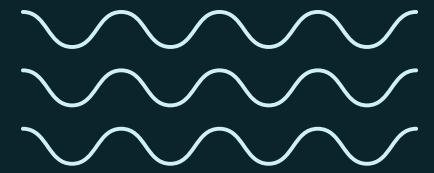




Drought Characterization using SPI and GIS

GROUP - 9

PRANATHI - 2020101083
 IMAMI - 2020113012
 DIVYA - 2020101081
 RUPA - 2020101097
 JAY - 2020101070
 SHIVAM - 2021101127



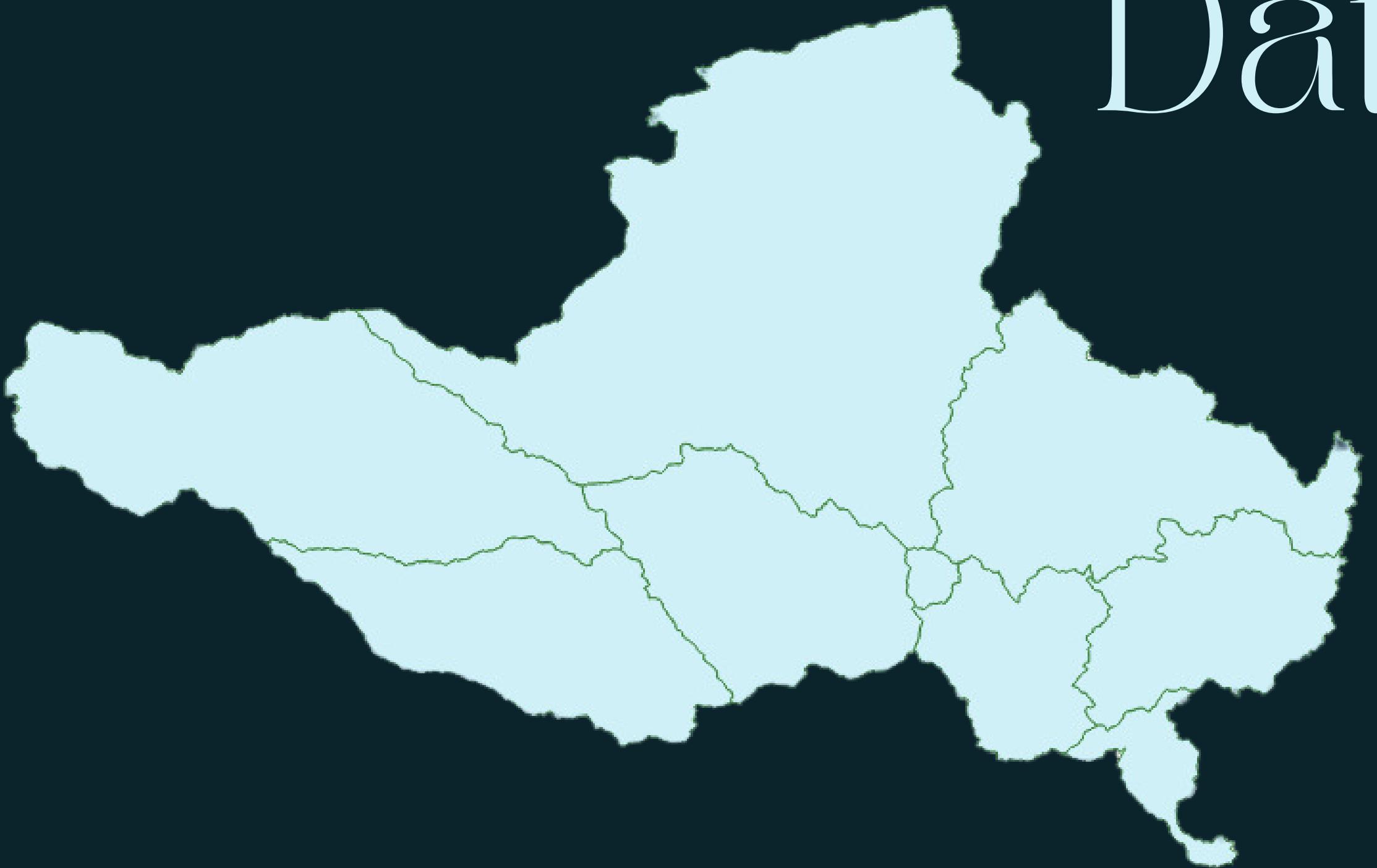
Data Set

GODAVARI

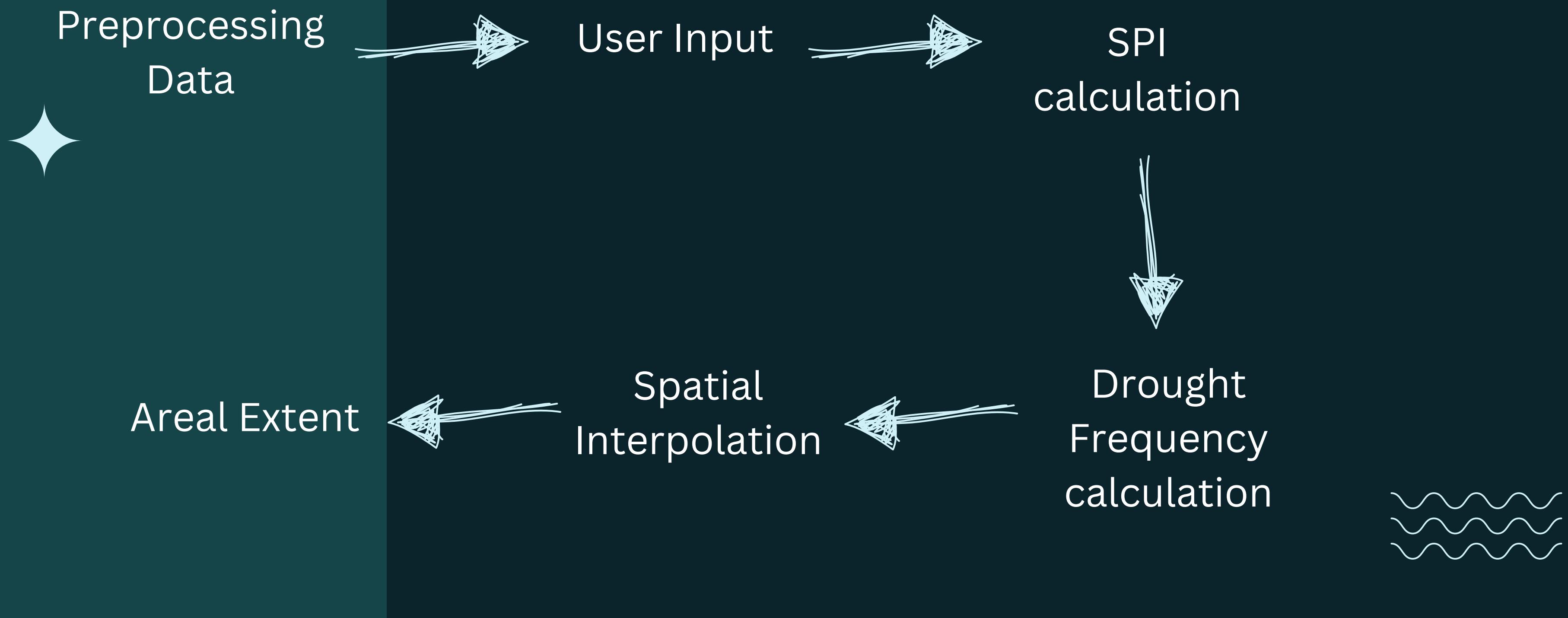
22 stations selected

