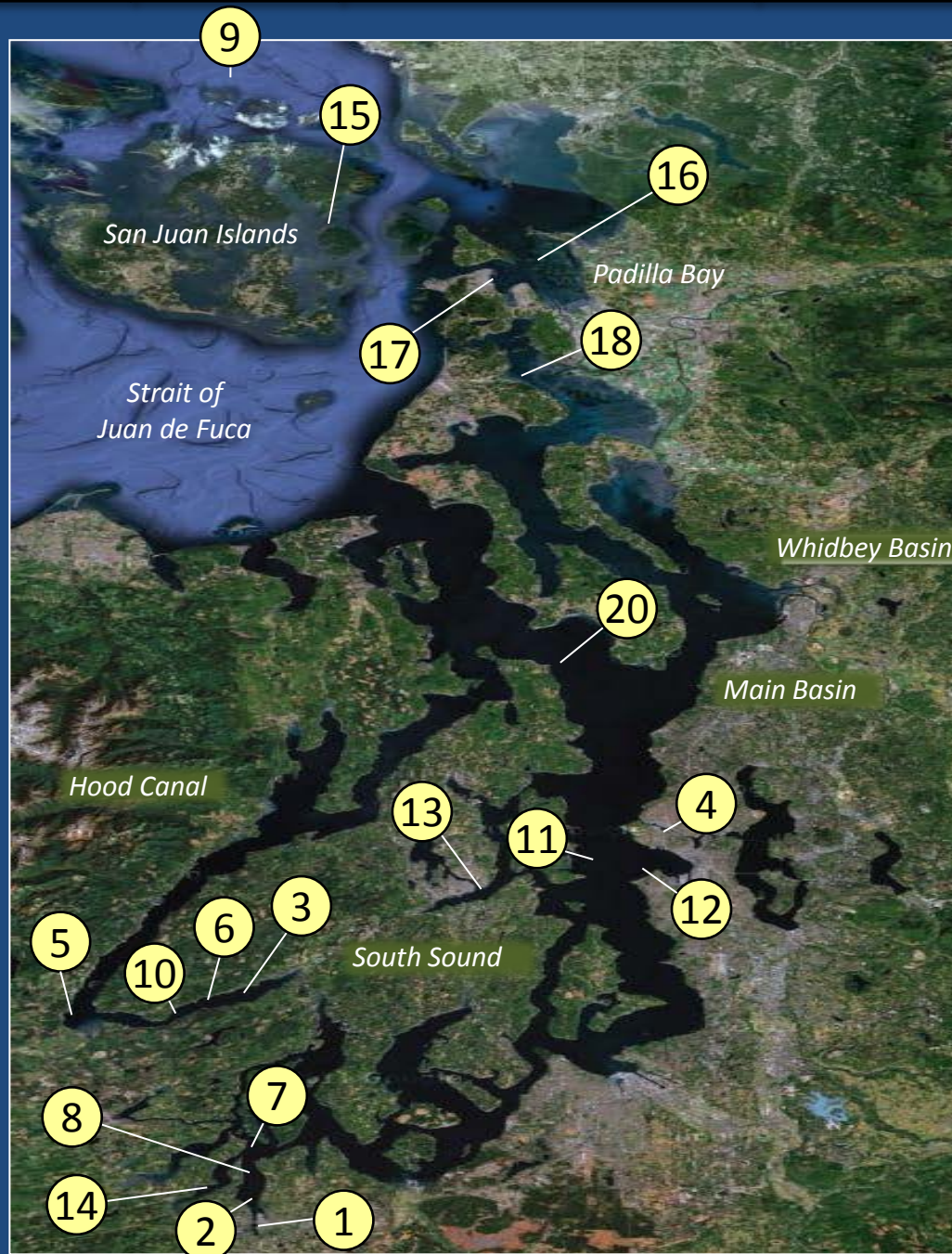
In 2013, water temperatures were expected or warmer until October, then became colder. Salinity in 2013 was mostly expected with greater variability in the north. Oxygen was lower than expected in the north until August, then varied regionally in the fall. 2013 looked very different from the previous two years (cold, fresher, and high in oxygen).

Flight log	-	Water column	Aerial photos	-	-
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Low oxygen conditions persisted from January into August. Dramatic Noctiluca blooms appeared one month earlier than normal (May) and lasted for two months. Large jellyfish patches persisted over the winter but then were less visible for the rest of the year. Large drifting algal mats in August.

