

Integrated Drought & Vegetation Condition Analysis

Relationship between Rainfall Deficits, Vegetation Health, and Anomalies (2023–2025)

Panama, Coclé Province



Drought and Wetness

Vegetation Anomaly

Vegetation Stress

SPI Median

0.12

NDVI Median

0.26

VCI Median

65.69

2023

2024

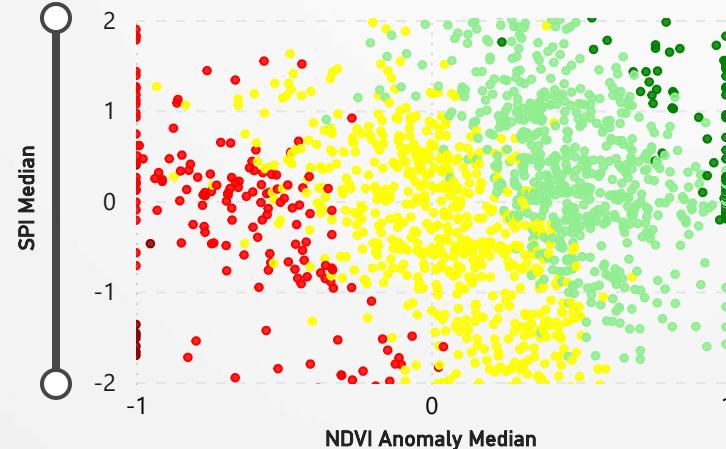
2025

January

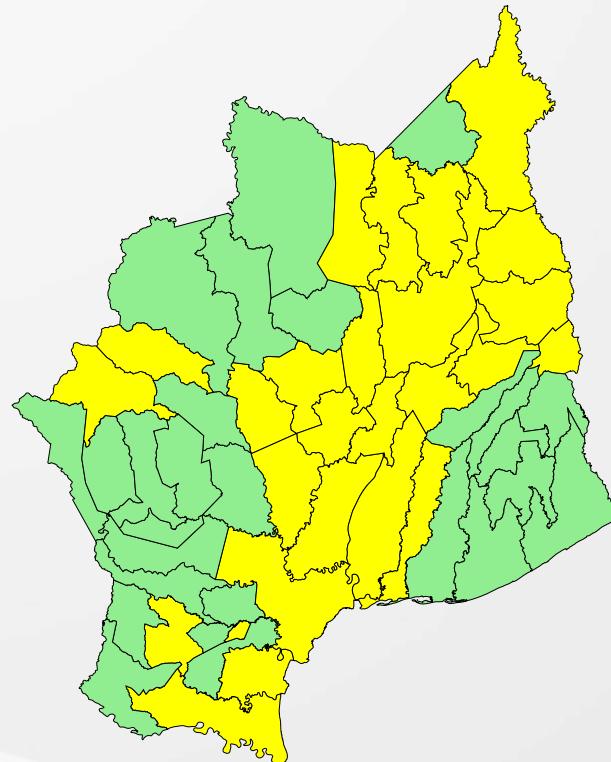
February

March

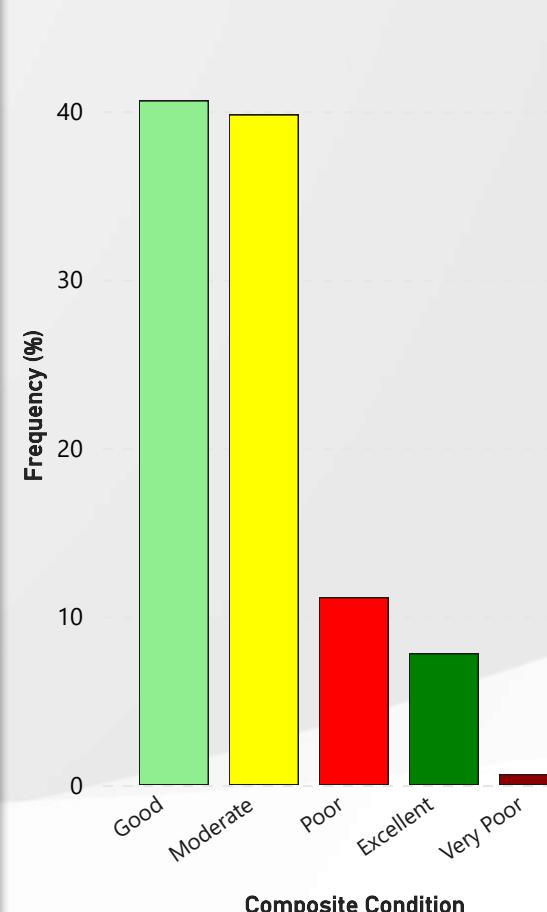
Relationship between Rainfall & Vegetation Anomalies



