

## **Report from the Global Environmental and Climate Change Centre, GEC3 (Drs. Chmura and Peng) on Mission du MDEIE en Chine dans le domaine de la R-D en environnement**

### *Our Goals and Their Realization*

Three members of GEC3 participated in the mission: Drs. Chmura (McGill), Peng (UQAM), and Aubé (Sherbrooke). Drs. Chmura and Aubé were interested in making links for potential research collaborations. As a Centre, our goal for participation in the China mission was to promote links between GEC3 and other groups performing research and student training on aspects of global climate and environmental change. Dr. Peng is familiar with high caliber science in China and played a key role in targeting the mission program. By highlighting the research of GEC3 members during the mission, we hoped to attract high caliber applicants for graduate and postgraduate study to GEC3's member institutions.

All goals were met. We found two institutions (see summaries in Appendix 1) that had missions similar to those of GEC3, specifically Beijing Normal University's College of Global Change and Earth System Science and Fudan University's Institute of Biodiversity Science (Shanghai). If the mission of GEC3 expands to include more researchers addressing impacts and adaptation to global change, a formal link to Tongji University's Institute of Environment and Sustainable Development (Shanghai) would provide great opportunities for student training and networking. Other institutions had programs of research and student training that did not meet the scope of the Centre mission, but could provide interesting collaborations for individual researchers or groups of collaborating researchers within GEC3. For example, East China Normal University is the base of the State Key Lab for Estuarine and Coastal Research – possible research links for Chmura's work in estuarine science. Other possible links are mentioned in Appendix 1, which will be made available to GEC3 members.

We note that East China Normal University (Shanghai) has an intensive French language training program for doctoral students who obtain a joint degree from China and France. The University is expanding this program to include Environmental Sciences. A similar link with Québec could be of great benefit to universities province-wide.

China is changing rapidly. Construction is every where – in the cities and countryside. New lands are being reclaimed from the sea at amazing rates for mixed uses, such as fish farms and wind farms. Solar panels dot roofs in the countryside where there are no street lights or even paved roads. (Observations Chmura made during the three days she added to visit Nanjing and coastal wetlands.) Examples of “leap-frogging” are everywhere and educational institutions are being funded at a level that will make them (or has, already) globally competitive. We met high caliber scientists who are well funded. The hierarchical professorial system prevalent in earlier decades is evolving and becoming more similar to North American systems. Most of the institutions we visited already have formalized links with universities abroad, and are being “courted” by more.

With some support from Québec we can join with the advancing scientists of China and recruit some of their top students. The GEC3 has regular workshops and “summer schools” on global change topics that would be attractive to Chinese students if we could obtain subsidies for their participation. This participation would be part of a broader program developing formal links between research centers.

## Appendix 1 to GEC3 report on MDEIE Mission to China (Oct 2009)

### Universities and Research Groups Visited by GEC3 members

A partial list of China-based participants at meetings with GEC3 members Drs. Chmura, Peng and Aubé is included.

#### Beijing Normal University (October 12)

College of Global Change and Earth System Science

Dr. Cheng Xiao Associate Dean for Academic Research [xcheng@bnu.edu.cn](mailto:xcheng@bnu.edu.cn)  
Dr. Qingyun Duan Chief Scientist [gyduan@bnu.edu.cn](mailto:gyduan@bnu.edu.cn)  
Dr. John Moore Chief Scientist [john.moore@bnu.edu.cn](mailto:john.moore@bnu.edu.cn)

The College of Global Change and Earth System Science is a new, ambitious program with a scope quite similar to that of GEC3, but all within a single university. Some of the newly appointed faculty have returned to China after careers in the US and one (Moore) has relocated from his (most recently held) position in Finland.

Beijing Normal has a University of the Arctic and an international field school. They mentioned programs that sponsor visitors for up to three months.

This is an excellent candidate for an institutional link with GEC3 as well as individual researchers.

#### Institute of Atmospheric Physics, Chinese Academy of Science (IAP), Beijing (October 12)

Dr. Jian hui Bai Professor [jianhuib@263.sina.com](mailto:jianhuib@263.sina.com), [bjh@mail.iap.ac.cn](mailto:bjh@mail.iap.ac.cn)  
Dr. Zhang Lu Deputy Director of International Cooperation, Dept of Sci. Planning  
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International Center for Climate and Environment Sciences (ICCES)

Dr. Zhaohui Lin Director [lzh@mail.iap.ac.cn](mailto:lzh@mail.iap.ac.cn)

Laboratory for Middle Atmosphere and Global Environment Observation (LAGEO)

Dr. Wang Pucai Professor [Pcwang@mail.iap.ac.cn](mailto:Pcwang@mail.iap.ac.cn)

The IAP's 53 professors and 88 associate professors train M.Sc., Ph.D. and postdocs (81, 41, and 7, respectively enrolled in 2004). The Institute incorporates 5 laboratories (National Key Lab of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics, State Key Lab of Atmospheric Boundary Layer Physics and Atmospheric Chemistry, Key Lab of Regional Climate-Environment for Temperate East Asia, LAGEO, and Lab of Cloud-Precipitation Physics and Severe Storms) and 5 research centers. We met with 7 people. The group has an emphasis on modeling focused on the following fields: climate dynamics and monsoon, developing an earth system model, seasonal to inter-annual climate and hydrological prediction, "disastrous weather dynamics and prediction, and ecological dynamics and natural cybernetics that might be of interest to a number of GEC3 members (Ramankutty of McGill Geography; Mathews of Concordia and adjunct at McGill Geography, Peng of UQAM and adjunct at McGill Geography, vanNuygen in McGill's Engineering Faculty, Sushama of UQAM, members from Cartel at U. Sherbrooke, etc.)

