



# NEWSLETTER

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

— For Better Lake Management —

This Newsletter is also available in Japanese.

## UNEP International Technology Centre (UNEP/IETC) OPEN!!



Mr. Inaba,  
Dr. Tolba,  
& Mr. Takada  
(from l to r)

The UNEP International Technology Centre (UNEP/IETC) was established on October 30, 1992 in Japan, as a result of an agreement between the Government of Japan and UNEP. The opening ceremony for the Shiga Office was attended by Dr. Mostafa K. Tolba, then Executive Director of UNEP, Mr. Minoru Inaba, Governor of Shiga Prefecture and Mr. Saburo Takada, Mayor of Kusatsu City. Those attending confirmed their determination to cooperate to make the Centre a success.

UNEP/IETC will be dedicated to the transfer of environmentally sound technologies to developing countries and countries with economies in transition by means of providing training and consulting services, carrying out research, and accumulating and disseminating related information, with special focus on environmentally sustainable management of big cities and fresh water lake and reservoir basins.

There will, in effect, be two centres, one in Kusatsu (Shiga) and the other in Osaka. The Shiga office will be in charge of fresh water environmental management. Associated with the establishment of UNEP/IETC, ILEC will further expand its activities as a supporting founda-

tion in Shiga, to support the Centre and to coordinate local contributions to the Center.

Shiga Prefectural Government has determined to support IETC in many ways such as constructing a new building to house the Centre, mobilizing a fund for the Centre to cover its operation cost, and providing manpower to expand its projects. The new building will be completed in the end of 1994 and will be located on the shore of Lake Biwa.

The Osaka Office will be in charge of environmental management of big cities. The Global Environment Center (GEC) will function as a supporting foundation and be located in the city of Osaka.

UNEP has been advertising worldwide for new staff for the Centre since February 1993. Posts are expected to be filled by June.

### International Symposium on Networking of Environmental Conservation Technology Transfer

In commemoration of the establishment of the UNEP

Environmentally Sound Technology  
of the Establishment of  
an Environmental Technology Centre—

環境保全技術移転ネットワーク化シンポジウム  
—UNEP国際環境技術センター開設記念—

主 催 環境庁 外務省 滋賀県 大阪府 大阪市



Dr. Tolba

International Environmental Technology Centre (UNEP/IETC), the International Symposium on Networking of Environmental Conservation Technology Transfer was convened in Otsu, Shiga and in Osaka with over 1,000 participants from international organizations attending. The Symposium was organized by the Environment Agency of Japan, Ministry of Foreign Affairs, Shiga Prefectural Government, and the city of Osaka, with the special cooperation of the International Lake Environment Committee (ILEC) and the Global Environment Center (GEC).

The themes of the Symposium were the promotion of effective transfer of environmentally sound technology and the establishment of global networks through collaboration among relevant countries and organizations, focusing on the modality of operation of UNEP/IETC.

After the opening ceremony, Keynote addresses delivered by representatives of UNEP, the Ministry of Foreign Affairs and the Environment Agency of Japan. Intensive discussions were held on four topics, namely 1) transfer of environmentally sound technologies and the role of UNEP/IETC; 2) environmental management of big cities and international cooperation; 3) environmental management of fresh water lake/reservoir basins and international cooperation; and 4) expected functions of UNEP in the post-UNCED process and proposals to strengthen UNEP.

It was suggested that UNEP/IETC should promote technology transfer through the following activities:

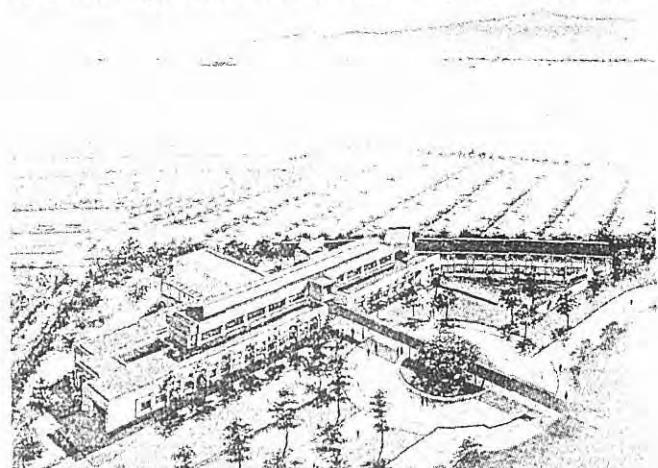
- 1) establishing an easily accessible database on relevant technological information;
- 2) training people in both public and private sectors, who are in charge of environmental management;
- 3) conducting research and studies on methodologies and mechanisms to facilitate technology transfer as well as to assess technologies suited to the needs and conditions of developing countries;
- 4) raising public awareness through information dissemina-

nation and educational programs on the role of technologies in solving environmental problems; and

- 5) providing consulting services including dispatch of experts for the purpose of assisting in solving specific environmental problems and in developing environmental policies.

