

**CANADIAN OCEAN SCIENCE NEWSLETTER
LE BULLETIN CANADIEN DES SCIENCES DE L'OCÉAN**

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JOBS

Université Laval, Chaire de recherche du Canada (niveau 2) en Modélisation des écosystèmes marins arctiques

Première université francophone en Amérique, l'Université Laval est l'une des plus importantes au Canada. Activement engagée dans son milieu, elle offre un environnement de formation et de recherche de premier plan au cœur de Québec, ville du patrimoine mondial de l'UNESCO. La personne recherchée doit posséder un doctorat en océanographie ou discipline pertinente, avec expérience postdoctorale et expertise en modélisation de la circulation océanique ou en modélisation des processus biologiques ou biogéochimiques. Elle doit pouvoir enseigner en français dans un délai d'au plus un an, posséder un excellent dossier de publications et de recherche, recruter des étudiants aux 2e et 3e cycles et obtenir des subventions de recherche. En collaboration avec les chercheurs du regroupement stratégique Québec-Océan, la candidate ou le candidat devra adapter ou développer des modèles numériques couplant les processus biotiques aux processus physiques afin de cerner l'impact des fluctuations des climats atmosphérique et océanique sur la production biologique dans les mers arctiques. ([clicquer](#))

Date limite de dépôt de candidatures 30 juin 2010

Sessional Teaching Opportunities, UVic, Winter 2010-2011

The School of Earth and Ocean Sciences at the University of Victoria is seeking applications from qualified individuals interested in contributing, on a sessional teaching basis, to two courses: EOS 350 – Understanding the World's Oceans, and EOS 433 – The Climate System. Applications are open until the positions are filled. ([click](#))

Post-Doc in Oceanic/Atmospheric Fluid Dynamics, MUN

A Post-Doctoral research position is available in the area of oceanic/atmospheric fluid dynamics at the Department of Physics and Physical Oceanography, Memorial Univ. of Newfoundland, St John's, Newfoundland.

Canada Research Chair (tier II) in Numerical Modeling of Arctic Marine Ecosystems - Université Laval

Université Laval, the first francophone higher education institution in the Americas, is one of the leading universities in Canada. Located in Quebec City, a UNESCO world heritage city, Université Laval offers an outstanding research and training environment for scholars. In collaboration with researchers at Québec-Océan, the candidate is expected to adapt or develop numerical models that couple biotic and physical processes to understand the influence of atmospheric and oceanic climates on the biological productivity of arctic seas. The successful applicant will have a Ph. D. in oceanography or related field, with post-doctoral experience and expertise in the modeling of oceanic circulation or the modeling of biological or biogeochemical processes. The appointee is expected to teach in French after at most a year, supervise graduate students, and develop an independent grant-funded research program. ([click](#))

Application deadline 30 June 2010

The area of interest includes both laboratory experiments with stratified/rotating fluids and numerical modelling. The successful candidate will be conducting experiments on the rotating platform using the state of the art Altimetric Image Velocimetry system. The subject of interest is jets, vortices, turbulence on the gamma-plane. Numerical simulations can be run in parallel with laboratory experiments. The position is available immediately for a 1-year term and includes a salary of Can\$ 30,000. ([click](#))

OCEAN SCIENCE PROGRAMS

[Update on SCOR/LOICZ/IAPSO WG 122 - *Mechanisms of Sediment Retention in Estuaries*](#)

This group recently published its work in a special issue of *Estuarine, Coastal and Shelf Science*, Volume 87(2):175-366 ([click](#)).

[Progress Report on SCOR WG125 - *Global Comparison of Zooplankton Time Series*](#)

Submitted by Dave Mackas

SCOR WG125 held its final working group meeting on May 15-16 2008 in Gijón Spain, hosted by the Gijón laboratory of the Instituto Español de Oceanografía. The two day meeting was attended by most of the WG Members and Associate Members, plus by several IEO staff. The main purpose of this meeting was hands-on data analysis by various teams of investigators, and deciding how these analyses will ultimately be presented and published.

