NATURAL RESOURCES & ENVIRONMENTAL SCIENCES DOMAIN

Organizes Webinar on the occasion of

भूजल सप्ताह

16-22 जुलाई 2023

"यह संकल्प निभाना है, हर एक बूँद बचाना है"

"Groundwater Depletion in India – Causes, Implication & Way Forward for Sustainable Practices"

21 जुलाई 2023

Mode: Online Time: 2:00pm - 5:10pm

Introduction:

The webinar on "Groundwater Depletion in India – Causes, Implications & Way Forward for Sustainable Practices" was organized with the aim of bringing together experts from various fields to discuss the critical issue of groundwater depletion in India. The event took place from 2:00 pm to 5:10 pm and saw renowned speakers sharing their insights on the topic.

Agenda:

The program started with Lighting of Lamp & Saraswati Vandana followed by Welcome and Introduction by Dr. Renu Dhupper, Assistant Director, AIES. She welcomed the participants and set the stage for the discussions. Following which Dr. S.P Singh, Director ASNRSD delivered the opening remarks, highlighting the significance of addressing groundwater depletion and its implications on India's sustainability. Prof. Tanu Jindal, Director of AIETSM shared valuable insights into the importance of sustainable practices in managing groundwater resources.

Prof. D. K. Bandyopadhyay, Chief Advisor FPO and Chairman of Amity Law School, Mentor at Amity Institute of Environmental Sciences, discussed the various causes of groundwater depletion and the legal and policy aspects involved in addressing the issue. Prof. (Dr.) Balvinder Shukla, Vice-Chancellor of Amity University Uttar Pradesh (AUUP), shed light on the implications of groundwater depletion for agricultural practices and the role of educational

institutions in promoting sustainable solutions. She conveyed her best wishes for the successful implication of the program.

SPEAKERS

Lecture 1:

Speaker: Dr. P. R. Ojasvi, Pr. Scientist (SWCE), ICAR-Indian Institute of Soil and Water Conservation

Topic: Rainwater Management for Food Security

Dr. P. R. Ojasvi presented a comprehensive overview of rainwater management techniques and their significance in ensuring food security. He discussed the role of rainwater harvesting, conservation, and efficient utilization in agricultural practices. Dr. Ojasvi highlighted the potential benefits of rainwater management, such as groundwater recharge, increased crop yield, and reduced dependence on groundwater resources. His lecture emphasized the need for integrating rainwater management strategies into agricultural policies for achieving long-term food security in India.

Lecture 2:

Speaker: Dr. Gopal Krishan, Scientist D, National Institute of Hydrology, Roorkee

Topic: Isotopic Applications for Groundwater Recharge

Dr. Gopal Krishan delved into the innovative use of isotopic applications for understanding groundwater recharge processes. He explained the use of isotopes as tracers to study the movement and origin of groundwater, providing valuable insights into recharge mechanisms. Dr. Krishan highlighted the importance of accurate groundwater recharge assessments for sustainable water resource management. His lecture showcased how isotopic techniques can contribute to informed decision-making and efficient groundwater recharge strategies.

Lecture 3:

Speaker: Mr. Mukesh Anand, Scientist B, Central Ground Water Board, NCCR, Raipur

Topic: Integrated Water Resource Management

Mr. Mukesh Anand's lecture centered around the concept of integrated water resource management (IWRM). He discussed the significance of adopting a holistic approach to manage water resources, incorporating social, economic, and environmental dimensions. Mr. Anand emphasized the need for collaboration between various stakeholders and government agencies to ensure efficient water allocation and usage. His lecture emphasized the role of IWRM in mitigating groundwater depletion and ensuring sustainable water availability for present and future generations.

