### **National Remote Sensing Centre**

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#### **Science Story**

# Lakes from Space

**Scientists at National Remote Sensing Centre (NRSC)** captured water bodies across rural and urban India using satellite data. The water bodies assume lot of significance to maintain the flora and fauna as well as ecological balance. They also play a significant role in tourism and recreational activities. They are used for irrigation, fishing and drinking purpose.

It is a well known fact that the lakes have either been encroached or the channels in the catchment area have been blocked leading to the reduction in the capacity of the lakes/drying up of lakes. The Government of India initiated Jal Shakti Abhiyaan (JSA), Mission Amrit Sarovar etc. to ensure water security.



The Water Spread Area (WSA), of each water body increases or decreases seasonally based on the rainfall and consumption / evaporation. The water volume available in these water bodies is a great water resource available for consumption for different purposes.



NRSC captures the water spread area of all the water bodies in the country, at regular intervals using remote sensing satellite data from multiple sensors (spatial resolution in the range of 6 m to 56 m), using automated feature extraction algorithms. This information is made available as **Water Bodies Information System (WBIS)** for visualisation and download on NRSC/Bhuvan web site (<u>https://bhuvan-wbis.nrsc.gov.in/</u>). In addition, the water quality in terms of turbidity and chlorophyll is also made available in the form of Normalised Difference Turbidity Index (NDTI) and Normalised Difference Chlorophyll Index (NDCI).

High turbidity can be caused by silt, clay, organic and inorganic matter, mud, algae, or chemicals in the water. Turbidity can affect the taste and odor of water. Chlorophyll is a measure of the amount of algae growing in a lake, whichIndicates high level of phytoplankton in the water. Water with high levels of nutrients from fertilizers, septic systems, sewage treatment plants and urban runoff may have high concentrations of chlorophyll and excess amounts of algae.



## **Advantages of WBIS**

Local governments can use WSA information available in WBIS for following purposes.

- 1. Inventory of lakes alongwith respective water quality parameters, will help local government to develop appropriate strategies for water conservation and rejuvenation
- 2. Landuse and Landcover changes around lakes help to understand the developmental activities and encroachments, if any, around lake.
- 3. If water in a lake is stagnant, or due to sewerage inflow or industrial effluent inflow, the lake degrades. Water quality parameters at regular intervals indicate the relative comparison and status of lakes.

Researchers can use the temporal water spread area information from WBIS in the following areas.

- Studies on water spread dynamics
- Hydrological drought assessment
- Inland fisheries assessment
- Reservoir sedimentation assessment

- Updating EAC curves
- Input to hydrological models, climate /weather studies

### *Need for conservation / Rejuvenation*

Lakes need to be conserved / rejuvenated so that water in lake can be used for drinking purpose / for industrial supply. Lakes can be used to divert storm water as urban flood control measure. The can also be developed as recreation / tourism destinations. Lakes can be used for Rain Water Harvesting (RWH) for improved ground water recharge.

Technical document : (<u>https://bhuvan-wbis.nrsc.qov.in/static/media/</u> WBIS\_V3\_TechnicalDocument\_bodies.8a9dc73c7df78434bf74.pdf)