Preliminary versions of many of the comparative analyses were presented the following week in the International Symposium 'Effects of Climate Change on the World's Oceans' (sponsors IOC, ICES, PICES, SCOR, GLOBEC, and WCRP). These and others have subsequently been submitted to *Progress in Oceanography* for a planned special issue on zooplankton time series, guest edited by Pierre Pepin, Mackas, and Verheye. Although progress has been slow, the majority of papers are now in their second round of revision. We expect to be completed by the autumn 2010.

The WG125 goal of global comparison received very good 'buy-in' by the international community of marine zooplanktologists. We had access to over 100 zooplankton time series, from over 25 countries. One consequence was a need for a suite of 'entry-level' data analysis and visualization tools that could be applied across diverse sampling designs (frequent sampling of a single site vs. seasonally-repeated survey grids vs. irregular repeat averages within defined statistical areas); sampling methods (horizontal, vertical or oblique net tows; different net designs and mesh sizes); and measurement currencies (displacement volume, dry-weight biomass, carbon biomass, numeric abundance at varying levels of taxonomic aggregation). Our approach (implemented mostly by Todd O'Brien; illustrated in Fig. 1) has been to estimate average seasonal cycles from log-transformed raw time series, then use these baselines to calculate anomaly time series, and finally to display both data and anomalies as color-coded pixel grids that show which seasons/years have unusually high or low values. These simple graphical displays have been useful not only for comparison among time series, but also for within-time-series quality control and hypothesis building.

Helgoland Roads

Small Copepod Abundance (#/m3)

