



**International Conference on Isotopes in  
Environmental Studies –  
Aquatic Forum 2004**

**Monte-Carlo, Monaco  
25 – 29 October 2004**

Organized by the  
International Atomic Energy Agency (IAEA)

Co-sponsored by the  
Intergovernmental Oceanographic Commission (IOC) of UNESCO  
Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée  
(CIESM)

Hosted by the  
Government of the Principality of Monaco

**ANNOUNCEMENT AND CALL FOR PAPERS**

## **1. BACKGROUND INFORMATION**

The aquatic environment, both marine and freshwater systems, has been widely impacted by human activities and its protection against further deterioration and the sustainable use of its resources require further investigations to better understand the main processes affecting the present situation as well as possible developments in the future.

Isotopes have often been used as tools for the investigation of environmental processes and changes, transport and mixing processes in ecosystems, atmosphere-ocean interactions, transport of tracers through surface and groundwater systems, the response of atmospheric, hydrological and marine systems to climate change and also for the prognosis of future environmental conditions.

The Conference will provide an important forum for evaluating the state of the marine and freshwater environments, defining the current scientific understanding of environmental processes and climate change and improving risk assessment approaches. The meeting will involve leading scientists in the field of environmental protection and representatives from relevant UN bodies and other international organizations.

## **2. OBJECTIVE**

The principal objective of the Conference will be to review recent achievements in the use of isotopic techniques to study marine and terrestrial environmental processes, transport of contaminants in the aquatic environment, climate change, computer modelling of environmental processes, present state of the art of isotopic techniques, data validation and syntheses, and the development of geographical information systems.

## **3. SCOPE OF THE CONFERENCE**

The Conference will provide a forum for evaluating the current understanding of environmental processes, important for the protection of the marine and terrestrial environments in the future. It will review recent achievements in applications of isotopes to study atmosphere-hydrosphere-ocean interactions and climate change, to study the behaviour of isotopes in the marine and terrestrial environments, and to trace the origin and fate of contaminants from land-based sources to oceans and seas.

The Conference will provide inputs to Inter-Agency sponsored regional and global environmental programmes. It will enable participants to interact with leading experts in the field and to discuss future trends in environmental isotopic studies.

Comprising a core programme of plenary sessions with a series of oral and poster sessions and specialist discussions on key topics, the Conference will serve as one of the main environmental scientific events of the year 2004. Its findings and recommendations are expected to influence further research and actions in environmental protection.

#### 4. TOPICS

##### **Sources of contaminants in the environment:**

Land-based discharges; atmospheric discharges; nuclear weapons testing; dumping of wastes; accidents on land and at sea; river inputs; non-nuclear industries; oil industries; sources of natural radionuclides; depleted uranium.

##### **Aquatic ecosystems:**

Atmosphere-land-sea systems; large-scale transport; compartmental dynamics; freshwater systems; marine systems; coral reefs.

##### **Atmosphere-hydrosphere interactions:**

Water cycle; processes in the atmosphere and hydrosphere; atmospheric moisture and precipitation; transport of water vapour; water and carbon cycles; atmospheric greenhouse gases; reconstruction of past levels of greenhouse gases; sinks of greenhouse gases; CO<sub>2</sub> sequestration.

##### **Groundwater dynamics:**

Hydrological processes; recharge and dynamics of aquifers; residence time; dating of groundwater; groundwater sustainability; groundwater-surface water interaction; groundwater contamination; migration of contaminants; paleowaters.

##### **Groundwater-seawater interactions:**

Submarine groundwater discharge; transport of contaminants; nutrient and phosphate fluxes; marine impacts on freshwater sources; groundwater-seawater balance; saltwater intrusion; groundwater management in coastal regions.

##### **Coastal zones:**

Characterization of the sources of contaminants; coastal dynamics; processes in coastal waters and sediments; eutrophication and blooms; HABs; impacts of changes in up-welling on fisheries; health of wetlands; estuaries; contaminant chronologies; isotopic markers; colloidal processes; bioaccumulation.

##### **Oceans and seas:**

Transport of isotopes in the oceans; carbon fluxes; processes in the water column; water dynamics; oceanic circulation; residence times; oceanic general circulation models; sediment dynamics; sediment-water interactions; re-suspension of isotopes from sediment.

