EPICLIM DISEASE-CLIMATIC DATASET: ANALYSIS & INTERPRETATION

EpiClim is the first weekly, district-wise, all-India climate-health dataset (2009–2023), built to support GeoHealth research. It combines epidemiological data from the Integrated Disease Surveillance Program (IDSP) with climatic variables—notably:

- *Precipitation*
- *Temperature*
- *Leaf Area Index*

DEMOGRAPHY & DISEASE PROFILE

TOP 4 STATES BY TOTAL DISEASE CASES (2009-2023)	
West Bengal	178,830
Delhi	80,933
Uttar Pradesh	60,173
Maharshtra	53,575
Karnataka	39,532

Top 4 Diseases by Total Case	
Acute Diarrhoeal	251,456
Dengue	238,047
Cholera	126,495
Malaria	111,858
Chikungunya	53,289

Total cases in Top 5 states: 413,043   Total cases overall: 796,427   Top 5 states represent 51.9% of all cases

CLIMATE THRESHHOLD SEGMENTATION

Variable	Threshold Zone	p-value
Precipitation	> 30 mm/week = outbreak risk	Significant (p=0.003)
Temperature	No clear threshold	Not significant (p=0.89)
LAI	No threshold	Not significant (p=0.18)

Precipitation
- Impact: +51 cases per mm
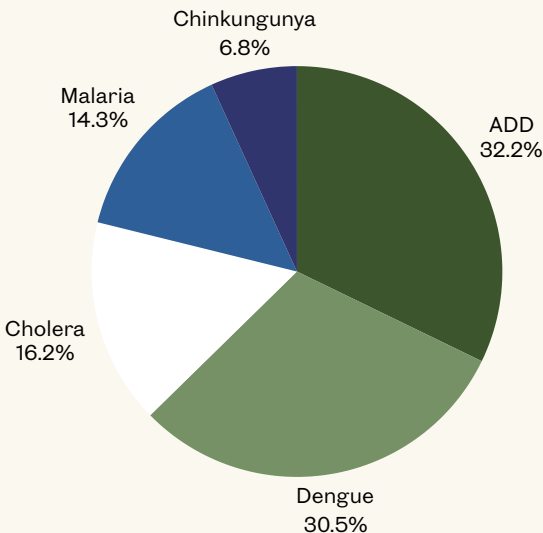- Significance: p = 0.003 ✅
- Threshold: Risk rises > 30 mm/week

Temperature
- Impact: Very low (−0.19 cases/°C)
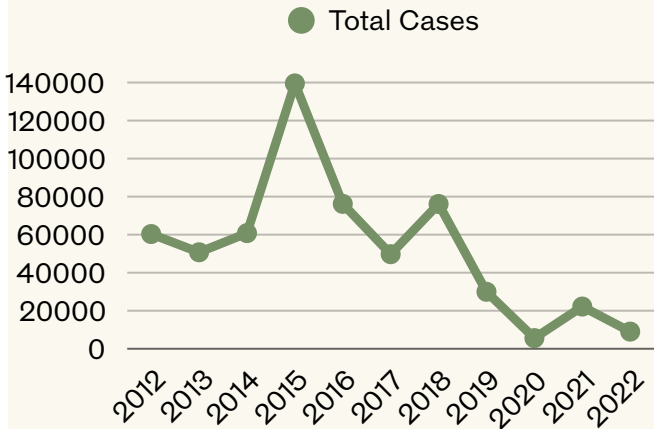- Significance: p = 0.89 ❌
- Threshold: None detected

Leaf Area Index
- Impact: −1.56 cases per unit LAI
- Significance: p = 0.18 ❌
- Threshold: Not applicable

TOP 5 DISEASES

- Chinkungunya 6.8%
- Malaria 14.3%
- ADD 32.2%
- Cholera 16.2%
- Dengue 30.5%

ANNUAL TREND: 2012 – 2022

Total Cases

CONCLUSION

Precipitation is the strongest climate driver of disease outbreaks in India, with risk sharply rising beyond 30 mm/week.

While temperature and vegetation show limited direct impact, the findings validate long-standing concerns about monsoon-linked epidemics, especially diarrhoea, malaria, and dengue.

Importantly, India has witnessed a significant reduction in reported outbreaks, especially post-2018 — a positive signal of improved public health systems, surveillance, and perhaps climate adaptation efforts.

Yet, this trend should not breed complacency. With increasing climate variability, urban-rural overlap, and infrastructure stress, there is an urgent need to:

- Integrate climate data into health policy,
- Develop threshold-based early warning systems, and
- Enable district-level outbreak forecasting.