RESEARCH IN THE SPOTLIGHT

A new full member joins Quebec-Ocean

MARTIN MONTES-HUGO
martin_montes@uqar.qc.ca
PROFESSOR IN OCEANOGRAPHY
TELEDETECTION EXPERT
UQAR/ISMER

Martin Montes-Hugo was born in Uruguay (South America), raised in Argentina and has spent the last 6 years in the USA. He studied marine ecology in Mexico and marine optics in the USA. His research interests relate to marine optics, teledetection, marine microbiology and climate variability. From now on, he will work in Quebec, and more precisely in Rimouski. “The opportunity to be a professor in teledetection, the French-speaking culture, the cordiality of the Canadians and a more family-oriented way of life, convinced me to settle in Rimouski” says the researcher.

Optical physics for the study of the Arctic and the St. Lawrence

Martin Montes-Hugo will do research in the Arctic within RUSCA (Robotic Underwater Surveys in the Canadian Arctic), recently funded by CFI (Canadian Foundation for Innovation). RUSCA aims to deploy underwater gliders over the Mackenzie coastal shelf, to estimate coastal and oceanic carbon fluxes and link them in the context of climatic changes. This project will be a key contribution to coastal teledetection in the Canadian Arctic waters, whereas for the first time, a Canadian university will own a glider. Martin Montes-Hugo is also interested in the St. Lawrence. He recently submitted a proposal to the discovery program of NSERC, to model the suspended particulate matter (SPM) dynamics in the estuary, thanks to teledetection. This project will use data from the last 30 years to estimate SPM in various areas of the estuary. This important volume of information will help to understand how the climatic conditions influence the optical properties of the waters, with regard to SPM concentrations and biogeochemical processes.

A glider centre in Rimouski

Martin Montes-Hugo is also working on the ambitious project of setting up a glider centre which could revolutionize the young Canadian oceanographers’ ways of research. This centre implemented at ISMER would include two laboratories: a control room for operating gliders and a wet laboratory for the inspection and preparation of the gliders before each mission. The newly acquired glider will be mainly used during the free ice period in the Arctic. In the short run, its use in the St. Lawrence will be practically impossible because of the very strong currents of the St. Lawrence. Martin Montes-Hugo intends however to develop collaborations with other researchers to set up missions in other Canadian waters.

IN THIS ISSUE

RESEARCH IN THE SPOTLIGHT 1
IN THE FIELD 2
AWARDS AND RECOGNITION 2
SHORT TRAINING AND CONFERENCES AROUND THE WORLD 3
IN THE MEDIA 5
EVENTS 6
AWARDS AND RECOGNITION

Exceptional article according to the «Faculty of 1000»

The article entitled “From Sea to Sea: Canada’s Three Oceans of Biodiversity” was rated 10 by «Faculty of 1000». Congratulations to Philippe Archambault, Michel Harvey, Veronique Lesage, Connie Lovejoy, Christopher W. McKindsey and Michel Poulin.

Louis Fortier wins the 2010 Armand Frappier award

Québec-Océan is proud to highlight that Louis Fortier, full member and founder of the centre, has obtained the 2010 Armand Frappier award. This award represents one of the highest distinctions granted by the Government of Quebec in the cultural and scientific domains. It was awarded to him in recognition of his remarkable contribution to the development of oceanographic research in Quebec and the renewed interest of Arctic research in Canada.

Which are the main milestones of this specialist’s career in zooplankton and fish larvae, and international leader in Arctic research? PhD graduate from McGill University (1983); postdoctoral fellow of NATO at Plymouth (U.K.), then scientist at Fisheries and Oceans (1983-1986); research associate, then professor at Université Laval (1986-); director of GIROQ ³ (1996-2001);
founder and director of Québec-Océan (2002-2005); team leader in the international research programs SARES (Canada-Japan) and NEW (Polynia in the East Water of Greenland); scientific director of international programs NOW (North Water Polynia) and CASES (Canadian Arctic Shelf).

