2014-2015 Oceanographic Anomalies in the Gulf of Alaska

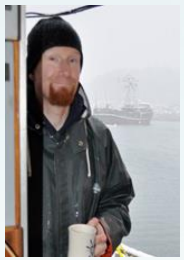
Kris Holderied
NOAA/National Ocean Service Kasitsna Bay Laboratory

Russ Hopcroft, Tom Weingartner, Sonia Batten,
Rob Campbell, Seth Danielson, Angela Doroff









Alaska Ocean Observing System

Exxon Valdez Oil Spill Trustee Council

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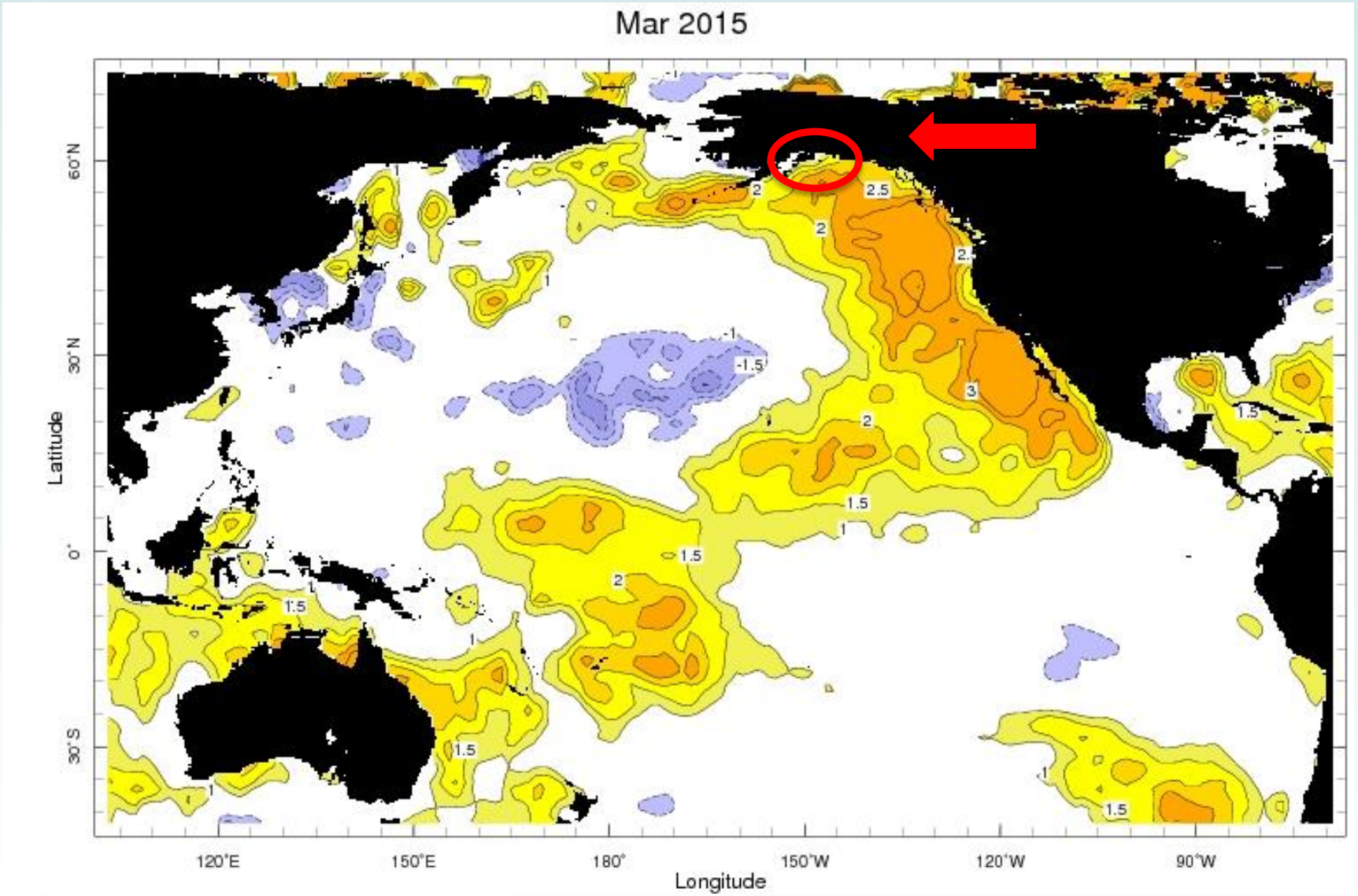
2014-2015 anomalies: Gulf of Alaska

Satellite SST Anomaly – March 2015 (R. Thoman)



