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# SIXTH INTERNATIONAL GROUNDWATER CONFERENCE (IGWC-2015)

on

*Exploration, Assessment and Management of Groundwater Resources in Arid and  
Semi-Arid regions*

*December 09-11, 2015*

**Organized jointly**

by

**Department of Civil Engineering  
SRM University, Chennai  
Tamil Nadu, India  
and**

**Association of Global Groundwater Scientists (AGGS), India**

**In collaboration with**

Central Groundwater Board, Govt. of India  
CSIR-National Geophysical Research Institute, Hyderabad  
TWAD Board, Govt. of Tamil Nadu, Chennai  
Centre for Water Resources, Anna University, Chennai  
Water Technology Centre (WTC), TNAU, Coimbatore, India  
Department of Applied Geology, Madras University, Chennai  
Department of Geology, Anna University, Chennai  
GEOFORUM, Maharashtra

## ABOUT THE CONFERENCE

Groundwater resources in arid and semi-arid regions with limited renewable potential have to be managed judiciously to ensure adequate supplies of dependable quantity and quality. It is a natural resource with economic, strategic and environmental value, which is under stress both due to changing climatic and anthropogenic factors. Therefore the management strategies need to be aimed at sustenance of this limited resource. In India, and also elsewhere in the world major parts of the semi-arid regions are characterized by hard rocks and it is of vital importance to understand the nature of the aquifer systems and its current stress conditions.

Monitoring water level over the last four decades (since 1970 onwards), in many parts of India have provided clear evidence of a long-term water-level decline, as a result of increased groundwater abstraction. This resulted in the deterioration of water quality and the widespread drying-up of wells following a 'failure' of the monsoon. Deepening of wells does not appear to be a viable option as most wells already fully penetrate the shallow weathered aquifer. This has resulted only debt trap of farmers particularly from the monsoon climatic countries such as India and African continent. It is under this condition, there were many institutions have been established in India to carry out extensive research on groundwater resources assessment and later management aspect. Central Groundwater Board (CGWB) was established during 1974, Indian Council of Agricultural Research (ICAR), New Delhi has established nine groundwater utility centres at various parts of the country since 1975 onwards. CSIR-NGRI, Hyderabad started groundwater hydrogeology group during 1974-1975 to carry out groundwater exploration through geophysical studies, assessment through geo-hydrological studies (pumping test etc.), estimation of rainfall recharge through isotope techniques and management by mathematical modeling. National Institute of Hydrology (NIH) was started during 1977 at Roorkee in Uttarkhand and various departments at IITs and Universities also started groundwater research around the same time. Many State Governments also started groundwater Departments to carry out groundwater research around the same time.

Though the groundwater research was started much earlier in the western countries, it is during 1970's and eighties the numerical modeling of groundwater flow and mass transport got importance and a lot of good work started and many scientists have contributed immensely towards the development of computer program and modeling. Dr. MacDonald & Harbaugh of USGS who developed the MODFLOW during 1988 is the turning point in the modeling technology of groundwater flow and mass transport in multilayer porous medium.

Apart from modeling aspect during the last four decades, the development of electrical resistivity imaging technique and software 2D and 3D developed by Ron D. Parker and his colleagues at the University of Birmingham, UK to delineate the fresh water zone as well contaminant zone is one of the breakthrough in the groundwater prospecting aspect. During the same period the application of remote sensing and GIS started playing vital role in the assessment of groundwater resources and water quality. Pioneer research work is under way in quantification of soil moisture movement and nutrient migration in the vadoze zone and sea water intrusion studies for coastal aquifer development. The present trend is to study the impact of climate change on groundwater resources and hope to get better results in the near future.

Thus the achievements through scientific development in exploration, assessment and management are commendable from seventies till today could be termed as the **golden age of groundwater research**.

Taking in view of the above glorious period, the sixth International Ground Water Conference (IGWC-2015) is planned during December 09-11, 2015 at SRM University, Chennai, India.

The Conference is aimed at to bring Scientists, Researchers, Students, Engineers, Water Resources Specialists, Government Administrators, NGOs and all those interested in groundwater and environment problems to a common platform and offer the opportunity to exchange ideas, knowledge, experience, techniques and know how in various aspects of groundwater research carried out in the last few decades in India and elsewhere.

Dr. M.Thangarajan who started his groundwater research work during 1975, carried out an extensive work on groundwater modeling both in India and abroad. He had successfully organized two International Groundwater Conferences (IGW-89 & IGWC-2002) at NGRI, Hyderabad also coordinated four other International Conferences in India (IGWC- Series) and will be the Advisor cum Coordinator for the Sixth International Groundwater Conference (IGWC-2015) at SRM University, Chennai, India.