1 2	Jan.	Jellyfish aggregations continue to persist in Budd Inlet. Debris lines are numerous and long.	Start here
3 4	Feb.	Early algae blooms in Hood Canal and Eld Inlet. Multiple oil sheens in Seattle waterways.	
5 6	Mar.	A large red-orange-brown bloom persists in southern Hood Canal. Jellyfish are still going strong in southern inlets.	
7 8	Apr.	Heavy rains resulted in long foam lines and large river plumes that are filled with sediment. Oxygen is decreasing.	
9 10	May	Noctiluca blooms appear. The Fraser River sediment influence is very strong north of the San Juan Islands.	
11 12	Jun.	Second large Noctiluca bloom is intense. Jellyfish patches increasing in Budd, Totten, and Eld Inlets.	
13 14	Jul.	Algal mats in South Sound, Hood Canal, and Sinclair Inlet. Red-brown algal blooms in southern inlets. Oxygen is low.	
15 16	Aug.	Large drifting algal mats in Central Sound, Sinclair Inlet, Hood Canal, and Padilla Bay.	
17 18	Sept.	Glacial flour in northeastern regions. Debris in Hood Canal, Central Sound, and South Sound Inlets. Oxygen is returning to expected levels.	
19	Oct.	Temperatures colder. Red-brown blooms and abundant jellyfish in south Puget Sound inlets.	
20	Nov.	Sediment-rich plumes leave Whidbey Basin. Red-brown blooms in Henderson, Eld, and northern Budd Inlets. Water very clear for this time of the year.	



Aerial photography & navigation guide

Date: 2013



Click on numbers





Flight log

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Water column

Aerial photos

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Sizable and numerous jellyfish (approx. 10 cm diameter). Location: Swantown Marina (Budd Inlet), 10:55 AM

Flight log

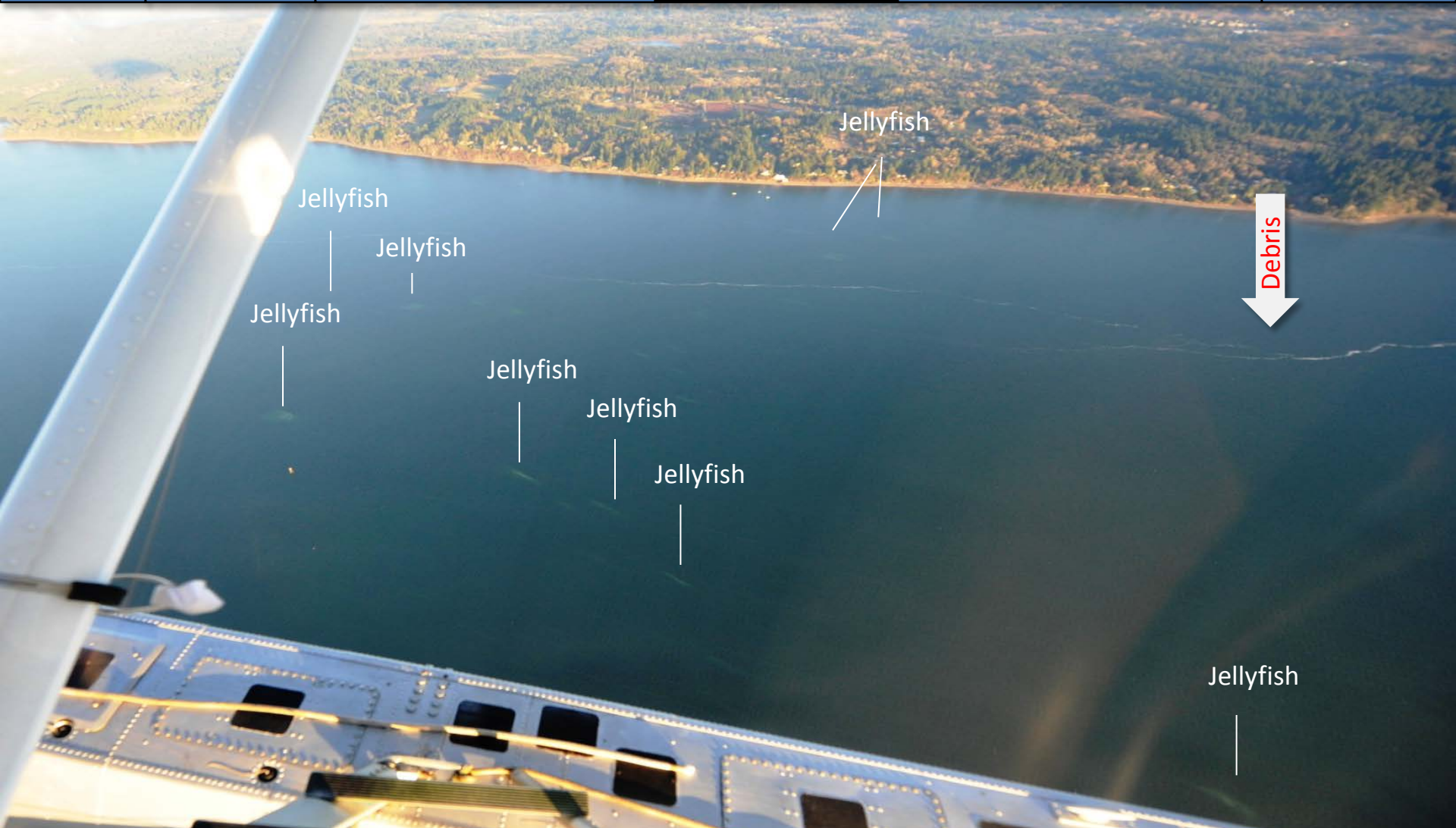
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Water column