Composite Drought-Vegetation Condition



Condition Category Distribution (%)



SPI-Based Drought & Wetness Analysis (2023–2025)

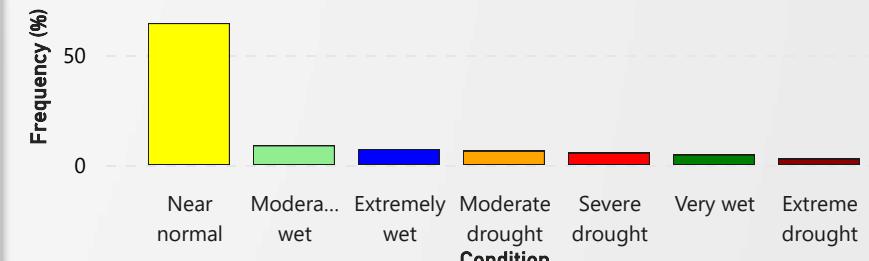


2023
2024
2025

Quarter
1
2
3

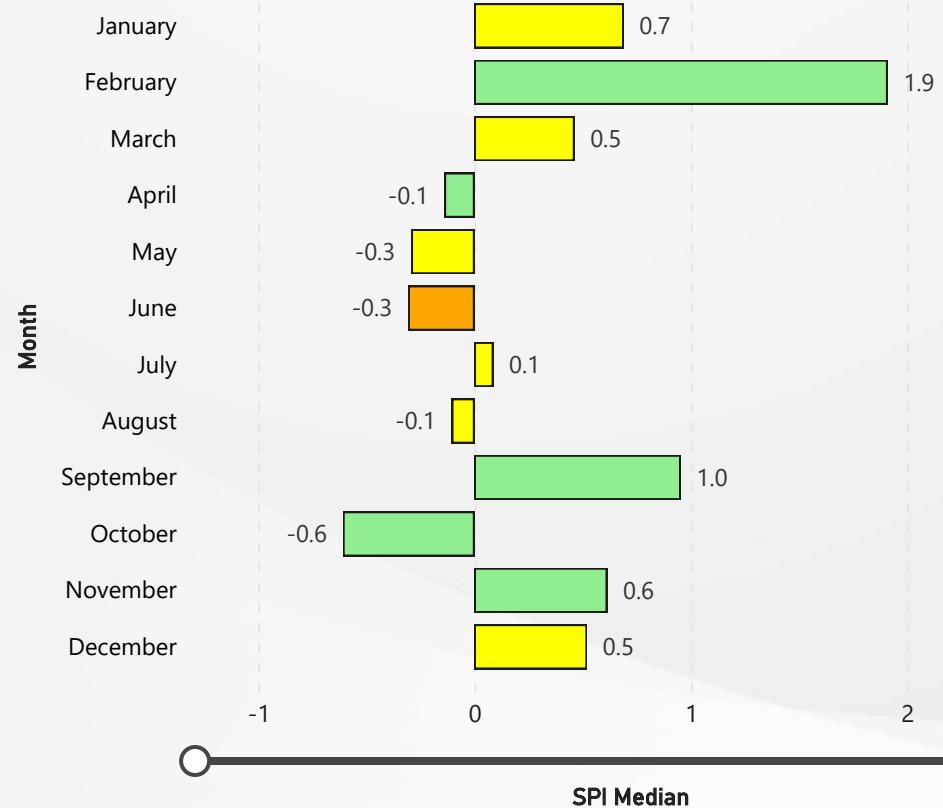
- January
- February
- March
- April
- May
- June

Condition Frequency (%)