Gulf of Alaska oceanography

Anchorage

Prince William Sound

PWS

Seward

GAK1

Cook Inlet

Lower Cook Inlet

Kachemak Bay

Homer

ACC

Seward line

CPR

Coastal Alaska: Local influences

Kachemak Bay, Cook Inlet

Gulf Watch Alaska Oceanography

Prince William Sound

Anchorage

PWS

Seward

GAK1

Cook Inlet

Lower Cook Inlet

Kachemak Bay

Homer

Seldovia

Seward line

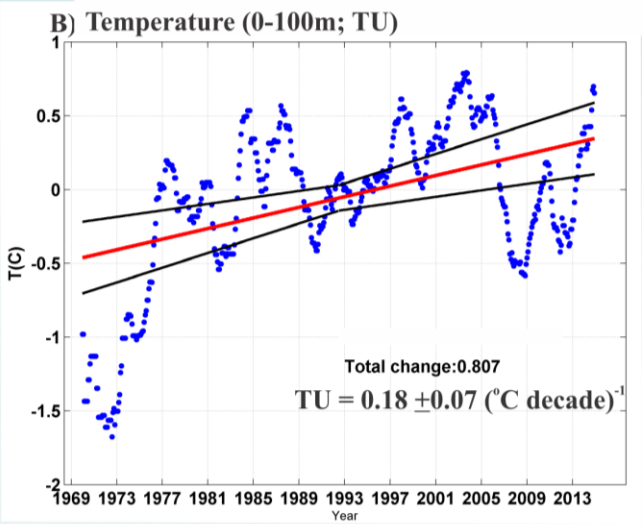
CPR

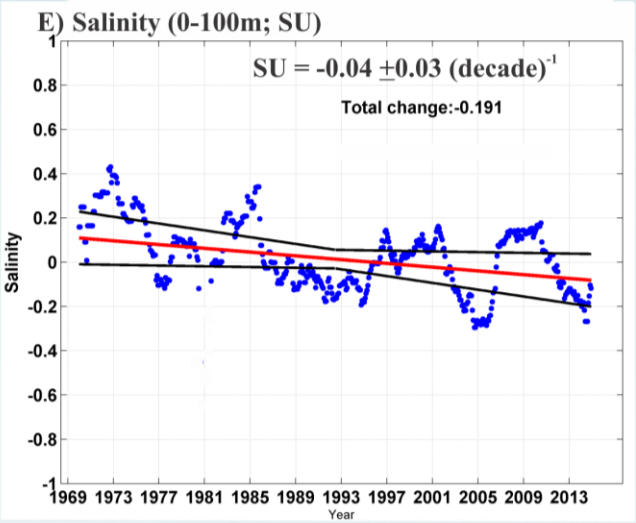
Coastal Anomalies: GAK1 mooring

Temperature

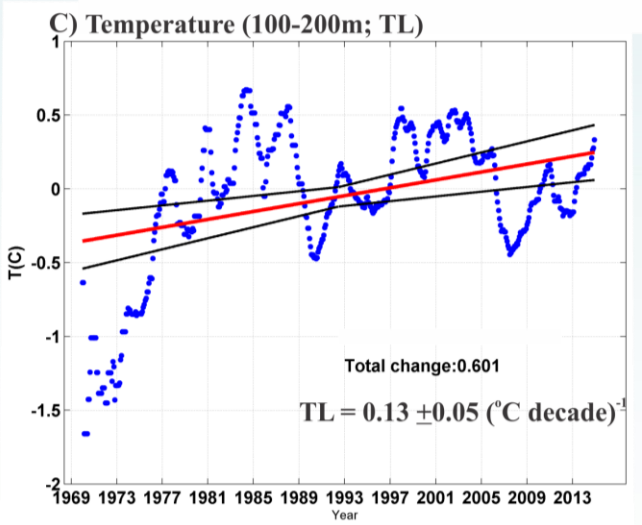
Salinity

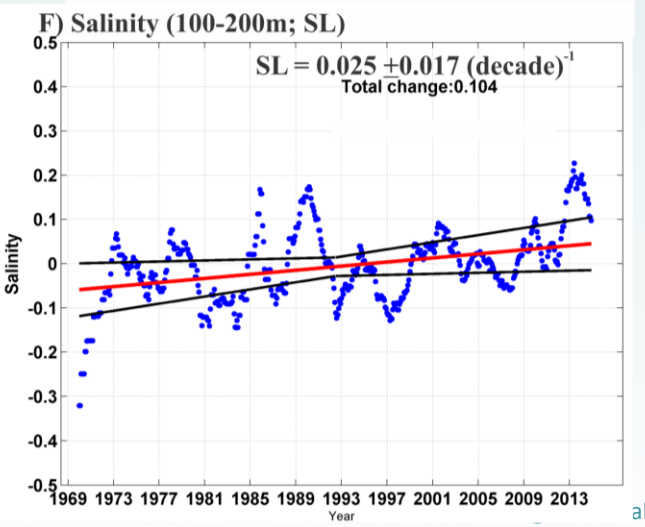
0-100 m





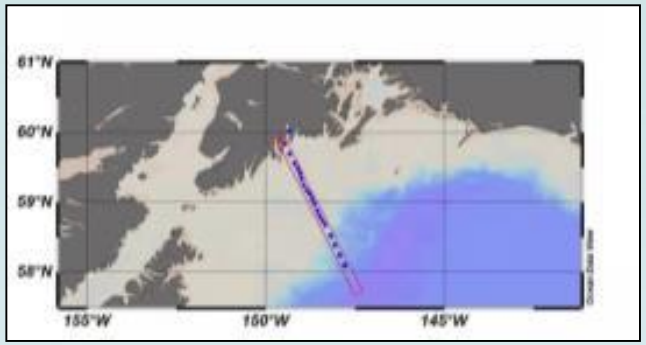
100-200 m





T. Weingartner
S. Danielson