#### Nankai University (October 13)

College of Environmental Science and Engineering

Dr. Kexun Li Associate Professor [likx@nankai.edu.cn](mailto:likx@nankai.edu.cn)  
Dr. Jianfeng Feng Associate Professor [fengjf@nankai.edu.cn](mailto:fengjf@nankai.edu.cn)  
Dr. Lingyan Zhu Specially Appointed Professor [zhuly@nankai.edu.cn](mailto:zhuly@nankai.edu.cn)  
Dr. Jingchun Tang Key Laboratory of Pollution processes & Environmental Criteria, Ministry of Education  
[tangjch@nankai.edu.cn](mailto:tangjch@nankai.edu.cn), [jc\\_tang@163.com](mailto:jc_tang@163.com)

Expertise here is more in air and water pollution. There are possible links for Aubé, but not core to the GEC3.

**Shandong University, Jinan** (October 14)

School of Environmental Science and Engineering

Dr. Cui Zhaojie	Director of Institute of Environmental Science	<a href="mailto:cuizij@sdu.edu.cn">cuizij@sdu.edu.cn</a>
Dr. Rutao Liu	Deputy Dean	<a href="mailto:rutaoliu@sdu.cn">rutaoliu@sdu.cn</a>
Dr. Baoyu Gao	Dean, Professor of Environmental Engineering	<a href="mailto:bygao@sdu.edu.cn">bygao@sdu.edu.cn</a>
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Shandong University has 60 faculty members (only 8 supervise doctoral students and only 60% hold Ph.D.s themselves) and 400 undergraduates. The University hosts key labs, but none with research foci that correspond to the breadth of GEC3's. The School of Environmental Science and Engineering focuses on environmental impact assessment, environmental management and planning, environmental engineering, and environmental protection. They are concerned with "social responsibility and have a cooperative project with University of Amsterdam.

The University subsidizes "scholar visits" of one week to one semester. Potential scholars should be invited by a member of the Shandong faculty and are expected to contribute to student education (e.g., offering lectures or a course).

I thought that there could be some possible connections made with those at McGill examining air pollution and health, such as Ian Strachan (a GEC3 member of McGill Natural Resource Sciences) and Nancy Ross, in the Geography Dept. – but those at the meeting did not seem interested in environment and health at this scale.

**Fudan University, Shanghai** (October 15)

Institute of Biodiversity Science

Dr. Bo Li	Professor	<a href="mailto:bool@fudan.edu.cn">bool@fudan.edu.cn</a>
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We met with multiple faculty of the Institute of Biodiversity Science, and some students were in attendance, but only one name is listed above. The Institute is relatively new, as is the Department of Ecology and Evolutionary Biology which hosts it. Their research interests include wetland ecosystem processes and ecosystem/soil response to climate change (some GEC3 members Chmura, Roulet, Moore, Strachan, Peng), and global change (broad GEC3 overlap). Fudan has a field station on the coast that greatly facilitates research focused on the Yangtze Delta. Faculty research includes three eddy flux towers in wetlands – paralleling collaborative research on greenhouse gas flux conducted by GEC3 members from McGill: Roulet, Moore and Strachan. The estuarine research carried out by Dr. Bo Li and others is of particular interest to Chmura.

Faculty members have a very respectable publication record. The Institute is an excellent candidate for an institutional link with GEC3 as well as individual researchers.

**Tongji University, Shanghai** (October 16)

College of Environmental Science & Engineering

Dr. Fangming Jin	Director- Institute of Carbon Cycle Technology	<a href="mailto:fmjin@mail.tongji.edu.cn">fmjin@mail.tongji.edu.cn</a>
Dr. Ru Guo	Assistant Professor	<a href="mailto:ruquo@tongji.edu.cn">ruquo@tongji.edu.cn</a>

The UNEP-Tongji Institute of Environment for Sustainable Development, founded in 2002, is an impressive initiative serving developing countries. Besides UNEP funding, many of their programs seem to benefit from funding or collaboration with Germany. (The name "Bayer" was evident on plaques.) The institute runs an annual "Asia-Pacific Leadership Program on Environment for Sustainable Development" (initiated with the sponsorship of UNEP's Asia-Pacific program) for emerging leaders in government organizations, NGOs and private enterprises. In 2008 the Institute organized (with UNEP) the "Young Environment Leaders Programme for African Countries" and hopes to make this a regular event. Participant numbers range from 25 to 30, yearly. Resources people come from AIT in Bangkok, Australia, Japan, and the U.S.