Lecture 4:

Speaker: Prof. (Dr.) Brijesh Yadav, Professor & Head, Department of Hydrology, IIT Roorkee

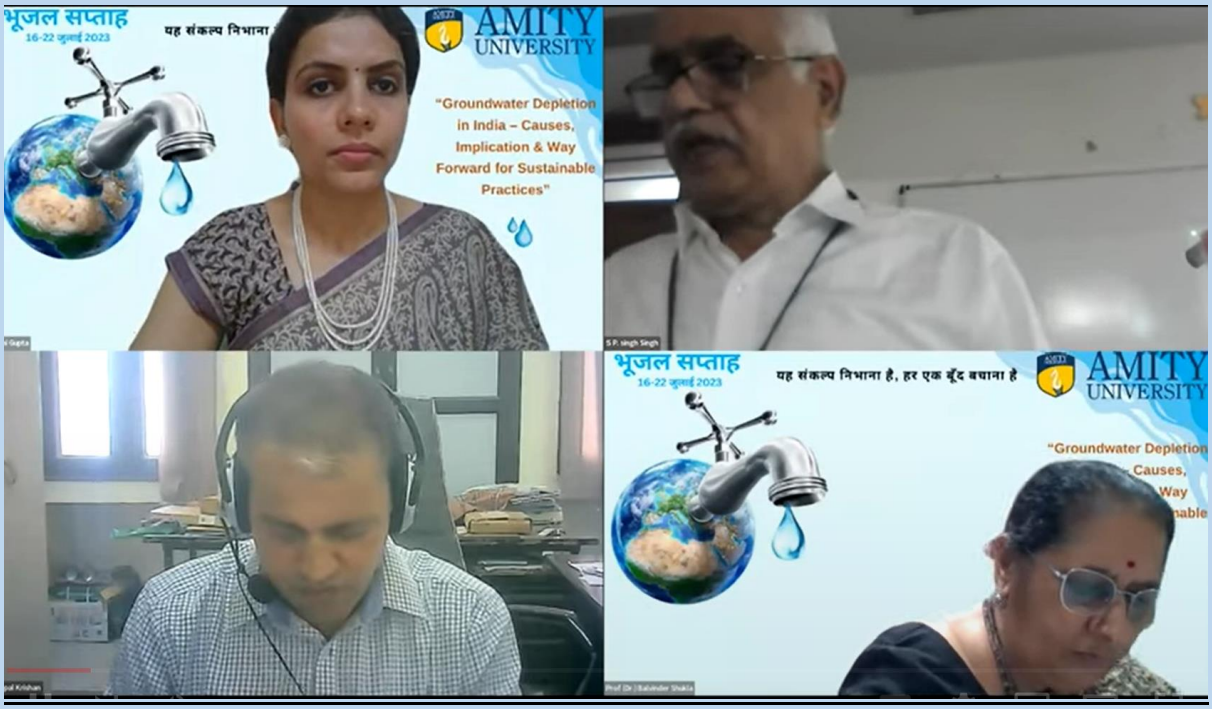
Topic: Groundwater: Making the Invisible Visible