Shelf Water
Temperature & Salinity



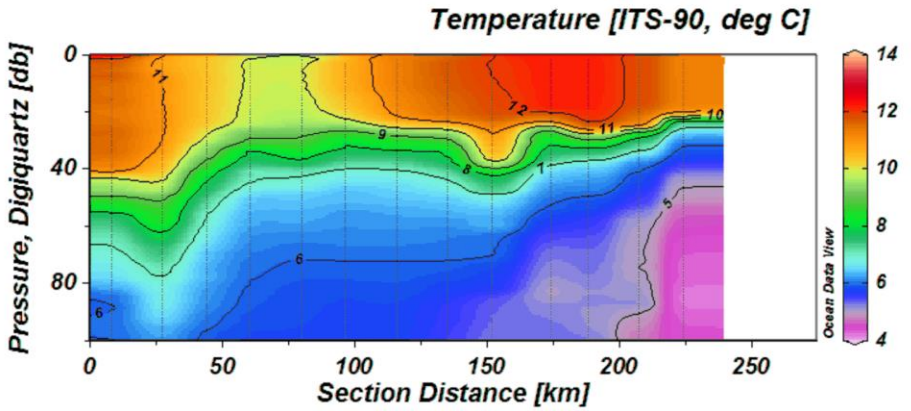
Seward Line

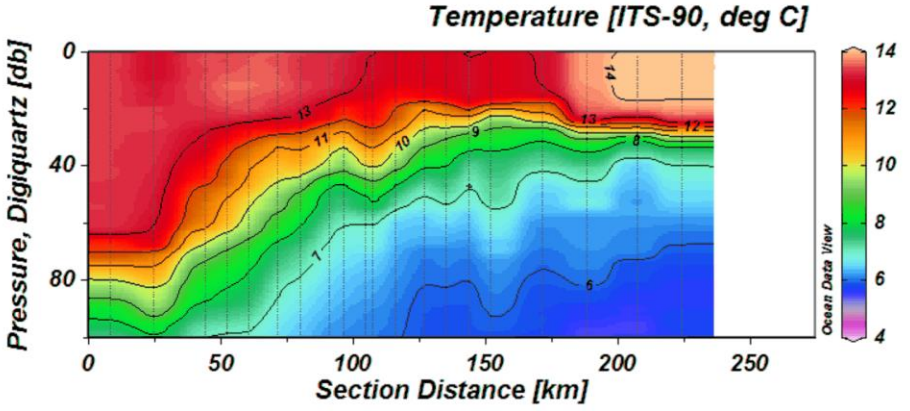
September 2013

September 2014

WARM

T





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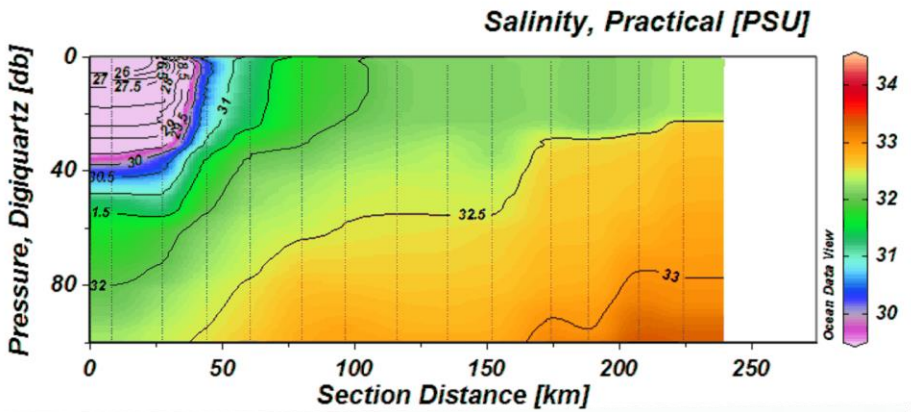
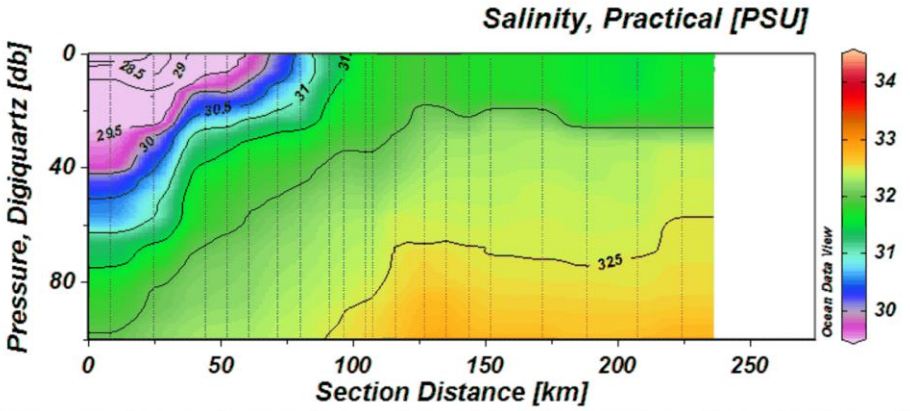




Coast → Slope

R. Hopcroft

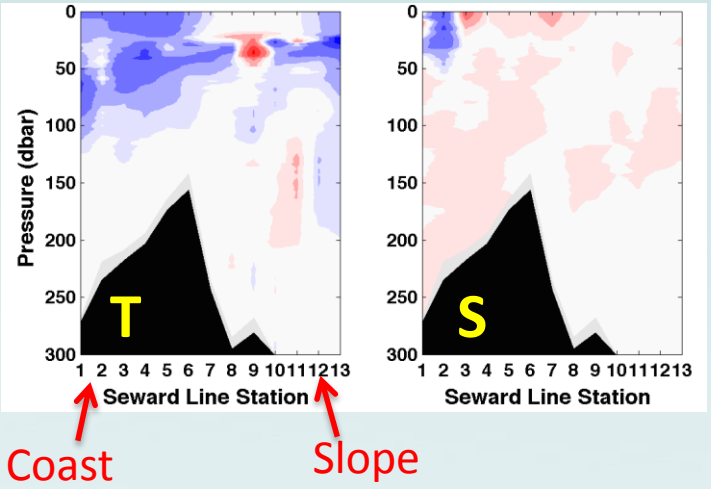
Seward Line Hydrography

- 2006-2012 coastal (GAK1) temperatures were mostly cooler than 1970-2014 long-term trend line
- Late summer 2013 was anomalously salty and cool across the Seward Line
- 2014 warmed and freshened
- 2014 warming stands out along with the El Nino events of 1997/8 & 2002/3