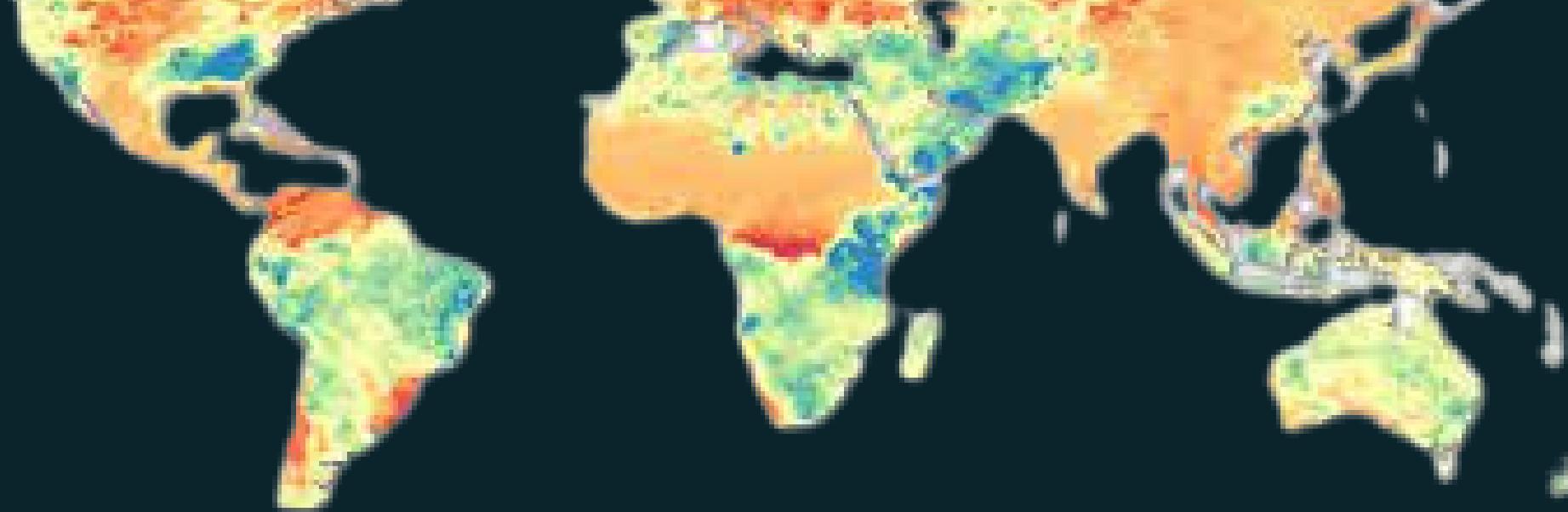
6 - out of basin near the outline

16 inside the basin to collect data



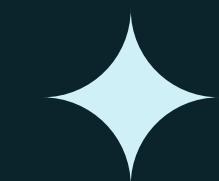
Methodology





SPI

QUANTIFYING, CHARACTERIZING METEOROLOGICAL DROUGHTS BASED ON
PRECIPITATION ANOMALIES OVER DIFFERENT TIMESCALES



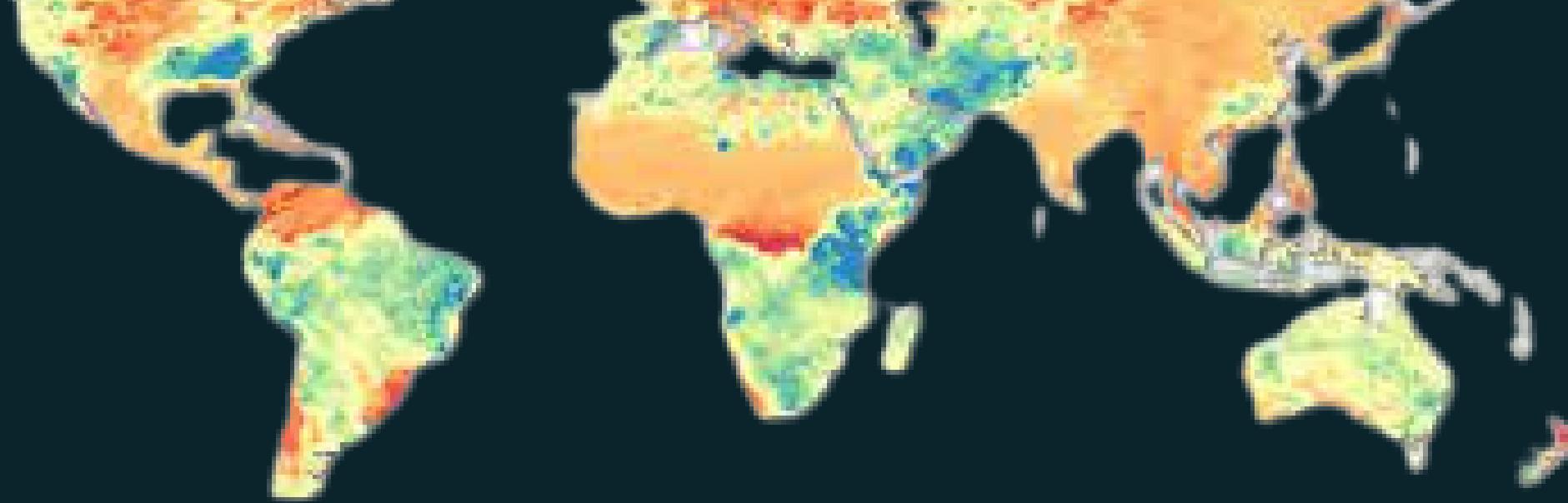
SPI calculation

GAMMA
DISTRIBUTION.