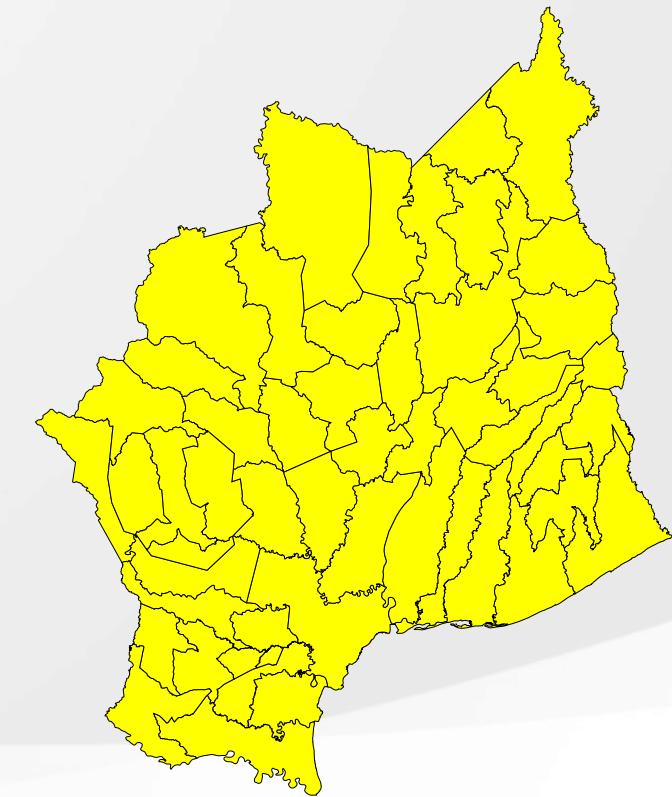


| Corregimiento | SPI Median |
|----------------------|------------|
| Las Huacas | 0.27 |
| Toza | 0.26 |
| El Valle | 0.25 |
| El Píchano | 0.25 |
| Pajonal | 0.23 |
| El Copé | 0.20 |
| El Roble | 0.19 |
| Victoriano | 0.19 |
| Lorenzo | |
| San Juan de Dios | 0.17 |
| San Miguel | 0.17 |
| Toabré | 0.17 |
| Olá (Cabecera) | 0.16 |
| Villarreal | 0.16 |
| Chiguirí Arriba | 0.15 |
| Cabuya | 0.15 |
| Barrios Unidos | 0.15 |
| Llano Norte | 0.15 |
| El Chirú | 0.14 |
| Aguadulce (Cabecera) | 0.14 |
| Río Hato | 0.14 |

Monthly Drought/Wetness Index (SPI)



Geographic Patterns of Drought & Wetness



NDVI-Based Vegetation Anomaly Analysis (2023–2025)