##### **Large aquatic systems:**

Marine isotopic studies in the Mediterranean, Baltic, Black and Caspian Seas; isotopic lake studies; environmental change studies on water balance; river inflow; evaporation losses; sea level changes; water circulation; history of contamination.

##### **Climate change:**

Major climatic phenomena; the response of hydrological and marine systems to climate change; Pacific Ocean phenomena; Atlantic Ocean phenomena; Arctic Ocean phenomena; isotopes in natural archives in deep sea sediments, corals, ice sheets, tree rings; palaeowaters and palaeoclimate; climate models.

##### **Radiation protection of the aquatic environment:**

Radiation assessment; radionuclide transfers and uptakes; radiotracer techniques; bioaccumulation; distribution coefficients; concentration factors; radionuclide speciation and bioavailability; mussel watch; radioactive particles; individual vs. population approach; effects on organisms; effects on ecosystems; case studies.

**Trace elements and organic contaminants:**

Inputs; heavy metals; methylmercury; organochlorines; pesticides; PCBs; hydrocarbons; antifouling agents; nutrients; phosphates; transport; biogeochemical cycles; accumulation; speciation; migration; bioindicators; bioimpacts; ecotoxicity studies; mussel watch; finger-printing; impact assessments; occupational exposure.

**Environmental modelling:**

Global circulation models; atmospheric models; atmosphere-ocean coupling; hydrodynamic modelling; oceanic circulation models; compartmental models; dispersion models; modelling processes in the water column; modelling sediment dynamics; validation of models.

**Development of radiometrics techniques:**

Alpha, beta and gamma-spectrometry at very low-levels; liquid scintillation spectrometry; anti-cosmic and anti-compton gamma-spectrometry; underground facilities; radioactive contamination of construction materials; radon contamination; analysis of noble gases; Monte-Carlo modelling.

**Development of Mass Spectrometry (MS) techniques:**

New MS systems; MS of light isotopes; Inductively Coupled Plasma Mass Spectrometry (ICPMS); Thermal Ionisation Mass Spectrometry (TIMS); Secondary Ions Mass Spectrometry (SIMS); Resonant Ionisation Mass Spectrometry (RIMS); coupling of gas chromatography with MS; new dating techniques; isotopic finger-printing methodologies.

**Development of Accelerator Mass Spectrometry (AMS) techniques:**

Mini-AMS systems; coupling of gas chromatography with AMS; organically bound isotopes; micro-sample procedures; particulate organic matter; ice studies; cosmogenic isotopes; light isotopes; heavy isotopes; environmental isotope studies; *in situ* studies; time series in tree-rings, corals and sediments; Mn nodules and crust; new isotopic studies.

**Radiochemical techniques:**

Pre-treatment of samples; separation techniques for fission and activation products; actinides; long-lived radionuclides; rapid methods; treatment of small volume samples for MS; contamination problems; clean laboratories.

**Environmental monitoring for emergency response and safeguards**

Rapid detection systems; screening techniques; aerosols; atmospheric gases; biomonitors; underwater monitoring; data transfer and evaluation.

**Quality assurance/quality control:**

Reference materials; certification procedures; intercomparison exercises; proficiency tests; data evaluation; quality assurance/quality control protocols; statistical treatment of data; treatment of ultra-low counting rates; accreditation.

**Remote sensing of environmental contamination:**

Aerial and satellite monitoring; *in situ* analyses; continuous underwater monitoring; *in situ* gamma-mapping of sediments; ROVs; AUVs; satellite data transmission and evaluation; calibration procedures; data evaluation and presentation; isomaps.

**GIS and databases:**

Data synthesis; time trends; predictions; data presentation; GIS; databases; web sites; contamination maps.

**Global and regional environmental studies:**

Atmosphere; oceans; regional seas; lakes; international projects; mussel watch; national projects of global importance; socio-economic impacts.