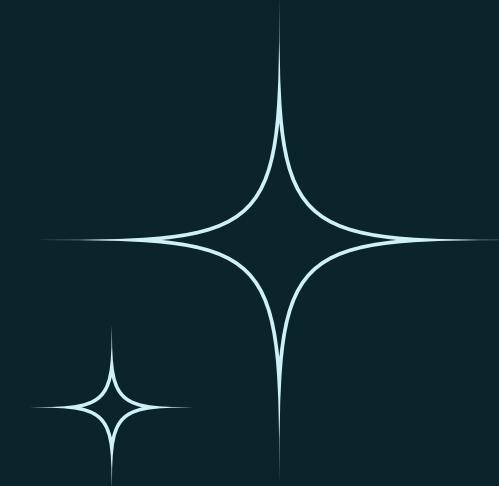
NORMALIZATION

CATEGORIZATION





SPI



GAMMA DISTRIBUTION.

fit long-term precipitation dataset from desired station to a probability distribution, (gamma distribution)

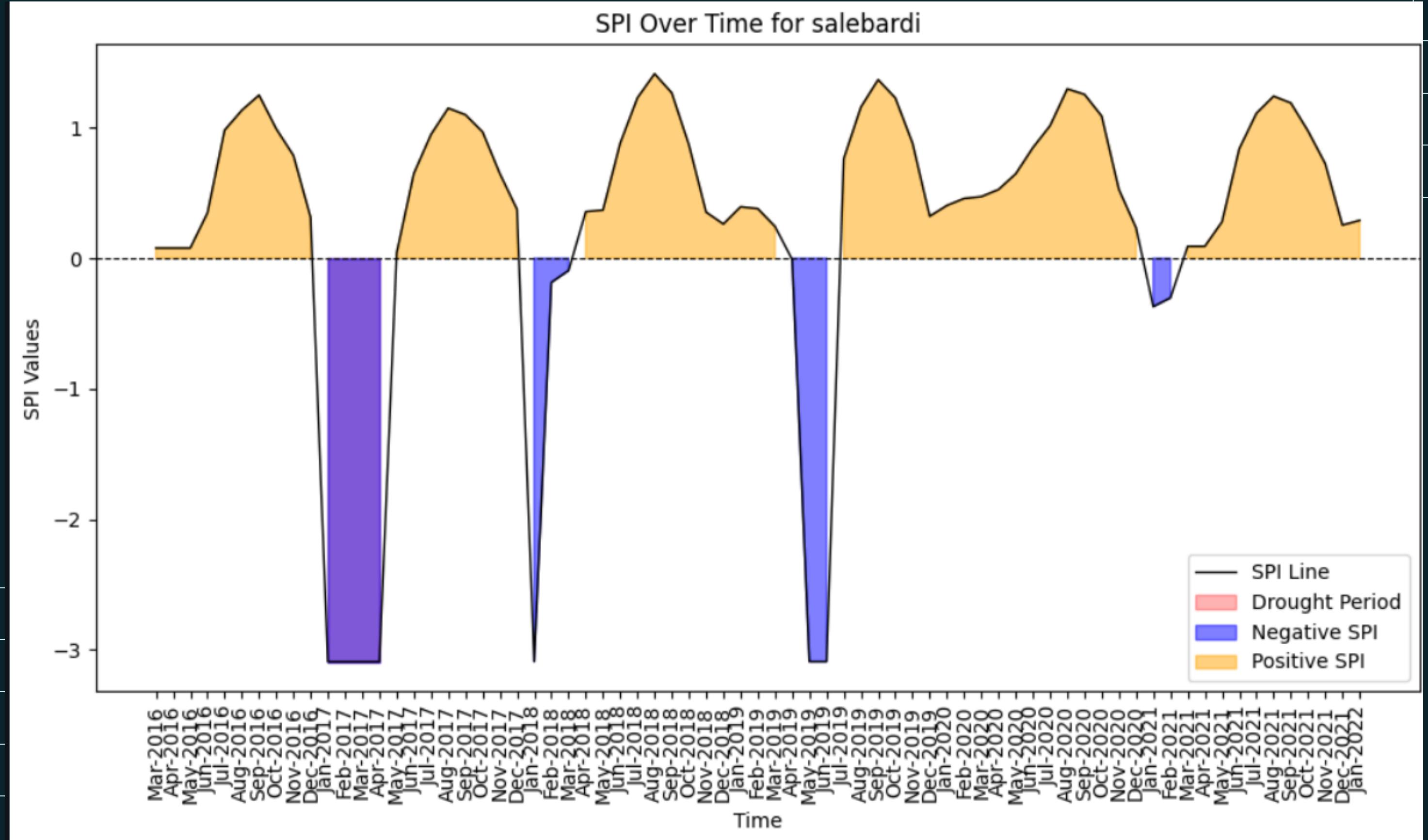
NORMALIZATION

normalize distribution, transforming into Normal Distribution with mean “o” and standarddeviation “I”.

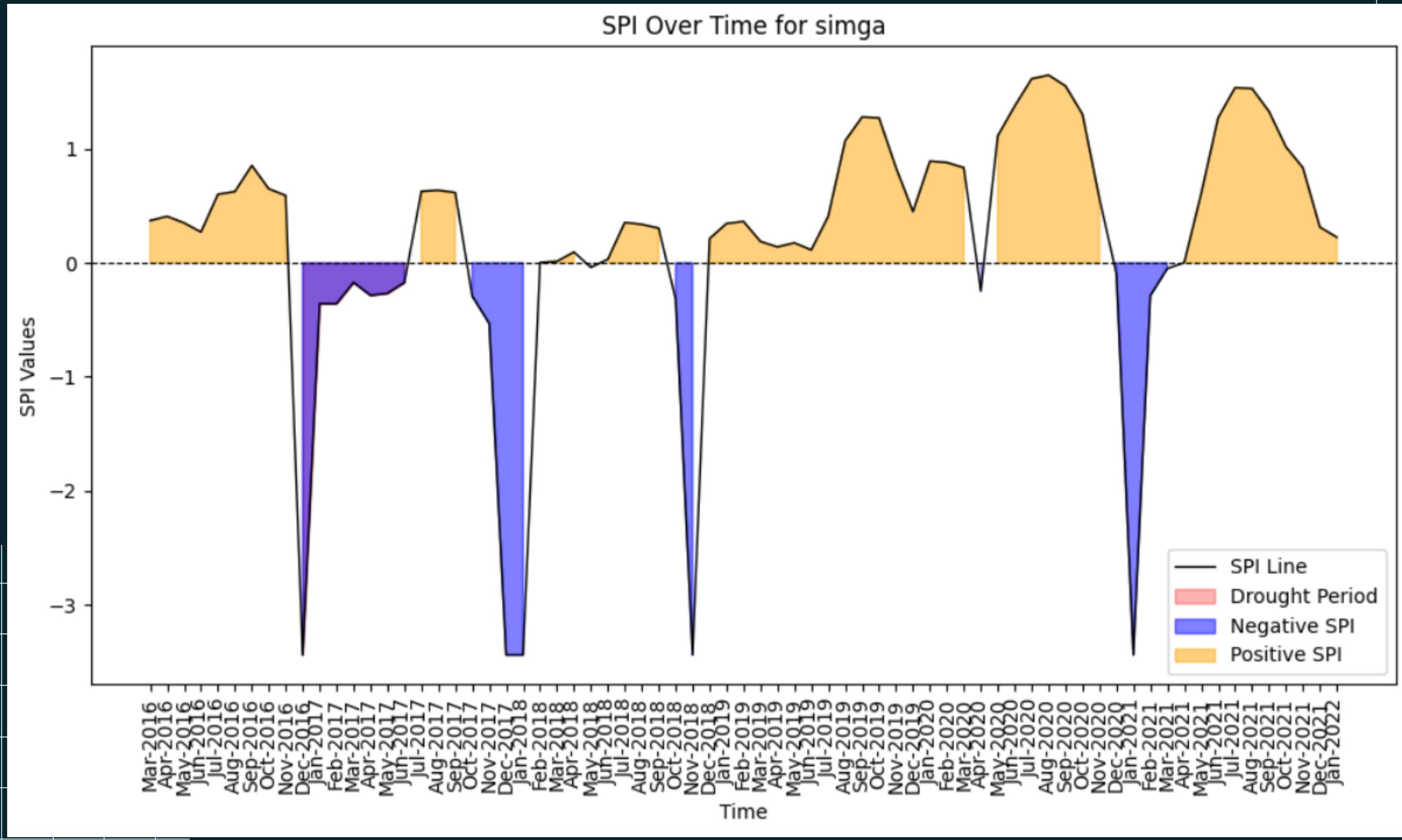
CATEGORIZATION

resulting SPI value, determine the drought condition at the station.