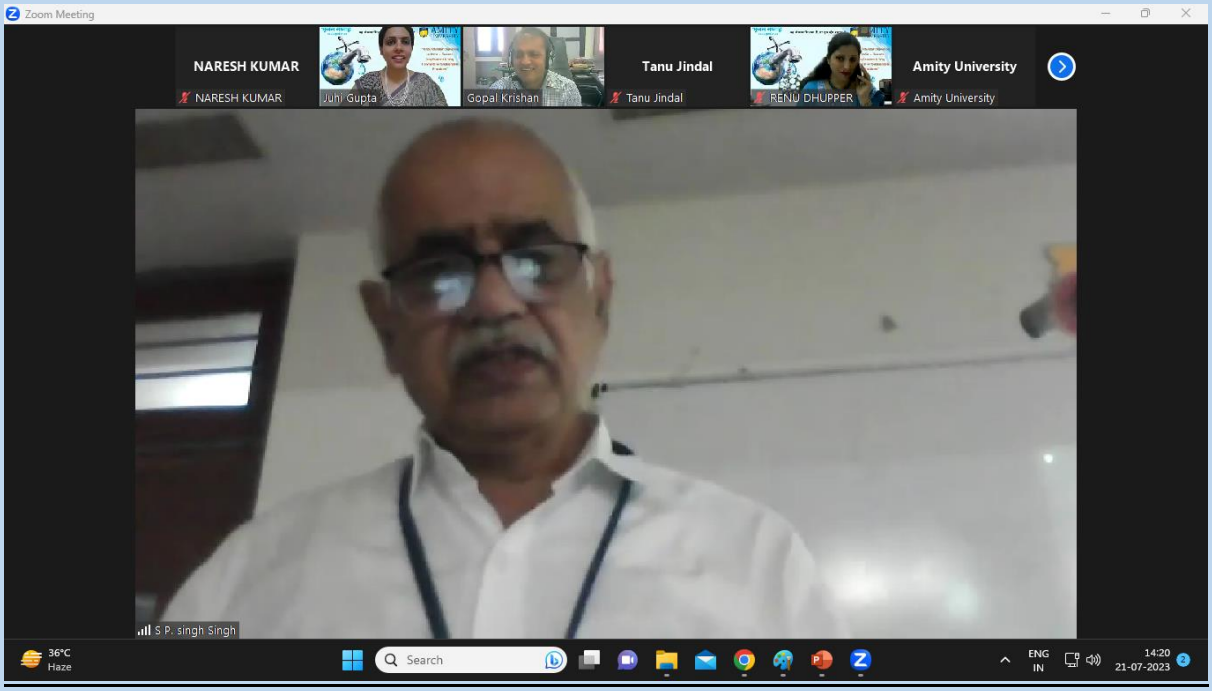
Prof. (Dr.) Brijesh Yadav's lecture focused on the importance of understanding and visualizing groundwater dynamics for effective management. He elaborated on advanced technologies, such as remote sensing, geophysical methods, and modeling techniques, that aid in mapping and monitoring groundwater resources. Prof. Yadav emphasized the need for comprehensive data collection and analysis to develop robust groundwater management strategies. His lecture highlighted the significance of making groundwater information accessible and transparent for sustainable utilization.

Conclusion

The webinar successfully provided a platform for experts to share their knowledge and ideas on groundwater depletion in India. Some of them also shared their real time success of the various ideas of ground water conservation and management. The webinar highlighted the urgent need for sustainable practices to conserve this vital natural resource. Participants gained valuable insights into the various causes, implications, and potential solutions for addressing groundwater depletion in the country. It is hoped that the knowledge shared in the webinar will contribute to a more informed and concerted effort towards sustainable groundwater management in India.

Few photographic glimpses:

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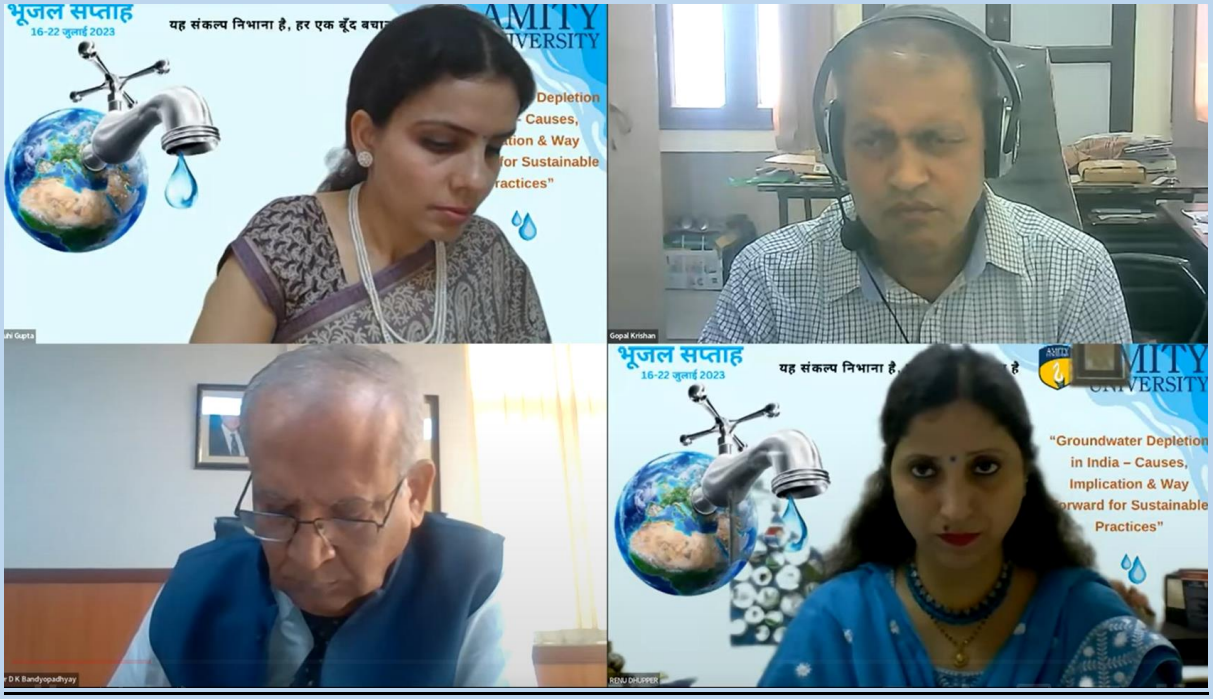
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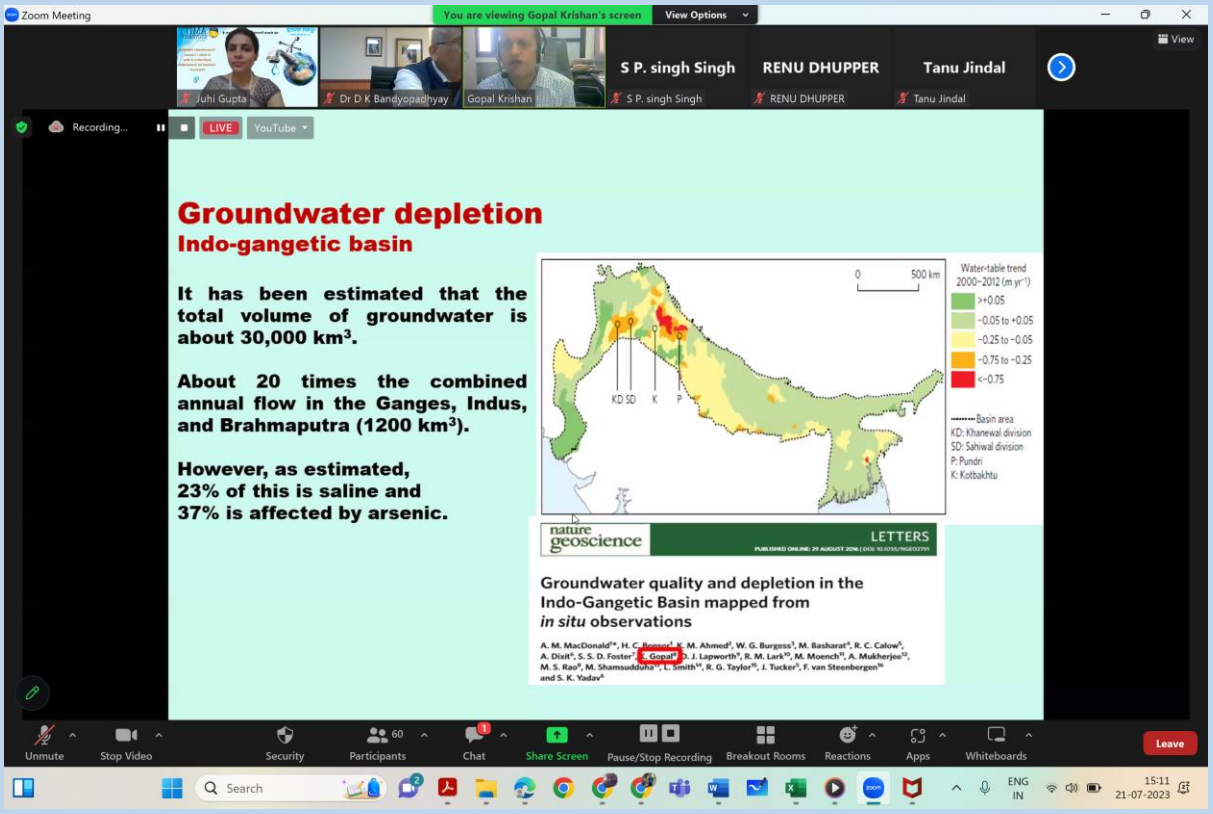
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Groundwater depletion
Indo-gangetic basin
It has been estimated that the total volume of groundwater is about 30,000 km³.
