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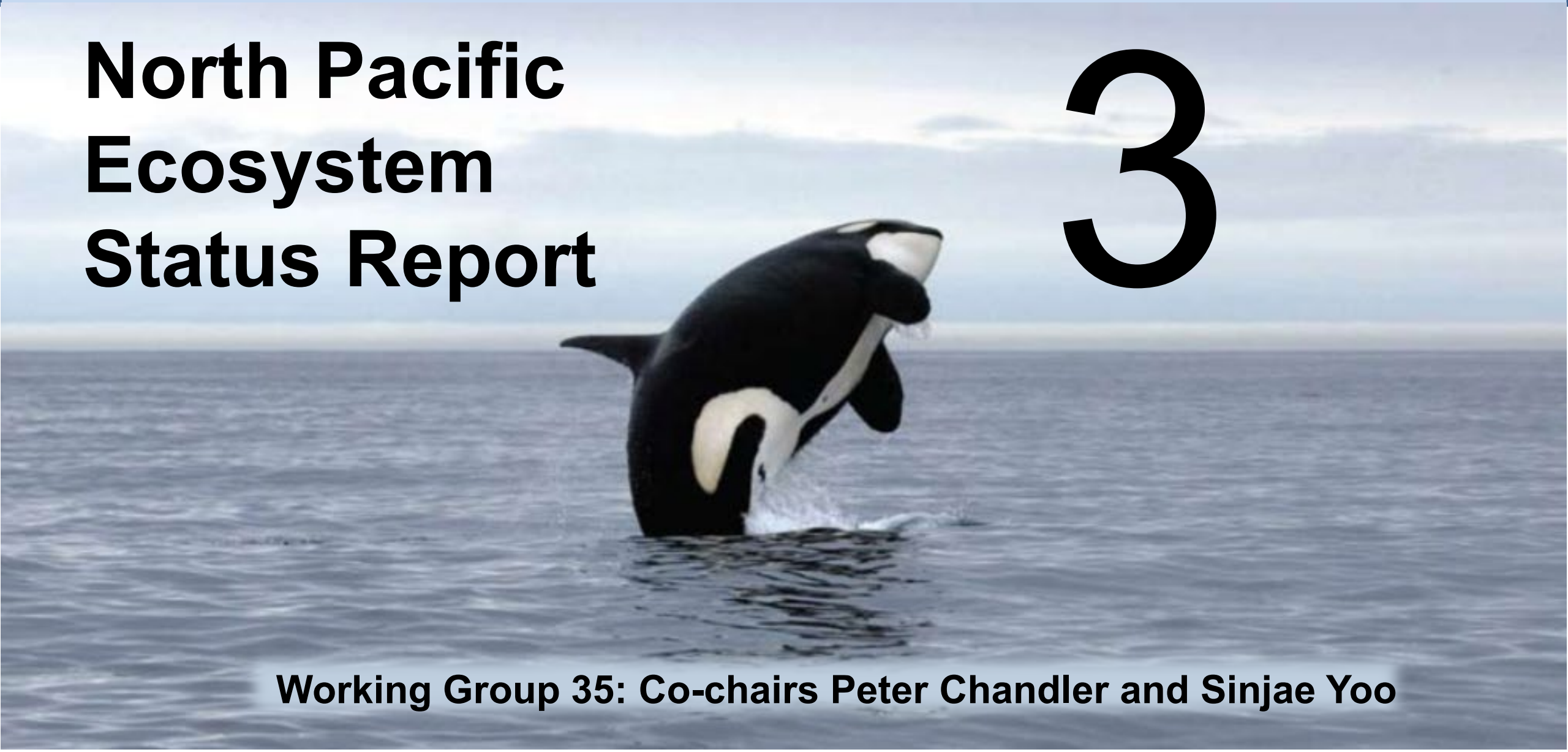
North Pacific Ecosystem Status Report 3



Working Group 35: Co-chairs Peter Chandler and Sinjae Yoo

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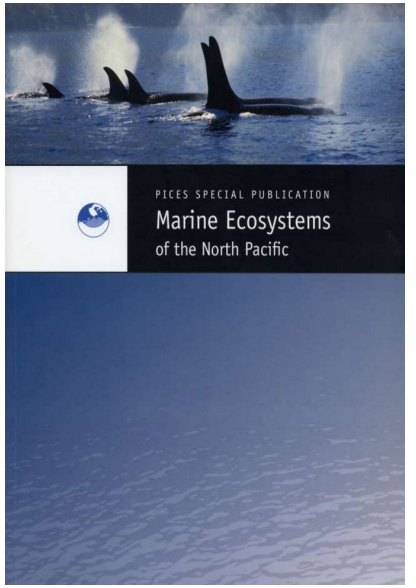
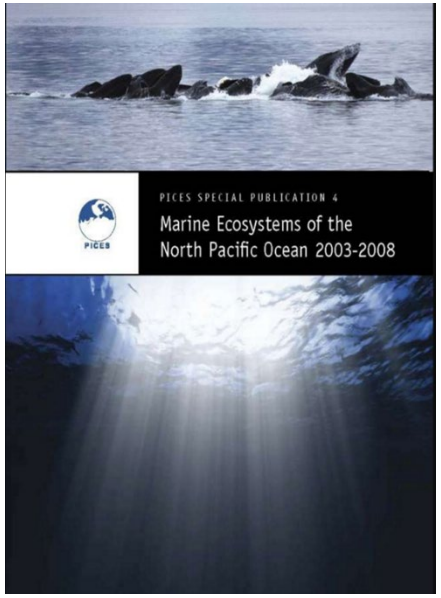
NPESR1

Perry, R.I. and McKinnell, S.M. [Eds.] 2004, 280 p.



The first North Pacific ecosystem status report was produced by PICES in 2004 to identify, describe, and integrate recent observations of change in the North Pacific Ocean. Specifically to summarise climate, oceanography, chemistry and biology information into regional assessments and then into a broad basin-wide synthesis.



NPESR2

McKinnell, S.M. and Dagg, M.J. [Eds.] 2010, 393 p.

A second hard copy book with a focus period of 2003-2008 that summarized ecosystem status and trends in the four marginal seas, the four coastal boundary currents, and the large oceanic region at their centre. An overall synthesis report was also was written by an international group of senior scientists and reviewed by scientists who were not involved in the project.

https://meetings.pices.int/publications/special-publications

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AGAIN?

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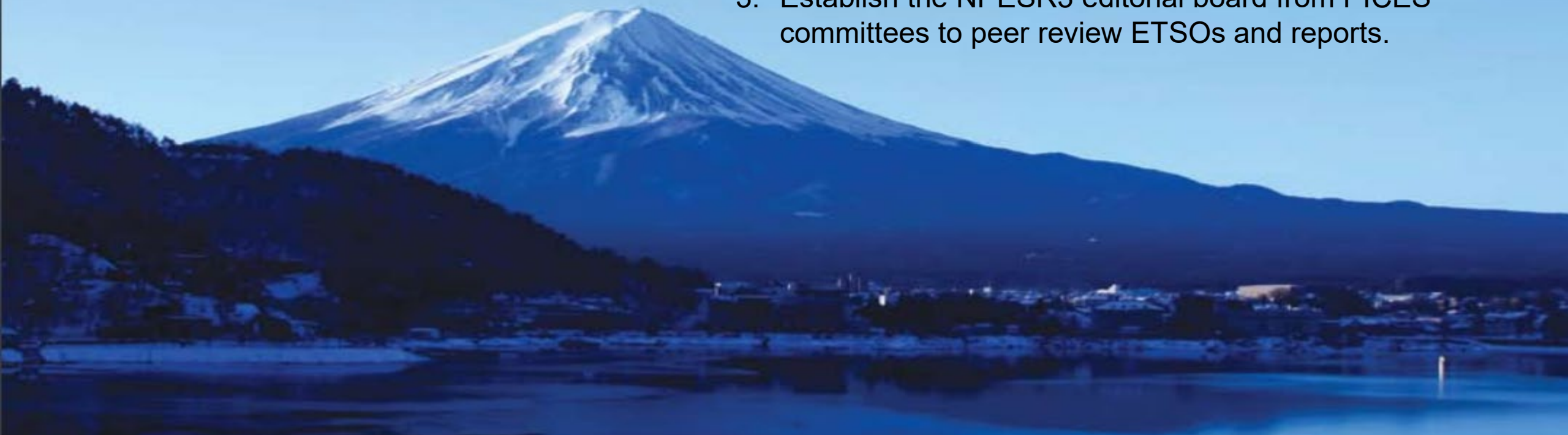
Blue sky thinking