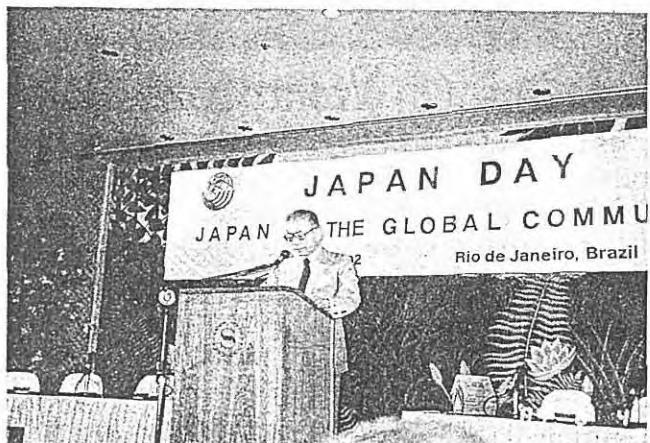
#### Commemorative Lecture by Dr. Tolba

In order to celebrate the establishment of the UNEP International Technology Centre, the Shiga Prefectural Government held a commemorative lecture in Otsu on October 29. After the opening address delivered by Mr. Shouzaburo Nakamura, Minister in charge of Global Environment Problems, Japan and Mr. Minoru Inaba, Governor of Shiga Prefecture, Dr. Mostafa K. Tolba, Executive Director of UNEP, gave a commemorative lecture entitled "Necessity, Invention an All That". In his lecture, he expressed his expectations for the future. He said, "The Centre will be among the most important Centres of excellence of UNEP. And together, they will cover all facets of technology transfer; planning, information dissemination, training particularly in the area of technology assessment, consulting and research."



## ILEC Activities in 1992

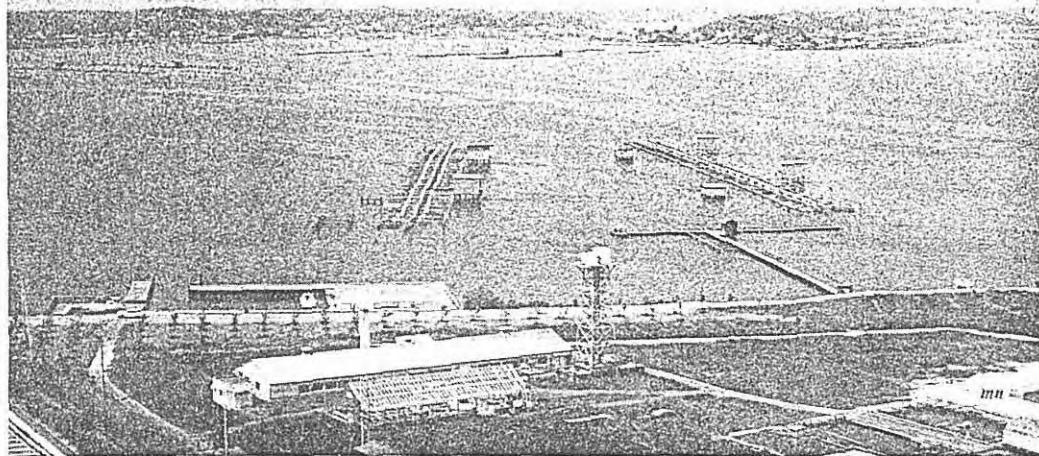
Jan 25 - Mar 26	The 2nd Group Training Course in Lake Water Quality Management in Otsu, Shiga (ILEC/JICA)		tive Director) to UNEP International Environmental Technology Centre (Kusatsu, Shiga)
Jan 26 - 31	Missions to Dublin, Ireland for International Conference on Water and Environment	Oct 30	UNEP International Environmental Technology Centre was inaugurated
Mar 22 - 27	Mission to Thailand on Lake Environmental Education	Nov 26 - 28	Participation in the symposium called "GRENTEX '92" in Yokohama
May 6 - 26	Missions to Lake Erhai in Yunnan Province, China for Inland Water Consulting Service	Dec 8	Environmental Education Pilot Class at Moriyama Kita Jr. High School (Moriyama City, Shiga)
May 31 - Jun 15	Mission to the Amazon River Basin, Brazil for Inland Water Management Consulting Service		
Jun 1 - 6	Missions to Rio de Janeiro Brazil for the United Nations Conference on Environment and Development (UNCED)		
Jun 4	ILEC activities were introduced and reported on Japan Day during UNCED		
Jun 22 - 24	Discussion on Data Collection Project between ILEC and CIP, Russia, at Otsu		
Jun 27	Environmental Education Pilot Classes at Kohoku Jr. High School (Kohoku Town, Shiga)		
Jun	Guideline book Vol.4 "Toxic substances Management in Lakes and Reservoirs" was published		
Aug 2	Participated at the 10th "Lake Aid Festival" (Kusatsu City, Shiga)		
Aug 12 - 22	Involved in UNCED Poster Exhibition (Otsu City, Shiga)		
Aug 27	Environmental Education Outdoor Pilot Class at Sawayama Primary School (Hikone City, Shiga)		
Sep 13 - 17	Sponsored a session INTECOL IV International Wetlands Conference (Ohio, U.S.A)		
Sep 29	Environmental Education Pilot Class at Daihoh Primary School (Rittoh Town, Shiga)		
Oct 15 - 20	Co-organized "Asian Wetland Symposium" 300 Participants from 24 countries (70 Overseas participants)		
Oct 29	Visit of Dr. M. Tolba (UNEP Execu-		