Aerial photos

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Jelly fish patches and debris line. Location: Budd Inlet (South Sound), 4:01 PM



Flight log

-

Water column

Aerial photos

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Early near-surface spring plankton bloom. Location: Hood Canal, 2:44 PM



Flight log

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Water column

Aerial photos

-

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Oil sheen

Oil sheen

Oil sheen extending into waterway from a vessel at northern shore.

Location: Salmon Bay (Seattle), 3:30 PM

Flight log

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Water column

Aerial photos

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Large and intense red-orange-brown plankton bloom and surface debris.

Location: Hood Canal, 3:27 PM

Flight log

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Water column

Aerial photos

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Large and intense red-orange-brown plankton bloom and river plume.

Location: Hood Canal, 3:33 PM

Flight log

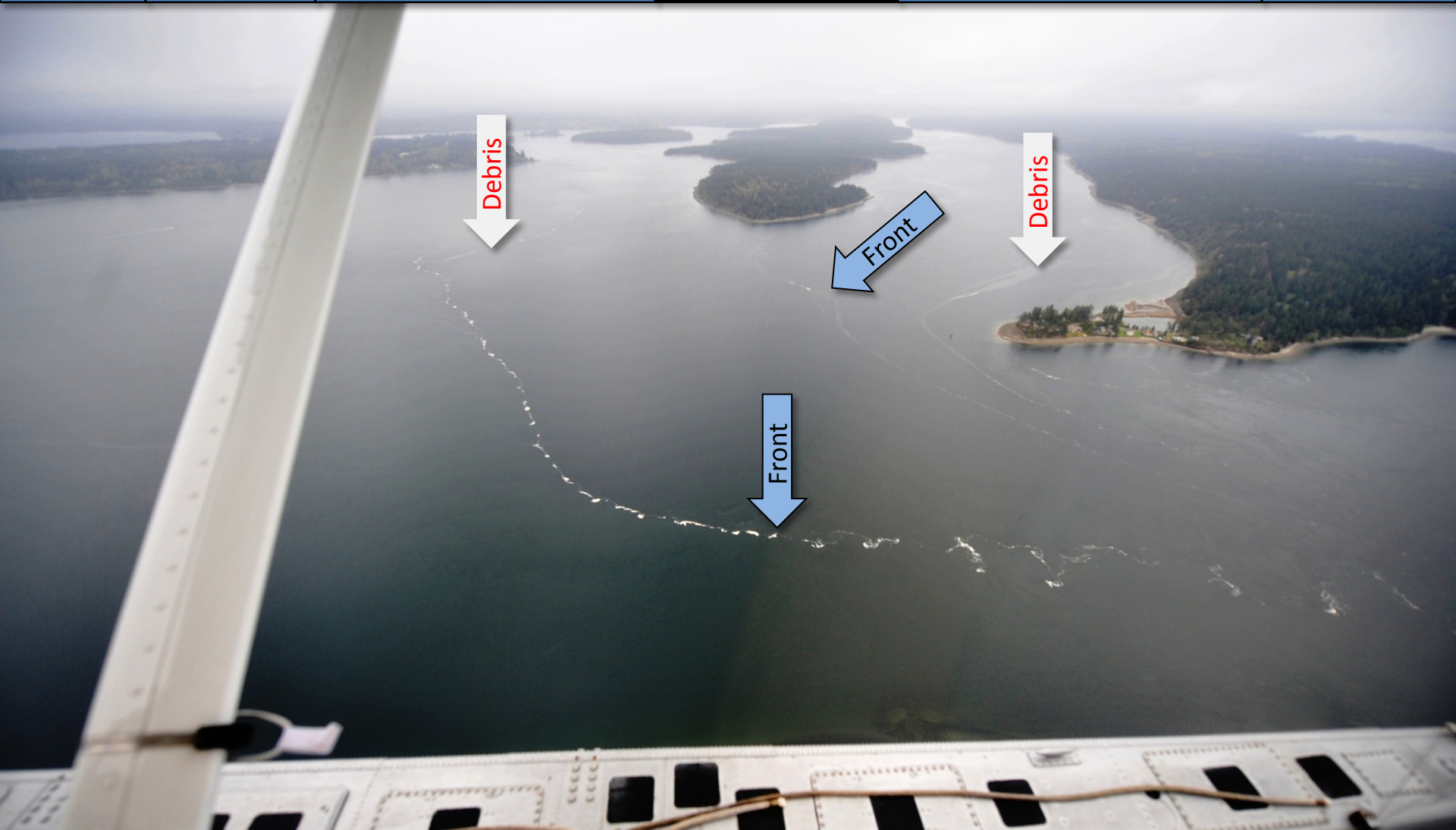
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Water column

