

Tapping In

WATER INDUSTRY NEWS, AWARDS, AND TRAINING

MONSOON PREPAREDNESS

Advanced Flood Detection and Alert Systems to Expand



Chhath celebrants make prasadam offering in River Ganga at Patna.

Based on its successful pilot project in Patna, India, which began in September 2018, US tech giant Google announced plans to expand its artificial intelligence (AI)-based flood detection and alert system for the forthcoming monsoon season, according to a 12 May 2019 *Indian Express* article (<https://bit.ly/2JXpnkL>). The pilot project involved Google partnering with India's Central Water Commission

to collect data for predictive modeling to more accurately gauge the effect of floods and alert those in most vulnerable areas ahead of events. Patna and environs were chosen for the pilot because of population density and severe riverine flooding frequency. The flood detection and alerting system for the 2019 monsoon season will cover areas along the Ganga and Brahmaputra rivers.

Noting that floods affect 230 million globally each year and 20 percent of flood fatalities occur in India, Jeff Dean, Google's AI division head, spoke at an annual developer conference in San Francisco about the project. As quoted in the article, Dean said, "Without consistent accurate warning systems, people are prone to ignore warnings and be unprepared." Such an outcome is especially detrimental in monsoon areas. According to Dean, the AI tools would help monsoon-affected communities, offering better forecasting tools to find areas most likely to flood; expanded alert coverage areas along the two major rivers selected; and more accurate mapping of high-, medium-, and low-risk alert designations to inform its updated public alert system. The model aggregates satellite images to create high-resolution elevation maps that can detect ground height, then uses neural networks to correct the terrain before applying physics to simulate how flooding will happen. Such riverine flood forecasting at scale still faces challenges, but the model's high-accuracy metrics are expected to make a significant improvement in the effort to better predict and respond to flooding events.

PHOTOGRAPH: ARUN SAMBHU MISHRA, SHUTTERSTOCK.COM

MAHARASHTRA WATER

Potable Tap Water Arrives in Mumbai

Mumbai residents recently learned they could drink water straight from the tap, based on a public announcement from a hydraulic engineer of the Brihanmumbai Municipal Corporation (BMC), according to a 11 May article (<https://bit.ly/2YE7YkY>) in the *Times of India*. The BMC was able to call the water safe because an average of just 0.7 percent of water samples collected across Mumbai from April 2018 to March 2019 tested positive for coliform bacteria. That said, uneven distribution system maintenance means safe drinking water can only be assured in areas where receiving storage tanks are regularly cleaned, according to BMC.

WATER QUALITY

Studies Show Irrigation's Role in Salty Soils

Even as soils in global dry areas are often salty by nature, inefficient irrigation and poor drainage are driving soil salinity, according to studies quoted in a 30 April 2019 article (<https://bit.ly/30E1c0n>) in *Circle of Blue*. Such poor irrigation practices raise the water table, bringing subsoil salts nearer the surface where they salinize plant roots once the water evaporates, stunting plant growth and contaminating drinking water supplies. Among worst-affected regions are India's Ganga basin, with about 20 million of the world's 300 million hectares of irrigated land, according to a 2018 assessment of global land degradation and restoration (<https://bit.ly/2tKdGow>). The more irrigation is used to increase food production, the more saline soils become, according to researchers. What's needed are reduced water use, improved water management, and methods to grow food without turning soils to salt.

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