



Canadian National Committee for SCOR
Comité national canadien pour SCOR

Scientific Committee on Oceanic Research

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

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Update on GLOBEC (Global Ocean Ecosystem Dynamics Program)

Report by Ian Perry, Ian.Perry@dfo-mpo.gc.ca

GLOBEC, the Global Ocean Ecosystem Dynamics program supported by IGBP, SCOR, and IOC, held its annual Scientific Steering Committee meeting in Cape Town, South Africa, on 5-6 May 2008 in conjunction with the 4th Congress of the International Geosphere-Biosphere Program (IGBP). The main topics for discussion were the synthesis activities and preparations to conclude the program in 2010.

GLOBEC Synthesis

As the program nears its conclusion, the focus has been on synthesising the results and discoveries of GLOBEC. There are three key synthesis activities:

GLOBEC synthesis book:

This book will highlight the developments and current understanding of marine ecosystems in a world of global changes. Its title is “Marine Ecosystems and Global Change”, and consists of 10 multi-authored chapters:

- The changing ocean ecosystems;
- Human impacts on marine ecosystems;
- Dynamics of marine ecosystems: physical processes;
- Dynamics of marine ecosystems: ecological processes;
- Dynamics of marine ecosystems: observation and experimentation
- Dynamics of marine ecosystems: integration and modelling;
- Interactions between changes in marine ecosystems and human communities;
- Management of marine resources in the face of change;
- Ocean ecosystem responses to future global change scenarios: a way forward;
- Ocean ecosystem responses: a synthesis.

The book will be published by Oxford University Press, and it is expected to appear in spring 2009 in time for the 3rd GLOBEC Open Science Meeting.

3rd GLOBEC Open Science Meeting:

This concluding symposium of GLOBEC will take place from 22-26 June 2009 at the Victoria Conference Centre, Victoria, BC. Although the details of the format are being developed, it is anticipated that there will be opportunities for “workshops” convened by the GLOBEC community to address specific issues of synthesis, followed by invited presentations on the history and achievements of GLOBEC, the on-going work of the Regional programs of GLOBEC, and a transition of GLOBEC programs and scientific questions to IMBER, the Integrated Marine Biogeochemistry and Ecosystems Research program of IGBP and SCOR. Suggestions for these workshops are welcome, and should be sent to the GLOBEC International Project Office (globec@pml.ac.uk) prior to 15 September 2008. Further details will be available on the GLOBEC web site (www.globec.org) as they develop.

Summary for Policy Makers:

A summary of the GLOBEC achievements and their implications for policy makers will be prepared by Fall, 2009.

Regional Program Updates

The six Regional Programs of GLOBEC continue to be active; many are in their own synthesis phases but some continue towards their mid-term program reviews whereas one is just now getting started.

Climate Change and Carrying Capacity (with PICES):

This program is now being completed, with a collection of papers from a recent symposium being published in *Progress in Oceanography* – selections of papers-in-press are available from the journal web site. The journal special issue is titled “Climate variability and ecosystem impacts on the North Pacific: a basin-scale synthesis” and consists of 14 papers separated into three sections: “Regimes”, “Ecosystem structure/function and seasonal to interannual time scales”, and “Pan-Pacific comparisons”. In addition, PICES is developing a new 10-yr integrating program called FUTURE: “Forecasting and Understanding Trends, Uncertainty, and Responses of North Pacific Marine Ecosystems” which aims to investigate the future of the North Pacific given current and expected pressures. Details of the development of this program are available from the PICES web site (www.pices.int).

Small Pelagics and Climate Change:

A synthesis book from the SPACC program is in press with Cambridge University Press, titled “Climate Change and Small Pelagic Fish”, edited by D.M. Checkley, J. Alheit, Y. Oozeki and C. Roy. It is expected to be published later in 2008. It consists of 15 chapters discussing a broad range of topics concerning small pelagic fishes, from the history of international research and fisheries to their habitats, trophic dynamics, management, economics, human dimensions, and future challenges and opportunities.