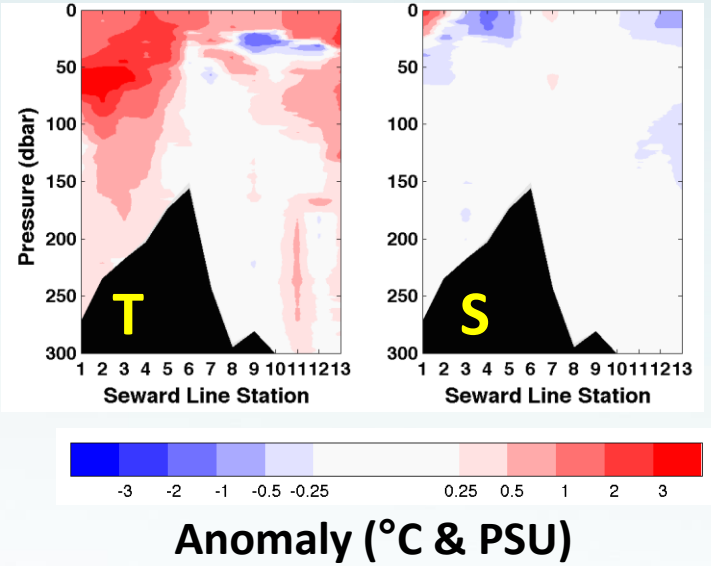
2013-2014 T & S anomalies not uniform with depth–vertical stratification change

Possible impacts on euphotic zone nutrient supply and cycling?

September 2013



September 2014

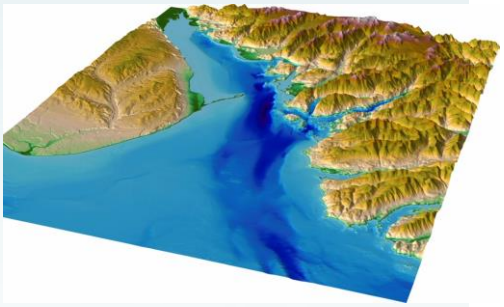


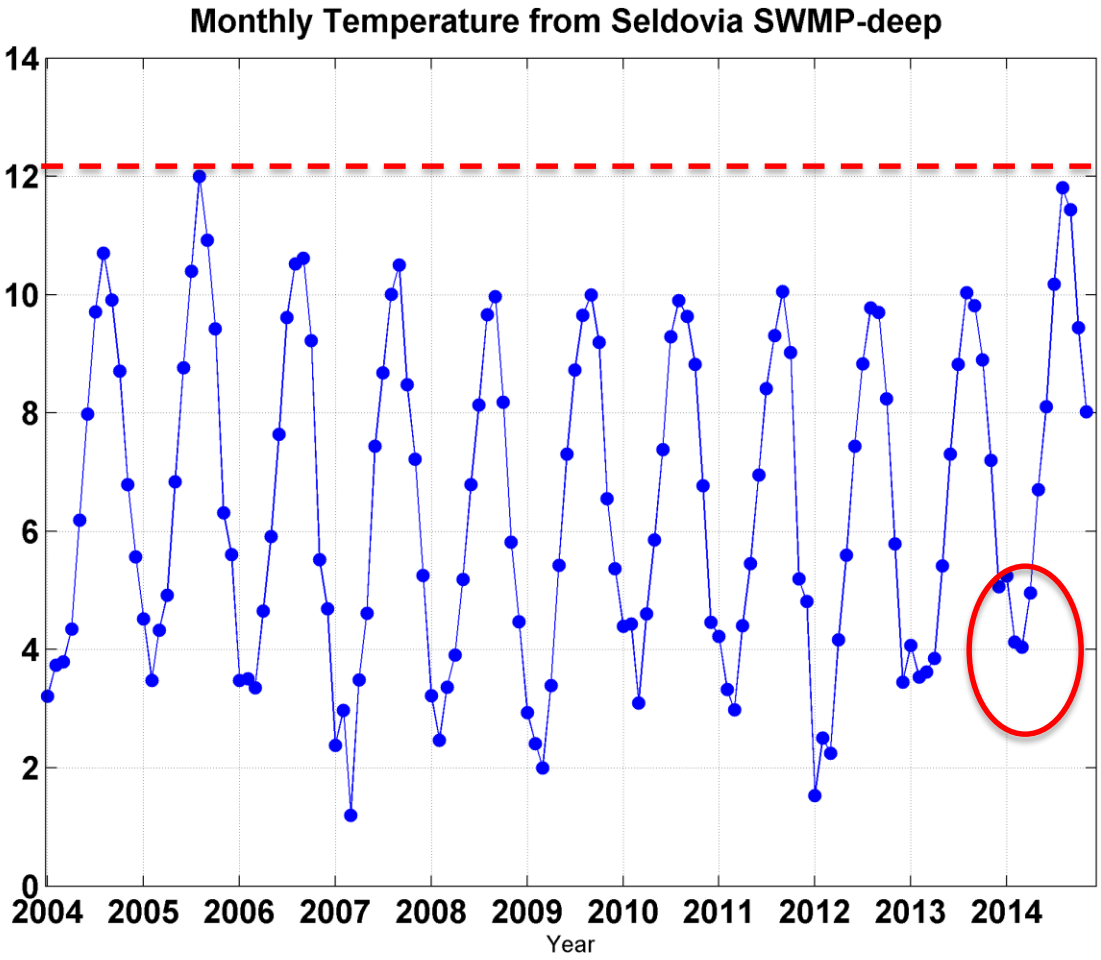
Anomaly (°C & PSU)