www.WGZE.net

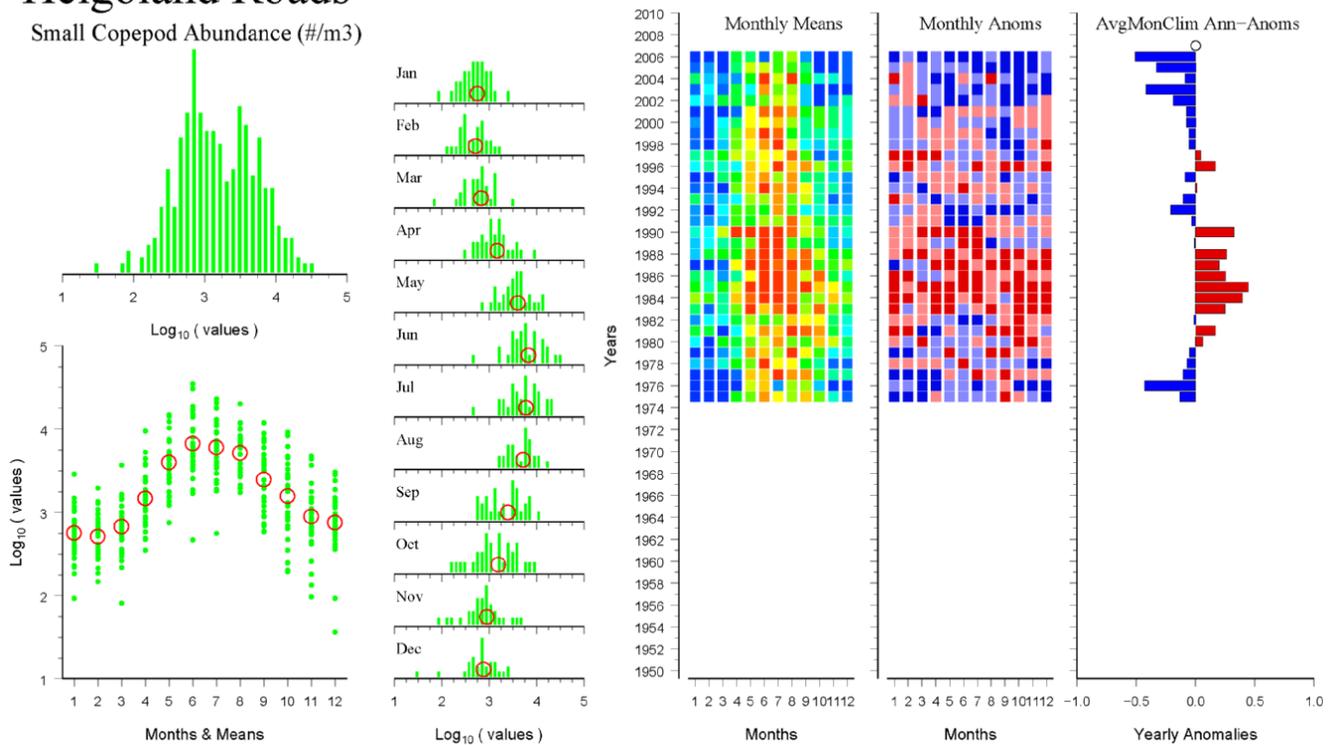


Fig. 1. Graphical output from the WG125 toolkit, applied to W. Greve’s ‘long and dense’ Helgoland Roads time series. The green dots and bars in the three left-side panels show overall and within-month frequency-distributions of individual data points. Red circles overlaid on the bottom-left graph show the average seasonal cycle. Color-coded pixels in the middle panel show ranking of within-month means. The right hand panels show monthly and annual-average anomalies.

Nearly all of our available zooplankton time series provide one or more indices of ‘total amount’: biovolume, biomass, or total abundance. One of our main comparisons was of how the amplitudes of fluctuations and trends differ among regions. To address this, we ranked time series based on the max-to-min or RMS ‘span’ of their anomaly time series (Fig. 2 ranking map, from O’Brien et al. presentation and manuscript). The strongest interannual variability was in the zooplankton time series from sub-polar regions, from the eastern boundary current upwelling systems, and from the ocean margins off Korea and Japan. Conversely, the smallest range of variation was found in the time series from mid-latitude continental shelf regions and from the European marginal seas.

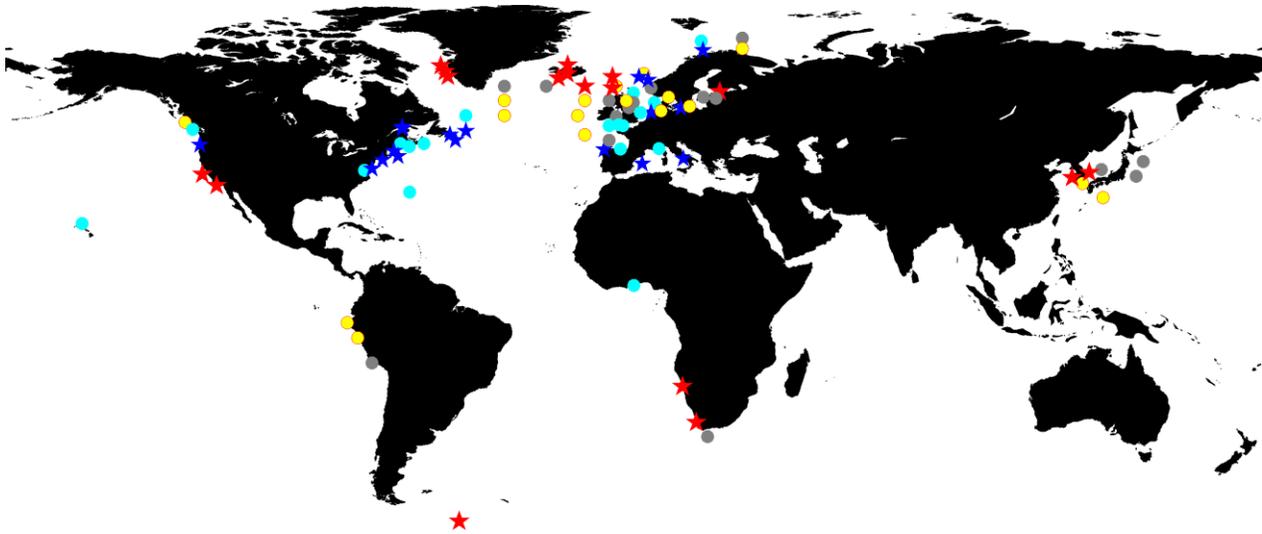


Fig. 2. Map of 'anomaly span'. Red and yellow symbols show locations of time series with a large interannual range, blue symbols have a much smaller range (some because they are brief). Grey symbols are intermediate.