About 20 times the combined annual flow in the Ganges, Indus, and Brahmaputra (1200 km³).
However, as estimated,
23% of this is saline and
37% is affected by arsenic.
0
500 km
Water-table trend 2000–2012 (m yr⁻¹)
>+0.05
−0.05 to +0.05
−0.25 to −0.05
−0.75 to −0.25
<−0.75
Basin area
KD: Khanewal division
SD: Sahiwal division
P: Pundri
K: Kotbakhtu
KD SD K P
nature geoscience
LETTERS
Groundwater quality and depletion in the Indo-Gangetic Basin mapped from in situ observations
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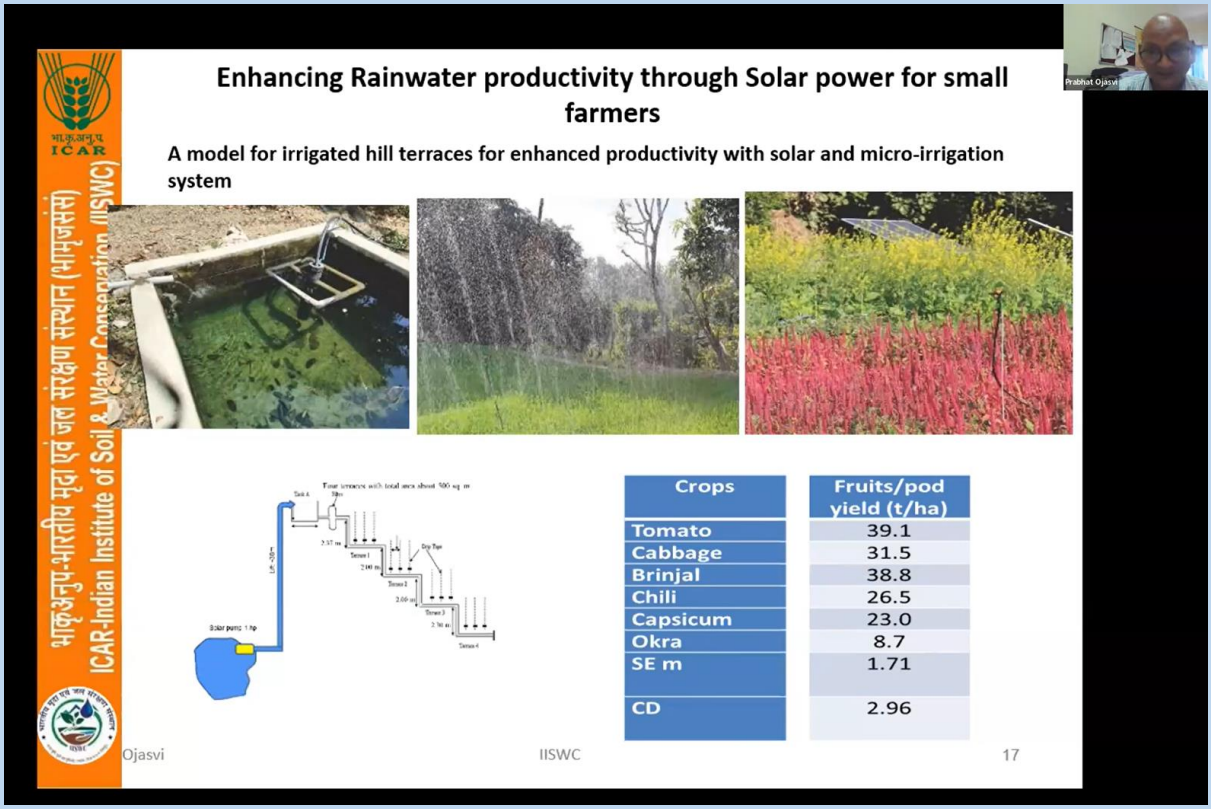
Prabhat Ojasvi
भाकृअनुप-भारतीय मृदा एवं जल संरक्षण संस्थान (भामृजसंसं)
ICAR-Indian Institute of Soil & Water Conservation (IISWC)
Enhancing Rainwater productivity through Solar power for small farmers