S. Danielson, R. Hopcroft, T. Weingartner

Estuary temperatures: 2004-2014

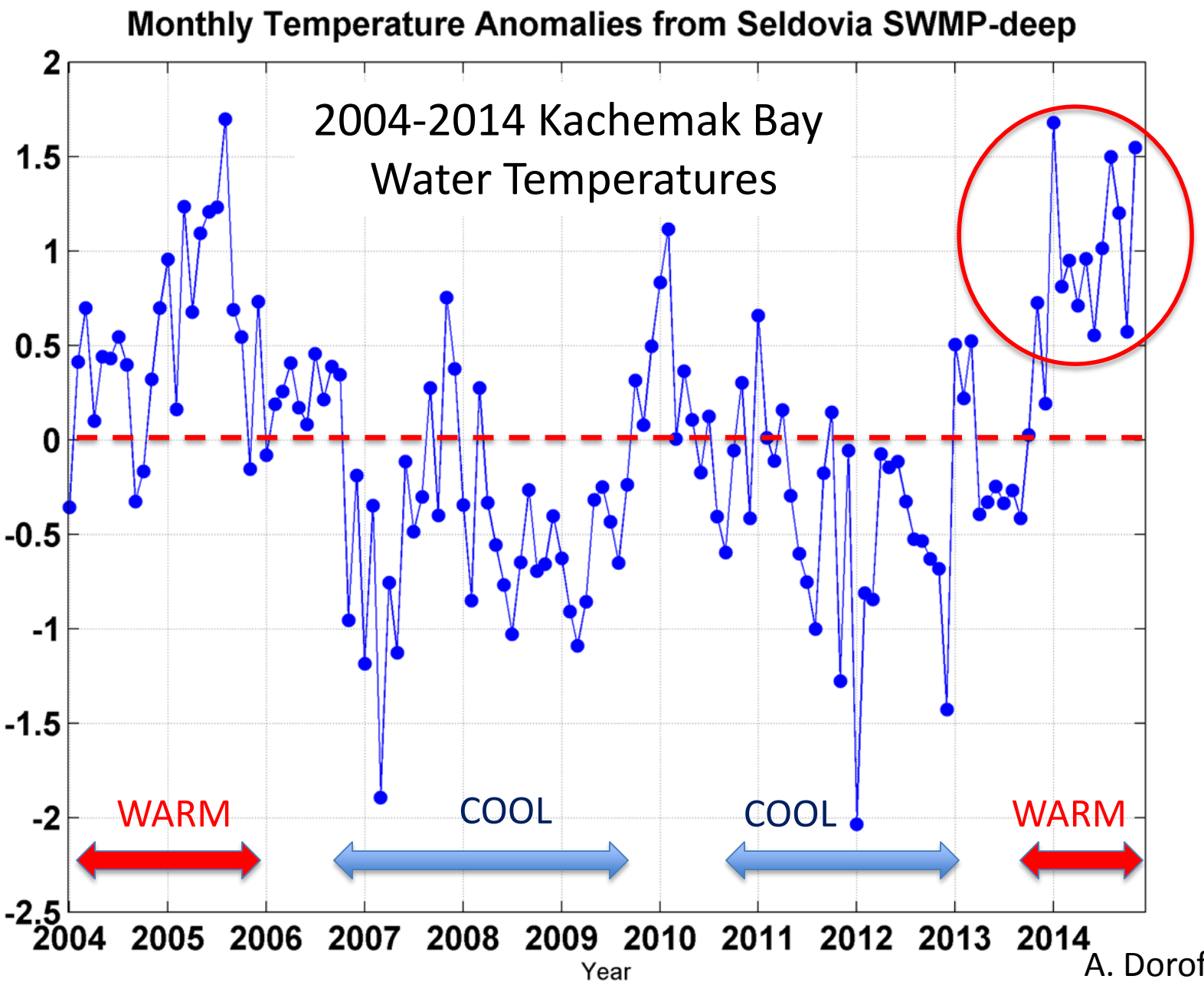
Seldovia Harbor - Kachemak Bay, Cook Inlet