Climate Impacts on Oceanic Top Predators:

The CLIOTOP program is nearing the middle of its 10 year expected duration. In December 2007 it held its first CLIOTOP Open Science Symposium, in La Paz, Mexico. A description of the CLIOTOP program and of the outcomes of this symposium are available in the GLOBEC Newsletter (April 2008); many of the presentations are available on the GLOBEC website under Structure>Regional Programmes>CLIOTOP.

Ecosystem Studies of Sub-Arctic Seas:

The ESSAS program published a collection of 32 papers in Deep-Sea Research resulting from the ESSAS Symposium titled “Effects of climate variability on sub-arctic marine ecosystems”. Several ESSAS workshops were held in Hakodate, Japan in 2007, and further workshops are planned for Halifax, NS, 15-19 September just prior to the ICES Annual Science Conference. These workshops will address: 1) the role of transport in sub-arctic marine ecosystems (Ken Drinkwater, convenor); 2) future climate scenarios and their impacts on subarctic regions (Jim Overland, convenor); and 3) modelling of subarctic marine ecosystems (Bernard Megrey and Ken Rose, convenors). In addition, an ESSAS Project Office has been funded by the Research Council of Norway and the Institute of Marine Research of Norway, and will be located in Bergen, Norway.

Cod and Climate Change (with ICES):

The CCC program published papers on the decline and recovery of Atlantic cod stocks throughout the North Atlantic (Lilly et al., in press, in: Resiliency of gadid stocks to fishing and

climate change. Alaska Sea Grant, University of Alaska Fairbanks.), and the incorporation of environmental information into fisheries management strategies and advice (http://www.ices.dk/reports/ACOM/2007/WKEFA/WKEFA_2007.pdf). A theme session at the ICES Annual Science Conference in Berlin in 2009 is planned to synthesise the work of the CCC program and to look at future developments of similar climate-related work in the North Atlantic.

Integrating Climate and Ecosystem Dynamics in the Southern Ocean (with IMBER):

The ICED program follows the successful GLOBEC Southern Ocean program, and has three major scientific objectives for the Antarctic region: 1) to understand the structure and dynamics of ecosystems in the Southern Ocean, and how they are affected by, and feedback to, climate processes; 2) to understand how ecosystem structure and dynamics interact with biogeochemical cycles in the Southern Ocean, and 3) to determine how ecosystem structure and dynamics should be incorporated into management approaches for sustainable exploitation of the living resources of the Southern Ocean. The Science Plan and Implementation Strategy for ICED was approved by GLOBEC and IMBER at this meeting. Dr. Evgeny Pakhomov of the University of British Columbia is a member of the Interim Steering Committee for ICED.

Conclusion of GLOBEC

Although GLOBEC as a separate program will conclude in late 2009/early 2010, several of the Regional Programs (CLIOTOP, ESSAS, ICED, and possibly others) are expected to continue, possibly in collaboration with IMBER. In addition, many of the outstanding scientific issues and new discoveries of GLOBEC are anticipated to be picked up and developed further by IMBER during its next 5 year program phase.

For more information on GLOBEC, and the latest newsletter, please visit the GLOBEC web site at www.globec.org

Global Comparisons of Zooplankton Time Series

Report by D.L. Mackas, DFO, Institute of Ocean Sciences, mackasd@pac.dfo-mpo.gc.ca

SCOR Working Group 125 (“Global Comparisons of Zooplankton Time Series”) held its final group meeting on 15-16 May 2008 at the Instituto Espanol de Oceanografia in Gijon, Spain, in conjunction with a symposium on “Effects of Climate Change on the World’s Oceans” convened by IOC, ICES, and PICES. During the Symposium, WG125 members presented a set of eight papers as part of a one-day workshop on zooplankton time series (May 18). Topics included status reports on the assembly and collation of zooplankton time series data sets, development of an analysis “tool kit”, and results-to-date of between-region comparisons. Topics compared included the trend and relative variance of total zooplankton biomass, seasonal timing (phenology), community composition and size structure, species 'invasions', and isotopic composition/trophic level. An overall summary paper was also presented as part of the symposium plenary session 4.1 “Impacts of climate change on lower trophic levels”. These papers, plus a few additional WG125 contributions by authors unable to attend the Gijon meeting, will be published as a special issue of Progress in Oceanography, probably in 2009. The WG also contributed a paper comparing zooplankton time series from four eastern boundary

upwelling regions at the 2-6 June Upwelling Symposium, sponsored by (in alphabetical order) BENEFIT, EUR-OCEANS, GLOBEC, GTZ, IMBER, IRD, SCOR, SOLAS, and ULPGC

