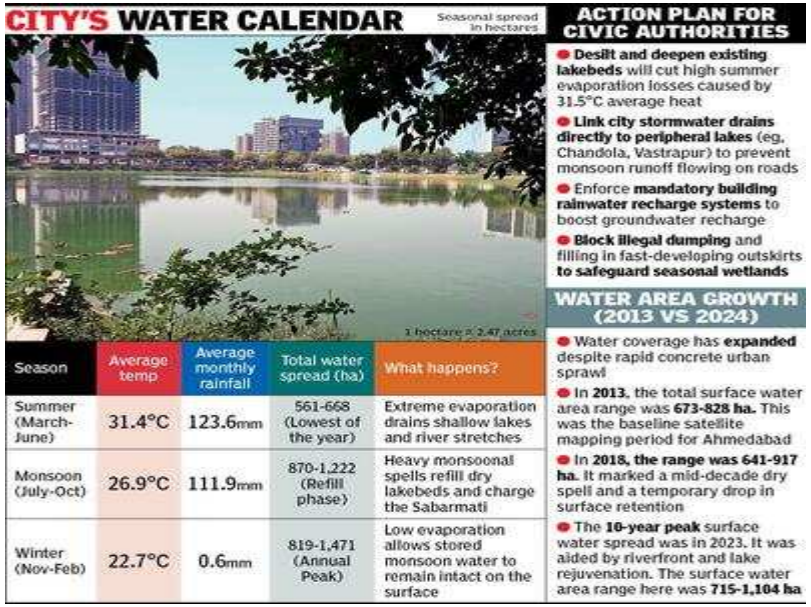
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Despite its heat, Ahmedabad is getting marginally blue

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Ahmedabad: Extreme summer heat and urban sprawl would normally suggest shrinking lakes and river channels. But a 12-year satellite study shows the opposite: Ahmedabad's surface water has grown, although modestly, and the upward trend is statistically significant. Some experts feel this can be capitalised with better management of the monsoon bounty to boost the city's groundwater table, although measures are already in place. The study analysed 144 monthly Landsat-8 image composites from 2013 to 2024. In summer (March to June), temperatures average 31.4°C, driving intense evapotranspiration, and water spread falls to its annual minimum of 561 to 668 hectares. Monsoon refills dry basins, raising coverage to 870 to 1,222 hectares. Winter holds the year's largest reserve, 819 to 1,471 hectares, as cooler weather averaging 22.7°C limits evaporation and preserves monsoon runoff.

The research paper, titled "Understanding Spatiotemporal Dynamics of Urban Water Bodies via Multi-Classifier Machine Learning Approaches in Semi-Arid Ahmedabad City", states, "Temperature is a significant driver of water change, and precipitation has low impact in the long-term water area change." The mean annual surface water coverage, the study pointed out, rose from 673-828 hectares in 2013 to 715-1,104 hectares in 2023.

The satellite maps also show a clear divide. Sabarmati river channel, Vasna Barrage and Kankaria lake held water in all 12 years, resilient against brief dry spells. Smaller lakes and catchments on the expanding southern and western outskirts lasted just one to three years, swelling in the monsoon and shrinking in the heat. Combining multi-model satellite analysis with local climate records cut prediction error by 85% compared with traditional climate-only models.

The research was conducted by Shreekant Varshney of the department of mathematics and Ankit Deshmukh of the department of civil engineering at Pandit Deendayal Energy University, Gandhinagar. It was published as a preprint on EarthArXiv. Using Mann-Kendall trend tests on the 144 monthly observations, the authors found that "a slight upward trend is evident with both yearly and monthly trend with Mann-Kendall test across all the classifiers".

The growth comes from municipal policies, including the rejuvenation of Sabarmati Riverfront, ongoing maintenance of Kankaria and Vastrapur lakes, anti-encroachment enforcement, and mandatory rainwater harvesting in buildings under the national Jal Shakti Abhiyan and NAQUIM frameworks.

The researchers conclude that data-driven monitoring offers vital insights for "data-driven governance of water resources, providing insights into sustainable urban development and environmental conservation strategies aligned with Sustainable Development Goals (SDGs) 6 and 11, which focus on clean water and urban sustainability".