Another important comparison is of which time series are most 'synchronous', and how their degree of temporal correlation varies with spatial separation. Hal Batchelder has done a spatial autocorrelation analysis (Fig 3) of the 'biomass' time series. He found that the biomass time series are positively but relatively weakly correlated across separations smaller than a few thousand kilometers, that the spatial autocorrelation is stronger in the Pacific than in the Atlantic, but that there is no evidence supporting the 'global synchrony' suggested by catch time series of anchovy and sardines. Does this mean that fish 'regimes' are more teleconnected than zooplankton 'regimes'? Perhaps, but not necessarily – the zooplankton analysis is of a highly aggregated currency (total biomass), while the fish analyses are at species level. Comparisons within the California Current system show that the short-range spatial autocorrelation of zooplankton community variability is considerably stronger than the spatial autocorrelation of total zooplankton amount (Fig 3).

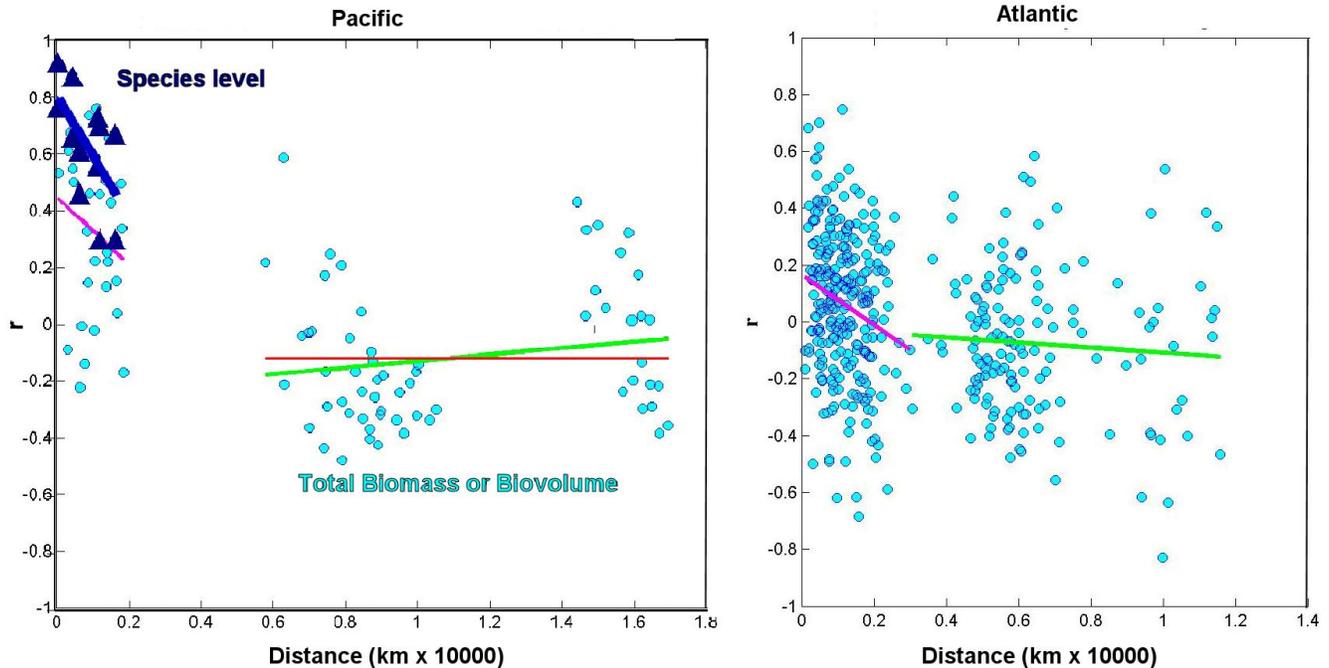


Fig. 3. Spatial correlograms for zooplankton anomaly time series from the Pacific (left, total biomass and community composition) and Atlantic (right, total biomass only). In both oceans, correlation decays to zero at separations greater than a few thousand km (i.e. there is little or no global synchrony). However, 'local' synchrony stronger in the Pacific than in the Atlantic, and are much stronger at species level than for total biomass. From Batchelder et al. and Mackas et al. presentations.

Update on SCOR WG 131 - *The Legacy of in situ Iron Enrichment: Data Compilation and Modeling*

Philip Boyd, a co-chair of the group, convened an afternoon meeting in Portland, Oregon (USA) in conjunction with the Ocean Sciences meeting in February to announce the database from iron enrichment experiments now available ([click](#)) at the Biological and Chemical Oceanography Data Management Office (BCO-DMO) in Woods Hole, Massachusetts (USA). Dorothee Bakker, the other co-chair, will present the same information at the European Geosciences Union meeting this month. The next step will be a meeting in 2011 to bring together modelers to discuss uses of the data.

Update on SCOR/WCRP/IAPSO WG 136 - *Climatic Importance of the Greater Agulhas System*

This group met for one day in conjunction with the Ocean Sciences meeting in Portland. Group members and guests discussed the observations and modeling already in place and planned for the Agulhas Current region, scoped out a review paper on the status of knowledge of the Agulhas Current and its effect on regional to global climate, and began planning for a workshop to be held in Africa in 2011. The SCOR Committee on Capacity Building will assist the working group in developing its capacity building activities.

