

Global Environment Monitoring System - Water Programme

June/July 2007

Volume 2, Issue 9

Good News

- Warm Welcome to Ulrich Looser, new coordinator of WHO Global Runoff Data Centre (GRDC)
- A second warm welcome to Zafar Adeel, new director of United Nations University International Network on Water, Environment and Health (UNU-INWEH)
- After launching our *Water Quality Outlook on World Water Day*, we received 189 requests for information

Special Edition: Focus on GEMS/Water Japan

National Institute for Environmental Studies (NIES) – Centre for Global Environmental Research (CGER) is GEMS/Water-Japan

This newsletter highlights the GEMS/Water National Focal Point for Japan, NIES, and highlights a few of their recent activities. GEMS/Water is very supportive of NIES and Japan for their strong commitment over the years.

Since 1994, GEMS/Water-Japan has provided data through its network of 23 stations, and coverage in GEM-Stat includes 271 parameters between 1979 and 2002.


GEMS/Water Japan started its international activities with its Mekong River (MeREM) Project in 2004. MeREM's main goal was capacity building for water quality monitoring.

The Mekong River, the largest international river in Asia, had been monitored for water quality by Thailand, Lao PDR, Cam-

bodia, and Vietnam between 1985 and 1994; and subsequently with the Mekong River Commission.

In 2003, NIES was requested to help and support a plan for long-term monitoring by Mekong riparian countries and GEMS/Water, to ensure sus-

tainable development of the whole Mekong River. One of the main results of MeREM is reported on page 2.

A website has been created for Japanese audiences to help the people to be well informed about GEMS/Water. 



GEMS/Water-Japan stations mapped in 3-D using Google Earth

Inside This Issue

Cover Story: Focus on GEMS/ Water-Japan	1
Lead Article: La Plata Workshop a Success	1
Japan in "Water Quality for Ecosystem and Human Health"	2
Mekong River Initiative Model Development	2
Internship at Burlington	2
Offer to Fund Lab Participation in PE-07	3
The DWQI and Japanese case study	3



La Plata Workshop a Success

Building capacity for La Plata basin management

On March 2nd 2007, NIES (GEMS/Water-Japan), in collaboration with the International Hydrological Programme (IHP) of UNESCO, the International Center for Hazard and Risk Management (ICHARM), the Argentine Institute of Water Resources (IARH), and Nihon University, organized the kick-off meeting for the fifth La Plata River Basin Workshop at UNESCO's Montevideo Office.

UNESCO Montevideo Office, the Regional Office for Science for Latin America and the Car-

ibbean, is the centre for technical cooperation and technology in the region. IHP is UNESCO's intergovernmental scientific co-operative programme in water resources, and is a vehicle through which Member States can upgrade their knowledge of the water cycle, and thereby increase their capacity to better manage and develop their water resources. It also aims at improving the scientific and technological basis for the development of methods for managing water resources including protecting the environment.

Recently, with a strengthened

social science component, IHP has become a truly interdisciplinary programme, capitalizing on the recognition that the solution of the world water problems is not just a technical issue. The sixth phase of the IHP that comprises the period 2002-2007 deals with the theme "Water Interactions: Systems at risk and social challenges."

The UNESCO Regional Offices are responsible for implementing IHP at the regional level. The International Hydrological Programme for Latin America

(Continued on page 3)

Japan in *Water Quality for Ecosystem and Human Health*

GEMS/Water–Japan data illustrate the need to link metals and sediment

“River and lake restoration in Japan is extensive and many successes have been documented in systems that are heavily urbanized and located in areas of extremely high population densities.”

This message was highlighted in *Water Quality for Ecosystem and Human Health*, published in PDF and ‘digital atlas’ formats, and available at <http://www.gemswater.org/publications/index-e.html#>

The main purpose of the publication is to provide an over-

view of major components of surface and ground water quality, and to describe how these variables relate to ecosystem and human health.

Local, regional, and global assessments of water quality monitoring data are used to illustrate key features of aquatic environments, and to demonstrate how human activities on the landscape can influence water quality in both positive and negative ways.

Lake Kasumigaura and Lake Mashu have a GEMStat trend station and a GEMStat baseline monitoring station, respectively. Lake Mashu is known as one of the most transparent

in the world, and is representative of lakes least affected by pollution in Japan. Lake Kasumigaura is a typical eutrophic lake in Japan.

As an example, metal concentrations in Lake Mashu tended to be elevated near the bottom of the lake where oxidation-reduction states are usually high (see Figure on page 4).

Thus, water quality monitoring for metals should also examine sediment concentrations, so as not to overlook a potential source of metal contamination to surface waters. ♦



Satellite view of Lake Mashu
(Source: NASA)

Mekong River Initiative Model Development

Successful outcome of the MeREM initiative

As introduced in the cover article, the purpose of MeREM was to improve capacity and understanding of the ecosystem, to predict long-term ecological changes, to develop scientifically based management plans, and to derive solutions for the sustainable development of the Mekong River.