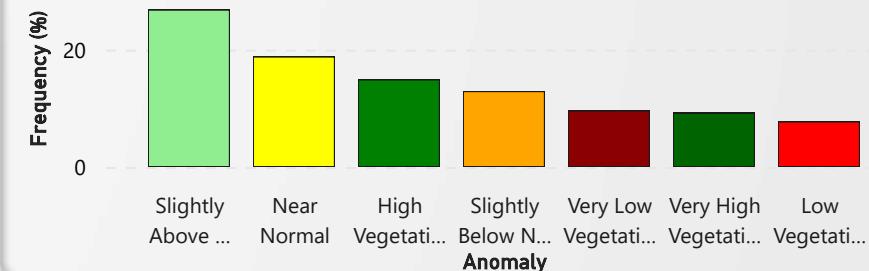


2023
2024
2025

Quarter
1
2
3

- January
- February
- March
- April
- May
- June

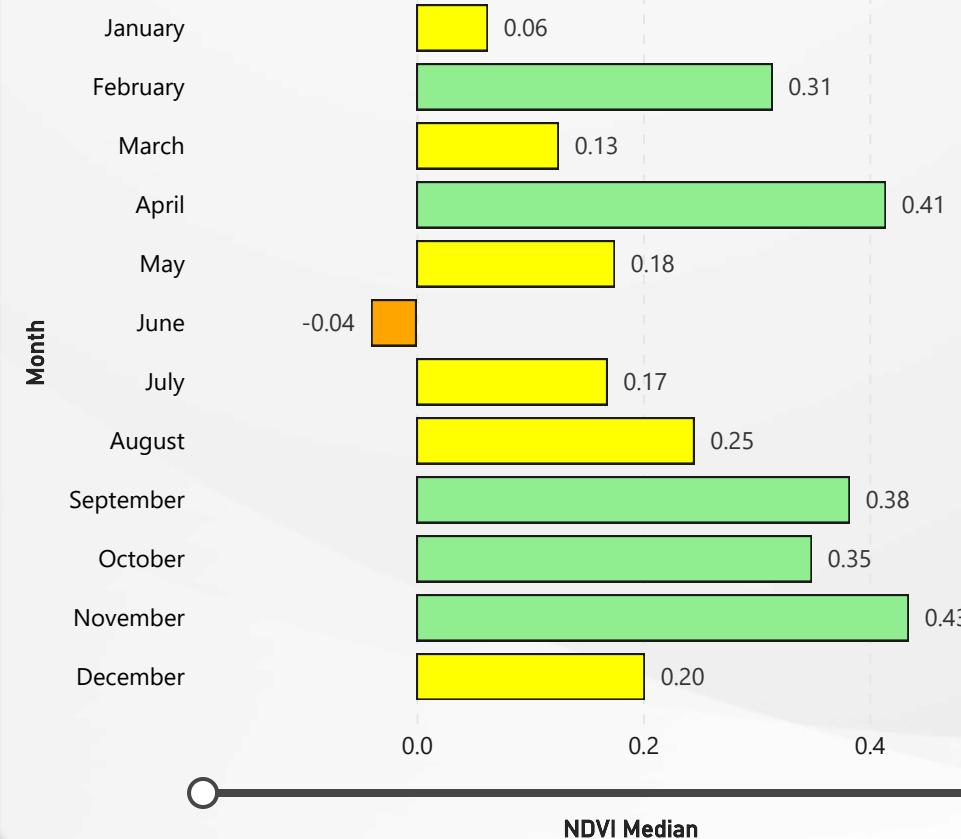
Distribution of Drought & Wetness Conditions (%)



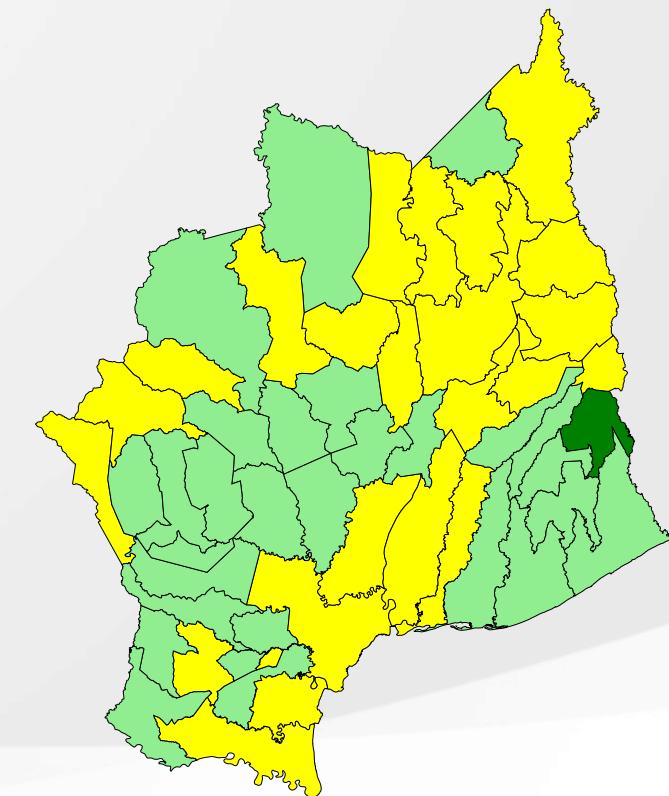
Corregimiento NDVI Median

| Corregimiento | NDVI Median |
|----------------------|-------------|
| Cabuya | 0.51 |
| Virgen del Carmen | 0.50 |
| La Pava | 0.44 |
| Río Hato | 0.42 |
| Guzmán | 0.42 |
| Santa Rita | 0.41 |
| Toza | 0.39 |
| Caballero | 0.36 |
| El Copé | 0.34 |
| San Juan de Dios | 0.32 |
| Llano Norte | 0.32 |
| El Caño | 0.31 |
| El Chirú | 0.30 |
| El Retiro | 0.30 |
| El Potrero | 0.30 |
| Antón (Cabecera) | 0.29 |
| Capellánía | 0.29 |
| Villarreal | 0.29 |
| Aguadulce (Cabecera) | 0.29 |

Monthly Median NDVI Anomaly



Geographic Patterns of NDVI Anomaly



VCI-Based Vegetation Health Analysis (2023–2025)