A. Doroff
K. Holderied

Data: Kachemak Bay National Estuarine Research Reserve station



A. Doroff

K. Holderied

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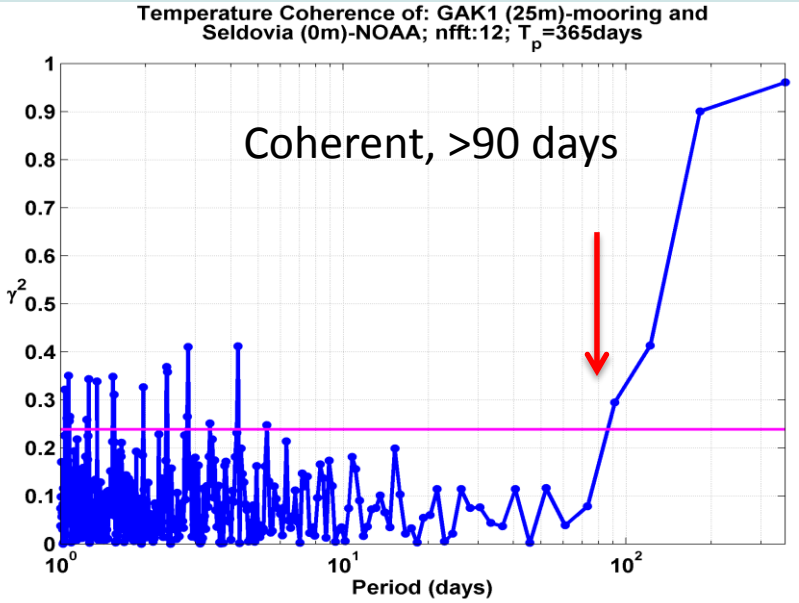
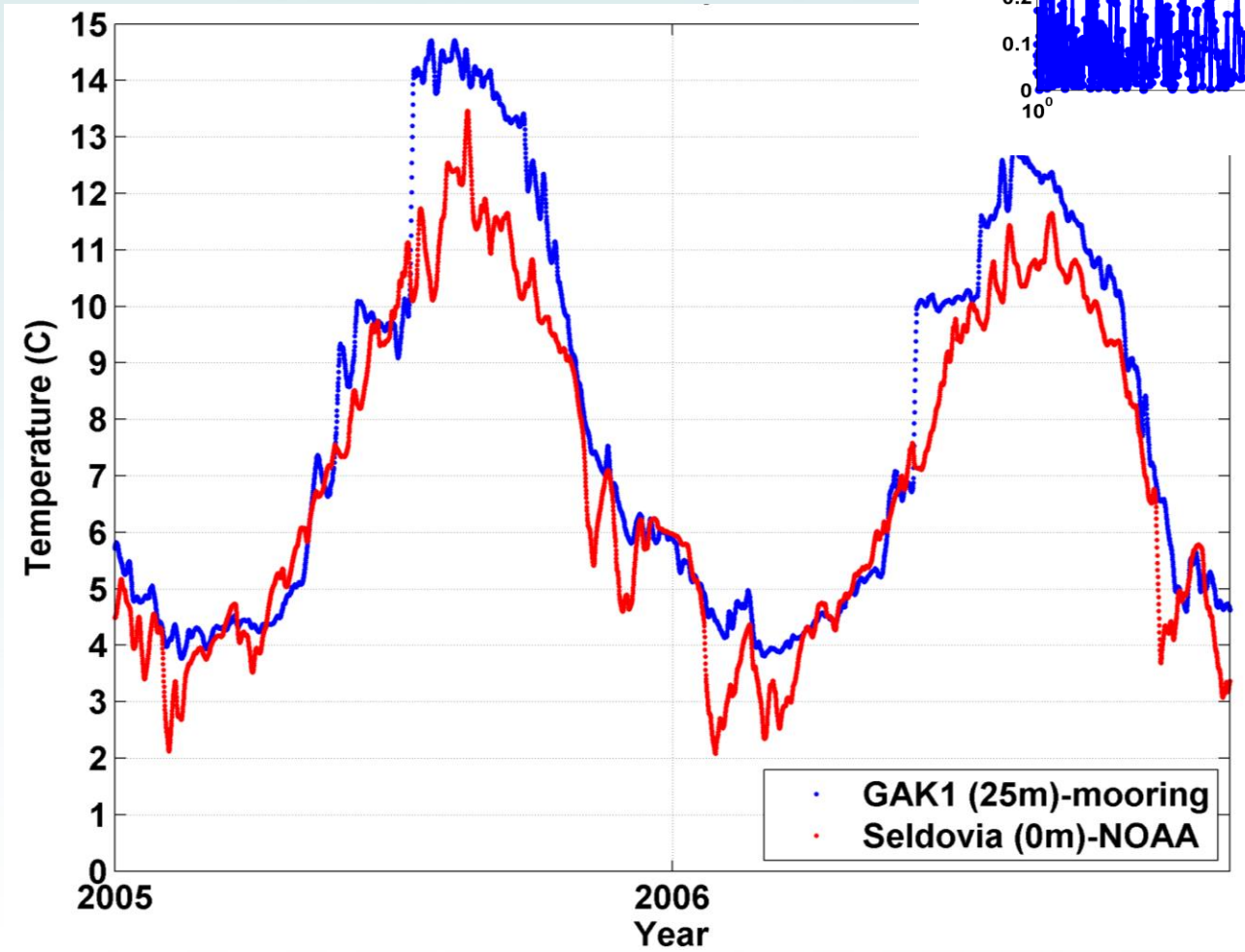
Estuary-shelf water temperature comparison





GAK1 mooring (shelf, 25m)

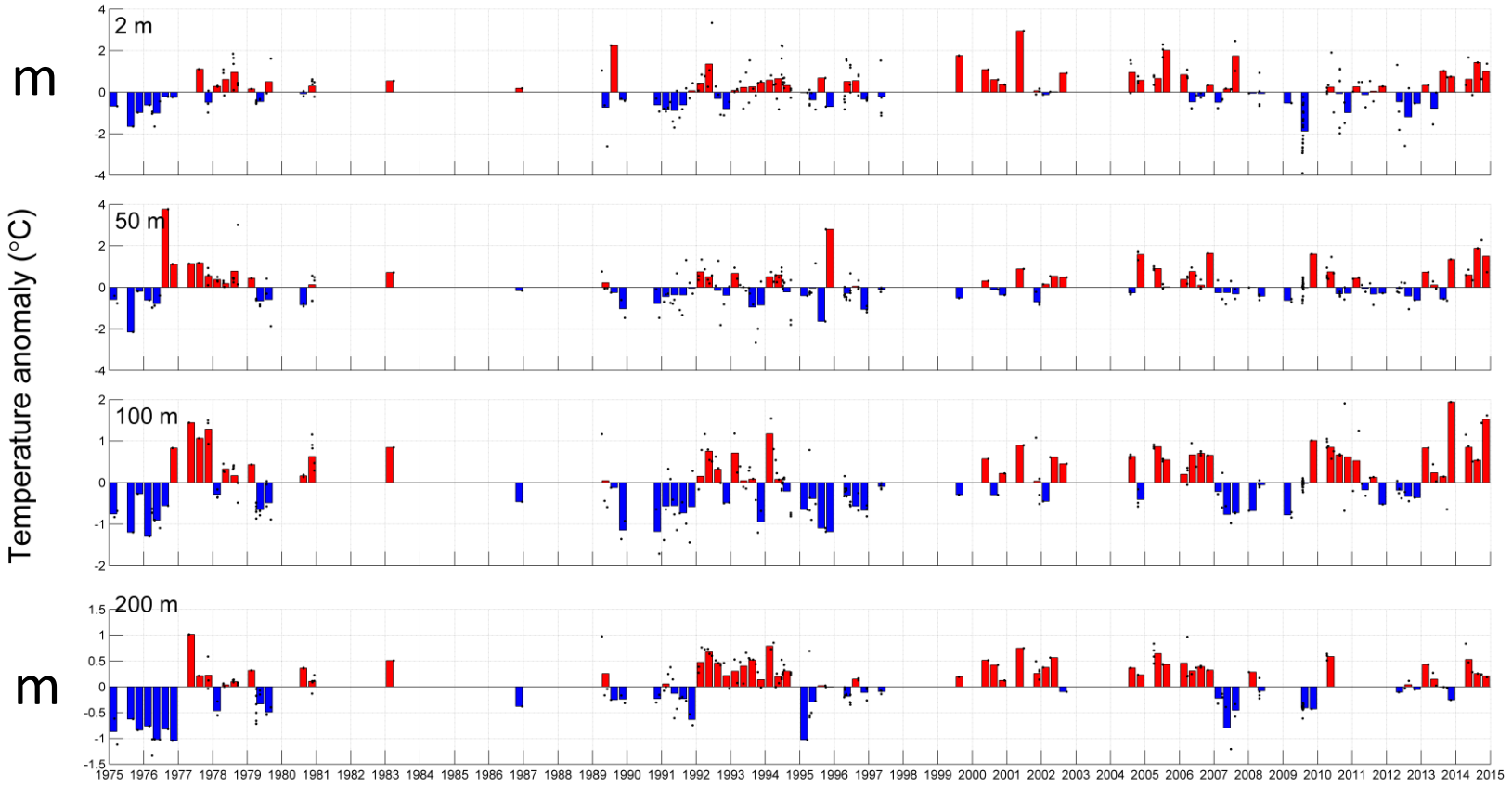
Kachemak Bay (Seldovia, 5 m)