Aerial photos

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Intense surface debris (foam bands) delineating adjacent water masses.

Location: Dana Passage (South Sound), 9:08 AM



Flight log

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Water column

Aerial photos

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Deschutes River plume with suspended sediment filling the eastern side of the estuary.

Location: Budd Inlet (South Sound), 5:12 PM

Flight log

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Water column

Aerial photos

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The far reaches of the sediment-laden river plume of the Fraser River
Location: Patos Island State Park (northern San Juan Islands), 12:22 PM

Flight log

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Water column

Aerial photos

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Noctiluca bloom accumulating in long band along a convergence.
Location: Near Twanoh State Park (Southern Hood Canal), 10:00 AM



Flight log

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Water column

Aerial photos

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Noctiluca bloom at surface in very long bands.

Location: Between Bainbridge Island and Elliott Bay (Central Basin), 5:27 PM.

Flight log

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Water column

Aerial photos

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Noctiluca bloom at surface in large patch washing onto public beach.

Location: Alki Beach, West Seattle (Central Basin), 4:51 PM.



Flight log

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Water column

Aerial photos

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Large debris rafts (algal mats) following water movement.
Location: Sinclair Inlet (Kitsap Peninsula), 12:15 PM.



Flight log

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Water column

Aerial photos

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Orange and red-brown bloom and patches of jellyfish near the surface.

Location: Eld Inlet (South Sound), 1:47 PM.

Flight log

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Water column

Aerial photos

-

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Fraser River sediment traversing and mixing dramatically with water in the San Juan Islands.
Location: Near Obstruction Island (San Juan Islands), 11:49 AM.



Flight log

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Water column

Aerial photos

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Large algal mats and organic debris.

Location: Near Saddlebag Island (Padilla Bay), 2:00 PM.



Flight log

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Water column

Aerial photos

-

-



*Intense red-brown bloom in Cap Sante Marina and sediment in water near barge.
Location: Anacortes Harbor (Anacortes), 2:19 PM.*



Flight log

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Water column

Aerial photos

-

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Narrow band of Skagit river plume rich in glacial silt hugging the western shore of Skagit Bay.
Location: Skagit River estuary near Dugualla Bay (Skagit Bay), 2:27 PM.



Flight log

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Water column

Aerial photos

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Red-brown algae bloom in Palix River near Bay Center.
Location: Palix River, US 101 bridge (Willapa Bay), 1:44 PM..

Flight log

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Water column

Aerial photos

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Many organic debris lines and sediment laden water originating from Whidbey Basin. Orcas swimming along front. Location: Point No Point (Central Sound), 1:50 PM.

