Title : T1S3. Space technologies and their relevance for groundwater monitoring

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Speakers' summery in space technologies and their relevance for groundwater monitoring

- 1. Assessing vulnerability and co-designing climate-resilient water management strategies for rural communities using geospatial datasets: Hafsa AEMAN, International Water Management Institute, CGIAR, Pakistan and University of Wuhan, China – online (using PCA)
- 2. Remote sensing for the management of transboundary aquifers shared between Algeria, Tunisia, and Libya in Africa: Badia CHELLI, Water Research and Technologies Center, Tunisia from (SASS)
- 3. cloud computing and remote sensing data for potential groundwater recharge estimation in water resources management: Elizabeth GUZMÁN HIDALGO, Faculty of Engineering at the National Autonomous University of Mexico (Using GEE)
- 4. F-hydra - groundwater vulnerability mapping in Ghana: Amos Kabo-Bah University of Energy and Natural Resources, Ghana (online)
- 5. Assessment of interactions between land use change and groundwater recharge under urban Heat Islands Remotely Sensed Signatures, in Santa Cruz-Bolivia - Ana RODRIGUEZ, IdeasHub

Cont.

- **Space technologies** offer a powerful toolbox for monitoring groundwater resources around the world. Evident, shows in various parameters like.
- **Relevance:**

1. **Remote Sensing:** Provides data on factors influencing groundwater recharge, like vegetation cover, soil moisture, and land use changes.
2. **Geographic Information Systems (GIS):** Integrates various data sources for comprehensive groundwater resource analysis.
3. **Global Positioning System (GPS):** Enables precise location tracking for well monitoring and aquifer mapping. Eg. Analyzing **Ground potential zones**

- **Benefits:**

1. **Large-scale monitoring: spaced data** efficiently covers vast areas, particularly valuable for regional aquifers.
2. **Cost-effective approach:** Reduces reliance on expensive, ground-based methods for data collection.
3. **Timely data acquisition:** Enables regular monitoring and rapid response to changes in groundwater levels.

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❑ Conclusions:

1. Space technologies are revolutionizing groundwater monitoring, providing valuable data for informed water management decisions.
2. Integrating space-based data with ground observations leads to a more holistic understanding of groundwater resources.

❑ Gaps:

1. **Data access and quality:** High-resolution data might be limited in some regions. Eg, Radar and Lidar data.
2. **Technical expertise:** Training and capacity building are needed to utilize space technologies effectively.
3. **Data integration:** Seamless integration of diverse data sources requires robust infrastructure. Like National Spatial Data Infrastructure. (NSDI)

Recommendations:

1. **International collaboration:** Sharing resources and expertise can improve data access for all.
2. **Capacity building programs:** Training water managers on utilizing space technologies for better monitoring.
3. **Standardized data protocols:** Establishing common data formats for easier integration and analysis eg ISO standards.

Thank you

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