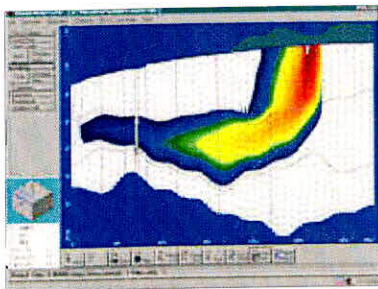
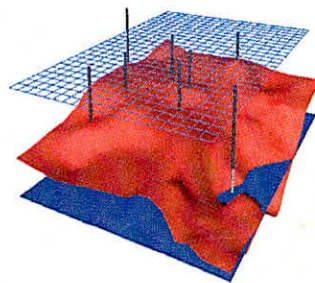


APPLICATION OF GIS TO GROUNDWATER MODELING AND MANAGEMENT

(Vol. II)

Training Course

March 28 - April 08, 2011



Organized by



National Institute of Hydrology
Jal Vigyan Bhawan
Roorkee

APPLICATION OF GIS TO GROUNDWATER MODELING AND MANAGEMENT

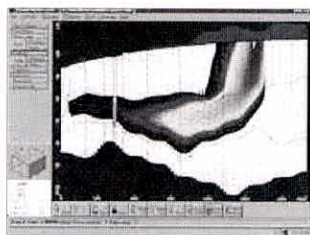
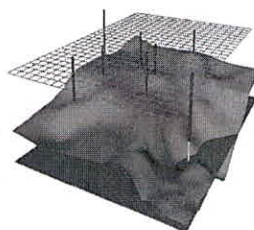
(Vol. II)

Training Course

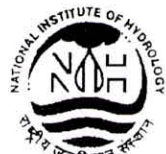
March 28 - April 08, 2011

Course Coordinator : Dr. Anupma Sharma

Course Co-Coordinator : Dr. N. C. Ghosh



Organized by



आपो हि ष्टा मयोभुवः

National Institute of Hydrology
Jal Vigyan Bhawan
Roorkee

CONTENTS

LECTURES (Vol. I)

1	Practicing Hydrology: An Overview R. D. Singh	1
2	Groundwater Modeling and Management: An Overview N. C. Ghosh	41
3	Estimation of Groundwater Potential C. P. Kumar	51
4	Well Hydraulics G. C. Mishra	69
5	Remote Sensing: An Overview Sanjay K. Jain	77
6	Groundwater Data Requirement and Analysis C. P. Kumar	91
7	Estimation of Groundwater Recharge using VHELP Surjeet Singh	113
8	Basics of GIS Sanjay K. Jain	123
9	Isotopes in Groundwater Studies (semi-arid/arid regions) Bhishm Kumar	135
10	Determination of Aquifer Parameters G. C. Mishra	179
11	Statistical Techniques for Groundwater Data Analysis Vijay Kumar	197
12	Suitability of Groundwater for Irrigation Purposes Surjeet Singh	211
13	Remote Sensing and GIS in Hydrology Sanjay K. Kain	223
14	Assessment of Groundwater Sustainability – A Case Study D. C. Singhal	233
15	Drought Monitoring and Management R. P. Pandey	249

LECTURES (Vol. II)

16	Water Quality Constituents and Assessment N. C. Ghosh	263
17	Geophysical Techniques for Groundwater Mapping V. C. Goyal	283
18	Subsurface Characterization of Aquifers Sudhir Kumar	297
19	Surface Water Data Processing Using SWDES A. K. Lohani	309
20	Optimal Network Design For Groundwater Monitoring Vijay Kumar	331
21	Application of Remote Sensing and GIS in Hydrological Data Analysis and Modelling Sudhir Kumar	349
22	Groundwater Quality Assessment and Modelling N. C. Ghosh	377
23	Groundwater Modelling Deepak Kashyap	395
24	Application of GIS to Groundwater Modeling and Management Anupma Sharma	405
25	Using MODFLOW for Groundwater Flow Modeling Anupma Sharma	415
26	Role of Simulation Models in Planning of Groundwater Development Deepak Kashyap	433
27	Problems of Hard Rocks in India B. B. S. Singhal	443

TUTORIALS (Vol. II)

1	ARCGIS Tutorial-1 Pradeep Bhatt
2	ARCGIS Tutorial-2 Pradeep Bhatt

TUTORIALS (Vol. II)

- 3 **ARCGIS Tutorial-3**
Pradeep Bhatt
- 4 **ERDAS Tutorials**
Sanjay K. Jain
- 5 **VHELP Software for Recharge Estimation Tutorial**
Surjeet Singh
- 6 **Arc Hydro Groundwater Tutorial**
Anupma Sharma