Mr. Kei Yamazaki (Director General of ILEC) at Japan Day during UNCED on Jun. 4 at Rio de Janeiro



Asian Wetland Symposium during Oct.15 - 20 at Lake Biwa Research Institute



Lake  
Kasumigaura

## The 6th World Lake Conference will be held in IBARAKI

As mentioned in ILEC Newsletter No. 20, the 6th World Lake Conference will be held in Ibaraki (near Tokyo) in 1995. It is the first world lake conference in Japan, since this conference was held in Otsu in 1984. Some 3,000 participants are expected to attend from 60 nations.

### IBARAKI PREFECTURE

Ibaraki (Prefecture) is located in the central part of Japan's main island (Honshu), in the northeast part of the region known as the Kanto Plain. It lies to the northeast of Tokyo with Mito, the main city in the prefecture, just 100 Km away from the capital city, while Tsukuba Science City is only 40Km from Narita (new Tokyo) Airport, the gateway to Japan from the air.

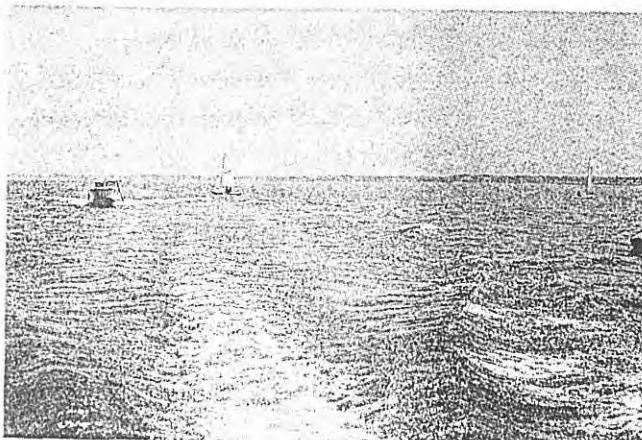
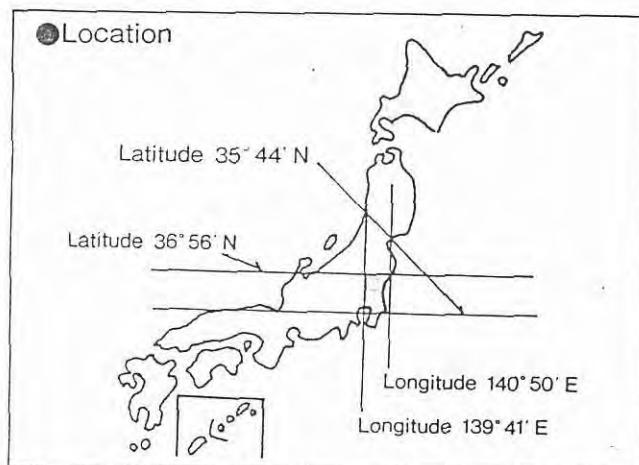
### LAKE KASUMIGAURA