1. Define regions in North Pacific based on the Large Marine Ecosystems of the World.

2. Build a **web accessible database** of national and International ecosystem time series observations **"ETSOs".**

3. Establish the NPESR3 editorial board from PICES committees to peer review ETSOs and reports.



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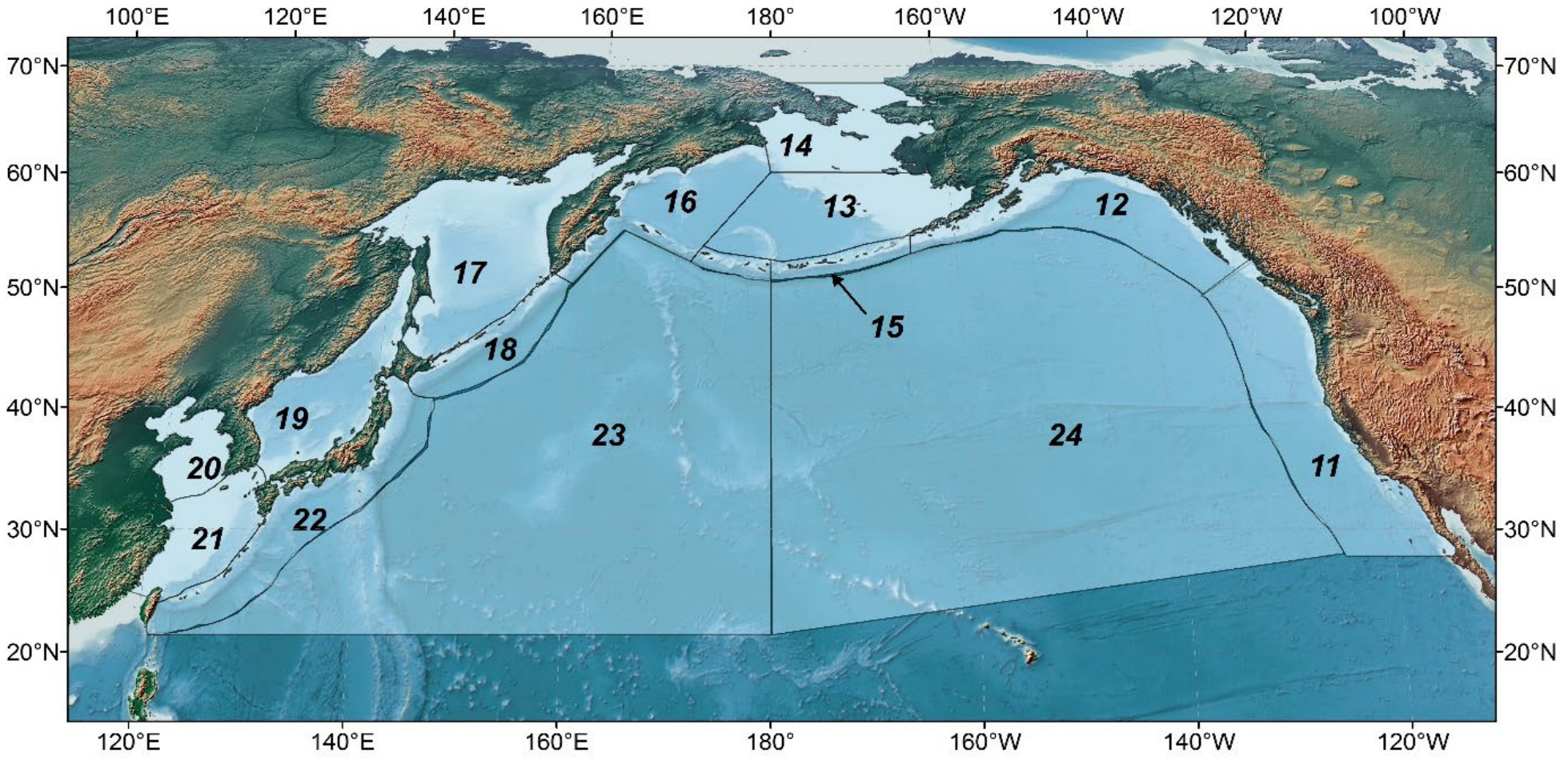

PICES Region	Lead Author
11	Bill Sydeman
12	Stephani Zador Steve Kasperski
13	Elizabeth Siddon
14	Matt Baker
15	Ivonne Ortiz
16	Kirill Kivva
17	Yury Zuenko
18	Hiroshi Kuroda
19	Vyacheslav Lobanov
20	Sinjae Yoo
21	Yu Fei
22	Kazuaki Tadokoro
23	Tsuneo Ono
24	Sonia Batten
Climate	Nick Bond
Human dimensions	Keith Criddle

Map of the North Pacific Ocean showing the 14 regions and the PICES naming convention used in the regional reports that form the basis of the North Pacific Ecosystem Status Report (NPESR3).

North Pacific Ecosystem Status Report

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Highlights
Introduction
Atmosphere
(temperature, sea level pressure)
Physical Ocean
(Currents, hydrography/stratification, seasonal sea ice, rivers)
Chemical Ocean
(oxygen, nutrients, OA)
Phytoplankton
Biomass
Productivity
HABS
Zooplankton
Microzooplankton
Mesozooplankton
Ichthyoplankton
Gelatinous zooplankton

Fishes and Invertebrates
Species Composition/Diversity
Catch and Biomass
Distribution
Recruitmen
Benthos
Biogenic habitat (e.g. eelgrass, coral)
Marine Birds
Marine Mammals
Pollutants/Contaminants
Human Dimensions
Catch value, Fisheries participation/employment, Aquaculture (production volume, value)
Climate Change, Ecosystem Considerations & Emerging Issues

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https://pices.submittable.com/submit/65185/north-pacific-ecosystem-status-report-ecosystem-time-series-observations

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+/-	SUBMISSION ↑	SUBMITTER	FORM	DATE	STATUS	ASSIGNED
	overall length		Ecosystem Time Series Observations			
	Canada: Quantity of wild and aquaculture seafood per species	Lesley MacDougall	North Pacific Ecosystem Status Report – Ecosystem Time Series Observations	11/3/2017	In-Progress	William Sydeman
	Canada: Value of Wild and Aquaculture seafood per species	Lesley MacDougall	North Pacific Ecosystem Status Report – Ecosystem Time Series Observations	11/3/2017	In-Progress	William Sydeman
	Canada: Vessel Descriptions_2012	Lesley MacDougall	North Pacific Ecosystem Status Report – Ecosystem Time Series Observations	11/3/2017	In-Progress	William Sydeman
	Chl a concentration at the surface of the central Okhotsk Sea	Yury Zuenko	North Pacific Ecosystem Status Report – Ecosystem Time Series Observations	12/16/2018	In-Progress	Yury Zuenko
	Climate Indices and Air Temperatures	Nicholas Bond	North Pacific Ecosystem Status Report – Ecosystem Time Series Observations	11/7/2017	In-Progress	Multiple Team Members

first | prev | 1 | 2 | 3 | 4 | 5 | 6 | 7 | next | last Show 20 rows per page of 169 total results View: active

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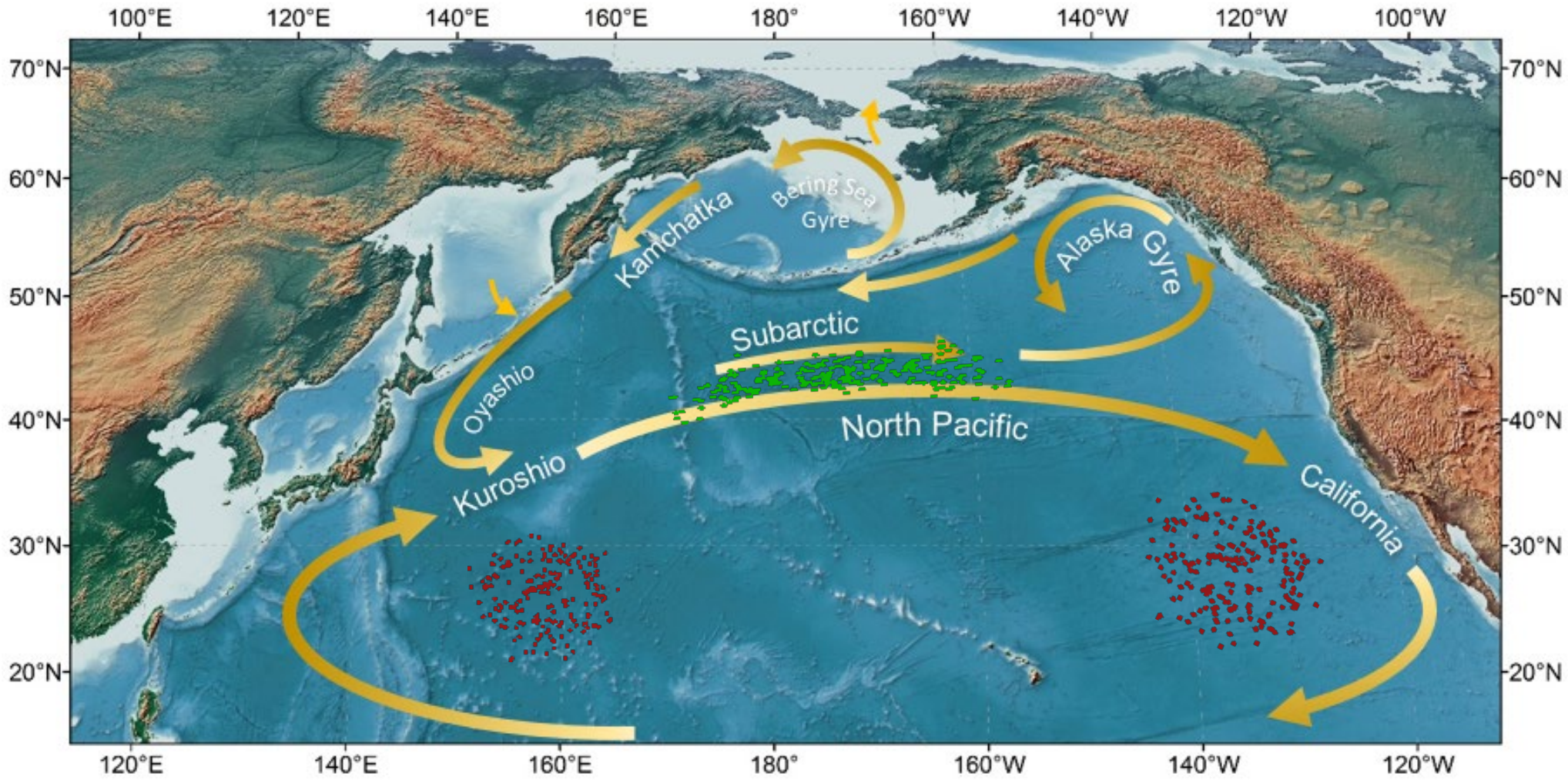