**5. EXPECTED RESULTS**

It is expected that the Conference will provide new information in synthesised form on :

- the present state of the art isotopic methods used in environmental studies;
- sources of radioactive and stable isotopes (and corresponding contaminants labelled with these isotopes) in the marine and terrestrial environments;
- behaviour, transport and distribution of radioactive and stable isotopes in the marine and terrestrial environments;
- spatial and temporal trends in the distribution of isotopes in the environment, early warning signals and possible scenarios for the future;
- atmosphere-hydrosphere interactions;
- groundwater dynamics and management;
- groundwater-seawater interactions, saltwater intrusion;
- indicators of past climatic and environmental changes and predictions for the future;
- processes in coastal regions and integrated coastal zone management;
- large aquatic systems (lakes and semi-enclosed seas);
- processes in the oceans and seas, water and sediment dynamics;
- protection of the aquatic environment against radioactive and non-radioactive contaminants;
- computer modelling of environmental processes and distribution of tracers in the aquatic environment;
- data management using Geographical Information Systems;
- development of new isotopic techniques.

**6. PROGRAMME STRUCTURE**

The Conference will include several types of presentations:

- **Key note lectures** – invited reviews on recent developments in environmental isotopic studies;
- **Oral presentations** – original contributions covering the Conference topics;

- **Poster presentations** – original contributions covering the Conference topics.

Oral presentations will be organized as plenary sessions, as well as three parallel sessions.

Further, it is expected that several accompanying meetings and workshops will take place during the Conference.

## 7. AUDIENCE

The Conference is aimed at professionals involved in a broad spectrum of disciplines including marine sciences (ocean, seas, coastal zones), hydrosphere, atmosphere, climate change, environmental modelling, protection of the environment, GIS, emergency response, development of isotopic techniques and quality assurance/quality control. Government officials, including policy makers and persons responsible for assessment of environmental contamination would also benefit from attending the Conference.

## 8. PARTICIPATION

All persons wishing to participate in the Conference are requested to complete a Participation Form (Form A) and send it as soon as possible to the competent national authority (Ministry of Foreign Affairs or national atomic energy authority) for subsequent transmission to the IAEA. A participant will be accepted only if the Participation Form is transmitted through the competent official authority of a Member State of the IAEA or by an organization invited to participate.

Participants whose designations have been received by the IAEA will be notified directly two to three months before the Conference. This information will be posted on the Conference web page: <http://www-pub.iaea.org/MTCD/meetings/meetings.asp>.

## 9. EXPENDITURES

No registration fee is charged to participants. As a general rule, the IAEA does not pay the cost of attendance, i.e. travel and living expenses, of participants. However, limited funds are available to help meet the cost of the attendance of selected specialists mainly from **developing countries with low economic resources**. Generally, not more than one grant will be awarded to any one country. If governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the IAEA to this effect. Governments should ensure that applications for grants:

- (a) be submitted by **30 April 2004**;
- (b) be accompanied by a duly completed and signed Grant Application Form (see attached Form C).

Applications that do not comply with the conditions stated under (a) and (b) cannot be considered. The grants awarded will be in the form of lump sums and will usually cover only part of the cost of attendance. It should be further noted that grants are generally given only to those presenting a paper or poster.

## 10. PAPERS/POSTERS AND CONFERENCE PROCEEDINGS

Concise papers on issues falling within the topics outlined in Section 4 may be submitted as contributions to the Conference. All papers, apart from invited review papers, must present original work; they should not have been published elsewhere.

### (a) Submission of Synopses

Persons who wish to present a paper or poster for the Conference must submit a synopsis (in English), together with the completed Form for Submission of a Paper (Form B) and the Participation Form (Form A) to the competent national authority for official transmission to the IAEA in time for them to be received by the IAEA by **30 April 2004**. The synopsis should also be sent electronically to [Conf.Monaco@iaea.org](mailto:Conf.Monaco@iaea.org). Authors are urged to make use of the Synopsis Template in Word 2000 on the Conference web page. The specifications and instructions for preparing the synopsis and how to use the synopsis template are given in the attached "Instructions on how to prepare the synopsis and how to submit it electronically". Attached to this announcement is a sample synopsis. Given the number of papers anticipated and the need to provide ample time for discussion, the number of papers that can be accepted for oral presentation is limited. Authors who would prefer to present their papers in a poster session are requested to indicate this preference. The synopsis will be considered by the Programme committee only if the Participation Form A and Paper Submission Form B have been received by the IAEA through official government channels (see Section 12). Furthermore, the Secretariat reserves the right to exclude contributions that do not comply with its quality standards and do not apply to one of the topics in Section 4 above.