Tsuchiura city, one of the venues for the conference, is located by Lake Kasumigaura. Lake Kasumigaura is the second largest lake in Japan and located near the river mouth of River Tonegawa, 65Km north-east of Tokyo.

### TSUKUBA SCIENCE CITY

Tsukuba Science City, the other venue for the conference, was built over a 20-year period at a cost of 1.5 trillion yen for the purpose of promoting science and technology in Japan and relieving the congestion of facilities in those fields in Tokyo.

Two universities, the offices of 44 national research organizations, and numerous other facilities are located within this "city" dedicated to research and study. Also, with nearly 2,000 foreign students and research trainees from over 90 countries living within this city has been developing as a community with a strong international flavor.



Lake Kasumigaura

# Training Course in Lake Water Quality Management

The "Training Course in Lake Water Quality Management" for developing countries was held mainly in Kusatsu, Shiga, Japan, from January 25 to March 25, 1993, jointly convened by ILEC and JICA (Japan International Cooperation Agency). This was the 3rd time and this training course has been holding since its inauguration as an ODA project in 1991.

The course included lectures and study visits on subjects ranging from limnology and biology to water resource management, public health, water sampling, waste water treatment, water quality and sediment analysis and the history of water pollution control in Japan.

ILEC intends to hold this course on an annual basis for about 10 trainees and hopes to make a global network of administrators/researchers in water environment.

## A List of Participants, follows:

Santiago Morales Maldonado (Bolivia)  
..... Chief of Chemical & Physical Section, Tiquina Fisheries Development Research Center  
Evo Zaniboni Filho (Brazil)  
..... Energetic Company of Minas Gereis Manager  
Jun Li (China)  
..... Assistant Director, Chief of Development Section, Human Yueyang Research Institute  
Philip Dwamena Boateng (Ghana)  
..... In charge of the Ghana Water and Sewerage Cooperation  
Ranjini Warrier (India)  
..... Deputy Director, Ministry of Environment & Forest  
Onne Indirasari Hardi (Indonesia)  
..... Staff of sub Directorate of West Region Implementation, Water Supply DGHS, the Ministry of Public Works  
Gilbert C. Gonzales (Philippines)  
..... Specialist / Chief, Water Pollution  
Hamood Mohammed Mamood Al-Hussein (Syria)  
..... General Director of GEN. ORG. for portable Water & Sanitary Drainage of Hama, Ministry of Housing & Utility  
Suwannee Lokulprakit (Thailand)  
..... Fisheries Biologist, Surin Inland Fisheries Station, Dept. of Fisheries, Ministry of Agriculture  
Emine Tamer (Turkey)  
..... Environmental Engineer (Water Quality Engineer), Ministry of Environment  
Flor Alba Oviedo de Perez (Venezuela)  
..... Engineer, Ministry of Environmental & Natural Resources

## Lecturers of the Course

Takeshi Goda  
..... Vice Director General, ILEC Foundation, Professor, Faculty of Engineering, Setsunan University

Tatuo Kira  
..... Chairperson, ILEC Scientific Committee, Director, Lake Biwa Research Institute, Shiga Prefectural Government  
Saburo Matsui  
..... Secretary, ILEC Scientific Committee, Professor, Faculty of Engineering, Kyoto University  
Hiroshi Tsuno  
..... Associate Professor, Faculty of Civil Engineering, Kyoto University  
Munetsugu Kawashima  
..... Professor, Faculty of Education, Shiga University  
Akira Kurata  
..... Head of Research Section, Lake Biwa Research Institute, Shiga Prefectural Government  
Masahisa Nakamura  
..... Head of Research Section, Lake Biwa Research Institute, Shiga Prefectural Government  
Hirotomo Maeda  
..... Senior Researcher, Lake Biwa Research Institute, Shiga Prefectural Government  
Fumitsugu Kusano  
..... Assistant Executive Director, Department of Health and Welfare, Shiga Prefectural Government  
Masaru Moriya  
..... Director, Nature Conservation Division, Shiga Prefectural Government