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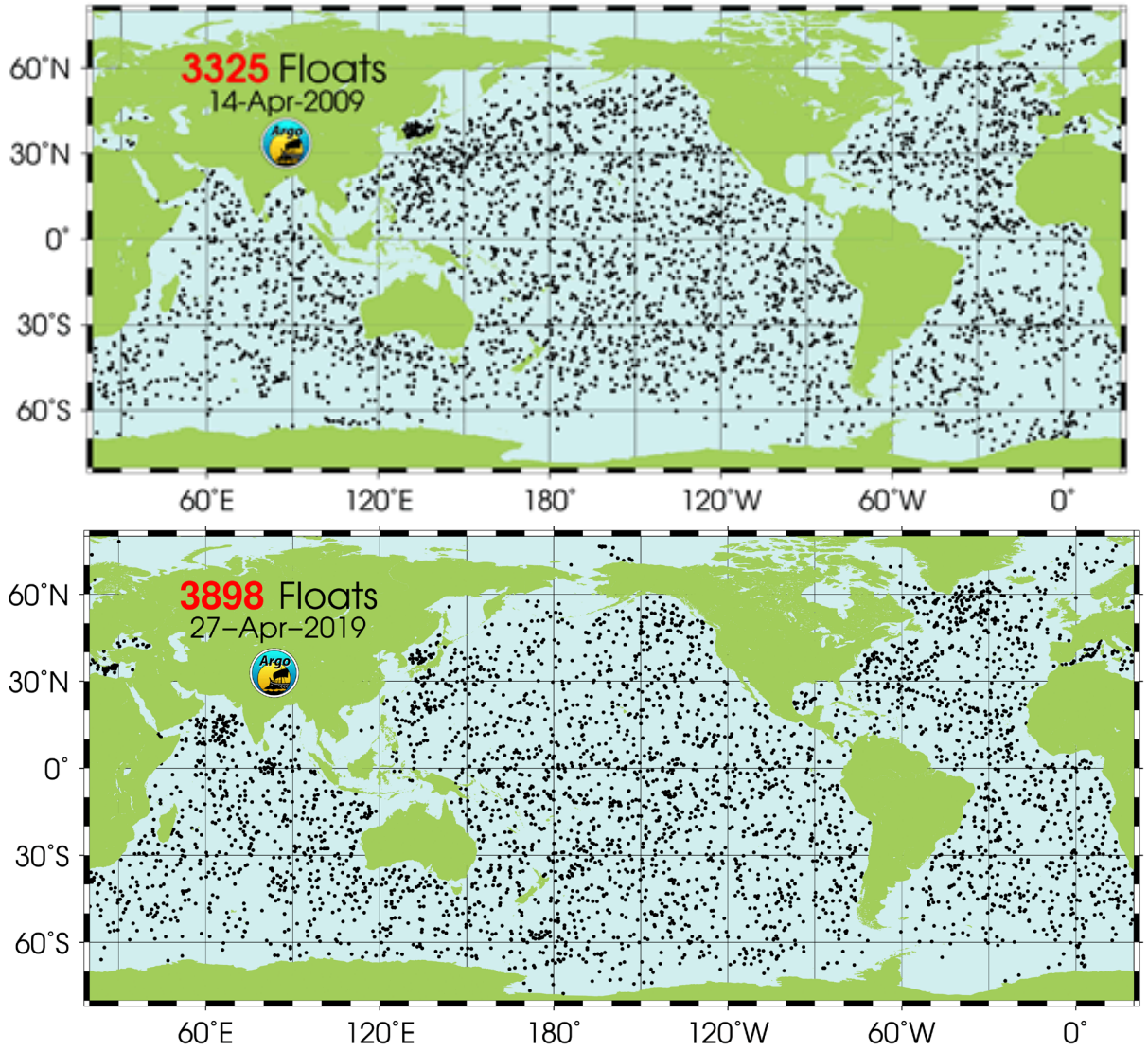

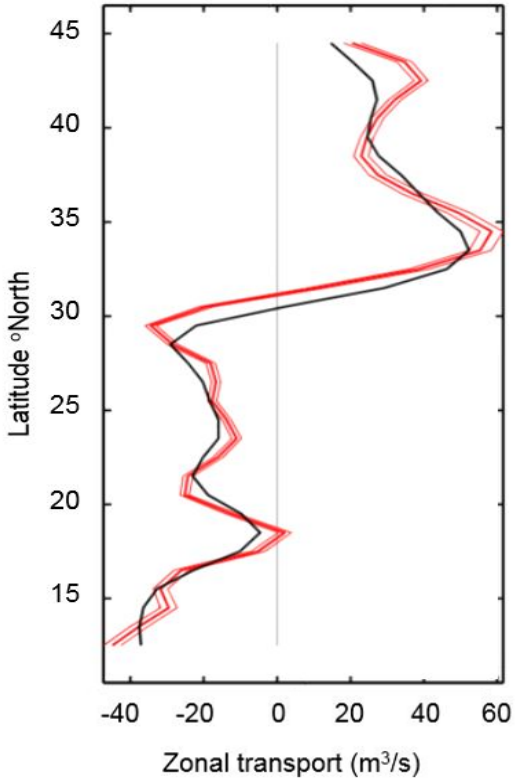

Zonal transport per degree latitude in the upper 1900 db (150−170◦E average) referenced to the Argo trajectory data (red line, with error bars) and referenced to the 1975 db (black line). Giglio, D., 2014.

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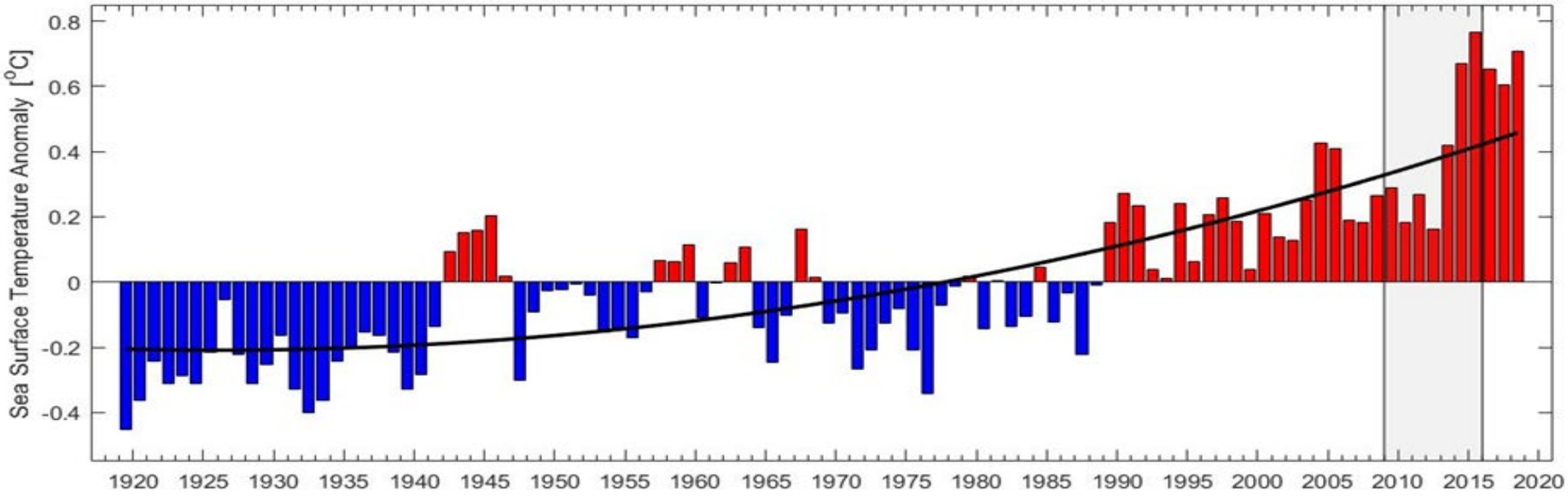
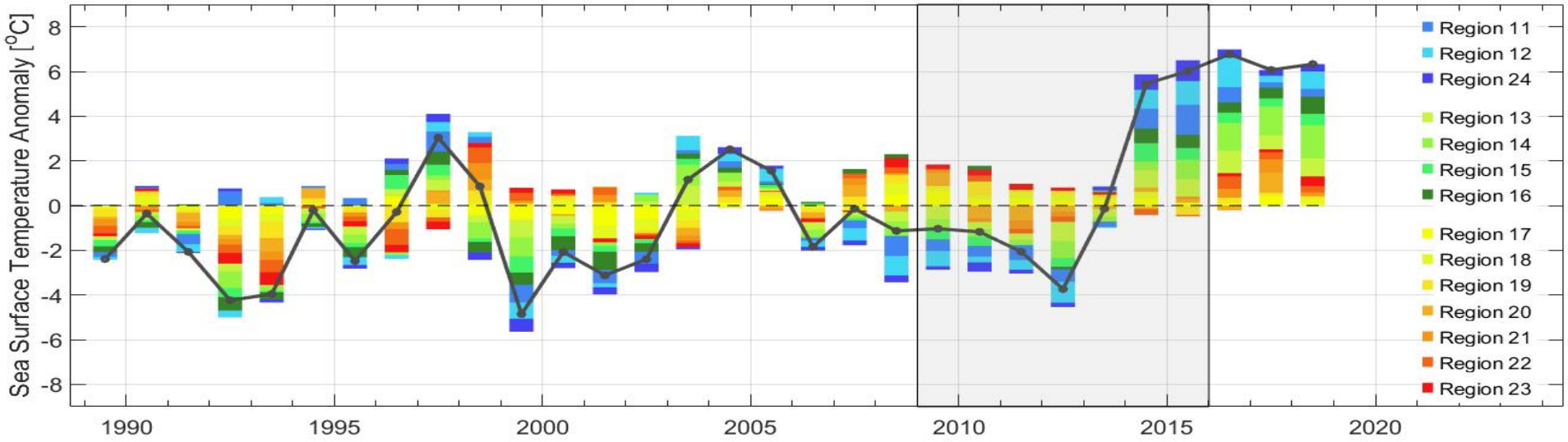
Sea Surface Temperature