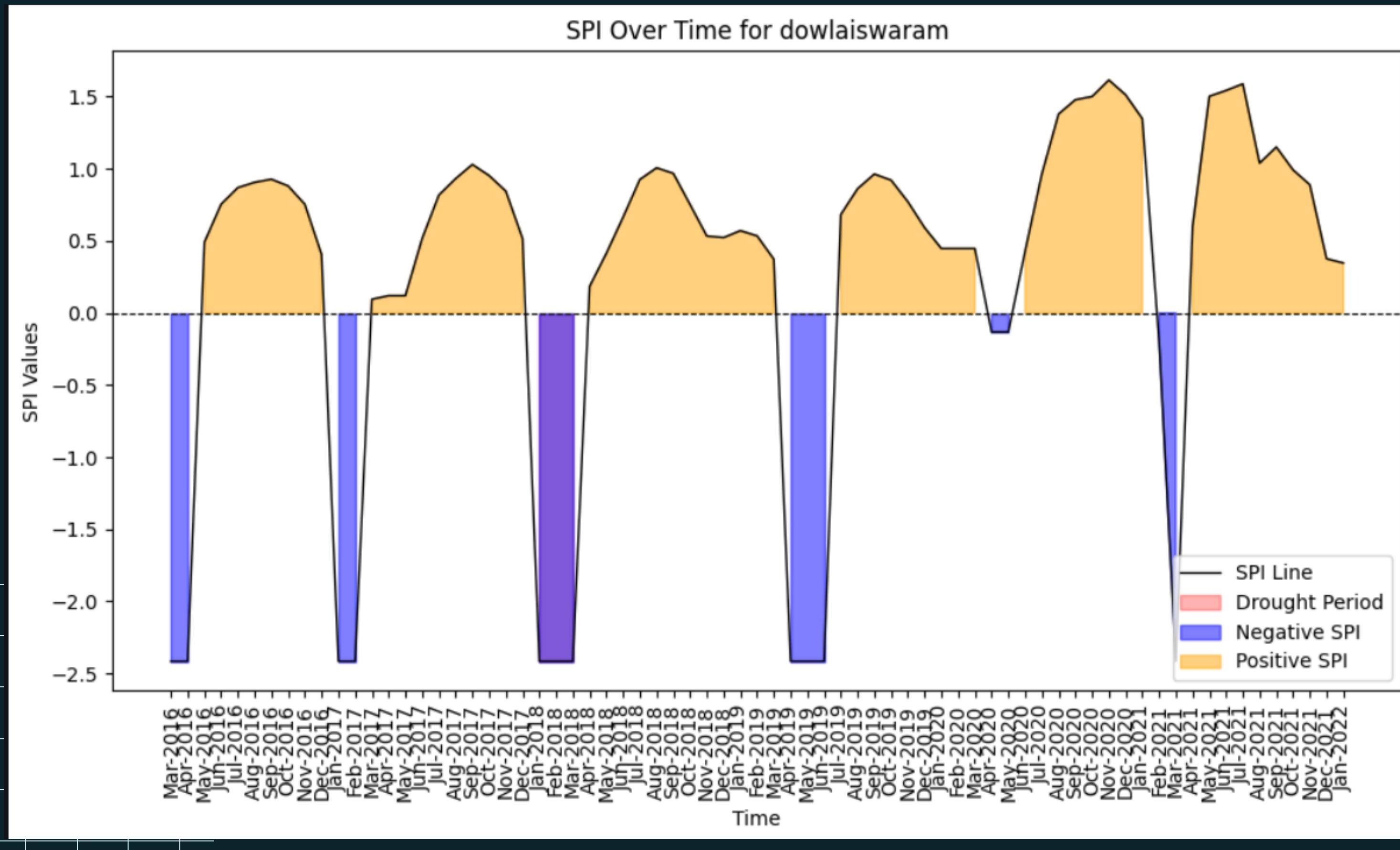
Salebardi



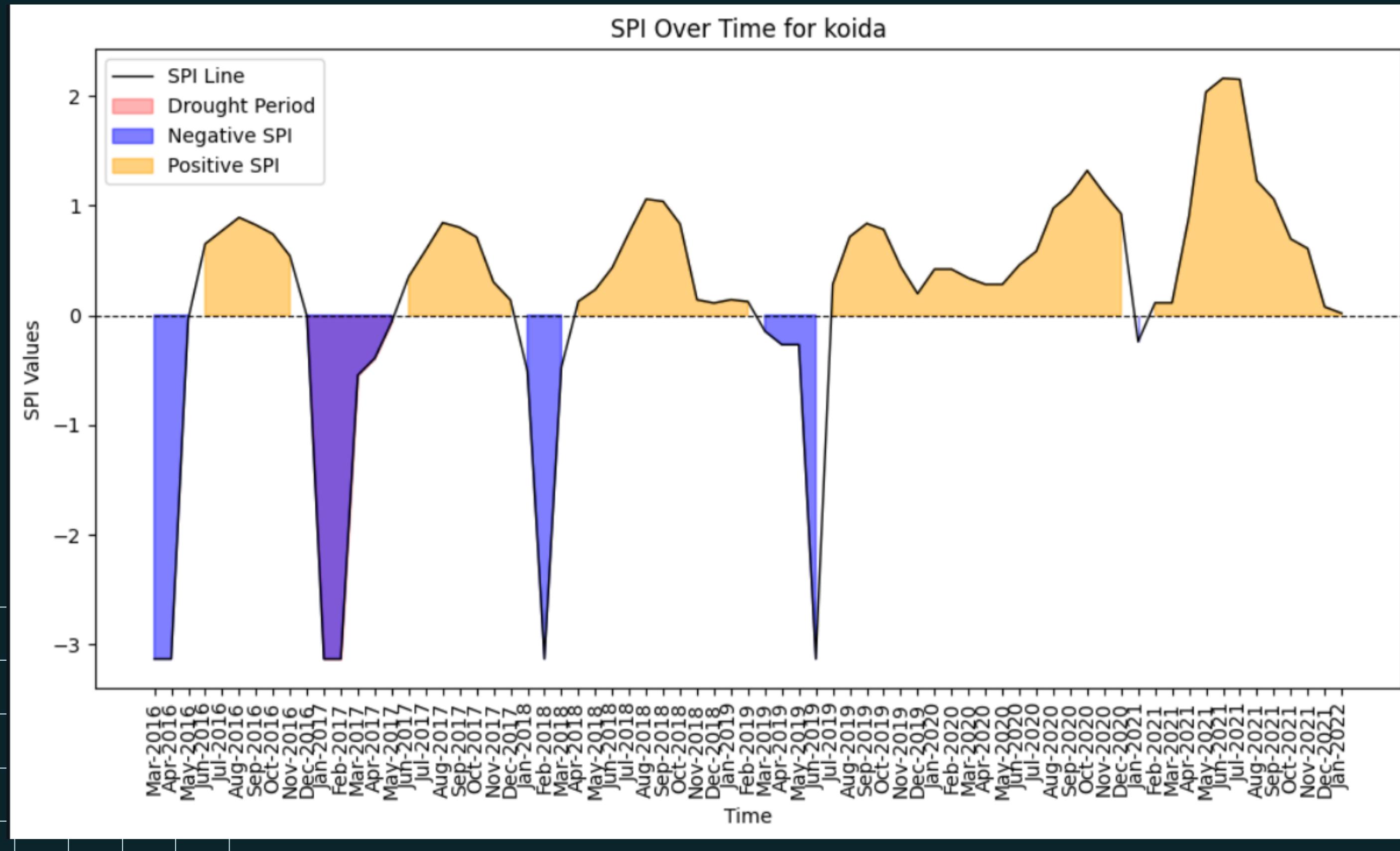