Trainees at National Institute for Environmental Studies in Ibaraki



Trainees at lecture room in ILEC in Kusatsu

# LAKES OF THE WORLD



Dead Sea

## Salt Lakes

by W. D. Williams Department of Zoology University of Adelaide Australia

The total volume of inland water that is saline (i. e. with a salinity  $> 3 \text{ gL}^{-1}$ ) is only slightly less than the volume of inland fresh water (0.008 : 0.009 percent of total biospheric water). Much of this saline water (like fresh water) is held in a few very large lakes, notably the Caspian and Aral Seas. Even so, salt lakes are common and geographically widespread, occurring on all continents. They are particularly common in semi-arid areas (less than 40% of global land area).

In general, salt lakes have attracted rather little attention from limnologists although they have a variety of important uses and values.

Economically, they are important as a source of minerals. Salt ( $\text{NaCl}$ ) is particularly important but other minerals have become of increasing interest, such as uranium, lithium and zeolites. Inflow streams are often important as a source of fresh water. Moderately saline lakes are a source of fish and other foods. In more saline lakes, *Artemia* (significant in the aquaculture industry) and its cysts are of considerable commercial value, and several organisms can be harvested from which fine chemicals, proteins and other organic products may be obtained (especially *Dunaliella*, a source of  $\beta$ -carotene and glycerol, and *Spriulina*, a source of protein). Certain salt lakes are said to have therapeutic properties. Finally, the economic value of salt lakes as natural "banks" from which genes conveying halotolerance may be drawn should not be overlooked.

So far as the cultural value of salt lakes is concerned, this is not as high as that for fresh waters - reflecting the relative isolation of salt lakes - but there are several exceptions. The Aral and Caspian Seas figure prominently in the classical literature of central Asia, as does the Dead Sea in the history of the Middle East and eastern Europe. Many salt lakes of North and South America had special local cultural significance also, e. g. Mono Lake, California.

Attitudes to the aesthetic values of salt lakes have been divided and have changed with time. Certainly, many early European explorers did not rate the aesthetic appeal of salt lakes highly when first sighted in remote areas. However, Mono Lake, California, is now perceived as a lake of outstanding beauty, a feature not lessened by the recently exposed tufa columns. Lake Nakuru, Kenya, and the Etosha Pan, Namibia, and their associated flamingo and wildlife populations, provide the focus of an important tourist industry drawing visitors worldwide who come to photograph and observe their beauty. Flamingos, both at Lake Nakuru and elsewhere, have long been regarded as birds of great beauty and grace. The cultural and aesthetic values of many salt lakes mean that many are visited by tourists to experience these values at first hand. Fishing, swimming and sailing are also recreational activities associated with lakes of moderate salinity.

Salt lakes are of particular value to a number of

scientific disciplines. To ecologists, because of their habitat homogeneity, discreteness, low taxonomic diversity, and value as a source of material for microecosystem studies; to physiologists, because of nature of biological adaptations to the environmental extremes operating within salt lakes (high salinity, low oxygen concentrations, high light exposure); to biochemists, because of the enzyme mechanisms used by halophiles, and the mechanisms by which Halobacteria fix light energy; and to evolutionary biologists, because *inter alia*, stromatolites are amongst the oldest known forms of life on earth (3,000 million years B.P.). Interest to non-biological scientists, especially geochemists, is equally as wide. Finally, the sensitivity of salt lakes to relatively small climatic changes means that they are of considerable interest to palaeolimnologists, an interest recently catalysed by impending global climatic change.