One of the research outcomes was model development for water quality simulation of the basin using land use and in-

dustrial activities information. This is a combination of a water quality model of biochemical reaction and material retardation processes, and the distributed hydrological model of rainfall-runoff processes.

Its application for the Mekong River basin showed the model’s capacity to simulate monthly total nitrogen load and concentration in rainy and dry seasons over 4,600 km from Tibet to the river mouth along the main stream of the river.

It shows that the nitrogen load is large, especially during the dry season (winter), where the Mekong passes through the urbanized area in Northern Thailand. During rainy season (summer), the immobilized nitrogen is diluted.

Such model simulation serves as reference information for quality control of water quality measurements and helps the long-term monitoring efforts of the riparian countries. ♦

Student Internship at Burlington

NIES starts an internship project in Canada

NIES together with the Graduate School of Global Environmental Studies-Kyoto University created an assignment for an internship programme for sending graduate students to support activities at GEMS/Water headquarters in Burlington.

As the first candidate, Ms. Tomoko Teramoto completed a three-month internship placement at GEMS/Water. Her as-

signment focused on manipulating water quality data in GEMStat, and on checking the quality of metadata which have been associated with the geographic location of the monitoring sites.

The project also aims to exchange research information for producing doctoral theses; to transfer skills and knowledge; as well as harness the power of youth to contribute to the overall GEMS/Water Programme.

This initiative by NIES benefits both the student interns as well as GEMS/Water. All necessary costs (salary, travel and accommodation) were covered by GSGES-Kyoto University.

GEMS/Water invites all Focal Points to consider supporting a student from their country to work as an intern at GEMS/Water Burlington Office.

For more information, contact Richard Roberts. ♦



Tomoko Teramoto enjoying winter in Burlington

La Plata Workshop a Success *(cont.)*

(Continued from page 1)
and the Caribbean (IHP-LAC) has its venue at the UNESCO Montevideo Office. At the national level, IHP is implemented through National Committees and Focal Points.

La Plata River Basin is one of the largest international river basins in the world, with an area of about 3 million km². The basin spreads across five countries (Argentina, Bolivia, Brazil, Paraguay and Uruguay) and has been developed through large dam construction which started in the early 1960s including the world largest hydropower "Itaipú" built mainstream between Brazil

and Paraguay. The First and Second International Workshops on Regional Approaches for Reservoir Development and Management in the La Plata River Basin were organized by UNEP and ILEC in collaboration with IARH in 1991 and 1994.

La Plata River Basin Environmental Research and Management Network (RIGA) was officially launched at the Third International Workshop in March 2001, at the City of Posadas near the Yacyreta reservoir and its hydropower plants.

The Fourth International Workshop took place in November

2005 at the Salto Grande Reservoirs.

At the kick-off meeting of the Fifth International Workshop, stakeholders from regional countries gathered for intensive discussion on sustainable basin management.

The meeting concluded with agreement that the Fifth International Workshop on Regional Approaches for Reservoir Development and Management in the La Plata River Basin (V La Plata Workshop) will be convened at Itaipú Falls (Foz do Iguaçu) in March 2008. For information, contact Yosuke Yamashiki. ♦



Participants at the La Plata kick-off workshop

Offer to Fund Laboratory Participation in PE-07

NIES proposes ¥ 1 million for Japanese labs

In the past, GEMS/Water has supported the participation of water quality laboratories in the international performance evaluation studies. The last study, PE-06 was designed to evaluate the reliability and comparability of water quality data from labs worldwide. 97 labs from 50 countries participated in PE-06 by submitting measurement results for nutrients, demand analyses, miner-

als, pH, trace metals, and solids in synthetic water samples. Participation was greatest in Asia, followed by Africa and Europe. The full report of PE-06 is available at <http://www.gemswater.org>.

Due to funding shortages, developed countries may be asked to fund the participation of their country's labs in the next study, PE-07.

NIES has responded by offering to provide ¥ 1 million for 20 or 30 Japanese labs to par-

ticipate in PE-07.

The cost for one lab is about \$US 1,500.00, which is not expensive, but the total cost for all labs (about 120 are expected for PE-07) is beyond GEMS/Water's current means.

If more developed countries offered to pay for their labs, then the future of the lab studies will be secured and more labs around the world can benefit from participating.

For details, contact Yvonne Stokker. ♦

Developing the Drinking Water Quality Index and Japan

Developing the DWQI with a Japanese case study

In March 2007, GEMS/Water-Japan invited Carrie Rickwood, co-researcher behind the Drinking Water Quality Index (DWQI) development, to Tokyo to discuss collaboration with Japan. The proposed project would incorporate the DWQI with basin-scale water-use and population data. The goal of this project is to produce a Japanese case study for publication with the next stage of

DWQI development. A case-study of this nature is advantageous to the development of the DWQI as it can illustrate potential for use with other types of data, and produce a detailed overview of drinking water quality in the Tokyo Bay area. It can also lay the groundwork for developing global-scale modeling using the DWQI.

Two seminars were also delivered to undergraduate students at the CST- Nihon Uni-

versity, one to introduce the GEMS/Water Programme, GEMStat and Google Earth; and the second one to explain water quality indices currently in development.