# **SCIENTIFIC THEMES FOR IGWC-2015**

## **Sixth International Groundwater Conference (IGWC-2015)**

**(SRM University, Chennai, India, December 09-11, 2015)**

### **TS-1: ASSESSMENT OF GROUNDWATER RESOURCES AND AQUIFER CHARACTERIZATION**

1. *Geophysical and imaging Techniques*
2. *Application of RS-GIS*
3. *Characterization of aquifer parameters*
4. *Isotopes in estimation of effective porosity, dispersion and matrix diffusion*
5. *Aquifer mapping for delineation of fresh water zones*
6. *Issues related to the acquisition of hydro-aquifer data base and its management aspects*
7. *Geo-statistics in the analysis of sparse geo-hydrological data*

### **TS-2: GROUNDWATER RECHARGE ESTIMATION PROCEDURES AND ISSUES**

1. *Various techniques for estimation of rainfall recharge*
2. *Artificial recharge methods for augmentation groundwater resources*
3. *Estimation techniques to quantify the irrigation return to saturated aquifer*
4. *New techniques to quantify evaporation and evapotranspiration*
5. *Conjunctive use of surface and groundwater for optimal exploitation*
6. *Quantification of aquifer recharge from surface water bodies*
7. *Managing Recharged Aquifer (MRA)*

### **TS-3: IMPACT OF CLIMATE CHANGE ON FRESHWATER RESOURCES & AGRICULTURE**

1. *Human activities on the cropping pattern and the socio & economic conditions of rural poor and its remedial measures*
2. *Simulation and Programming techniques in Agricultural Production*
3. *Drip irrigation to ensure security of water*
4. *Optimal cropping pattern for sustainable development and management*
5. *Variation of soil characteristics (Permeability & Storativity) due to frequent draught condition*
6. *The impact of drought and floods on groundwater resources and mitigation process*
7. *New Technologies for Crop irrigation with special reference to rice cultivation*

#### **TS-4: GROUNDWATER POLLUTION AND ITS REMEDIAL MEASURES**

1. *Soil water chemistry for groundwater pollutant migration*
2. *Sea water intrusion mechanism and evolving optimal management plans*
3. *Fluoride and Arsenic contamination in groundwater*
4. *Impact of mining activities on regional groundwater flow and environment*
5. *Geochemical Modeling*
6. *Disposal measures for domestic, industrial and nuclear wastes*
7. *Environment impact assessment due to human induced activities*
8. *Waste water treatment and management*
9. *Mitigation measures against pollutant migration in groundwater*

#### **TS-5: FLOW AND MASS TRANSPORT MODELS IN THE ASSESSMENT MANAGEMENT OF GROUNDWATER RESOURCES**

1. *Groundwater flow and mass transport modeling*
2. *Parameter estimation through inverse modeling*
3. *Sea water intrusion and management of coastal aquifer system*
4. *Problems & challenges in modeling soil moisture movement in the vadoze zone*
5. *Integrated Remote Sensing and Geographical Information System*
6. *Stochastic theory in characterization of fracture geometry and its parameters*
7. *Application of Equivalent porous medium (EPM), Dual porosity (DP) and Discrete Fracture Network (DFN) Approaches in conceptualizing the weathered fractured aquifer system*
8. *Uncertainty in up scaling the discrete fracture network (DFN) model to the regional scale through stochastic theory*
9. *Challenges in modeling fractured couple weathered aquifer system*
10. *Models and Modeler's ethics in the futuristic management decision aspects*
11. *Case Studies*

#### **TS-6: GROUNDWATER MANAGEMENT POLICIES**

1. *Problems and challenges in quantification of water demand and its pricing for effective management*
2. *Economics of groundwater*
3. *Water policy for rural sector*
4. *Role of Community and Regulatory Agencies in the optimal management of water Resources*
5. *Role of NGO's and Sociologists in creating awareness among user communities*
6. *Addressing climate change in long term water resources plans and policy issues*

Abstracts pertaining to the above themes are accepted. All abstracts not exceeding 250 words (in duplicate) should reach to Prof. R. Annadurai, Department of Civil Engineering, SRM University & Conference Convener IGWC-2015, at [annadurai.r@ktr.srmuniv.ac.in](mailto:annadurai.r@ktr.srmuniv.ac.in) and copy to Dr. M. Thanagarajan, Conference Coordinator at [karvimrajan@gmail.com](mailto:karvimrajan@gmail.com) and also to Prof. C. Mayilswami, Secretary, Scientific Advisory committee at [ceemayil@gmail.com](mailto:ceemayil@gmail.com) on or before November 30, 2014. Abstracts will be reviewed by the Scientific Review Committee on the basis of Scope / Theme of IGWC-2015 and will be classified as ORAL or POSTER presentation. Acceptance will be communicated by February 28, 2015.

Authors will have to submit full manuscript of the paper(s) (with original figures, if any) to the Conference Secretariat by May 31, 2015. Necessary instructions regarding preparation of the manuscript(s) will be sent along with the acceptance and author(s) are requested to submit the final text in electronic form (CD).

Please contact Prof. Dr. R. Annadurai, Conference Convener, IGWC-2015 or Dr. M. Thangarajan, Conference Coordinator (IGWC-2015) and or Prof. C. Mayilswami, Secretary for AGGS, and Scientific Advisory Committee ((IGWC-2015) for further clarifications, if any, on

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