PERSONNEL

Oceanographers Deceased in 2009

A list of Canadian oceanographers who died in 2009 will be read out at the upcoming CMOS/CGU Congress. It presently contains: Don Vachon, Dave Slauenwhite, Ced Mann, Ken Williams, Mike Miyake and Ken Mann ([click](#)). If you are aware of other names that should be included, please send the editor a message ([click](#)).

MEETINGS

PICES 2010

The 2010 Annual Meeting of the North Pacific Marine Science Organization (PICES) will be held October 22–31, 2010, at the Oregon Convention Center, Portland, Oregon, U.S.A. The meeting is hosted by the Government of the United States of America, in coordination with the PICES Secretariat, with logistical support provided by the Pacific States Marine Fisheries Commission. The theme of the meeting is *North Pacific Ecosystems Today, and Challenges in Understanding and Forecasting Change*. An outline of the scientific program is available on PICES' website ([click](#)). The deadline for submission of abstracts, early registration and application for financial support is July 1.

GENERAL

Theses and Dissertations in Ocean Sciences

The CNC/SCOR website has been updated with the list of theses and dissertations completed in ocean sciences during 2009 ([click](#)). It records the completion of 18 Ph.D. and 26 M.Sc. degrees during the year.

Training Opportunity for the Identification of Harmful Marine Algae

A few vacant seats remain at the 2010 IOC Training Course and Identification Qualification in Harmful Marine Microalgae to be held in Copenhagen, Denmark during 16-26 August ([click](#)). The course includes 90 hours of teaching and is divided into two parts, each of 45 hours. The first part of the course is an internet teaching programme that must be completed between May and July, while the second is a practical workshop in species identification. The training course includes an examination at the end of the course with an 'IOC Certificate of Proficiency in Identification of Harmful Algae' issued to participants who pass. The course is organised by the University of Copenhagen, Denmark.

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Previous newsletters may be found on the CNC/SCOR web site.
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Newsletter #51 will be distributed on July 15, 2010. Please send contributions to Bob Wilson, wilson@telus.net
Bulletin #51 sera distribué le 15 juillet 2010. Veuillez faire parvenir vos contributions à Bob Wilson, wilson@telus.net

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