### (b) Acceptance of papers/posters

Authors will be notified by **30 June 2004** whether their papers have been accepted by the Programme Committee on the basis of the synopses for oral presentation or for presentation as a poster. They will be informed of the assigned paper/poster number and session of presentation. The synopsis, if accepted, will be reproduced in unedited form in the Book of Synopses.

### (c) Distribution of Documents and Proceedings

A preliminary programme of the Conference will be sent to all officially designated participants well in advance of the Conference and will also be available on the Conference website <http://www-pub.iaea.org/MTCD/meetings/meetings.asp>. The final Programme and a Book of Synopses accepted for the Conference will be available free of charge upon registration at the Conference. It is expected that the Conference Proceedings will be published as a special issue of The Science of the Total Environment and as an IAEA TECDOC.

## 11. SECRETARIAT

The address of the **Scientific Secretariat** is:

International Atomic Energy Agency  
 Marine Environment Laboratory  
 4 Quai Antoine 1er  
 MC 98012 Monte-Carlo, MONACO  
 Telephone No. (+377) 97977272  
 Fax No. (+377) 97977273  
 Electronic mail: [Conf.Monaco@iaea.org](mailto:Conf.Monaco@iaea.org)

The Scientific Secretary of the Conference is Mr. P. Povinec, (telephone ++377 9797 7272, e-mail address: [p.povinec@iaea.org](mailto:p.povinec@iaea.org)). Correspondence on scientific matters should be sent to the Scientific Secretary.

The address of the **Conference Services Secretariat** is:

International Atomic Energy Agency  
 IAEA-CN-118  
 Vienna International Centre  
 Wagramer Strasse 5  
 P.O. Box 100  
 A-1400 Vienna, AUSTRIA  
 Telephone No.: +43 1 2600 (0) plus extension  
 Telefax No.: +43 126007  
 Electronic mail: [official.mail@iaea.org](mailto:official.mail@iaea.org)  
 Internet <http://www.iaea.org>

Conference organization is provided by Ms. M. Solarik-Leahy, Conference Services Section, Division of Conference and Document Services (telephone no. + 43 1 2600/ext. 21321 or 21311; e-mail address: [m.solarik-leahy@iaea.org](mailto:m.solarik-leahy@iaea.org)). Correspondence on administrative matters should be sent to the IAEA Conference Services Section.

## 12. CHANNELS OF COMMUNICATION

The **Participation Form (Form A)** and if applicable, the **Grant Application Form (Form C)**, should be sent through the official channel of the IAEA (Ministry of Foreign Affairs or national atomic energy authority) for subsequent submission to the **Conference Services Secretariat**. The **completed Form for Submission of a Paper/Poster (Form B)**, together with a copy of each synopsis, should be sent through the official channel of the IAEA (Ministry of Foreign Affairs, national atomic energy authority) for subsequent submission to the **Scientific Secretariat**. The synopsis should also be sent electronically to [Conf.Monaco@iaea.org](mailto:Conf.Monaco@iaea.org).



### 13. VENUE, DATES AND WORKING LANGUAGE

The Conference will take place at the Grimaldi Forum, Monte-Carlo, Monaco, from 25 – 29 October, 2004.

The working language of the Conference will be English. All communications must be sent to the Agency in English.

### 14. ACCOMMODATION

Detailed information on accommodation will be sent to designated participants well in advance of the meeting and will also be available on the Conference website.

### 15. VISAS

Designated participants who require a visa to enter Monaco should submit an application to the nearest diplomatic or consular representative of France as soon as possible.

### 16. KEY DATES/DEADLINES

Deadline for receipt of participation forms (**Form A**), paper submission forms (**Form B**) and **hard copies of synopses** through official channels.....**30 April 2004**

Deadline for receipt of grant application forms (**Form C**) (if applicable) through official channels.....**30 April 2004**

The **electronic version of the synopses** must be received by the Scientific Secretariat not later than **30 April 2004**.

Authors will be informed by **30 June 2004** whether their contributions have been accepted for presentation at the Conference and for inclusion in the Book of Synopses.

### 17. CONFERENCE WEB SITE

Please visit the IAEA conference web site regularly for any new information regarding this conference under:

<http://www-pub.iaea.org/MTCD/meetings/meetings.asp>.