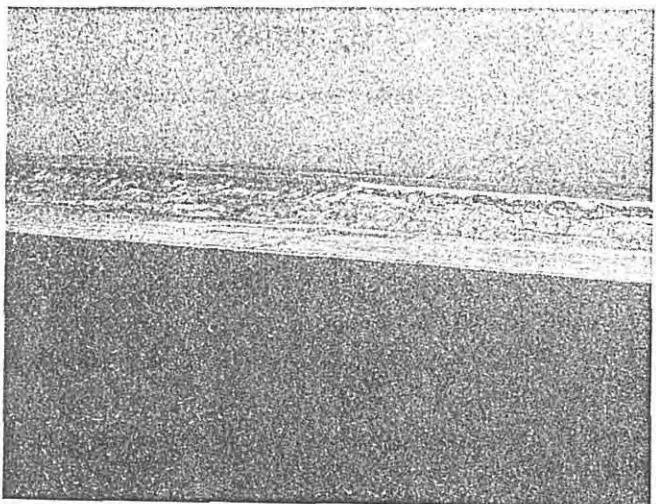
At a time of increasing environmental change and interest, the educational values of salt lakes should not be undervalued in regions where they are close to educational institutions. Microecosystems derived from salt lakes are useful teaching tools: they involve simple communities, are easy to manipulate, and a wide range of experiments can be undertaken using them.

Not least amongst the values of salt lakes, though the most difficult to measure, is their value as an integral part of the biosphere: their biological diversity and ecological processes cannot be excluded from global diversity and biospheric processes with any certainty that exclusion will not have profound repercussions. One clear value in this context is their role as feeding, refuge and breeding sites for many migratory or nomadic bird species.

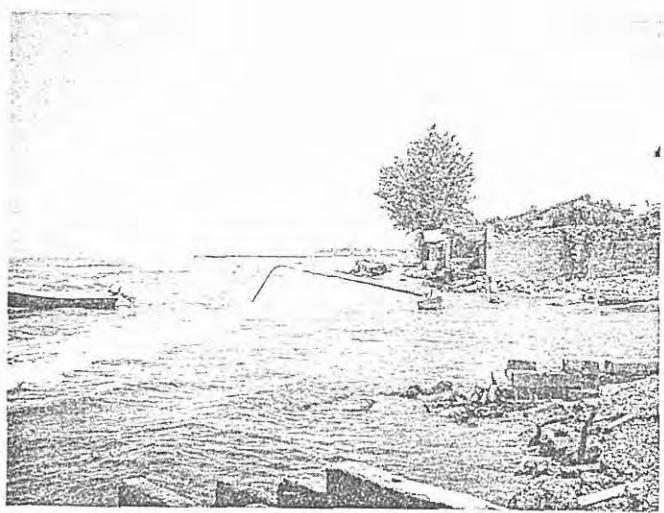
Notwithstanding their many values and the relative isolation of salt lakes, human impacts upon them have been numerous, significant, diverse, comprehensive and mostly irreversible. Almost without exception, impacts have been deleterious, with many already irreparably damaged.

Effects reflect the diversity of impacts but with comprehensive overlap: different impacts often have similar effects, especially those (the most ubiquitous) resulting in increased salinities. Impacts may be upon the catchment or drainage basin, result from diversion of inflowing waters, involve the addition of water products or pollutants, directly affect the biota, cause physical change to the lake basin itself, and will follow global climatic and associated changes. Not included, though its importance (and thus effect) can scarcely be overestimated, is human ignorance: the perception that salt lakes have limited uses and values, are expendable "wastelands",

and do not merit serious consideration as inland waters worth conserving or study. I hope this article will dispel that particular myth.



Aral Sea



Caspian Sea

# Forthcoming Conference

5th International Symposium on Society and Resource Management, Call for Papers

Date: June 7 - 10, 1994

Place: Colorado State University, Colorado, United States

Organization: The Human Dimensions in Natural Resources Unit at Colorado State University

The symposium will embrace a wide variety of topics but its main focus is on improving the utility of social science for natural resource managers and policy makers.

Those wishing to present at the conference should submit abstracts no longer than two double-spaced, typewritten pages by November 1, 1993, to the program chair.

Micheal J. Manfredo, Program Chair

Human Dimensions in Natural Resources Unit  
Colorado State University, Fort Collins  
CO 80523, U.S.A  
TEL : (+1) 303-491-1982  
FAX : (+1) 303-491-1101

# Call For Articles

ILEC Newsletter welcomes readers' contributions, such as "Lakes of the World", notification of international conference, book reviews and others. Kindly send us any other information you feel would be pertinent. Please join us.

All submissions to:

ILEC Secretariat

3-13-25 Kusatsu, Kusatsu-city, Shiga 525, Japan



INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

Secretariat

3-13-25 Kusatsu, Kusatsu-city, Shiga 525, Japan  
Tel : +81-775-67-2155. Fax : +81-775-67-2156



PRINTED MATTER

AIR MAIL