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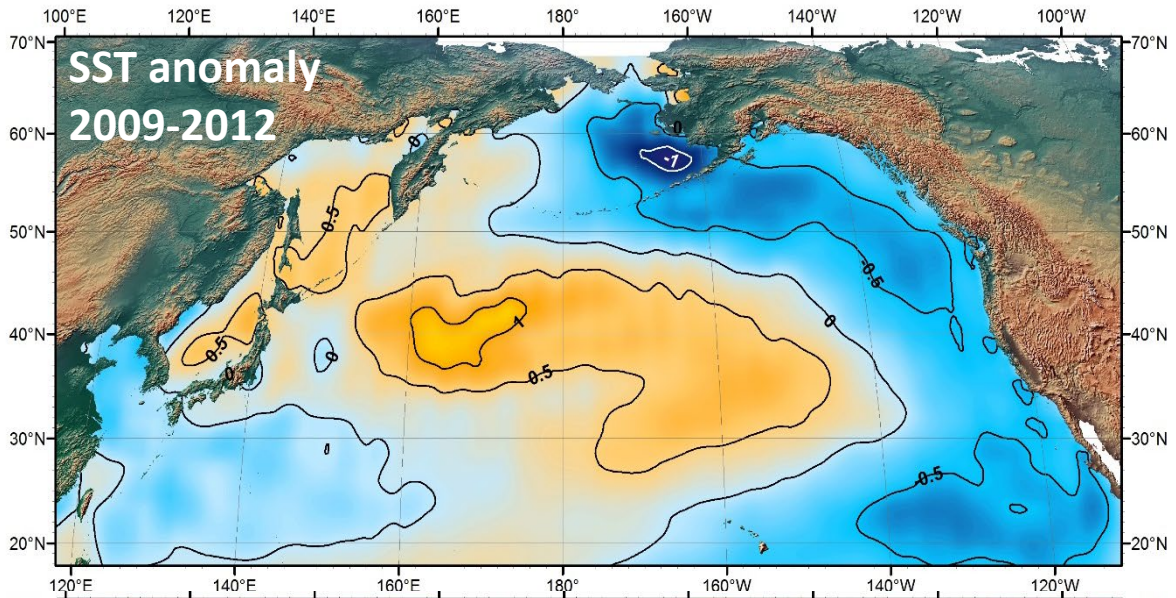

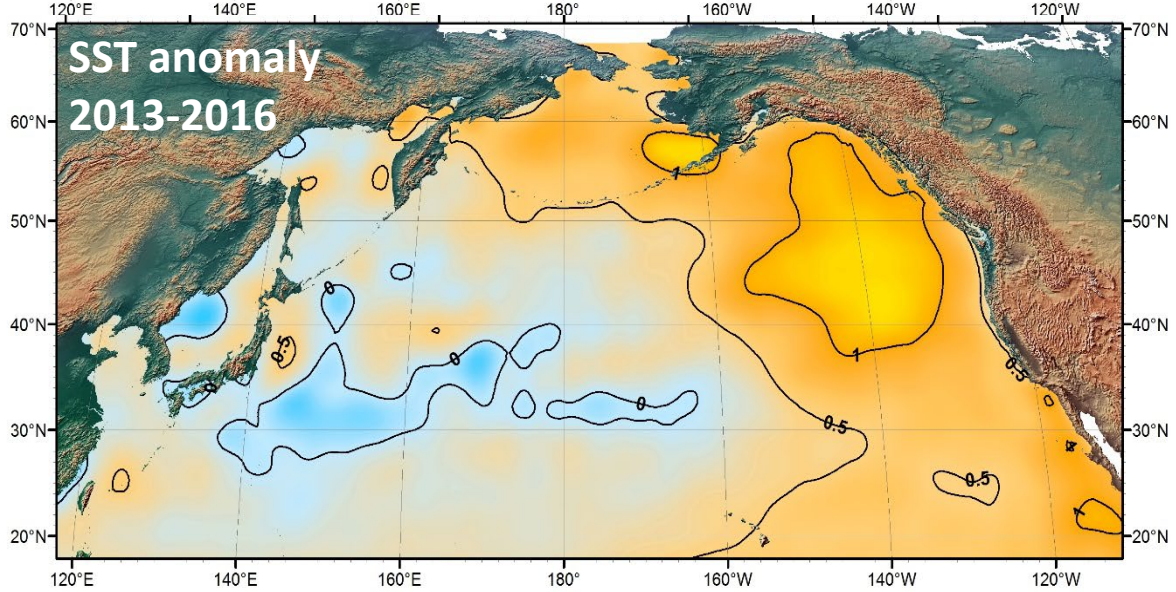

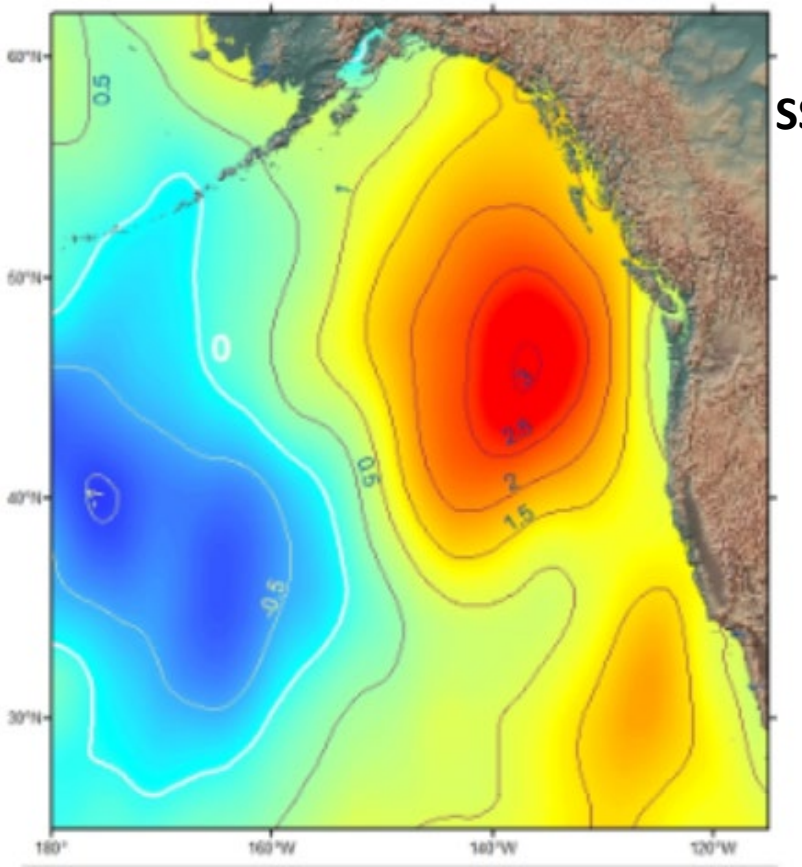

SST anomaly July 2015

Sea surface temperature anomaly (°C) at a 2°x 2° resolution, blue areas are below normal, red areas above normal where normal is the30 year average from 1981 – 2010, Data source: NOAA_ERSST_V3 data, NOAA/OAR/ESRL PSD, Boulder Colorado

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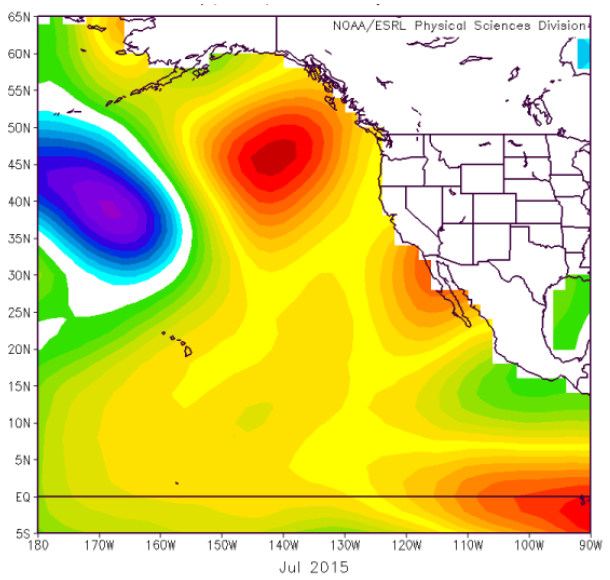
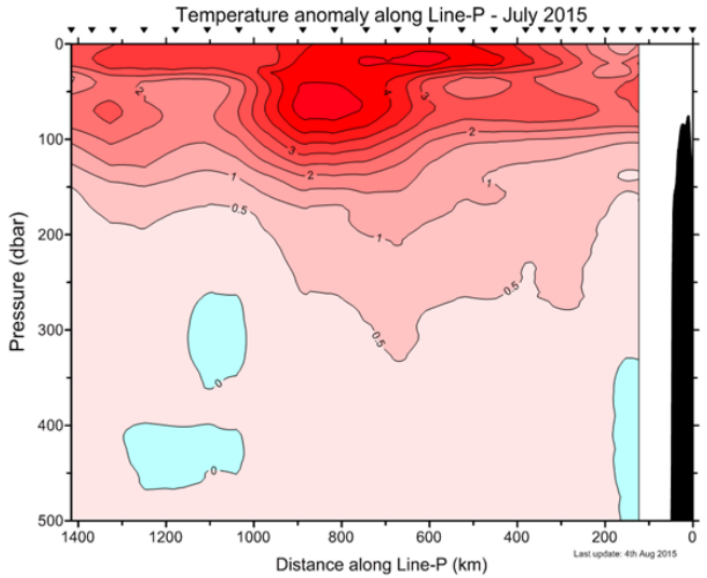
July 2015

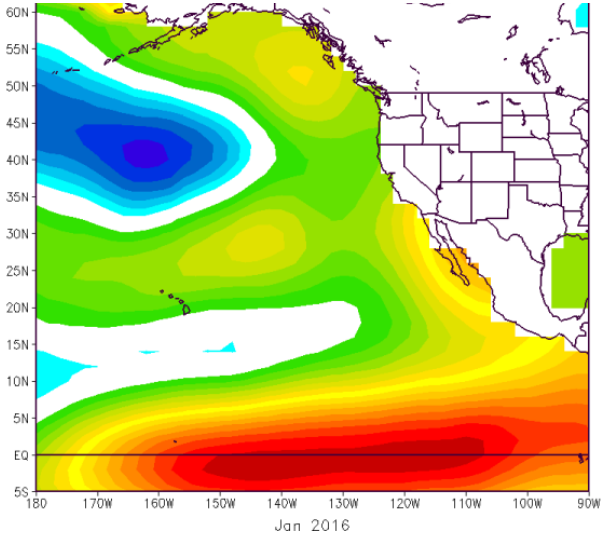
Well developed marine heat wave
Strong positive anomalies at depth
Emerging El Nino