In 2003, he obtained $32 million from the CFI to transform the CCGS Franklin icebreaker into the ultramodern research platform CCGS Amundsen. In 2003, he launched the Network of Centers of Excellence ArcticNet on the climate warming impacts in the Arctic. Gathering more than 145 researchers in natural, social and health sciences from 30 Canadian universities and eight federal ministries, the Network focuses on the impacts of icepack shrinking, biodiversity loss, the Inuits’ changing living conditions, and the industrial development in the Canadian Arctic. In 2010, Louis Fortier and his team succeeded in getting ArcticNet renewed for 7 more years.

At the same time, Louis Fortier trains students, writes scientific articles, and informs the general public and decision-makers of the urgency to prepare ourselves for full climate change impacts.

And if he had to do it all over again? Louis Fortier acknowledges that he would have liked to be a paleontologist, or a rich dilettante...

SHORT TRAINING AND CONFERENCES AROUND THE WORLD

Québec-Océan students can benefit from financial support so they can go abroad to participate in scientific meetings or improve their knowledge and skills by doing an internship or taking courses lasting less than 2 months. The next deadlines to apply for the short training support program outside Québec are May 31 and September 30, 2011. The application form and program rules are available on Québec-Océan’s web site.

Four grant holders’ story...

HEIKE LINK

Heike is a PhD student at UQAR/ISMER, under the supervision of Philippe Archambault. Thanks to Québec-Océan’s financial support program, Heike traveled to the Institute for Polar Ecology of Kiel University in Germany to better interpret her results. She benefited from Dr Dieter Piepenburg’s expertise in benthic diversity, ecology and carbon fluxes. She also had access to different tools such as new software or Foraminifera identification keys, and had the possibility of rubbing shoulders with European scientists. “I was able to learn more on the Eastern Arctic that Canadian researchers don’t study very much, and this allowed me to compare the ecosystems of the two regions”, says Heike.

Institute for Polar Ecology and IFM-GEOMAR.
She also discovered new ways of studying benthic processes and she was able to develop an efficient method of writing scientific articles. She concludes that her training was greatly formative and highly pleasant because of the very friendly atmosphere at the Institute and the researchers’ great availability. She is now back in Rimouski with a renewed motivation and many potential projects for the future.

FRANÇOIS DEMONTIGNY
François Demontigny is a Master’s student in renewable resources at UQAC, under the supervision of Pascal Sirois. Thanks to Québec-Océan’s financial support program, he was able to work with regard to the cabled submarine observatory VENUS, at Saanich Inlet, a fjord of Vancouver island. Since 2008, this observatory includes a biological observation module TEMPO-mini, developed by IFREMER (Brest, France) and equipped with a camera.

This training allowed François to collect, from obtained video sequences, quantitative information on the distribution of the megafauna of the fjord according to the variations of oxygen concentration (seasonal hypoxy), and to the lunar and solar cycles. The internship was in the labs of the University of Victoria at the Bob Wright Center, under the supervision of Dr Kim Juniper and of Dr Marjolaine Matabos. “I felt my supervisors’ interest for the subject, and that motivated me to turn out research work of high quality” says François. On a personal level, this training was also confirmation of his career choice!

THOMAS JAEGLER
Thomas Jaegler is a Master’s student in geography at UQAR, under the supervision of Simon Bélanger. Last fall, thanks to Québec-Océan’s financial support, he was able to go to Anchorage, Alaska, to participate in the Ocean Optics XX meeting. He presented a poster on his processes to develop a new method for detecting colored dissolved organic matter (CDOM) with the help of in situ measures. The fluorometer he used had the distinctive feature of measuring fluorescence at three wavelengths, which allowed to better measure the variations of the dissolved organic matter.

