



**REGIONAL COOPERATIVE AGREEMENT
INTERNATIONAL ATOMIC ENERGY AGENCY**



IAEA/RCA RAS7043

**Evaluating
the Efficacy of Artificial Recharge to Groundwater in Water Scarce Regions Using
Isotope Techniques**

Measurement of Stable Isotopes and Radioisotopes in Water

**Avani Ratchada Bangkok Hotel, Bangkok, Thailand
16 - 20 June 2025**

Host Organization:

**Thailand Institute of Nuclear Technology
(TINT)**

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Programme of the RTC

Time	Agenda	Speaker
DAY 1	Monday, 16 June 2025	
08:45 - 9:20	Registration	All participants
09:30 - 10:30	Opening Session ○ Brief the opening remarks (Course director) ○ Welcome remarks (Executive Director /host country coordinator) ○ Remarks by the IAEA official ○ Introduction of the participants	Official of the host country TO/IAEA Experts All participants
10:30 - 11:00	Group Photo & <i>Coffee /Tea Break</i>	
11:00 - 12:00	Lecture-1: THE HYDROCHEMICAL WATER CYCLE / INTRODUCTION TO HYDROCHEMICAL TRACERS	Paul Baudron
12:00 - 13:00	Lecture-2: BASIC PRINCIPLE OF STABLE ISOTOPES AND RADIOACTIVE ISOTOPIC TECHNIQUES AND THEIR APPLICATIONS IN HYDROLOGY	Paul Baudron Roberto Kirchheim
13:00 - 14:00	<i>Lunch break</i>	
14:00 - 15:00	Lecture-3: UNDERSTANDING WATER INCOME IN THE SYSTEM: ISOTOPES IN PRECIPITATION – practical case study	Roberto Kirchheim
15:00 - 15:30	<i>Coffee /Tea Break</i>	
15:30 - 16:30	Lecture-4: FOLLOWING THE WATER PATHS: A DEEPER VIEW ON GROUNDWATER RECHARGE - DEFINITIONS AND QUANTIFICATION TECHNIQUES	Paul Baudron Roberto Kirchheim
16:30 - 17:30	Discussion	All participants
18.00 - 20.00	<i>Hospitality Reception (Hosted by TINT) (At Baan Ying Restaurant, Central Rama 9)</i>	TINT
	End of Day 1	
DAY 2	Tuesday, 17 June 2025	
09:00 - 10:00	Lecture-5: AN OVERVIEW ON FIELD SAMPLING PROCEDURES	Roberto Kirchheim
10:00 - 10:30	<i>Coffee /Tea Break</i>	
10:30 - 11:30	Lecture-6: FROM RAIN TO RUNOFF: TRACING SURFACE WATER SOURCES AND INTERACTIONS – practical case study	Paul Baudron
11:30 - 12:30	Lecture-7: SURFACE-TO-GROUNDWATER RECHARGE. PART A: DECIPHERING ANTHROPOGENIC AND METEOROLOGICAL CONTROLS – practical case study	Paul Baudron
12:30 - 14:00	<i>Lunch Break</i>	
14:00 - 15:00	Lecture-8: SURFACE-TO-GROUNDWATER RECHARGE. PART B: WATERSHED-SCALE ANALYSIS USING ISOTOPIC TIME SERIES – practical case study	Paul Baudron
15:00 - 15:30	<i>Coffee / Tea Break</i>	