Simga



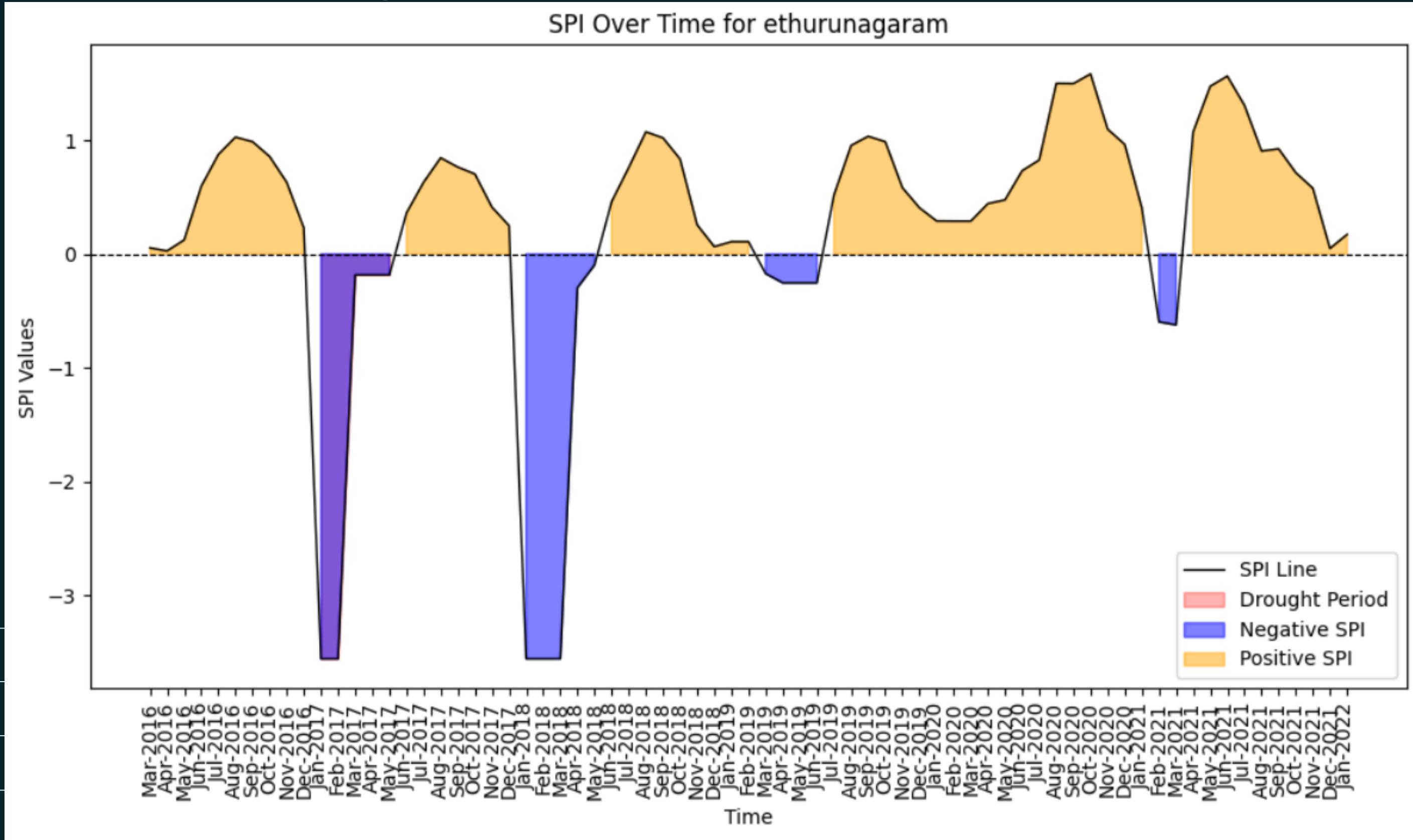
Dowlaiswaram



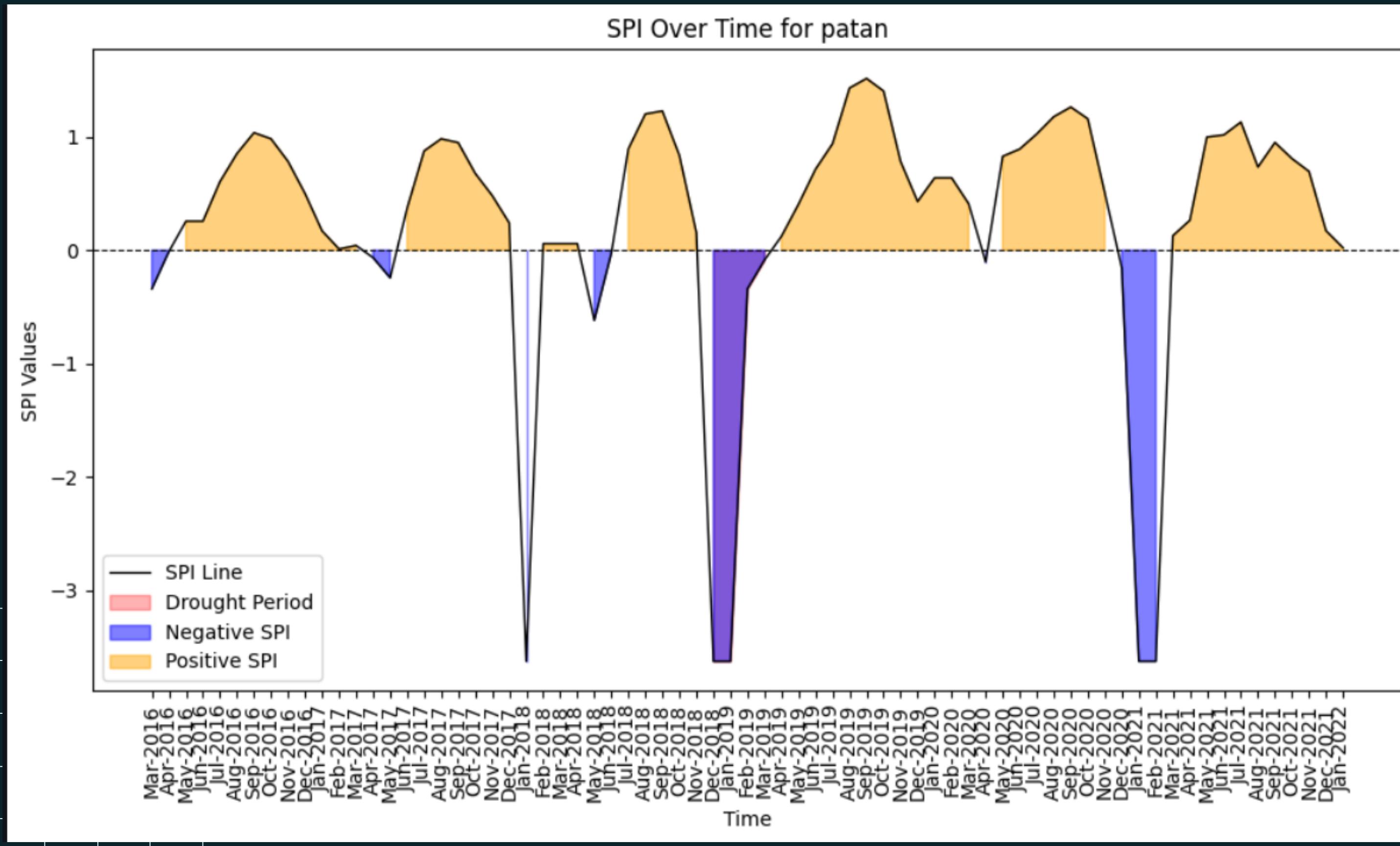