K. Holderied
T. Weingartner

Estuary: Central Prince William Sound

Temperature anomalies from CTD casts: 1975-2014

2 m



200 m

1975 Time 2014

R. Campbell

Gulf Watch Alaska Zooplankton

Anchorage

PWS

GAK1

Lower Cook Inlet

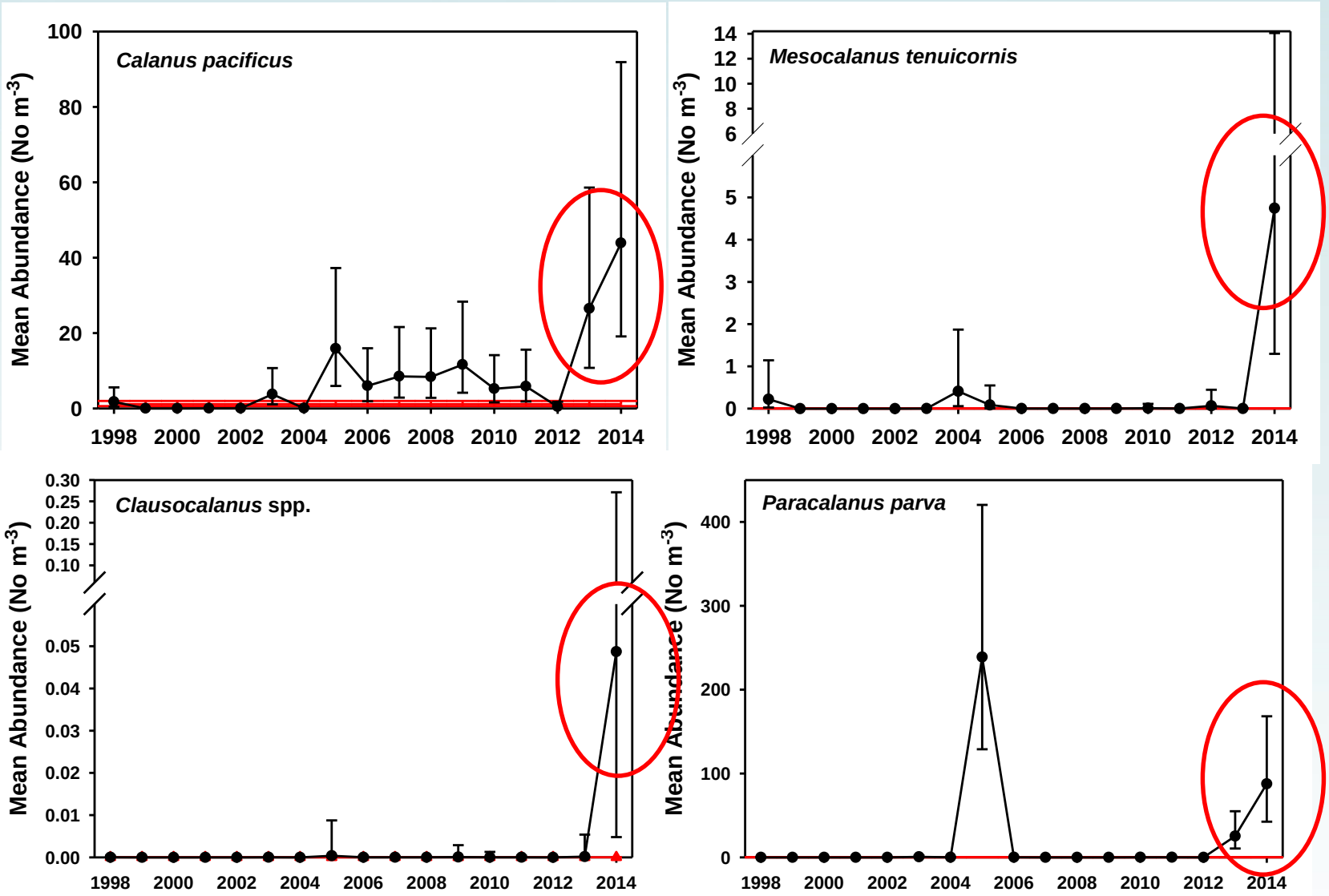
Homer

Seldovia

Seward line

CPR

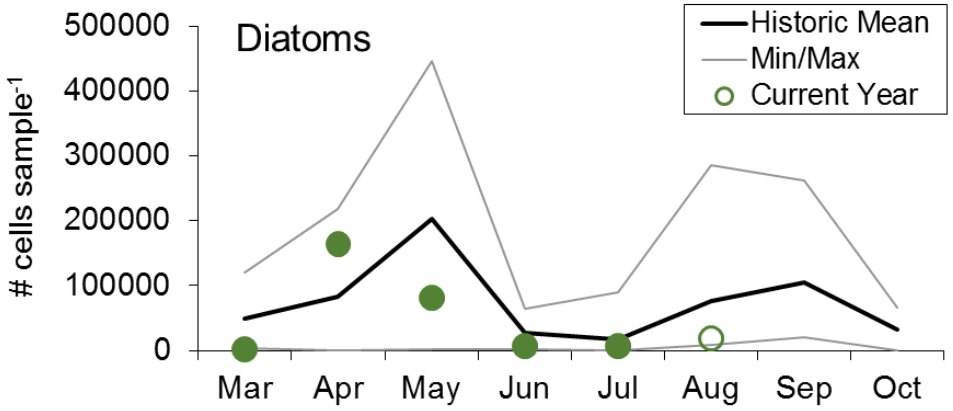
2014 anomaly: Seward Line zooplankton
4 southern copepod species: 1998-2014

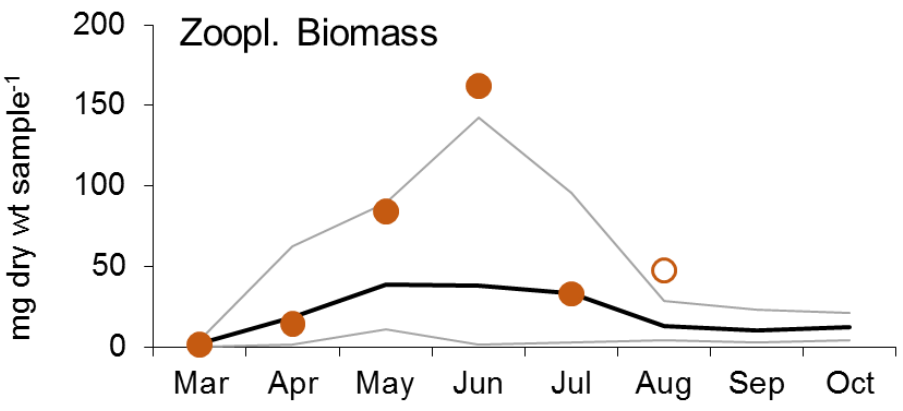