2023

2024

2025

Quarter

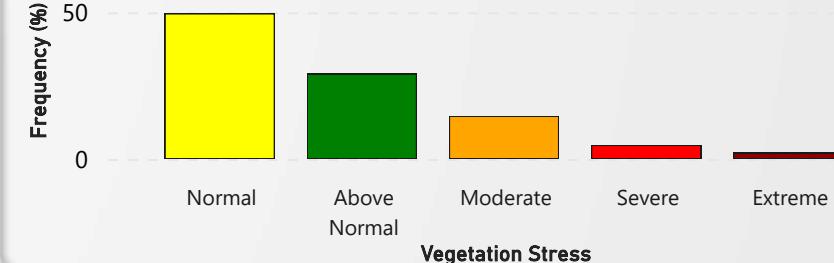
1

2

3

- January
- February
- March
- April
- May
- June

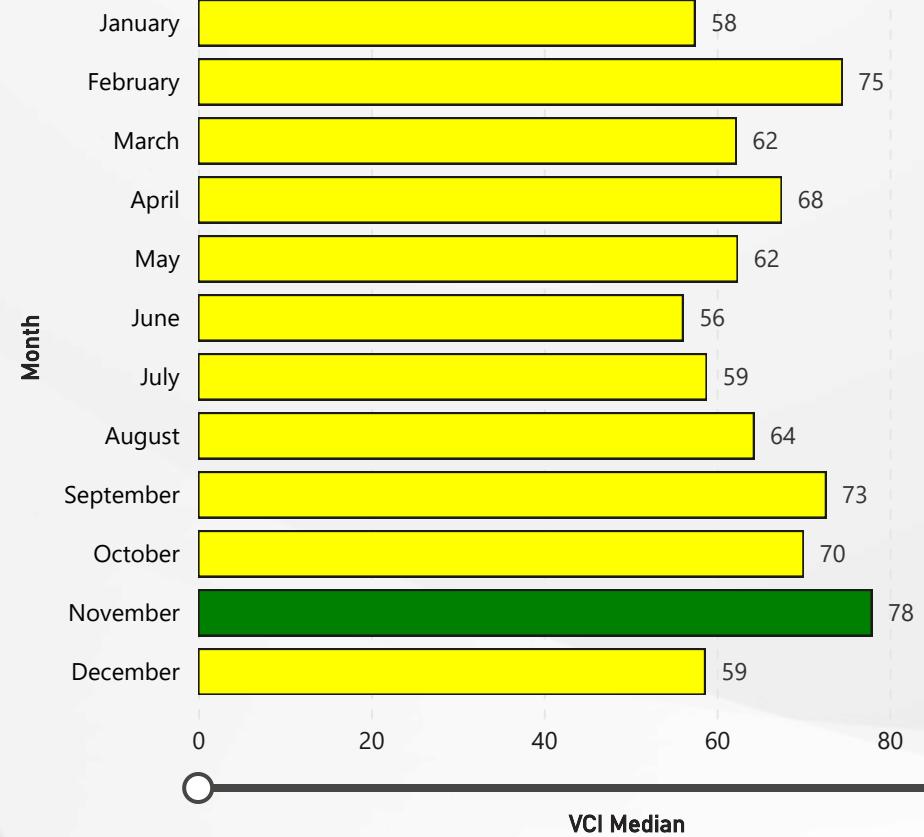
Distribution of Vegetation Conditions (%)



Corregimiento VCI Median

| Corregimiento | VCI Median |
|------------------|------------|
| Cabuya | 81.30 |
| Santa Rita | 74.65 |
| Llano Norte | 73.04 |
| El Retiro | 72.82 |
| La Pava | 70.93 |
| Caballero | 70.84 |
| El Cristo | 70.80 |
| Villarreal | 70.08 |
| Llano Grande | 69.51 |
| Piedras Gordas | 69.49 |
| El Hato de San | 69.06 |
| Juan de Dios | 69.00 |
| Reicito | 68.83 |
| Pueblos Unidos | 67.79 |
| El Chirú | 67.75 |
| Río Hato | 67.68 |
| Antón (Cabecera) | 67.62 |
| El Caño | 67.03 |
| Toza | 66.96 |
| El Copé | 66.90 |

Monthly Median Vegetation Condition Index (VCI)



Geographic Patterns of Vegetation Condition