koida



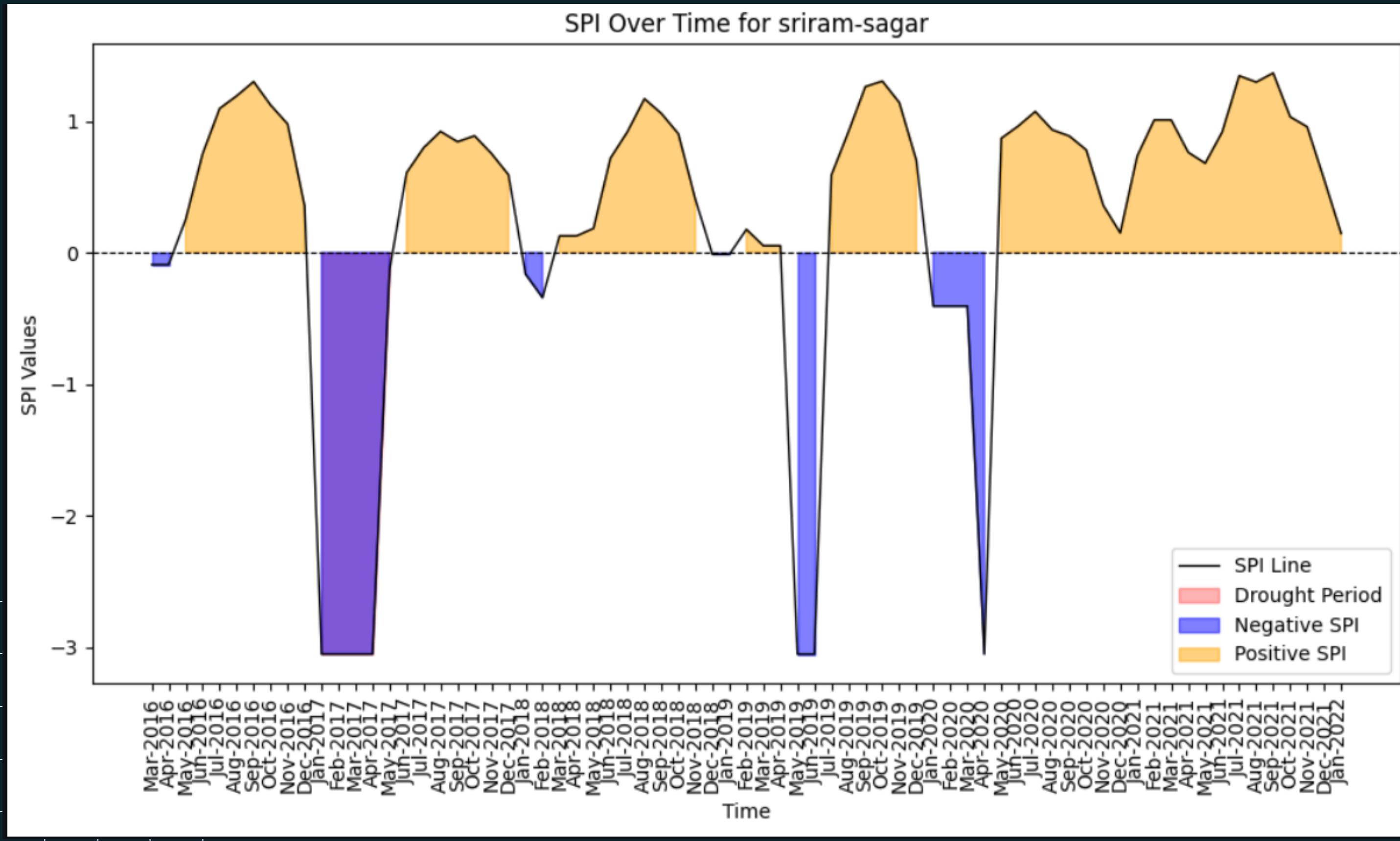
Ethurunagaram



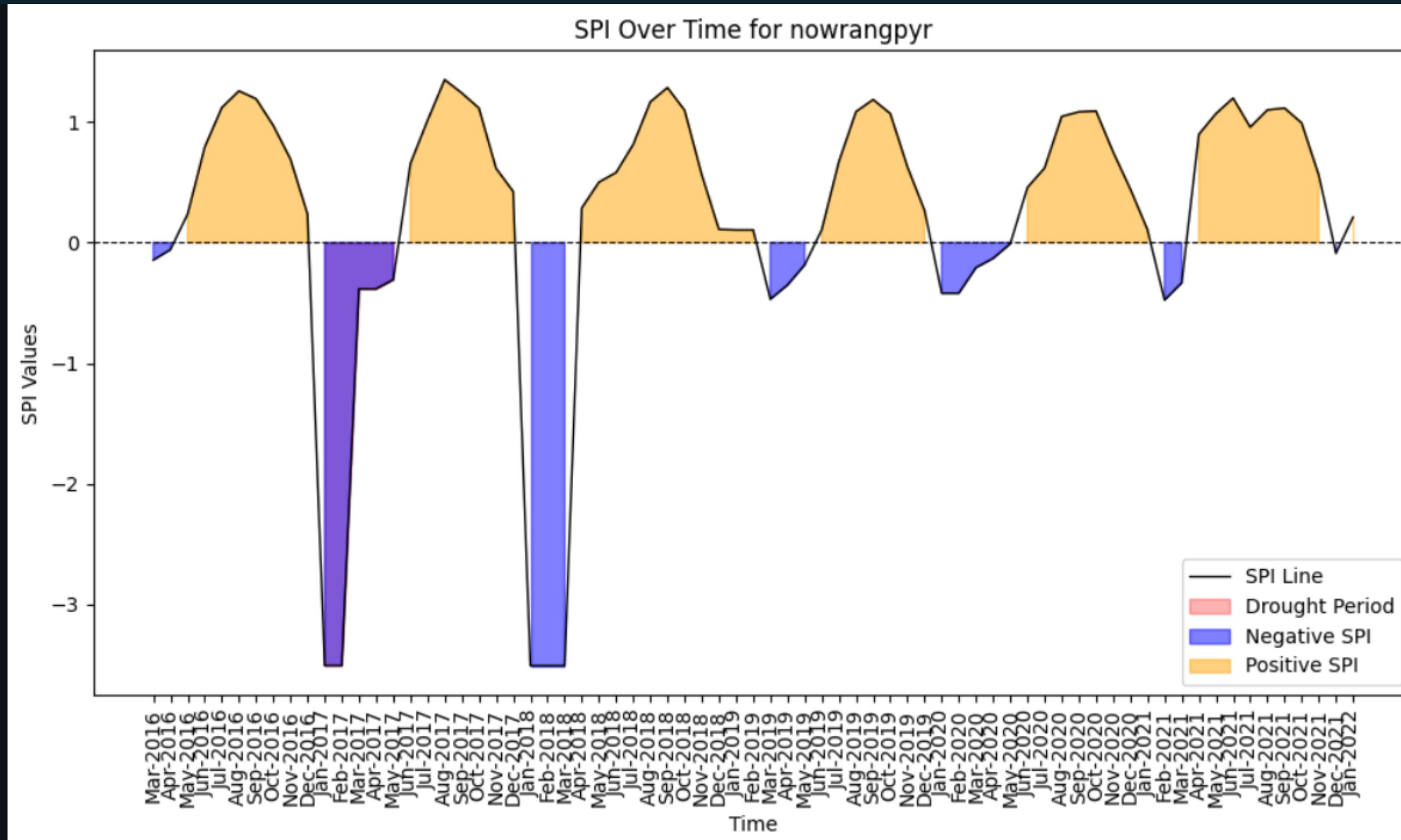