15:30 - 16:30	Lecture-9: SURFACE-TO-GROUNDWATER RECHARGE. PART C: AQUIFER-SCALE ASSESSMENT USING A REGIONAL SAMPLING APPROACH – practical case studies	Paul Baudron
16:30 - 17:30	Discussion	All participants
	End of Day 2	
DAY 3	Wednesday, 18 June 2025	Speaker
08:00 - 17:00	Field Trip: Field Demonstration and Visit Isotope Hydrology Facilities of Thailand Institute of Nuclear Technology (TINT)	Roberto Kirchheim
18:00 - 20:00	<i>Hospitality Reception (Hosted by IAEA)</i>	IAEA
	End of Day 3	
DAY 4	Thursday, 19 June 2025	
09:00 - 09:30	EXPLORING THE EFFICACY OF MAR (MANAGED AQUIFER RECHARGE) WITH ISOTOPIC TECHNIQUES IN DROUGHT- PRONE BARIND REGION OF RAJSHAHI DISTRICT, BANGLADESH	Masud Karim BANGLADESH
09:30 - 10:00	APPLICATION OF ISOTOPES IN ARTIFICIAL GROUNDWATER RECHARGE: A CASE STUDY OF LAKE WATER REINJECTION IN TIANJIN	Binbin Gao CHINA
10:00 - 10:30	<i>Coffee /Tea Break</i>	
10:30 - 11:00	EVALUATING THE EFFICACY OF MANAGED AQUIFER RECHARGE (MAR) BY INJECTION WELL USING ISOTOPE TECHNIQUES IN OLAK LEMPIT, SELANGOR	Nurul Fairuz Diyana Binti Bahrud MALAYSIA
11:00 - 11:30	REGIONAL TRAINING COURSE ON MEASUREMENT OF STABLE ISOTOPES AND RADIOISOTOPES IN WATER	Min Naing MYANMAR
11:30 - 12:00	OPTIMIZATION OF WATER SUPPLY SYSTEM OF POKHARA VALLEY THROUGH STABLE WATER ISOTOPE STUDY IN MERDI WATERSHED	Rajendra Prasad Bhandari NEPAL
12:00 - 12:30	ENSO-DRIVEN DUAL GROUNDWATER RECHARGE USING STABLE ISOTOPES AND HYSPLIT. CASE STUDY: MOUNT PANGRANGO, WEST JAVA, INDONESIA	Teuku Reza INDONESIA
12:30 - 14:00	<i>Lunch Break</i>	
14:00 - 14:30	EVALUATING THE EFFICACY OF ARTIFICIAL RECHARGE TO GROUNDWATER IN WATER SCARCE REGION USING ISOTOPE TECHNIQUES	Gan-Erdene Enkhbold MONGOLIA
14:30 - 15:00	MANAGING AQUIFER RECHARGE SYSTEMS ON GROUNDWATER RESOURCES WITHIN COMMUNITY-BASED ORGANIZATIONS (CBOS) AND RURAL WATER SUPPLY SCHEMES (RWSS) IN SRI LANKA USING ISOTOPIC TECHNIQUES	Sakhila Priyadarshane SRI LANKA
15:00 - 15:30	<i>Coffee /Tea Break</i>	
15:30 - 16:00	TO ESTABLISH AN ARTIFICIAL GROUNDWATER RECHARGE FACILITY (AGRF) TO ADDRESS THE ISSUE OF CONTINUOUS DECLINE OF GROUNDWATER LEVELS AND FLOODING IN BAGUIO CITY AND LA TRINIDAD	Dave Gabriel Cadungog PHILIPPINES
16:00 - 16:30	EVALUATION THE PERFORMANCE OF MANAGED ARTIFICIAL RECHARGE (MAR) IN THAILAND.	Kiattipong Kamdee THAILAND

16:30 - 17:00	APPLICATION OF STABLE ISOTOPE TECHNIQUES TO EVALUATE THE EFFECTIVENESS OF ARTIFICIAL GROUNDWATER RECHARGE IN THE CENTRAL HIGHLANDS OF VIETNAM	Nguyen Bach Thao VIETNAM
	End of Day 4	
DAY 5	Friday, 20 June 2025	
09:00 - 10:30	Lecture-10: BEST PRACTICES IN GW TRACER STUDIES: PLANNING, SAMPLING AND ANALYTICAL PROCEDURES	Paul Baudron Roberto Kirchheim
10:00 - 10:30	Discussion	All participants
10:30 - 11:00	<i>Coffee Break</i>	
11:00 - 12:00	Note: WHERE WE STAND AND WHERE TO GO IN GROUNDWATER MANAGEMENT & INTERNATIONAL COOPERATION	Roberto Kirchheim
12:00 - 13:00	<i>Lunch Break</i>	
13:00 - 14:00	Course Evaluation/Feedback from Participants	Paul Baudron Roberto Kirchheim
14:00 - 14:30	<i>Coffee /Tea Break</i>	
14:30 - 15:00	Closing Ceremony	All participants and local organizers
	End of Day 5	