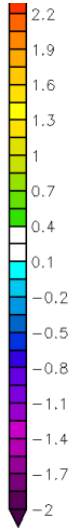


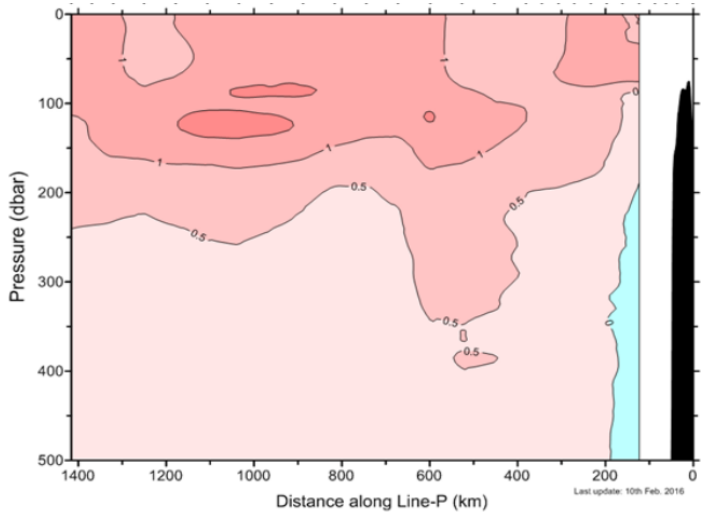


January 2016

Remnants of the marine heat wave
Still positive anomalies at depth
Well developed El Nino







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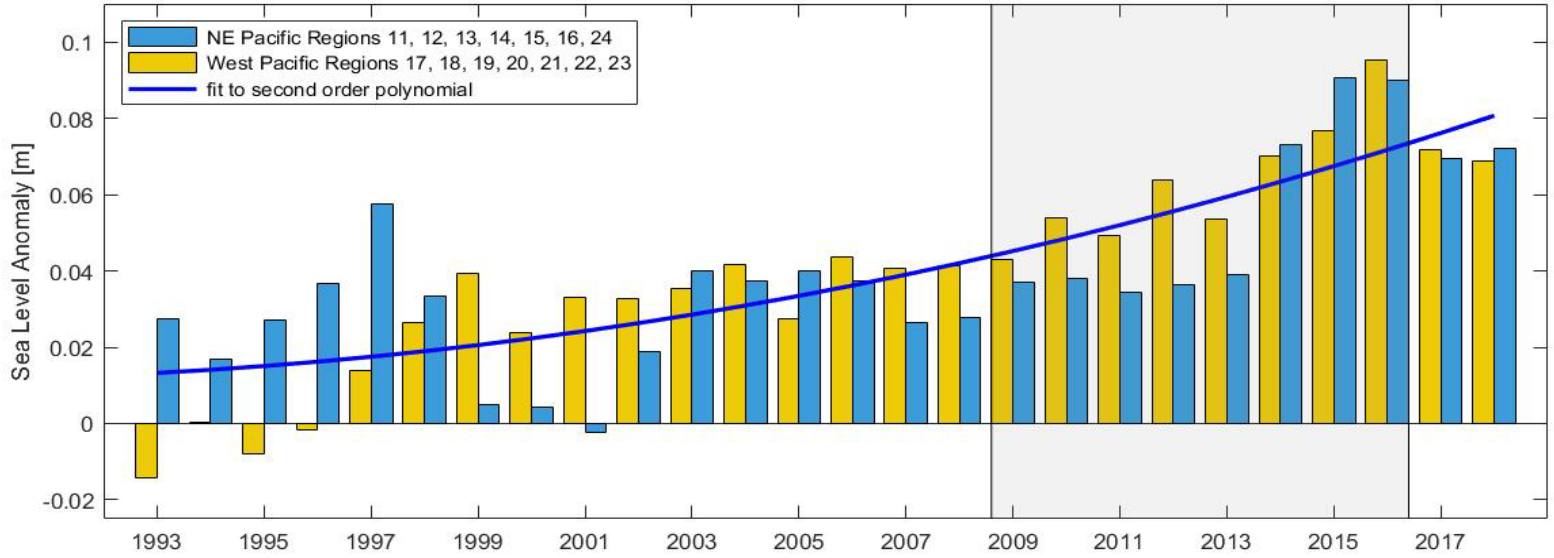
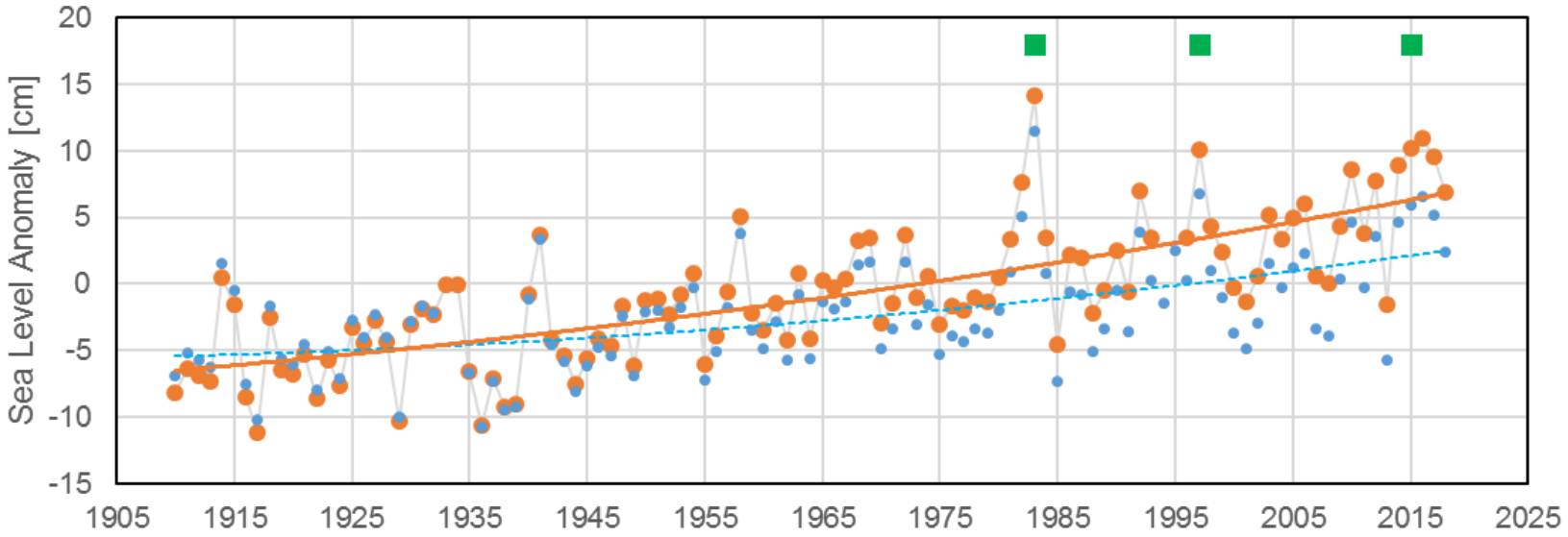
Sea Level



Annual sea level anomaly computed with respect to a 20-year mean reference period (1993-2012)



Tide gauge data from the Canadian Hydrographic Service in Victoria, Canada , corrected with uplift data from the Pacific Geoscience Centre, BC, Canada. Blue dots are uncorrected data, orange are corrected data, green squares show timing of strong El-Nino events.