In addition, they host an International Policy Forum which may provide interesting opportunities for McGill faculty involved in Environment, Development and Global Change studies. On November 16, 2009 they will host the Bayer-Tongji-UNEP Climate Forum. For instance, the Institute has produced a report on Carbon Emission Reduction in Shanghai (2007) and has a “low carbon society” demonstration project.

The student body is comprised of 600 B.Sc. students, 400 M.Sc. and 150 Ph.D., which includes 70 international students.

The Institute already is networking internationally, but is looking for additional partners to establish innovative education and research programs. There are interesting possibilities for institutional links, particularly if GEC3 expands its mission to include social science-based research on impacts and adaptations to global change.

Dr. Fangming Jin, a recent addition to the faculty (Chinese national who was working in Japan) is an experimentalist working on utilization of recycled products.

**East China Normal University, Shanghai (October 16)**

Dr. Yu Lizhong President

[lzyu@admin.ecnu.edu.cn](mailto:lzyu@admin.ecnu.edu.cn)

Wei Gao Dean

[wgao@geo.ecnu.edu.cn](mailto:wgao@geo.ecnu.edu.cn)

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The University appears to have strengths in a broad array of disciplines and has a faculty of nearly 1000 professors. Some of the faculty we met had trained abroad (e.g., Yu Lizhong obtained his Ph.D. from the University of Liverpool). This is the base for the State Key Lab for Estuarine and Coastal Research. The lab studies estuarine evolution and sediment dynamics, coastal dynamics and geomorphology, coastal ecology, and hypoxia. It has 44 faculty members involved in both basic and applied research. Besides coastal research, the university has labs specialized in GIS and polar materials, urban ecology and ecological restoration. The School of Resources and Environmental Sciences includes a Department of Environmental Science and Technology and one of the top 3 Geography Departments in China (self-proclaimed). The Geography department covers many sub disciplines.

Their presentation stressed “Innovation-Interdisciplinary - Internationalization”. Indeed, East China Normal has signed agreements with 150 foreign universities and institutes and has 150 honorary and advisory professors. They have an exchange program with Guelph and through a “Strategic Economic Dialogue” a link with Tulane University (New Orleans, Louisiana), a 15-year program with the Netherlands Institute of Ecology. (The latter is derived from Dr. Qin, a Faculty member’s training there.) In addition, they have strategic partnerships with ENS in France, the University of Pennsylvania, Cornell University, Columbia University Teachers College, Tokyo University, Kobe University, the University of Melbourne and academic exchanges with over 100 institutions around the world. Students in this program receive intensive French language training and take courses towards a dual degree doctoral program. The University is expanding this to include, among other topics, Environmental Sciences. It would be worth exploring opportunities for Quebec Universities.

President Yu Lizhong suggested

- 1 Staff/faculty exchanges through a joint program
- 2 Opportunities through the Chinese Scholarship Council (provides costs of travel and living)
- 3 Student exchanges – which would need funding on both sides, perhaps through covering each other’s students’ costs. This would fit well with an existing networking program that GEC3 funds for graduate students and postdocs.

4 Training programs, he suggested that our professors could come to Shanghai.

#### **Other contacts made during Ministry activities**

##### **Sino-Singapore Tianjin Eco-City** (October 13)

Commercial Bureau, Administrative Committee

Yang Liu Deputy Director [yangl@eco-city.net.cn](mailto:yangl@eco-city.net.cn)

*(After the end of the mission Dr. Chmura continued her trip, departing from Shanghai on Oct 20, to meet with researchers of Nanjing Normal University)*

##### **Nanjing Normal University**

School of Geography Science

Jiangsu Key Lab of Environmental Change & Ecological Construction

Dr. Liu Jin'e Lecturer/Assistant Professor [Jine1945@yahoo.com.cn](mailto:Jine1945@yahoo.com.cn)

Dr. Xie Biao Senior Research Scientist [biaox@hotmail.com](mailto:biaox@hotmail.com)

Chmura gave two presentations during the three day visit. On Oct 17<sup>th</sup> she presented a seminar "Salt Marshes and Mangroves are the Best Natural Carbon Sinks" to ~50 faculty and students of the School of Geographic Science. On Oct 19<sup>th</sup> she presented "Wetland Recovery and Use in Eastern Canada", with the help of a translator, at the "International Symposium on Sihong Wetlands". (The only other "international" participant was a speaker from Rutgers University.)

From Oct 17 through 19 Chmura travelled through the coastal countryside of Jiangsu Province. This included visits to sites where scientists from the Jiangsu Key Lab of Environmental Change & Ecological Construction were conducting research, the Yancheng Littoral Mudflat and Valuable Fowl National Nature Reserve, and the Hongze Lake Wetland National Nature Reserve in Sihong, Jiangsu / Sihong Hongzehu Wetland National Nature Reserve.