Patan



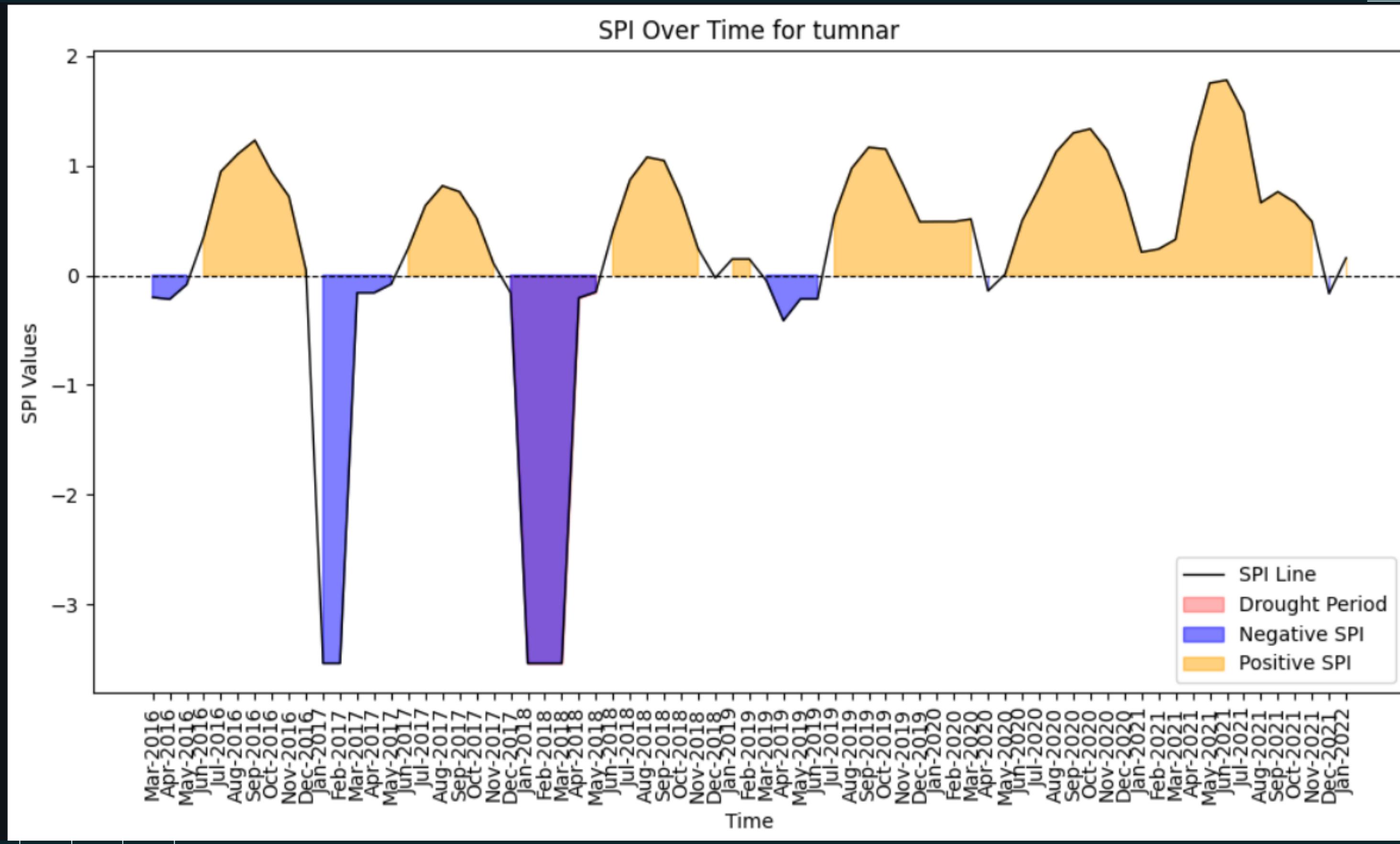
Sriram-sagar



Nowrangpur