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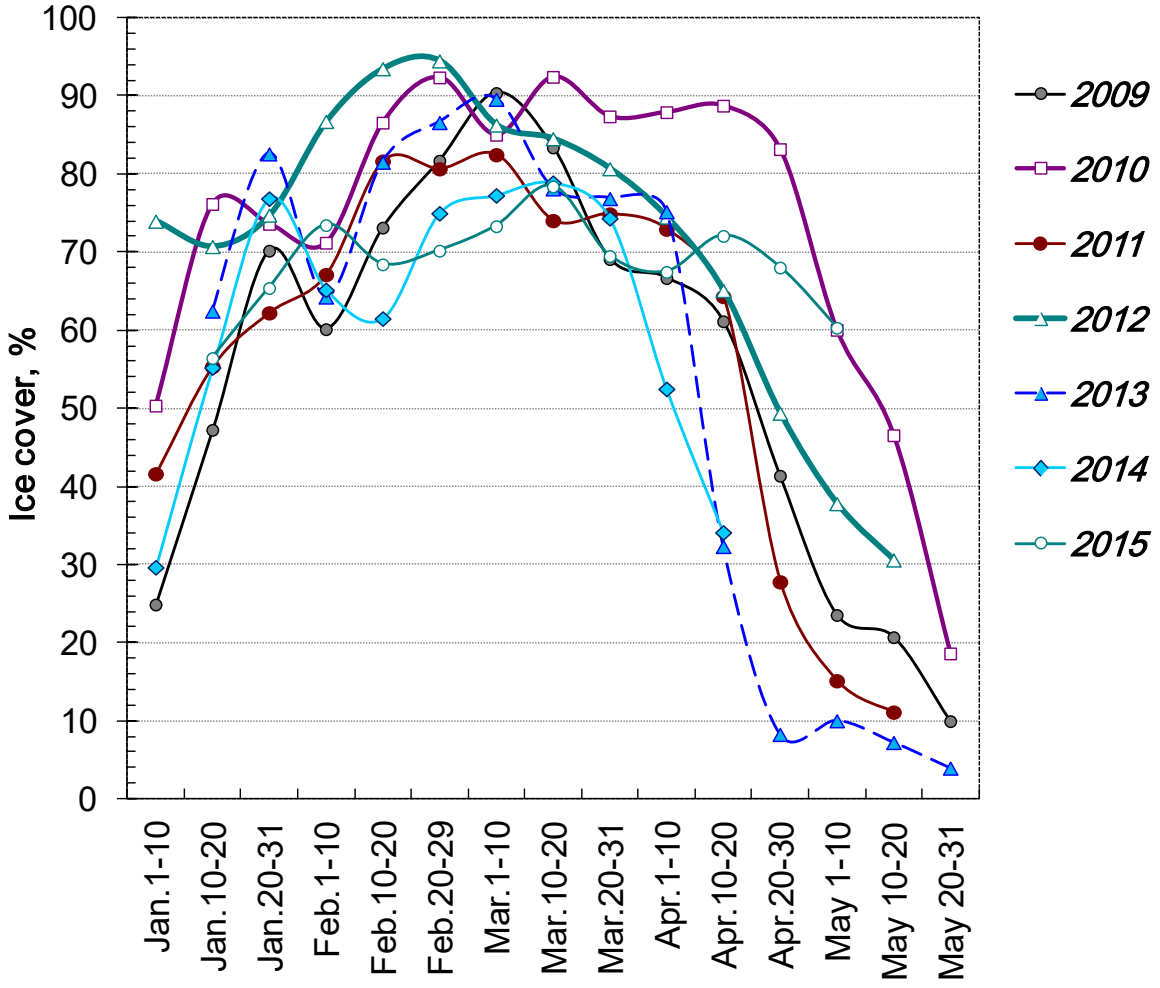
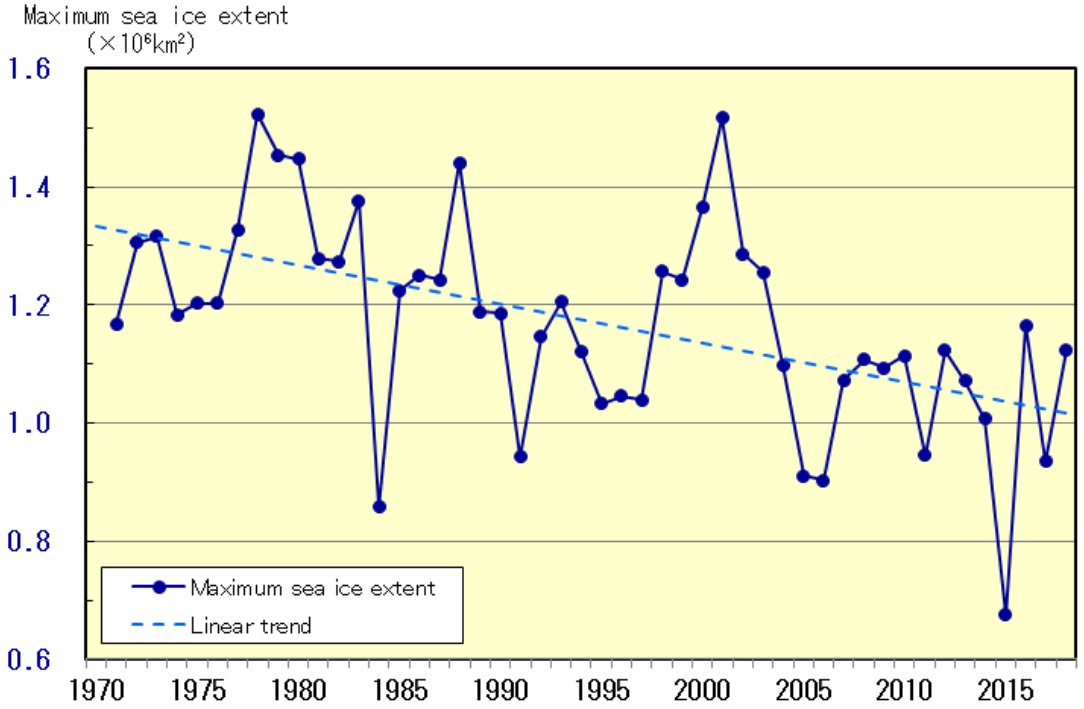
Sea Ice



Seasonal dynamics of the ice cover in the area at West Kamchatka in Region 17.

Maximum sea ice extent in Region 17, the Sea of Okhotsk.



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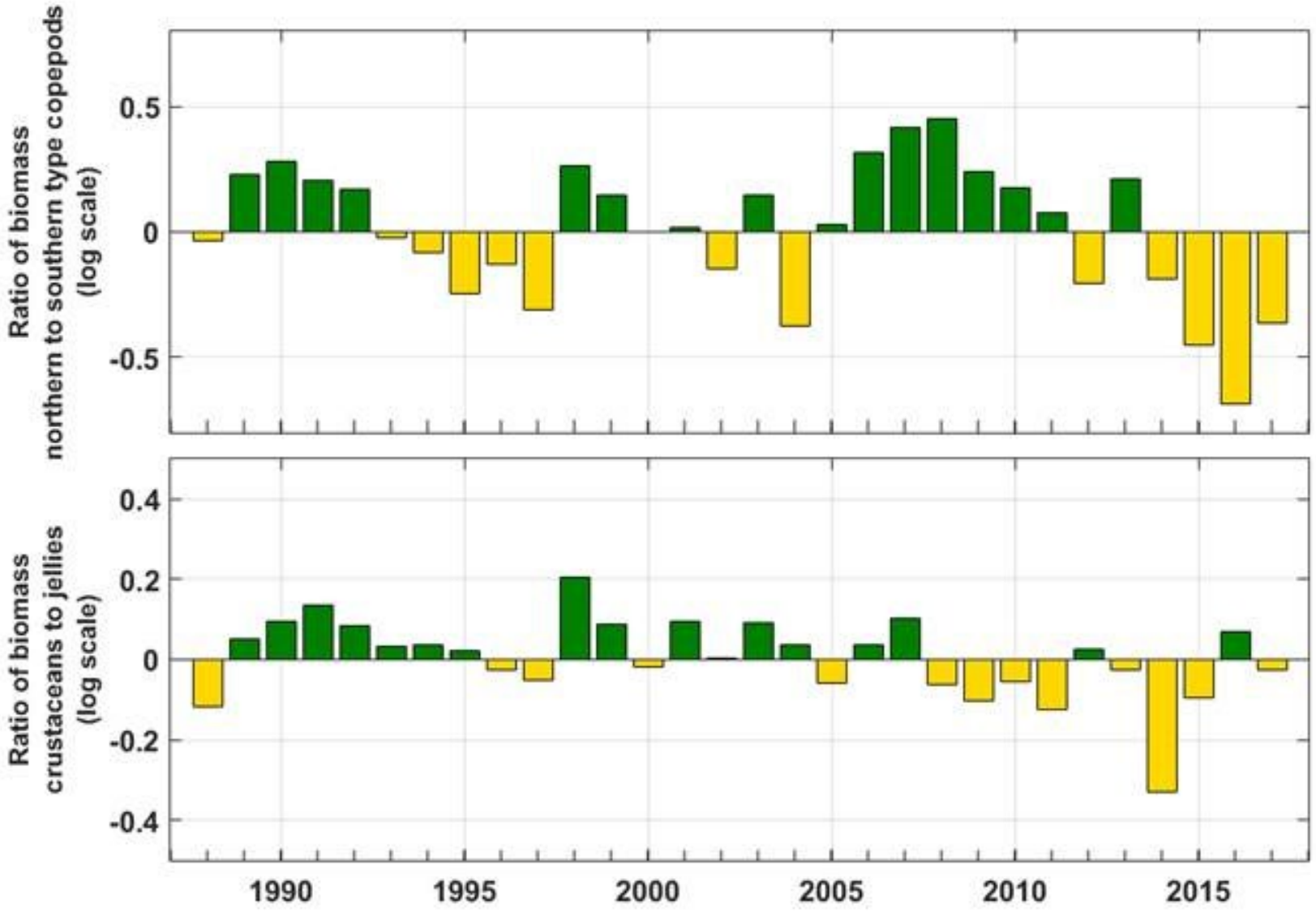

Zooplankton

The 1988-2017 time series of yearly averaged anomalies of zooplankton biomass off southern Vancouver Island in Region 11.

(a) the ratio of northern to southern species of copepods;

(b) (b) the ratio of crustaceans to jellies.);

green – fish food favourable, amber - less favourable fish food conditions.

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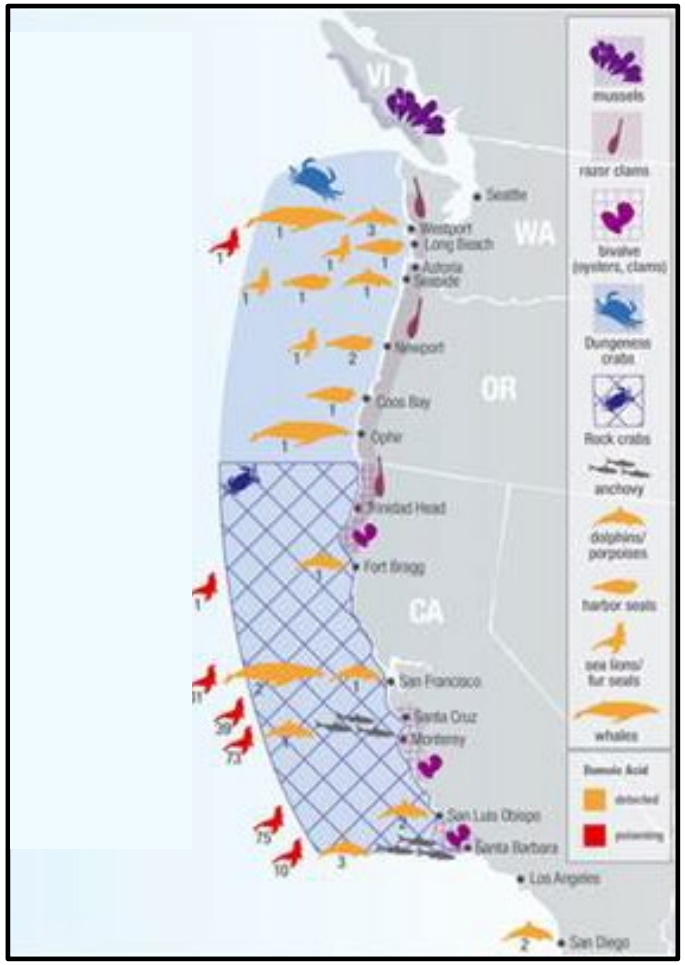
HABs

Impacts of domoic acid (DA) on fisheries and marine mammals in 2015.