A second visit to Japan to complete the basin-scale project and to present the methodology is planned for late fall 2007.

NIES is gratefully acknowledged for funding the Tokyo mission, and for this important initiative. ♦



Yosuke Yamashiki, Carrie Rickwood, and students, Tokyo bay

GEMS · Water Quality News

© 2007 the semi-annual newsletter of the UNEP GEMS/Water Programme

ISSN 1728-4163

c/o National Water Research Institute
867 Lakeshore Road
Burlington, Ontario, L7R 4A6 CANADA
www.gemswater.org/newsletter/index-e.html
tel: 1.306.975.6047
email: info@gemswater.org

The contents of this newsletter do not necessarily reflect the views or policies of UNEP, or of the GEMS/Water Programme, nor do they constitute an official record.

The contents of this newsletter may be copied without charge, provided that GEMS · Water Quality News is credited as the source.

The designation of geographical entities in this newsletter does not imply the expression of any opinion whatsoever on the part of the publisher or of participating organizations concerning the legal status of any country, territory or area, or of its authorities, or concerning the delineation of its frontiers or boundaries.

GEMS · Water Quality News welcomes articles and photos for publication. Readers' views and comments are also invited. For editorial information or subscriptions, contact Sabrina Barker.

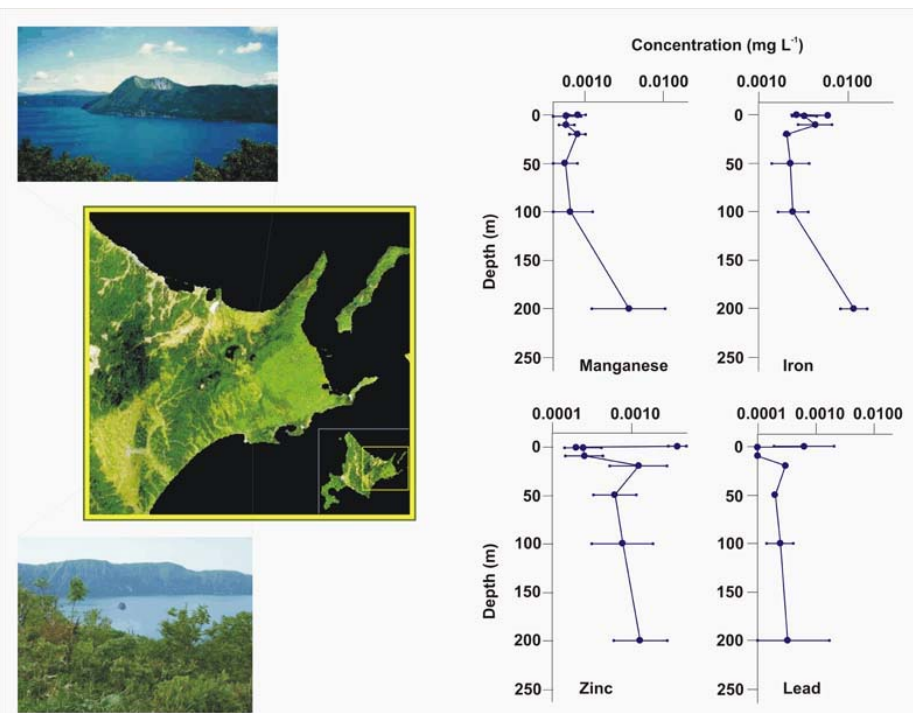
Established in 1978, the GEMS/Water Programme is the primary source for global water quality data. It is a multi-faceted water science centre oriented towards building knowledge on inland quality issues worldwide. Key activities include monitoring, assessment and capacity building. The twin goals of the programme are to improve water quality monitoring and assessment capacity in participating countries, and to determine the state and trends of regional and global water quality.

These goals are implemented through the GEMS/Water data bank, GEMStat, with water quality data from more than 100 countries, and over two million entries for lakes, reservoirs, rivers and groundwater systems. GEMS/Water activities add value to country-level data by creating global and regional water quality assessments. The programme also carries out assessments on a range of water quality issues and methodologies. GEMS/Water data have been used by many organizations, including the UN system and universities around the world.

GEMS/Water is considered as an inter-agency body of the UN, and is functionally part of the Division of Early Warning and Assessment (DEWA), UNEP.



Metals in Lake Mashu



Total metal concentrations plotted against depth in Lake Mashu, Japan, between 1995 and 2002. Data are mean ± 1 standard deviation. Note the increase in iron and manganese near the lake bottom, where oxidation-reduction states are usually high.

Contact Information for GEMS/Water-Japan

Center for Global Environment Research
National Institute for Environmental Studies
16-2, Onogawa
Tsukuba, Ibaraki 305
JAPAN
http://www-cger2.nies.go.jp/gems/gems_jnet/wayaku/01index.html
Email: gems@nies.go.jp

Mr. Shigeru Kariya
Research Scientist
Kariya.shireru@nies.go.jp

Dr. Yosuke Yamashiki
Advisor
Yamashiki.yosuke@nies.go.jp