New Snow Dataset Enhances Insights into Water Resources in the Ganges Basin

The Ocean Policy Research Institute of the Sasakawa Peace Foundation (OPRI-SPF), in collaboration with the International Centre for Integrated Mountain Development, has supported the release of a new dataset that significantly advances the monitoring of snow conditions across the Ganges River Basin.

Developed under the Glaciers-to-Ocean project (2024–2028), led by Santosh Kumar Rauniyar, the dataset integrates Terra and Aqua satellite observations to generate a cloud-reduced snow cover product at 500-meter resolution, covering the period from 2002 to 2025. By combining morning and afternoon satellite passes, the dataset offers a more comprehensive and reliable representation of snow dynamics in complex high mountain environments.

Seasonal snow in the upper Ganges Basin plays a vital role in sustaining river flows during dry periods, functioning as a natural buffer that supports downstream water availability. However, monitoring snow in mountainous regions has long been hindered by persistent cloud cover and rapidly changing weather conditions. The improved dataset addresses these challenges by reducing observational gaps and enhancing the accuracy of snow detection.

Accurate snow information is essential for understanding changes in water availability, particularly in the context of climate variability. Variations in the timing and persistence of snow

cover—such as earlier melt or reduced duration—can alter seasonal river flows, increase risks to infrastructure and communities, and complicate water resource management.

By providing a more robust scientific foundation for hydrological and climate analysis, this dataset supports improved decision-making for water management, disaster risk reduction, and climate adaptation across the region.

The dataset is publicly available through ICIMOD's data repository: https://rds.icimod.org/Home/DataDetail?metadataId=1973405