Canada remains member of ECORD and active in IODP

The latest proposal to Canada's National Science and Engineering Research Council (NSERC) for support to participate in the Integrated Ocean Drilling Program (IODP) as member of ECORD (European Consortium for Ocean Research Drilling) was successful. The proposal led by Anne de Vernal from GEOTOP at the Université du Québec à Montréal (UQAM) and Michael Riedel from GEOTOP at McGill University was supported by \$364K per year for two years and thus allows continuation of the successful operation of the Canadian Consortium for Ocean Drilling (CCOD). The grant nearly doubles the contribution of Canada to ECORD and IODP and thus maintains and fosters further national and international collaborations of Canadian scientists as well as opportunities to participate actively in ocean drilling expeditions. Since May 2008, the national IODP-Canada office is housed at UQAM (7th floor, 201 President Kennedy, Montreal). It is co-chaired by Anne de Vernal, who will represent Canada on the ECORD council, and Michael Riedel, who is appointed on the ECORD Science Support & Advisory Committee (ESSAC). H el ene Gaonac'h from UQAM acts as coordinator. Amongst the forthcoming IODP activities involving active Canadian participation: the Summer School in paleoceanography to be held in Urbino, Italy (August 2008), the Arctic Drilling Workshop to be held in Bremerhaven, Germany, next November, and Expedition 317 in the Canterbury Basin off New Zealand to which Alice Chang from the University of Victoria will participate. For more information, contact H el ene Gaonac'h (gaonach.helene@uqam.ca).

Le Canada demeure un membre du ECORD et actif au sein de IODP

La toute derni ere demande au Conseil National de Recherche en Sciences et G enie (CRSNG) du Canada pour supporter notre participation au Integrated Ocean Drilling Program (IODP) en tant que membre du ECORD (European Consortium for Ocean Research Drilling) a  et e couronn ee de succ es. Le demande soumise par Anne de Vernal du GEOTOP  a l'Universit e du Qu ebec  a Montr eal (UQAM) et Michael Riedel du GEOTOP  a l'Universit e McGill a  et e subventionn ee  a \$364K par ann ee pour deux ans et permettra de maintenir les activit es du Consortium Canadien de Forage Oc eanique (CCFO). Le subvention double presque la contribution du Canada  a ECORD et IODP et permettra de maintenir et encourager davantage les collaborations nationales et internationales des chercheurs canadiens ainsi que les opportunit es de participer activement aux exp ditions de forage. Depuis mai 2008, le secr etariat national de IODP-Canada se situe  a l'UQAM (7^{ eme}  etage, 201 Pr esident Kennedy, Montr eal). Il est co-dirig e par Anne de Vernal, qui repr esente le Canada au comit e conseil de ECORD, et Michael Riedel, qui si ege au Science Support & Advisory Committee (ESSAC) du ECORD. H el ene Gaonac'h de l'UQAM coordonnera les activit es. Parmi les activit es de IODP auxquelles participent des canadiens: le camp d' et e en pal eoceanographie qui se teindra  a Urbino en Italie (ao ut 2008), l'atelier de forage de l'Arctique qui aura lieu  a Bremerhaven, Allemagne en novembre prochain, et l'exp dition 317 dans le Bassin de Canterbury sur la c ote de la Nouvelle-Z elande  a laquelle participera Alice Chang de l'Universit e Victoria. Pour plus d'informations, contactez H el ene Gaonac'h (gaonach.helene@uqam.ca).

Erratum

In the previous Canadian Ocean Science Newsletter (May 15, 2008), the article on “International and Intergovernmental Organizations in Ocean Science” reported in error that the Scientific Committee for Oceanic Research (SCOR) is a scientific committee of the IUGG. Instead, it should have read that SCOR is a “Scientific Committee of ICSU, the International Council for Science”.

