Chennai Water Supply and Demand Analysis

Quarterly Report on Water Management

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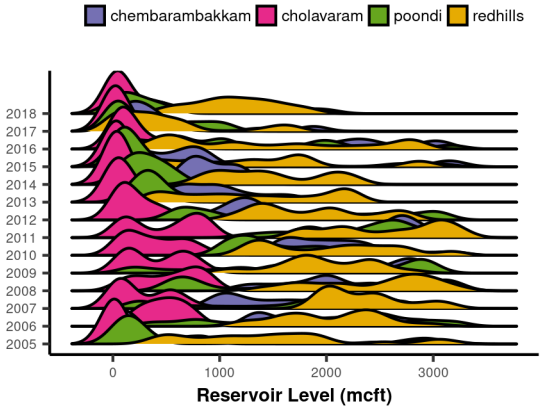
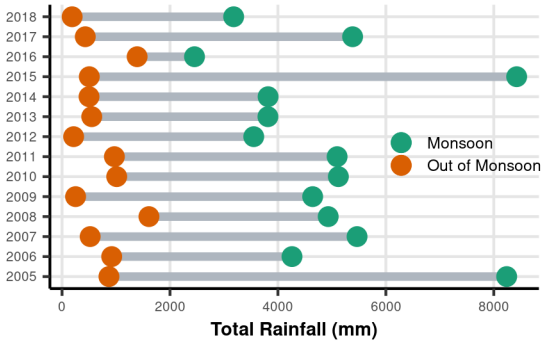
Chennai, India's significant cultural, economic, and educational hub in the south, faces water supply and demand challenges. The city, home to 10 million residents, draws its water primarily from four reservoirs with a combined capacity of 11,057 mcft. 2019 witnessed a severe water crisis, leading many to rely on wells and tanker trucks. Recent monsoon seasons have somewhat alleviated these concerns. This report provides an insight into Chennai's water management, crucial for future planning.

Distribution of Reservoir Levels Over the Years



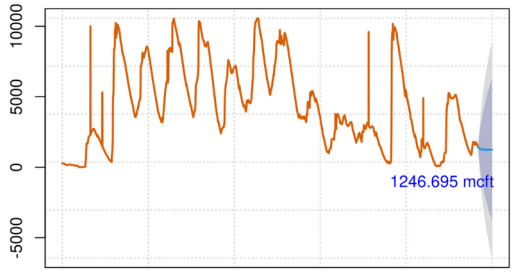
Comparison of Total Rainfall In and Out of Monsoon



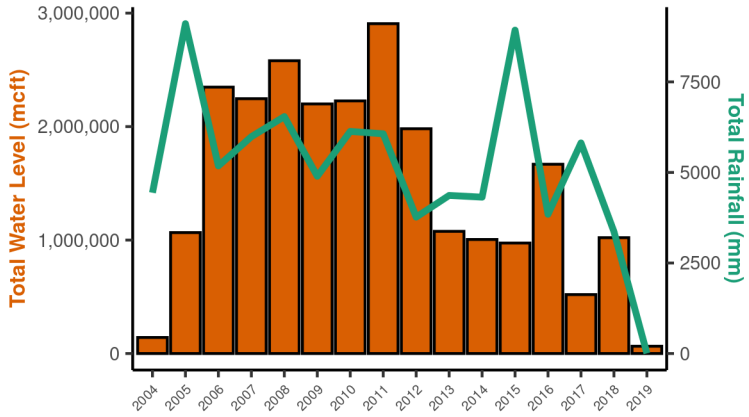
Water Usage, Rainfall, and Off-season Metrics

Year	Yearly Usage	Total Rainfall	Off-season Usage	Req Off-seas Rain
2005	-1265.40	9107.50	1691.01	572.89
2006	5581.16	5181.00	5985.21	4126.79
2007	2376.00	5987.40	4982.72	3249.28
2008	5168.47	6542.00	5789.82	4512.18
2009	5887.77	4894.85	5032.39	4798.61
2010	1286.87	6133.10	3565.43	3965.57
2011	5822.45	6066.80	5986.90	4417.10
2012	6590.42	3766.60	5599.75	3412.25
2013	5282.70	4364.95	4282.13	1102.87
2014	3459.56	4318.00	1209.73	2167.27
2015	-203.62	8928.70	2258.25	895.75
2016	10986.76	3845.80	6571.87	3294.13
2017	895.44	5814.40	1934.07	-228.07
2018	5856.09	3367.00	2869.25	2099.75

Water Level Forecast for 2019-07-01



Yearly Total Water Levels and Rainfall



Rainfall Patterns: Non-monsoon rainfall has declined over the years, indicating potential dry-season vulnerabilities. Water Consumption: Despite rainfall spikes, Chennai's water usage remains high, underscoring the need for efficient management.Negative Reservoir Values: The data indicates that in certain years, such as 2017, the reservoir had an excess of water beyond the city's usage. Estimated Water Usage: After significant rainfall, it's estimated that the city might consume approximately 8000 mcft units of water. Off-season Dependency: Data shows the city's reliance on rainfall to sustain reservoir levels, with occasional years having excess reserves. Reservoir Status: Future Levels Warning: Forecasting suggests a potential water crisis if the current consumption trend persists without substantial rainfall.We see a significant water level drop, even with slight rainfall decline, indicating factors like rising consumption due to population growth.

To better manage water resources, it's essential for the city to keep an eye on consumption patterns, especially after heavy rainfalls. Given the excess water in certain years, the city might consider investing in additional storage facilities or exploring ways to optimize water distribution. Furthermore, promoting water conservation methods during peak usage times can help in ensuring a more consistent water supply throughout the year.