Ocean Optics gathers together, from all over the world, researchers who work in optics, for example absorption, fluorescence, remote sensing of ocean color. Thomas also presented some preliminary results of fluorescence variation in the rivers of the Côte Nord region. He conferred with eminent specialists in the dynamics of organic matter in aquatic ecosystems, who were very interested in his innovative project. Furthermore, he was able to talk with the professionals of firms that built the measurement instruments he works with, thus enabling him to point out some specificities linked to the actual workings of the instruments. “I was immersed in the Ocean Optics « family », everybody knew each other, everyone respected each other. To feel such a link between researchers from all over the world made me understand the necessity of international collaboration for a better understanding of natural ecosystems » acknowledges Thomas.

GÉRALD DARNIS
Gérald is a PhD student at Université Laval, under the supervision of Louis Fortier. He traveled to Japan to examine the impact of predatory gelatinous zooplankton (jellies) on plantonic communities during their summer population explosions in the Japanese Sea. He joined Dr Shin-Ichi Uye’s team (Graduate School of Biosphere Science, Hiroshima University) which has been developing, for many years, innovative research methods on gelatinous zooplankton, among which the famous Nomura jellyfish that cause widespread damage to the Japanese Sea fisheries.
During my many oceanographic missions in the Canadian Arctic regions, I took note of our inefficiency to sample and thus study the fragile gelatinous zooplankton. I thus wanted to see how this component of the zooplankton community, at times important, was studied by specialists in the field, in this case the Japanese » states Gérald. Besides acquiring good tools to study the biology of jellyfish, he also made many contacts within the Japanese STOPJELLY network. He was able as well to confer with American and Korean marine biologists during an international meeting on the modeling of marine ecosystems. « This stay was a tremendous learning experience with regard to cultural, geographic and scientific knowledge. But I still don’t know how to speak Japanese! » admits Gérald.

**IN THE MEDIA**

**UQAR DELEGATION IN ARGENTINA**

Last November, in Argentina, many UQAR professors-researchers, among them Émilien Pelletier, Philippe Archambault and Gustavo Ferreyra, took part in work meetings relating to the Gulf of San Jorge maritime observatory project, based on the St. Lawrence Global Observatory model.

 Bruno Tremblay and melting ice

Bruno Tremblay, professor at the Atmospheric and Oceanic Sciences department of McGill University and full member of Québec-Océan, comments on his work on melting ice with regard to climate change.

 Jacques Locat and schist gas

Jacques Locat, professor at the geology department of Université Laval and full member of Québec-Océan, is a BAPE (Bureau des audiences publiques sur l’environnement) commission member working on the schist gas question in Québec.

 Country seal

Mike Hammill, researcher at Fisheries and Oceans (Institut Maurice-Lamontagne) and associate member of Québec-Océan, explains the new phenomenon of seals found in inland New-Brunswick.

 Gulf of Mexico disaster

Émilien Pelletier, professor at UQAR-ISMER and collaborator member of Québec-Océan, has studied, on numerous occasions, the impact of hydrocarbons on the marine environment. Radio-Canada’s program Découverte asked him his opinion on the potential impacts of hydrocarbon exploration and exploitation in the St. Lawrence and in the Arctic.

 Brooked trout: compromise between profitability and genetic integrity

Lakes are often sowed with brook trout chosen for their rapid growth. Louis Bernatchez sounds the alarm because this artificial selection is done to the detriment of their genetic integrity.
EVENTS

China-Québec workshop on oceans acidification

A workshop was held last December in Qingdao, China, whose objectives were to develop a Québec-China research project on the consequences of oceans acidification. The workshop, organized by Maurice Levasseur (U. Laval) and Gui-Peng Yang (Ocean University of China), was funded by the Quebec Ministry of International Relations (MIR). The other Quebec participants were Jean-Eric Tremblay (professor, U. Laval), Josiane Mélançon (PhD candidate, U. Laval) and Alfonso Mucci (professor, McGill U.). The workshop gathered about twenty participants.