A model for irrigated hill terraces for enhanced productivity with solar and micro-irrigation system
Crops
Fruits/pod yield (t/ha)
Tomato 39.1
Cabbage 31.5
Brinjal 38.8
Chili 26.5
Capsicum 23.0
Okra 8.7
SE m 1.71
CD 2.96
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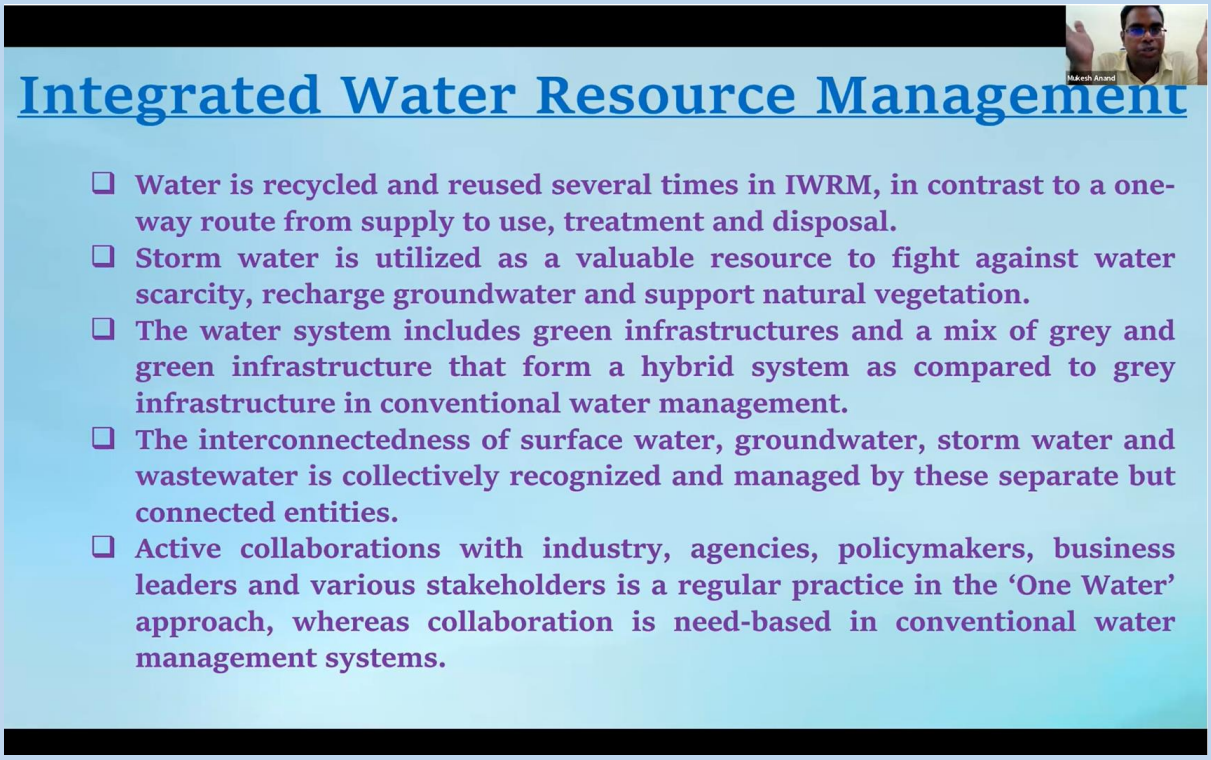
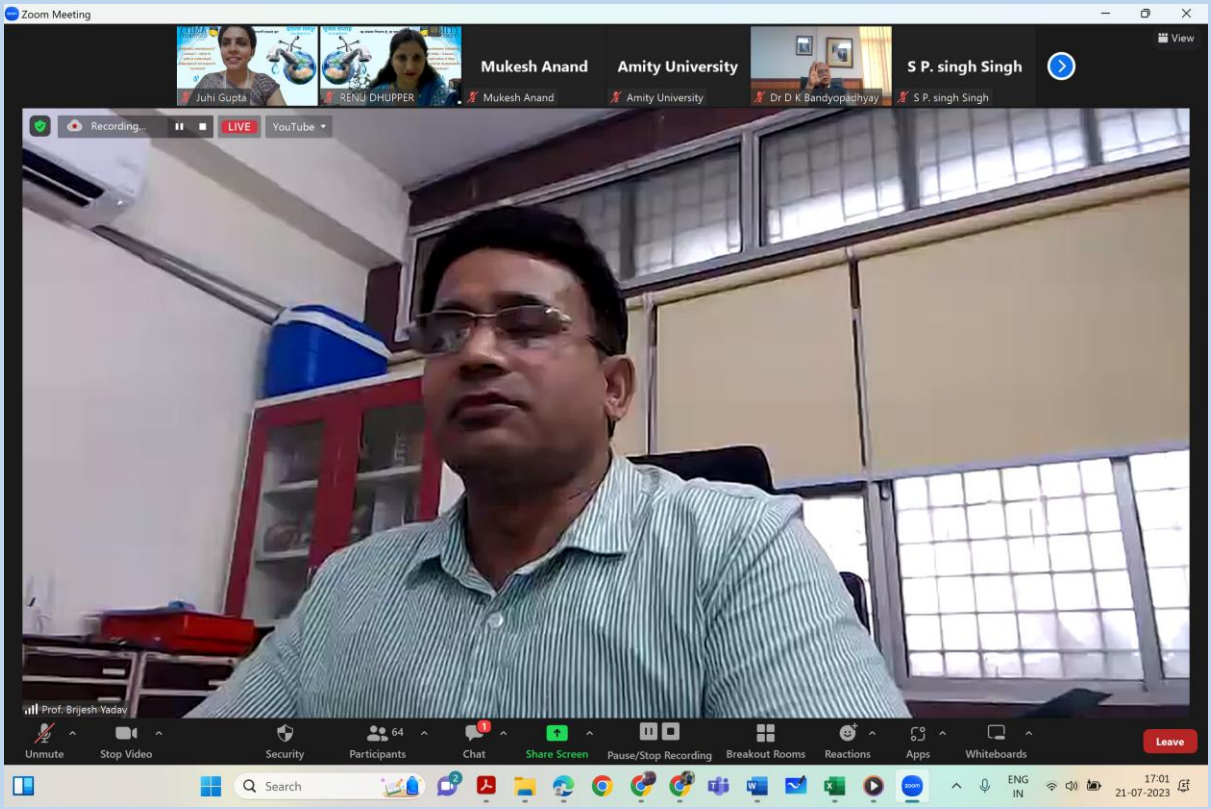