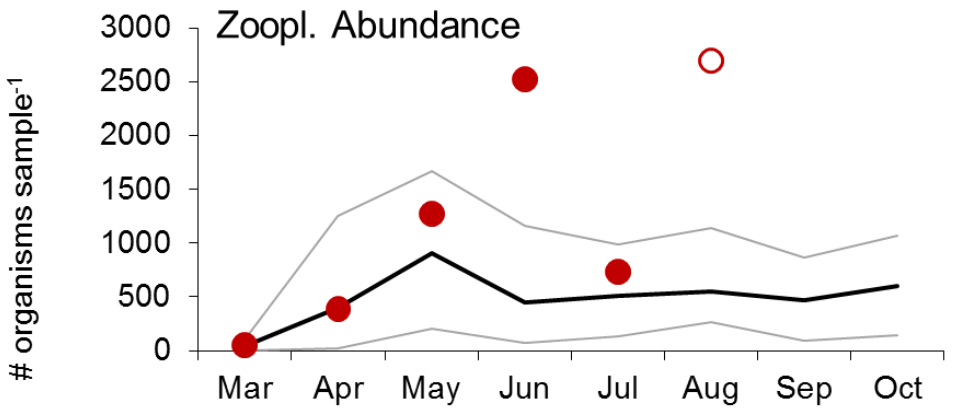
R. Hopcroft

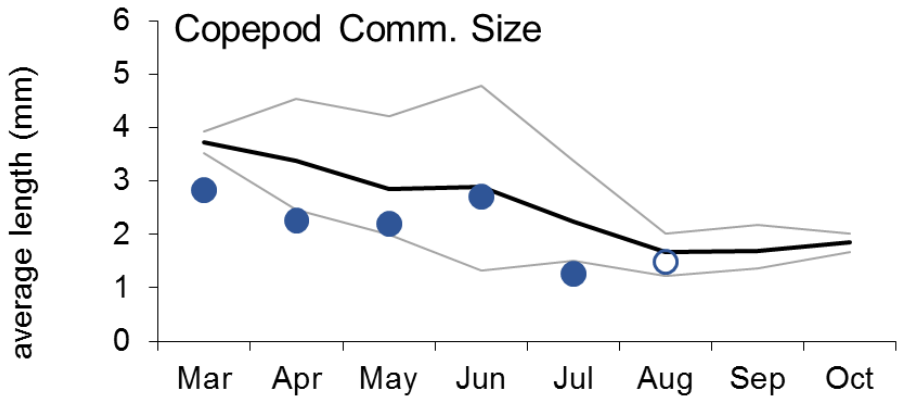
2014 anomaly: Zooplankton on shelf

Continuous Plankton Recorder (CPR) time series: 2000-2014









Long term monthly mean (2000-2013)

Long term monthly minimum/maximum (2000-2013)

Provisional 2014 monthly mean

Finalized 2014 monthly mean

S. Batten

Questions?

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Exxon Valdez
Oil Spill Trustee Council