Get data from Ecology's Monitoring Programs



Flight log

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Water column

Aerial photos

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Long-Term Monitoring Network

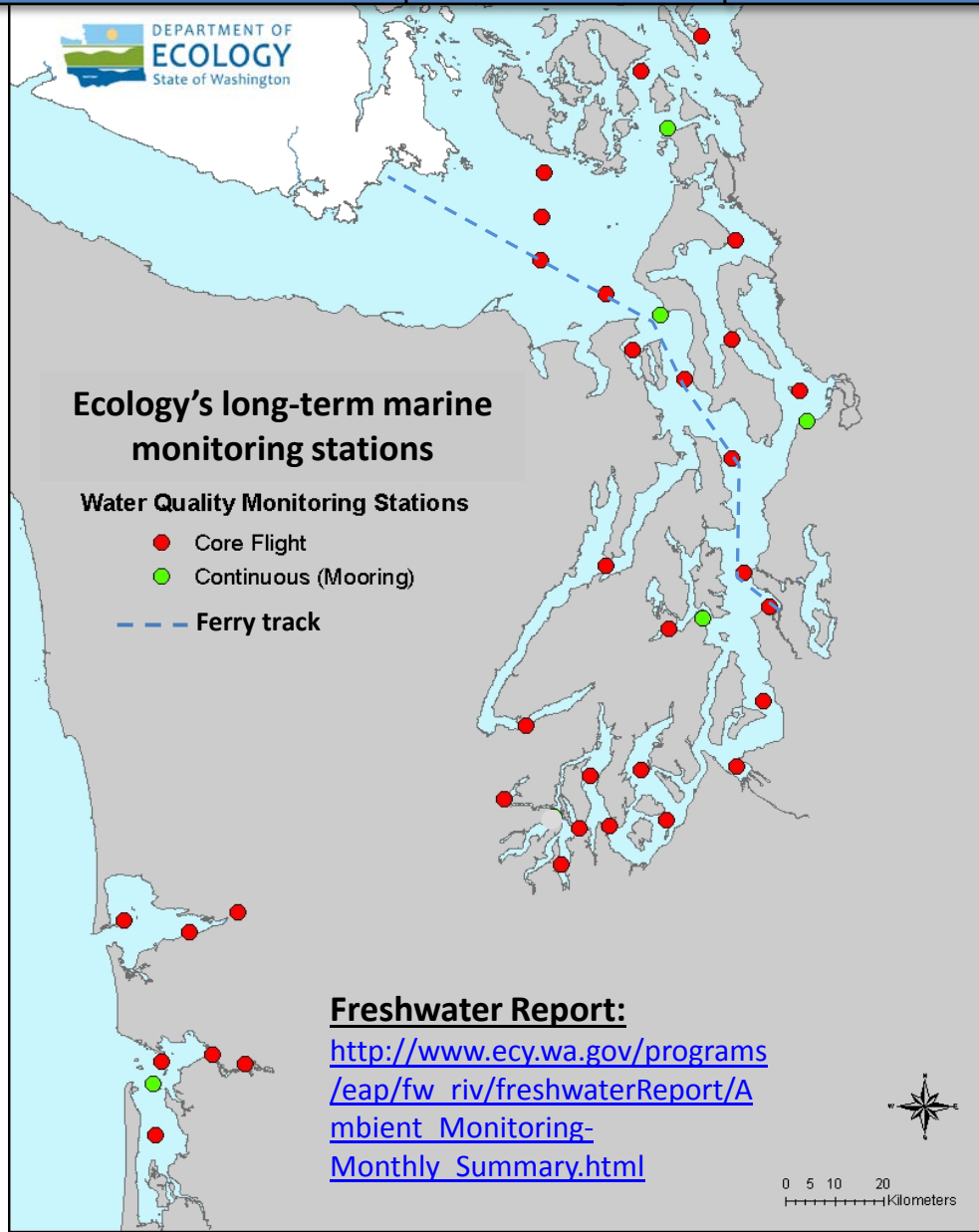


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Access core monitoring data:

<http://www.ecy.wa.gov/apps/eap/marinewq/mwdata/taset.asp>



Real-Time Sensor Network



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Access mooring data:

ftp://www.ecy.wa.gov/eap/Mooring_Raw/Puget_Sound/

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>



Flight log	-	Water column	Aerial photos	-	-
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We are looking for feedback to improve our products.

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Marine Monitoring Unit
Environmental Assessment Program
WA Department of Ecology

