**Key speakers** (in alphabetical order)
Dr. Peter Dillon (CSIRO, Australia)  
Dr. N. C. Ghosh (NIH, India)  
Dr. D. Gnanasundar (CGWB, India)  
Dr. V. C. Goyal (NIH, India)  
Dr. Gesche Grützmacher (KompetenzZentrum Wasser Berlin, Germany)  
Prof. Elango Lakshmanan (Anna University, India)  
Mr. Bertram Monninkhoff (DHI, Germany)  
Dr. Declan Page (CSIRO, Australia)  
Ms. Parimala Renganayaki (Anna University, India)  
Prof. Ramaswamy Sakthivadivel (Anna University, India)  
Prof. Michael Schneider (Freie University, Germany)  
Dr. Saroj Sharma (UNESCO IHE, Netherlands)  
Dr. Christoph Sprenger (Freie University, Germany)  
Dr. Markus Starkl (Centre for Environmental Management and Decision Support, Austria)  
Mr. M. Thirunavukkarasu (SPT Consultancy Services, Chennai)  
Prof. Thomas Wintgens (University of Applied Sciences and Arts Northwestern Switzerland)  
Ms. Anna Zabel (DHI, Germany)

**Who should attend?**
This course is suitable for Ph.D students and young scientists in India working on groundwater management by MAR. Professionals and scientists from water resources departments, water supply departments, NGO’s, experts from Universities/colleges/institutes, private industries and consultants.

**Registration fee**
The registration fee is Rs. 1,000/- which has to be paid as a demand draft payable at “National Institute of Hydrology, Roorkee”. The number of participants is limited to 25. Young researchers/professionals (preferably less than 40 years of age) will be chosen based on their field of research, expertise etc. No TA/DA will be paid. The participants are requested to make their own arrangements for boarding and lodging.

**Registration form**

Two Day Course on  
**Managed Aquifer Recharge: Methods, Hydrogeological Requirements and Impact Assessment**

**Last date for registration: 1st November 2012**  
(selected participants will be intimated by 5th November 2012)

- **Title:** Dr./Mr./Ms.:  
- **Name:**  
- **Date of birth:**  
- **University/Organisation/Institute:**  
- **Designation:**  
- **Area of research:**  
- **Corresponding address:**  
- **Phone with area code:**  
- **Email:**  
- **Registration fee:** DD no.:  
- **Signature with date:**  

Please send the registration form by post/email to:

**Prof. L. Elango,**  
Department of Geology,  
Anna University, Chennai – 600 025.  
Phone: +91-44-2238445, 50, 57  
Email: elango34@hotmail.com; elango@annauniv.edu  
www.elango.5u.com

with copy to  
**Dr. V. C. Goyal,**  
Head of Research Coordination & Management Unit  
Email: vcg@nih.ernet.in
**Introduction**

Increasing demand for water has resulted into over dependence on groundwater, especially in regions where surface water resources are limited and temporal rainfall is uneven. Exploitation of groundwater for various purposes has resulted in depletion of resources and rapid decline in groundwater table in several parts of the world. In order to balance the overdraft of groundwater, it is necessary to increase the rainfall recharge which will result in increase of groundwater storage and improvement in the water quantity.

Managed Aquifer Recharge (MAR) is carried out in many parts of the world including India to increase the rainfall recharge and combat with the present water crisis. Implementation of MAR requires knowledge about the location, quantity and quality of water recharged. In urban areas, MAR can provide effective storage for desalinated seawater, recycled water, storm water. Methods of MAR currently include aquifer storage and recovery (ASR), aquifer storage, infiltration ponds, infiltration galleries, soil aquifer treatment, percolation tanks and check dams. MAR can be used to address a wide range of water management issues, including, storing water in aquifers for future use, stabilizing or raising groundwater levels where over-exploited, impeding storm runoff and soil erosion, improving water quality and smoothing fluctuations, maintaining environmental flows in streams and rivers, managing saline intrusion or land subsidence, disposal or reuse of waste and storm water.

**Saph Pani project**

The Saph Pani (Hindi word meaning potable water) project “Enhancement of natural water systems and treatment methods for safe and sustainable water supply in India” aims to study and improve natural water treatment systems, such as river bank filtration (RBF), MAR and wetlands in India, building local and European expertise in this field.

The project aims to enhance water resources and water supply, particularly in water stressed urban and peri urban areas in different parts of the Indian sub-continent. This project is co-funded by the European Union under the Seventh Framework (FP7) scheme of small or medium scale focused research projects for specific cooperation actions (SICA) dedicated to international cooperation partner countries.

The objective of this project is to strengthen the scientific understanding of the performance-determining processes occurring in the root, soil and aquifer zones. The removal and fate of important water quality parameters, such as pathogenic micro-organisms and faecal indicators, organic chemicals, nutrients and metals will be considered. The hydrological characteristics (infiltration and storage capacity) and the ecosystem functions will also be investigated since they influence the local or regional water resources management strategies (e.g. by providing buffering of seasonal variations in supply and demand). The project focuses on a set of specific case studies in India. These include a range of natural water systems and engineered treatment technologies investigated by different work-packages including RBF, MAR and constructed wetlands. For more info visit www.saphpani.eu

**About Chennai**

Chennai (formerly Madras) is the capital city of the Indian state of Tamil Nadu. Located on the Coromandel Coast of the Bay of Bengal, it is a major commercial, cultural, and educational centre in South India, while the port of Chennai is the second largest port in India. Chennai is an important centre for Carnatic music and the Bharata Natyam, a classical dance form. Chennai has the second longest beach in the world, the Marina Beach.

**About Anna University**

Anna University is a premier technical university in Tamil Nadu, India which was formed on 4th September 1978. It offers higher education in Engineering, Technology and allied Sciences relevant to the current and projected needs of the society. Besides promoting research and disseminating knowledge gained there from, it fosters cooperation between the academic and industrial communities. Situated in the southern part of Chennai city, the University's main campus extends over 100 hectares. Later, it has become a large, highly renowned affiliating type University, having brought into its fold over 500 Self-financing Engineering Colleges six Government Colleges and three Government-aided Engineering colleges located in various parts of Tamil Nadu State.

**Themes of the course**

- Geological and hydrogeological aspects of MAR
- Methods of MAR and hydrogeological characterisation
- MAR with reclaimed water
- Pre-treatment and post-treatment for MAR systems
- Groundwater modelling for assessment of impact of MAR structures
- MAR practices in India

**About this course**

As a part of this Saph Pani project a training course on “Bank filtration for sustainable drinking water supply in India” was organised in April 2012. The second short term course aims to

- Introduce the participants to MAR at national and international level
- Provide knowledge on the basics of artificial recharge by MAR, methods, hydrogeological characterisation
- Give an insight into case studies in India and abroad