Acidification of the oceans is one of the ecosystem’s major problems that mankind faces. Atmospheric CO\textsubscript{2} concentrations have increased constantly since the beginning of the industrial era. Most of this anthropic CO\textsubscript{2} was absorbed by oceans, resulting in surface water acidification. Several marine organisms are affected, in particular those whose existence is based on the precipitation of calcium carbonate (ex: corals, coccolithophorids, pteropods). In coastal areas, the increasing hypoxic zones emphasize the problem.

Quebec and Chinese researchers have decided to join their efforts to study this important issue. Following the workshop, a proposal will be submitted, in the spring of 2011, for the PSR-SIIRI programme of the Ministry of Economic Development, Innovation and Export Trade (MDEIE). The project will be related to the combined effect of hypoxia and acidification on ecosystems and biogeochemical cycles of the St. Lawrence Estuary and of the Yellow Sea.

TOXCÉAN annual meeting

Many Québec-Océan members participated in Toxcéan that held its annual meeting on December 2, 2010 at the Institut Maurice-Lamontagne. Some twenty participants benefited from conferences and posters on mussel, fish and beluga intoxication, and the quality of the waters in the Saguenay-Saint-Laurent. Furthermore, Claude Rouleau, associate member of Québec-Océan, presented the services of the Laboratory of Expertise in Aquatic Chemical Analysis (LEACA) of Fisheries and Oceans.

To get a complete list of the conferences and posters, contact Rachel Picard, coordinator in Rimouski.

5th International Symposium on Biological and Environmental Chemistry on DMS(P) and Related Compounds in Goa, India

Seven years after the 3rd International Symposium on Biological and Environmental Chemistry on DMS(P) and Related Compounds, organized by Maurice Levasseur, was held in Rimouski, Québec-Océan members M. Levasseur and Martine Lizotte attended the 5th edition of this Symposium in Goa, India. Every 4 years, the gathering of researchers from all over the globe at this event marks the moment when the latest scientific progress in the field is shared and discussed. As a member of the Symposium Advisory Board, Maurice Levasseur will play a key role in publishing the results of this conference in a special
issue of Biogeochemistry highlighting the critical role that DMS plays in the global biogeochemical sulfur cycle and its influence on the Earth’s climate.

Arcticnet annual meeting

Did you know that more than 20 researchers from Québec-Océan and their teams are involved in the four Integrated Regional Impact Studies (IRIS) of ArcticNet?

This major contribution was particularly obvious during ArcticNet’s 7th Annual Scientific Meeting, held December 14-17, in Ottawa. Gathering nearly 550 attendees, the 2010 ASM enabled the participants to share the most advanced information on the Arctic, whether it be between researchers or with Inuits, governmental managers and decisions-makers, and representatives of the private sector. The focus this year was on decisions to be made so that research results can turn into tangible outcomes for the Arctic’s sustainable development. Congratulations to Jessy Barrette, PhD student at INRS-ETE and QO member, who won the 2nd Award in the marine field, for his poster entitled “Eddies in the Amundsen Gulf”.

St. Lawrence Global Observatory (SLGO) Inauguration

Inauguration of the SLGO premises took place October 21st at ISMER. SLGO is an information infrastructure in support of ecosystem conservation, economic development and decision making. The St. Lawrence Global Observatory (SLGO) provides an integrated Web access to data and information from a network of government, academic, and community organizations. The synergy created by clustering the means and expertise of data producers translates into an increased collective capacity to serve various user groups. Data access via SLGO also creates opportunities for the development of value-added products and services and, consequently, significant socio-economic benefits.

Québec-Océan is a member of SLGO via UQAR, INRS-ETE and U. Laval. Consequently, scientists from these universities can share their data with SLGO and anyone can profit from this infrastructure.

To contact them: info@ogsl.ca

Consult Québec-Océan’s website regularly in the “News” section for further information regarding the events scheduled in the next months!