

W4 PICES/CLIVAR Workshop

Scale interactions of climate and marine ecosystems

Workshop Convenors: Richard Beamish (Canada/PICES), Kuh Kim (Korea/PICES) and Kelvin Richards (U.S.A./CLIVAR)

The physical climate system varies on a wide range of scales: changing storminess and severe weather, recognised modes of variability (such as NAO, PDO and ENSO), and changes to mean global characteristics. Likewise the marine ecosystem has many interacting scales: small-scale patchiness vs global, shelf vs deep-sea populations, and individuals vs communities. To date, most studies considering the impact of the complexities of climate variability on the equally complex marine ecosystem have used correlation statistics of a given population and physical climate indices. We need to go beyond simple correlations to tease out the relationships between the changing physical and biological systems if we are to understand what controls what. How do the various scales of climate variability project onto the variability of the population of a given species or the ecosystem as a whole? How does the changing climate impact on the scale interactions of the biogeochemical system? Are the time-series we have long enough to draw meaningful conclusions? What do we need to get right in models used to predict the impact of climate change on the marine ecosystem and fisheries?

The workshop will bring together experts in the physical oceanography of the Pacific, climate dynamics and variability, marine ecosystems and biogeochemistry, and fisheries. The workshop will be charged to produce statements on our present understanding or lack thereof, on the impact of climate variability on the marine eco- and biogeochemical system, on what we can hope to extract from combining extant datasets, and on strategies for numerical experimentation, observational networks and data assimilation that will improve our knowledge and predictive capabilities. Sufficient enthusiasm by the participants will result in the publication of a special issue of a leading international journal.

Day 1 Saturday, October 23, 2004 8:30-17:30

- 08:30-08:45 **Introduction by Workshop Convenors**
- 08:45-09:30 **Jacquelyne R. King and Gordon A. McFarlane** (Invited)
Implications of climate regime shifts on the management of marine resources (W4-2167)
- 09:30-10:15 **Shoshiro Minobe** (Invited)
Global linkages of decadal variability over the North Pacific Ocean (W4-2155)
- 10:15-10:45 **Coffee break**
- 10:45-11:30 **Elizabeth A. Logerwell and Anne B. Hollowed** (Invited)
The impact of environmental variability on the effectiveness of fisheries management strategies (W4-1992)
- 11:30-12:15 **Arthur J. Miller** (Invited)
Regional impacts of large-scale climate variations on the Pacific Ocean ecosystem (W4-2187)
- 12:15-13:30 **Lunch**
- 13:30-13:45 **Vladimir I. Radchenko**
Coincidence of pink salmon catch trends among the odd-years and even-years populations: Regional and basin scale views (W4-2154)
- 13:45-14:00 **Eleuterio Yáñez, Claudio Silva and María Angela Barbieri**
Low frequency environmental fluctuations and main Chilean pelagic fisheries (W4-1867)

- 14:00-14:15 **Franz J. Mueter and Bernard A. Megrey**
Spatial scales and magnitudes of covariation among fish populations in the Northeast Pacific (W4-2067)
- 14:15-14:30 **Paul D. Spencer and Tom W. Wilderbuer**
Relationships between environmental variability and eastern Bering Sea flatfish population distributions (W4-1996)
- 14:30-14:45 **Troy W. Buckley and Stanislaw Kotwicki**
Consideration of spatial scale when assessing the influence of environmental variability on walleye pollock in the eastern Bering Sea (W4-2099)
- 14:45-15:00 **Peter W. Lawson**
Climate impacts on OPI coho salmon, *Oncorhynchus kisutch*, production: Insights from a species sensitive to habitat change at daily to centennial time scales (W4-2111)
- 15:00-15:15 **S. Lyn McNutt, Two Crow (AKA, Jim Schumacher) and Phil Mundy**
Integrated adaptive management applied to the Gulf Ecosystem Monitoring and Research (GEM) Program (W4-1811)
- 15:15-15:30 **Coffee break**
- 15:30-16:15 **Nathan J. Mantua** (Invited)
To upscale or downscale? Thoughts on bridging disparate scales of space and time in linking the planetary to the plankton (W4-2048)
- 16:15-17:30 **Discussion**

Day 2 Sunday, October 24, 2004 08:30-17:30

- 08:30-09:15 **Sinjae Yoo, Hyun-Cheol Kim and Stewart M. McKinnell** (Invited)
Variability of Chl-a in the North Pacific marine ecosystems (W4-2156)
- 09:15-10:00 **Sei-ichi Saitoh and Takahiro Iida** (Invited)
Temporal and spatial variability of phytoplankton biomass and productivity in the Bering Sea in relation to climate variability (W4-1997)
- 10:00-10:30 **Coffee break**
- 10:30-11:15 **Cara Wilson, Steven J. Bograd and Franklin B. Schwing** (Invited)
Temporal variability of sea surface chlorophyll and biophysical coupling in the Pacific (W4-2141)
- 11:15-12:00 **Yi Chao and Fei Chai** (Invited)
The impact of Pacific climate forcing on marine ecosystem (W4-2110)
- 12:00-12:15 **Ichiro Yasuda and Hiroaki Tatebe**
Tide-induced North Pacific Intermediate Water circulation and impact on climate (W4-2026)
- 12:15-12:30 **Vladimir I. Ponomarev, Aleksandr S. Salomatín, Dmitry D. Kaplunenko and Natalya I. Rudykh**
Relationship of different scales of climate variability in the Asian Pacific (W4-1964)
- 12:30-13:30 **Lunch**

- 13:30-14:15 **Richard A. Feely, C. L. Sabine, R. Wanninkhof, A. Murata, R. Key, C. Winn, M. F. Lamb and D. Greeley** (Invited)
CLIVAR/CO₂ Repeat Hydrography Program in the North Pacific Ocean (W4-1984)
- 14:15-15:00 **Raghu Murtugudde** (Invited)
Tropical and extratropical modes of ecosystem variability (W4-1925)
- 15:00-15:30 **Coffee break**
- 15:30-17:30 **Structured discussion, summary, recommendations**

Posters

- C. Franco-Gordo, E. Godinez-Dominguez and J. Freire**
Interannual variability of the diversity and ichthyoplankton community in the central Pacific off Mexico (W4-1851)