The CMOS President’s Prize

The CMOS President’s Prize is awarded each year to a member or members of the Society for a recent paper or book of special merit in the fields of meteorology or oceanography. The paper must have been accepted for publication in ATMOSPHERE-OCEAN, the CMOS Bulletin SCMO or another refereed journal. This year the award was presented to Francois Saucier for his leading role in two papers that represent a major advance in ocean-ice modelling in Canada, as well as in our knowledge of the Gulf of St. Lawrence and Hudson Bay: (1) “Modelling the formation and circulation processes of water masses and sea ice in the Gulf of St. Lawrence, Canada”, by Saucier and co-authors (Roy, Gilbert, Pellerin and Ritchie), *Journal of Geophysical Research*, 2003.; (2) “Modelling the sea ice-ocean seasonal cycle in Hudson Bay, Foxe Basin and Hudson Strait, Canada”, by Saucier and co-authors (Senneville, Prinsenberg, Roy, Smith, Gachon, Caya and Laprise), *Climate Dynamics*, 2004. Through his brilliant capabilities in numerical modelling, combined with his understanding of ice and ocean dynamics, Dr. Saucier has made a pioneering contribution to ice-ocean prediction in Canada in leading the development and application of a state-of-the-art system. This system is now being used to provide regular forecasts of ice and ocean variability in the Gulf of St. Lawrence, forced by Environment Canada’s atmospheric prediction model.

The CMOS Tully Medal in Oceanography



The CMOS Tully Medal in Oceanography is awarded each year to a person whose scientific contributions have had a significant impact on Canadian oceanography. The award was presented by Paul Myers to Sus Tabata for his dedication to the collection, quality control and evaluation of open-ocean data over the time scales of climate change before the importance of such work was widely recognized. His seminal contributions to the collection of unique observations at Ocean Station Papa and along Line P are particularly recognized by this award. Dr. Tabata was one of the first oceanographers to study both eddy and decadal changes in ocean conditions and his work has inspired generations of oceanographers to hypothesize and explore explanations for the changes that he revealed. Dr. Tully was one of Dr. Tabata’s mentors and we are sure that he would be very proud of his student and colleague today.

The CMOS Prize in Applied Oceanography



The CMOS Prize in Applied Oceanography is awarded each year to a member or members of the Society for an outstanding contribution to the application of oceanography in Canada. This year the award was presented to Bill Crawford for his important contributions, through a synthesis of basic and applied research, to improved tide tables and to our knowledge of Pacific coastal and open ocean circulation and dispersal processes. Of the numerous applications of his work, his thoughtful contributions to discussions of the fate of potential oil spills in the Queen Charlotte Basin and his leadership in the preparation of the annual state of the Pacific report have been particularly valuable. Bill's contributions to applied marine studies together with his great integrity bring credit to our profession and are appropriately acknowledged by the presentation of the CMOS Applied Oceanography Award.

CMOS Fellows

CMOS Fellows are awarded to individuals for exceptional long term service and support to the Society and/or for outstanding contributions to the scientific, professional, educational, forecasting or broadcasting fields in atmospheric or ocean sciences in Canada. This year there were two Fellows elected, namely:



Savithri Narayanan for her outstanding leadership in Canadian and international ocean science programs, and for her long-standing support to the programs of the Canadian Meteorological and Oceanographic Society (CMOS) and the Canadian National Committee for the Scientific Committee on Oceanic Research (CNC/SCOR).



Claude Labine for his generous and enthusiastic support of CMOS from programs in the local Alberta Centre to corporate and other sponsorships such as the best student poster paper. For over three decades of dedication to Arctic climate research demonstrated by his unwavering pursuit of better monitoring programs and environmental measurements

Tertia M.C. Hughes Memorial Graduate Student Prize

The Tertia M.C. Hughes Memorial Graduate Student Prize was awarded to Xiaoming Zhai for his outstanding Ph.D. research at Dalhousie University, in which he showed how the presence of a meso-scale oceanic eddy field drastically changes our view of how near-inertial energy is redistributed and for his assessment of the role played by eddies in the large-scale ocean circulation.