Mukesh Anand
Integrated Water Resource Management
Water is recycled and reused several times in IWRM, in contrast to a one-way route from supply to use, treatment and disposal.
Storm water is utilized as a valuable resource to fight against water scarcity, recharge groundwater and support natural vegetation.
The water system includes green infrastructures and a mix of grey and green infrastructure that form a hybrid system as compared to grey infrastructure in conventional water management.
The interconnectedness of surface water, groundwater, storm water and wastewater is collectively recognized and managed by these separate but connected entities.
Active collaborations with industry, agencies, policymakers, business leaders and various stakeholders is a regular practice in the 'One Water' approach, whereas collaboration is need-based in conventional water management systems.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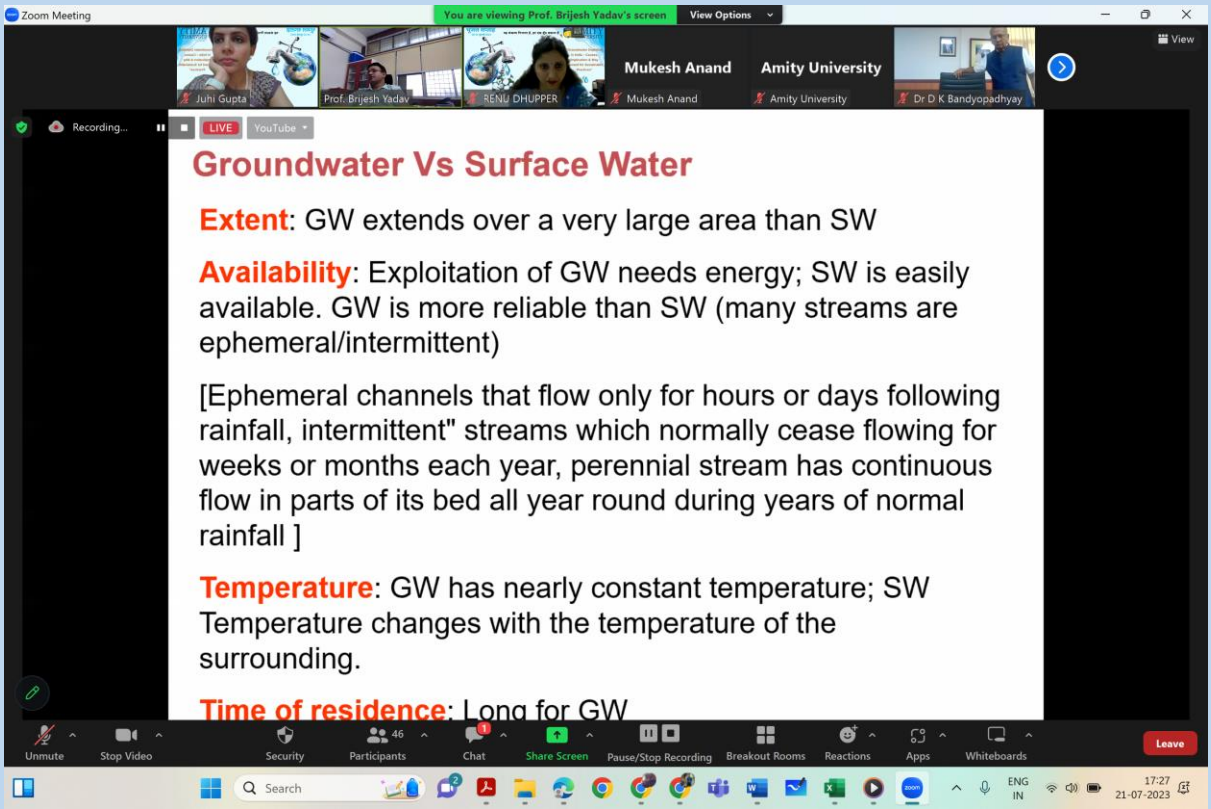
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Groundwater Vs Surface Water
Extent: GW extends over a very large area than SW
Availability: Exploitation of GW needs energy; SW is easily available. GW is more reliable than SW (many streams are ephemeral/intermittent)
[Ephemeral channels that flow only for hours or days following rainfall, intermittent" streams which normally cease flowing for weeks or months each year, perennial stream has continuous flow in parts of its bed all year round during years of normal rainfall]
Temperature: GW has nearly constant temperature; SW Temperature changes with the temperature of the surrounding.
Time of residence: Long for GW
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Event recording link:

https://youtu.be/Po-kvhFDwMI