Region 11



Regions 12, 13, 14, 15

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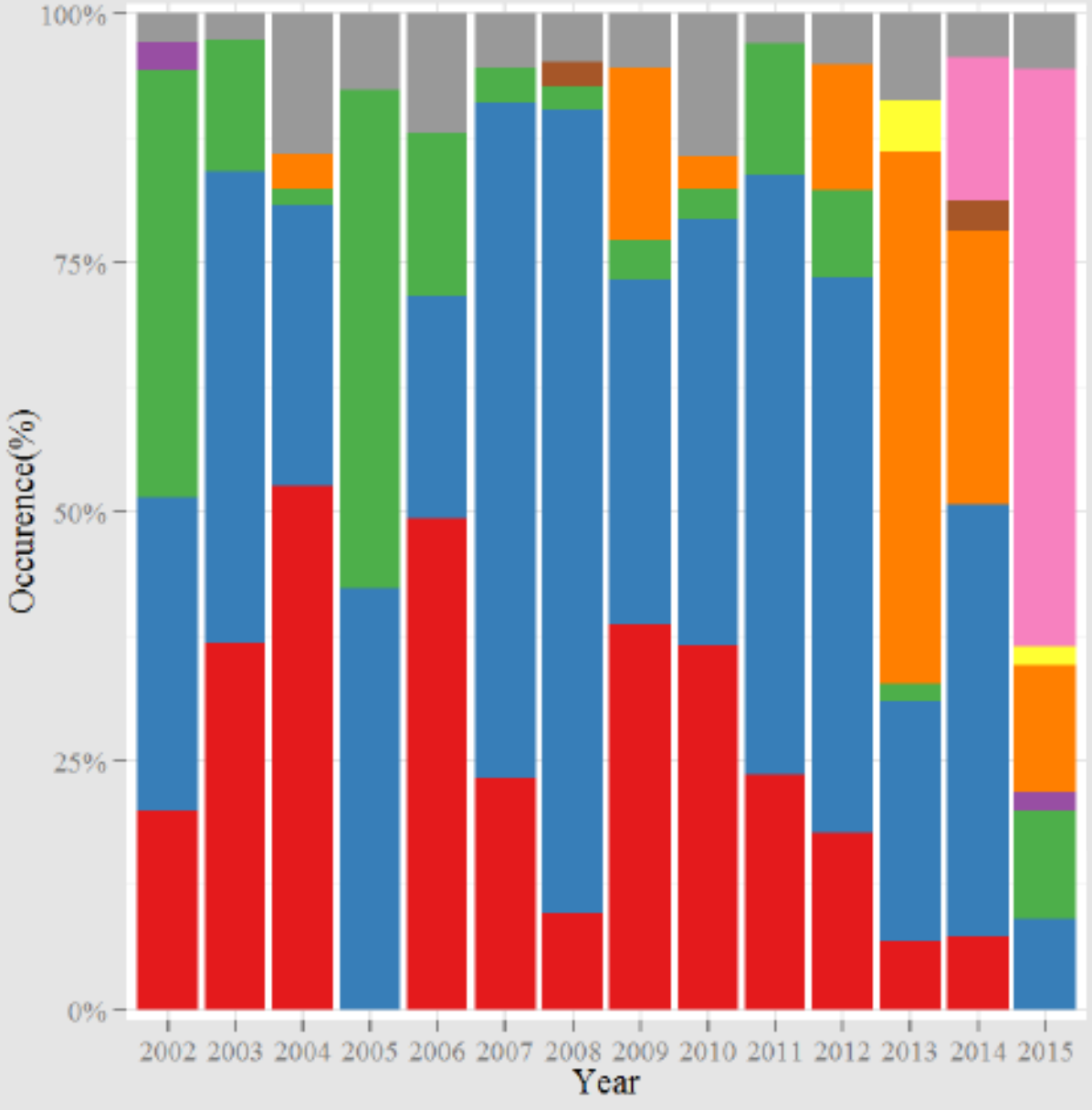
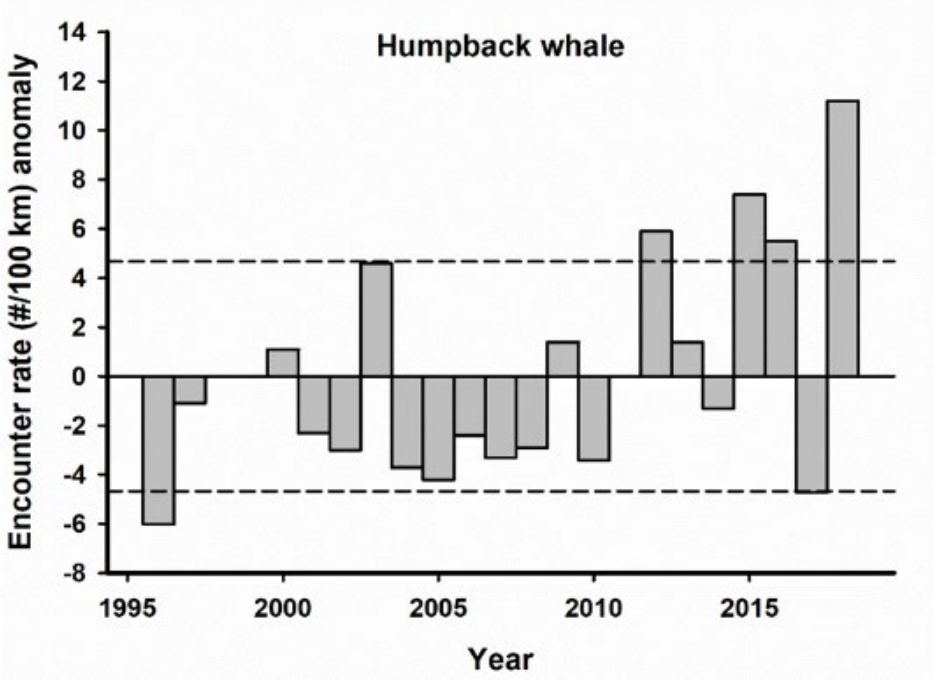


Trend of prey composition in the stomach contents of sei whales during 2002-2015 JARPNII

Humpback whale abundance in Region 11



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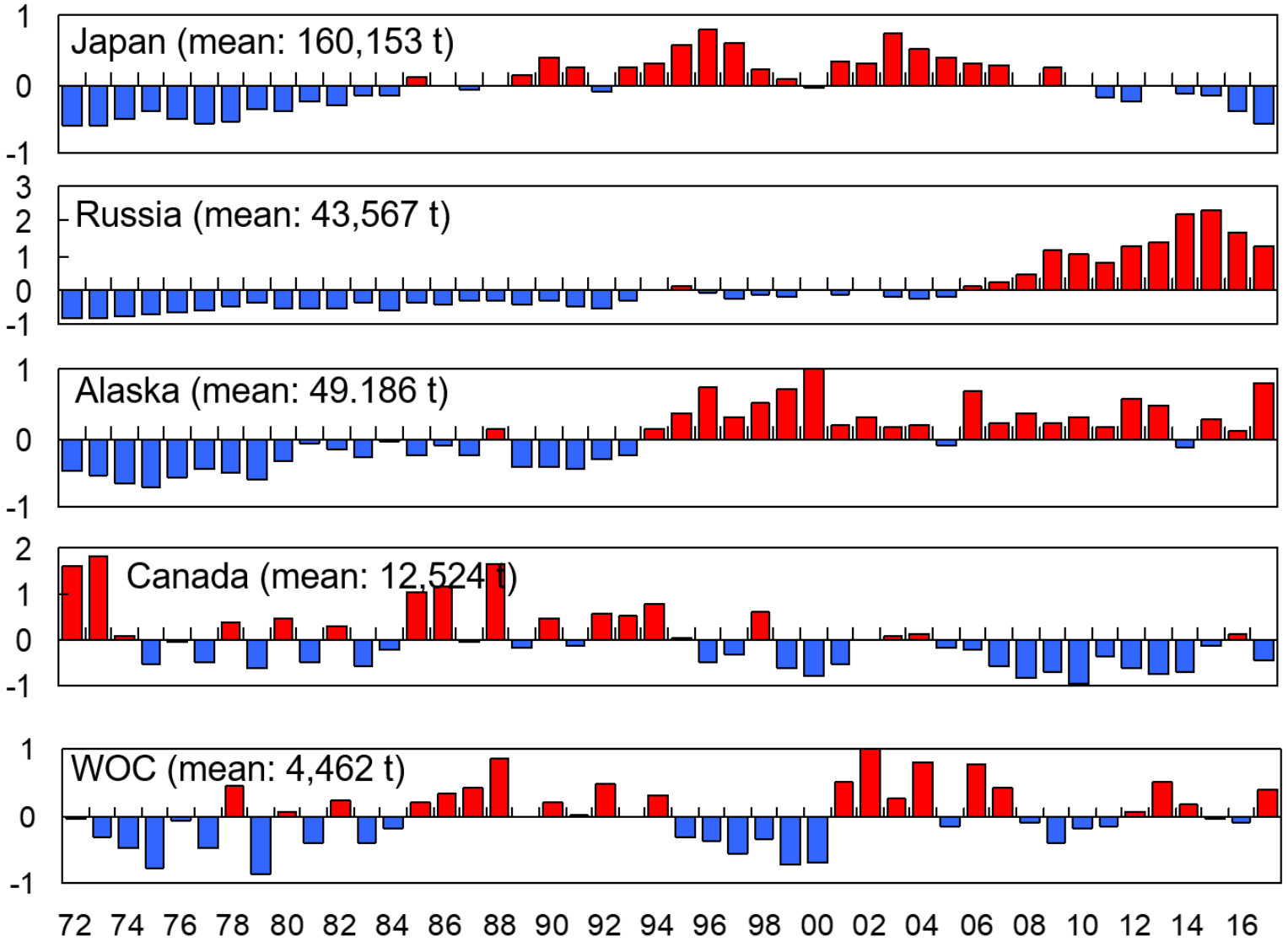