CMOS CNC/SCOR NSERC Scholarship Supplement in Ocean Sciences



Peter J. van Hengstum received the CNC/SCOR Scholarship Supplement for his work in the application of foraminifera to oceanographic and hydrologic problems in both modern and ancient settings, using both biological and geochemical methods. He is currently finishing a Master's program at McMaster University and will be pursuing a PhD at Dalhousie University in the fall of 2008.

CMOS Undergraduate Scholarship

Alanna Krepakevich of the University of Victoria received the CMOS Undergraduate Scholarship for her pilot study of southern Vancouver Island dinoflagellate cyst assemblages from coastal marine sediments. She is investigating whether the basin topography may allow for localized cultural eutrophication and resultant enhanced production (of toxic dinoflagellate species in particular), despite dispersal by tidal currents on mixing of high-nutrient oceanic input into estuarine circulation within Juan de Fuca Strait.

Timothy R. Parsons Award



Dr. Wendy Watson-Wright, Assistant Deputy Minister for Science of the Department of Fisheries and Oceans (DFO) announced the award named for Canadian ocean sciences pioneer Dr. Timothy R. Parsons to Dr. Donald Gordon on May 27th, 2008 at the Canadian Meteorological and Oceanographic Society 2008 Congress in Kelowna, BC. Dr. Donald C. Gordon was selected for Excellence in Multidisciplinary Ocean Sciences. In a research career spanning 35 years at DFO and in his retirement, Dr.

Gordon has had an important influence on government policy and regulation with respect to the protection and ecosystem-based management of Canadian ocean resources. He has influenced the assessment and regulation of offshore oil and gas development on the east coast, provided the scientific basis for fisheries closures to protect coral communities, spearheaded the inclusion of

habitat issues into fisheries management plans, and provided the baseline information on benthic habitats necessary for the development of integrated management plans for the Scotian Shelf. He repeatedly demonstrated that the value of the holistic approach includes not only all scientific aspects of the problem but also the engagement of all stakeholders throughout the process. Perhaps Dr. Gordon's greatest contribution has been his influence in motivating, mentoring, and providing leadership to other scientists and support staff to contribute synergistically to multidisciplinary research. Dr. Gordon will officially receive the award in a special ceremony at the Bedford Institute of Oceanography, Dartmouth Nova Scotia, on July 14th, 2008.

Call for Applications: CNC/SCOR to Support a Young Scientist(s) to Symposium

The Scientific Committee on Oceanic Research (SCOR) will be convening a symposium to celebrate SCOR's 50th Anniversary on 20-21 October 2008. The meeting will be held in Woods Hole, Massachusetts, USA, where the first SCOR meeting was held in 1957. This symposium--*The Changing Ocean: From Past to Future*--will bring together scientists who contributed to SCOR's history, as well as the new generation that will be entrusted with the field's future.

The major goal of this symposium is to guide SCOR's activities during the next decades of international ocean research and to help SCOR fulfill its mission to increase our basic knowledge of the ocean and contribute to a better understanding of the impacts of global changes and human activities. This will also be an occasion to introduce the next generation of ocean scientists to SCOR and to involve as many SCOR nations as possible. SCOR has requested that all SCOR nations send to the symposium one or more of their best young scientists - advanced Ph.D. students and scientists with a recent Ph.D. - to present their research as posters at the meeting. The young scientists will have an opportunity to mingle and present their posters to each other at a reception on the evening of Sunday, Oct. 19. Symposium participants will be able to view the posters during a special poster session on the afternoon of Oct. 20. Details on poster size, etc. and meeting logistics may be found on the Symposium web site noted above. Poster abstracts are due by **31 August 2008**. These abstracts will be compiled into the background book for the symposium.

CNC/SCOR is prepared to financially support a young Canadian scientist, or perhaps two depending on the applications received, to participate in the poster session of the symposium. Financial support would be up to \$1,000 plus any registration costs. Any such application should be sent by email, **by July 31, 2008**, to Dick Stoddart, Secretary CNC/SCOR, dick.stoddart@sympatico.ca and should include a brief abstract of the intended poster that would be presented at the Symposium.

International Arctic Change 2008 Conference

Quebec City, Canada, 9-12 December 2008

The ArcticNet Network of Centres of Excellence of Canada and its national and international partners are welcoming the international arctic research community to Quebec City for the International Arctic Change 2008 Conference. Coinciding with the pinnacle of the International Polar Year and the 400th anniversary of Quebec City, Arctic Change 2008 invites researchers, students, policy makers, and stakeholders from all fields of arctic research and all countries to

address the global challenges and opportunities brought by climate change in the circum-Arctic. With over 600 participants expected to attend, Arctic Change 2008 will be the largest trans-sectoral international arctic research conference ever held in Canada. The conference will be held at the Quebec City Convention Centre from 9-12 December 2008. Detailed information on session format, conference topics, and the conference venue is available at: <http://www.arctic-change2008.com>

5th Annual General Meeting of the Lunenburg Bay Project

Report by Blair Greenan, GreenanB@mar.dfo-mpo.gc.ca, Peter Smith, Will Perrie, and Bash Toulany

The Lunenburg Bay Project held its final AGM on 15 May 2008 at Dalhousie University. Throughout this project, researchers in the Ocean Sciences Division at the Bedford Institute of Oceanography (BIO) collaborated with Dalhousie University, the Meteorological Service of Canada (MSC) and two local companies, Satlantic and Martec, to develop a real-time prediction capability for the coastal regions of Atlantic Canada. Specifically, this goal was to implement real-time information streams from an ocean observatory in Lunenburg Bay, Nova Scotia, and combine this information with the existing land-based and satellite observation networks to enable our research group to develop and test atmosphere-ocean numerical prediction systems. Funding for this project was provided through the Canadian Foundation for Innovation (CFI, <http://www.innovation.ca>) and the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS, <http://www.cfcas.org>) with significant in-kind contributions from DFO and MSC.

Over 50 researchers attended the final AGM, along with representatives from CFCAS. Nineteen oral presentations reviewed research progress in coupling of atmospheric and ocean models including wave models, forecasting of fog, satellite and moored observations of the Scotian Shelf, and coupled biological-physical models. The BIO contributions to this project were primarily in the areas of wave modeling and measurement, moored observations at the Atlantic Zone Monitoring Program (AZMP) station 2 on the Halifax Line (HL2) and biological modeling. During the final phase of the project in 2007, the system was providing short-term forecasts of ocean circulation, waves (see Figure 1 and References), surf conditions and high-resolution winds. These forecasts were publicly available on the Centre for Marine Environmental Prediction web site (<http://www.cmep.ca>).

The Lunenburg Bay Project also served as the incubator for new technological developments in ocean instrumentation, particularly in the area of real-time telemetry. An example of this is the SeaHorse moored profiler, which matured from collecting and logging data internally at the start of the project to a system capable of transmitting ocean profiles from anywhere in the world using the Iridium satellite system. This project has provided many valuable lessons which will facilitate the advancement of operational oceanography in Canada.

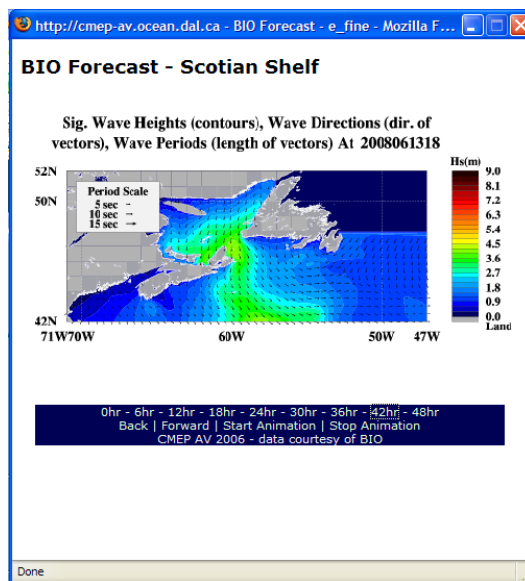


Figure 1: Example of wave forecast for the Scotian Shelf produced by the BIO wave modelling group.

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

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Les bulletins antérieurs se retrouvent sur le site web du CNC/SCOR.

Newsletter #38 will be distributed on August 22, 2008. Please send contributions to dick.stoddart@sympatico.ca
Bulletin #38 sera distribué le 22 août 2008. Veuillez faire parvenir vos contributions à dick.stoddart@sympatico.ca

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