Chum salmon catch (weight in metric tonnes) anomalies by region, 1972-2017

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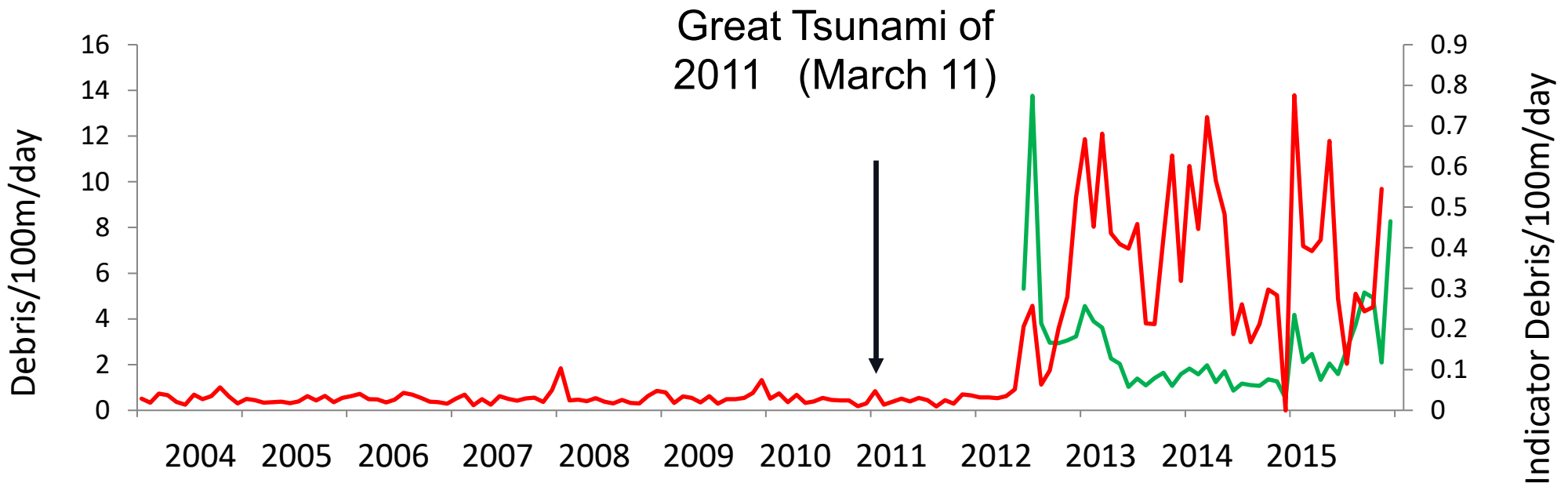

Mean monthly debris influx of indicator items (indicator debris items per 100 m per day) from 2004 to 2015 at sites in northern Washington State (red line) and mean monthly influx of all debris items (debris items per 100 m per day) for Washington (WA), Oregon (OR) and California (CA) from 2012 to 2015 (green line). Adapted from Murray et al. 2018.

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Highlights

A marine heat wave (MHW) occurred in the Northeast Pacific Ocean in 2014-16; it was an extreme event unprecedented in terms of its magnitude, duration, geographic scope and its impacts on the ecosystem from lower-trophic levels to top predators.

Ecosystem impacts associated with the 2014-2016 MHW include lower concentrations of chlorophyll a, smaller phytoplankton, a record toxic algae bloom, and shifts in the distribution and community composition of fish populations.

Warm water zooplankton taxa have shown increases in abundance and/or a northwards extension. Gelatinous zooplankton became more abundant in the eastern North Pacific but the extraordinary jellyfish blooms noted in the western regions in NPESR2 were absent during this focus period.

Warm water events in the Eastern North Pacific were associated with years of poor reproduction and widespread mortality events of birds and marine mammals. There were also localized reproductive failures in the Western North Pacific, but no large-scale coherent pattern.

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Expected Publication Dates:

- Synthesis report – spring 2020 – printed copy about 80 pages
- Regional reports – autumn 2020 – pdfs on PICES website

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Fisheries and Oceans Canada

Contributing authors

W.J. Sydeman , SA. Thompson, E. Bjorkstedt , S. Bograd, R. Brodeur, J. Field, J. Fisher, M. Galbraith, M. García-Reyes, R. Goericke, C. Harvey, M. Jacox, J. Jahncke, T. Jones, M. Kahru, J. Lanksbury, B. Lavaniegos, S. Lippiatt, S. Melin, C. Morton, J. Parrish, A. Peña, R. Robertson, I. Schroeder, R. Suryan, A. Thompson, and P. Warzybok, **Stephani Zador and Stephen Kasperski**, Nicholas Bond, William Stockhausen, Steve Barbeaux, Seth Danielson, Russell Hopcroft, Peter Chandler, Suzanne Strom, Kathy Kuletz, Sonia Batten, Kenneth Coyle, Lauren Rogers, Alison Deary, Kathryn Mier, Andy Whitehouse, Sarah Gaichas, Chris Rooper, Franz Mueter, Jennifer Boldt, Jerry Hoff, Gregory Ruggerone, Jim Irvine, Heather Renner, Nora Rojek, Arthur Kettle, Brie Drummond, Katie Sweeney, Tom Gelatt, K. Savage, John Elliott, Aroha Miller, Kyle Elliott, Sandi Lee, **Elizabeth C. Siddon**, Andrews, John Bengtson, Jennifer Boldt, Nicholas Bond, Gregory Buck, Kristin Cieciel, Curry Cunningham, Elizabeth Dawson, Andrew Dimond, Sherri Dressel, Lisa Eisner, Nissa Ferm, Robert Foy, Corey Fugate, Jeanette Gann, Colleen Harpold, Jordan Head, Jerry Hoff, **Matt Baker**, David Kimmel, Carol Ladd, Jesse Lamb, Christie Lang, Robert Lauth, Franz Mueter, Jim Murphy, James Overland, Rolf Ream, Heather Renner, Patrick Ressler, John Richar, Chris Rooper, Marc Romano, Sigrid Salo, Katie Sechrist, Elizabeth Siddon, Jeremy Sterling, Rod Towell, Jordan Watson, Michael Williams, Ellen Yasumiishi, and Stephani Zador, **Ivonne Ortiz**, Causey, D., Dahle, S.P., Fritz, L., Irvine, J.R., Ladd, C., Laman, N., London, J., Mordy, C.

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Fisheries and Oceans Canada

Contributing authors

Kirill Kivva, Padula, V., Poe, A., Rea, L., Renner, J.H., Rojek, N., Rooper, C., Ruggerone, G., Suryan., R., Stabeno, P.J, S.Y. Glebova, A.L. Figurkin, L.S. Muktepavel, V.I. Matveev, E.P. Dulepova, E.E. Ovsiannikov, S.V. Loboda, N.L. Aseeva, A.O. Zolotov, A.Y. Dubinina, V.N. Koblikov, **Yury Zuenko,** A.V. Lysenko, M.V. Simokon, L.T. Kovekovdova, **Hiroshi Kuroda,** Kuroda, H. Mitsudera, H., Sugimoto, S., Kakehi, S., Kasai, H., Sasano, D., Ono, T., Kaeriyama, H., Taniuchi, Y., Tadokoro, K., Okazaki, Y., Furuichi, S., Yukami, R., Kamimura, Y., Kaga, T., Kidokoro, H., Saito, T., Watanuki, Y., Yamamura, O**. Sinjae Yoo,** S. Ahn, M. Choi, C. Guan, C. Hahn, C. Huo , D.-W. Hwang, S. Jung, Y.S. Kang , J. Khim, H. Kim, M. Kim, C.E. Kong, Y.-W. Lee, R. Li, W. Lim, H.-B. Moon, J. Mu, G. Na, H. Sohn, S. Sun, X. Sun, Q. Wei, Y. Yao, S. Yeh, **Yu Fei,** Ishizaka, Joji; Jung, Sukgeun; Lee, Jae-Hak ; Liu, SuMei; Lobanov, Vyacheslav B.; Matsuno, Takeshi; Xu, Dongfeng; Yu, Rencheng ; Zhang, Jing ; Xinyu Guo; Atsuhiko Isobe; Sang-Wook Yeh; Gui-Ling Zhang; Xianguo Li; Sai-Chun Tan; Wuchang Zhang; Guangtao Zhang; Xinzheng LI; Weiwei Xian; **Kazuaki Tadokoro,** Kityotaka Hidaka,Takeshi Okunishi, Tsuneo Ono, Yoshioki Oozeki, Chiyuki Sassa, Takashi Setou, Yugo Shimizu, Shusaku Sugimoto, Akinori Takasuka, Keiichi Yamazaki, **Tsuneo Ono,** Yu Kanaji, Hideki Kaeriyama, Naoki Nagai, Akira Nagao, Syu Saito, Eko Siswanto, Tsutomu Tamura, Sayaka Yasunaka, Tomoko M. Yoshiki, Masahide Wakita, Shiroh Yonezaki**, Sonia Batten,** Marie Robert, Lisa Miller, Moira Galbraith, Angelica Pena, Tetjana Ross, **Keith Criddle**, Ron Felthoven, Jean Lee

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Thank you