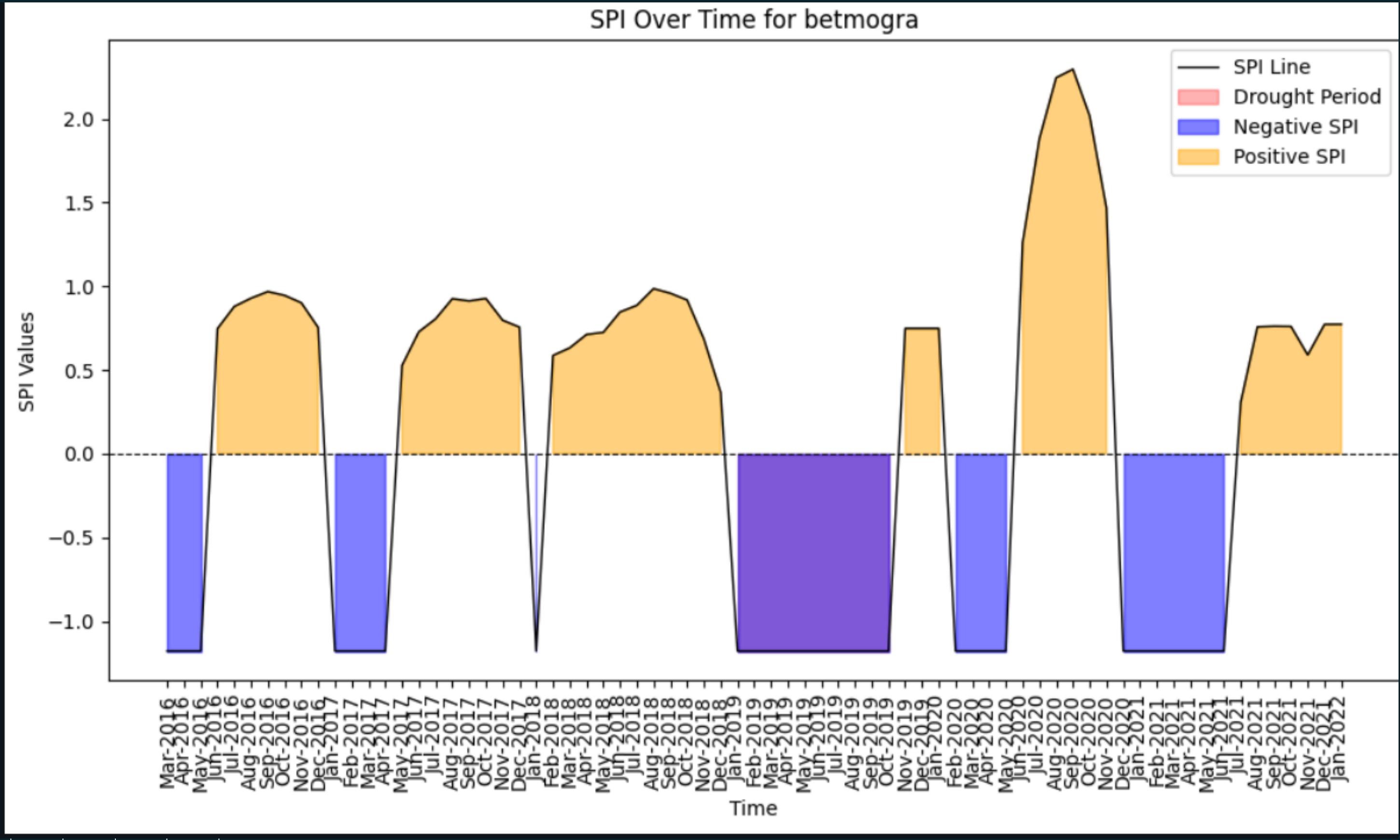


Tumnar

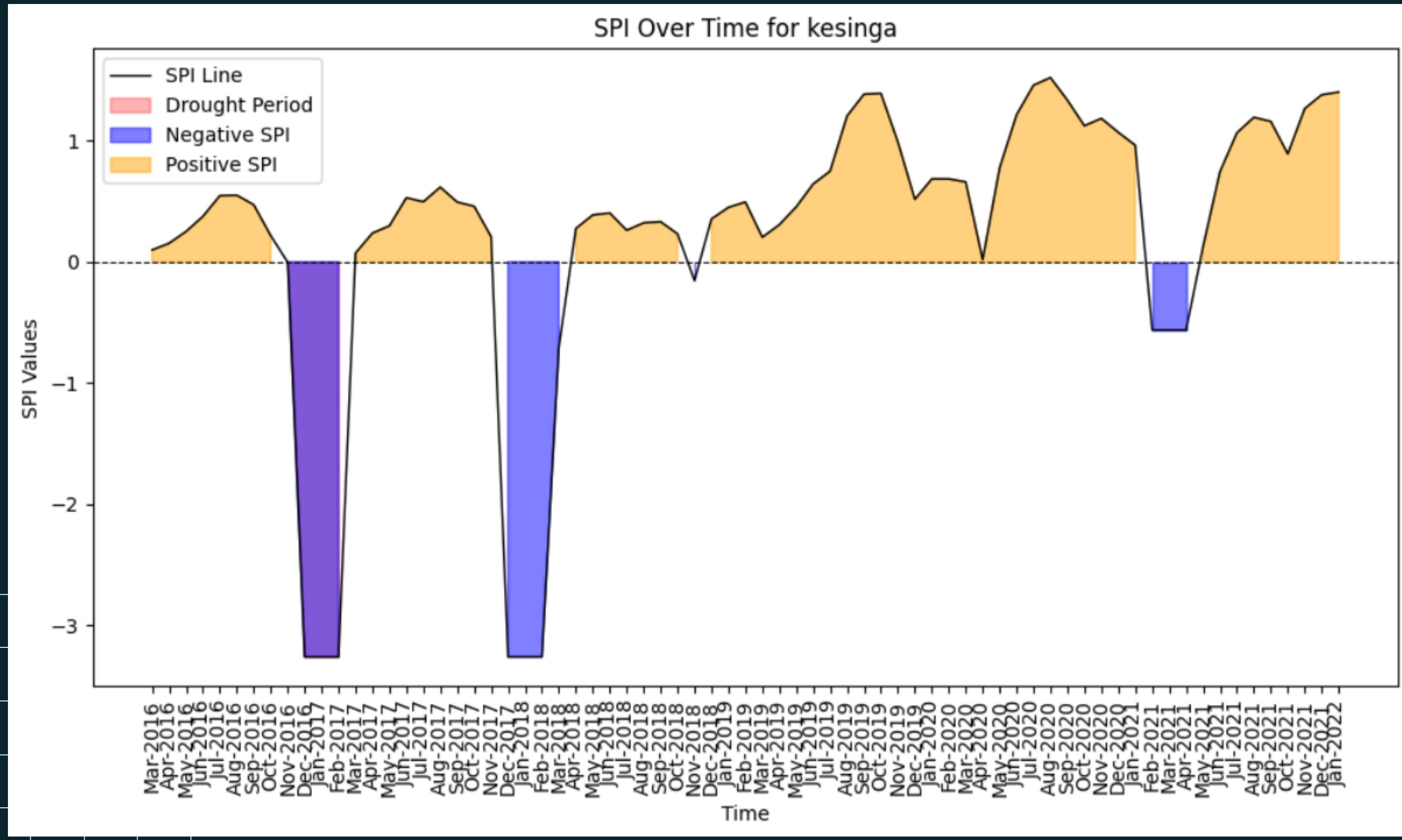


Betmogra

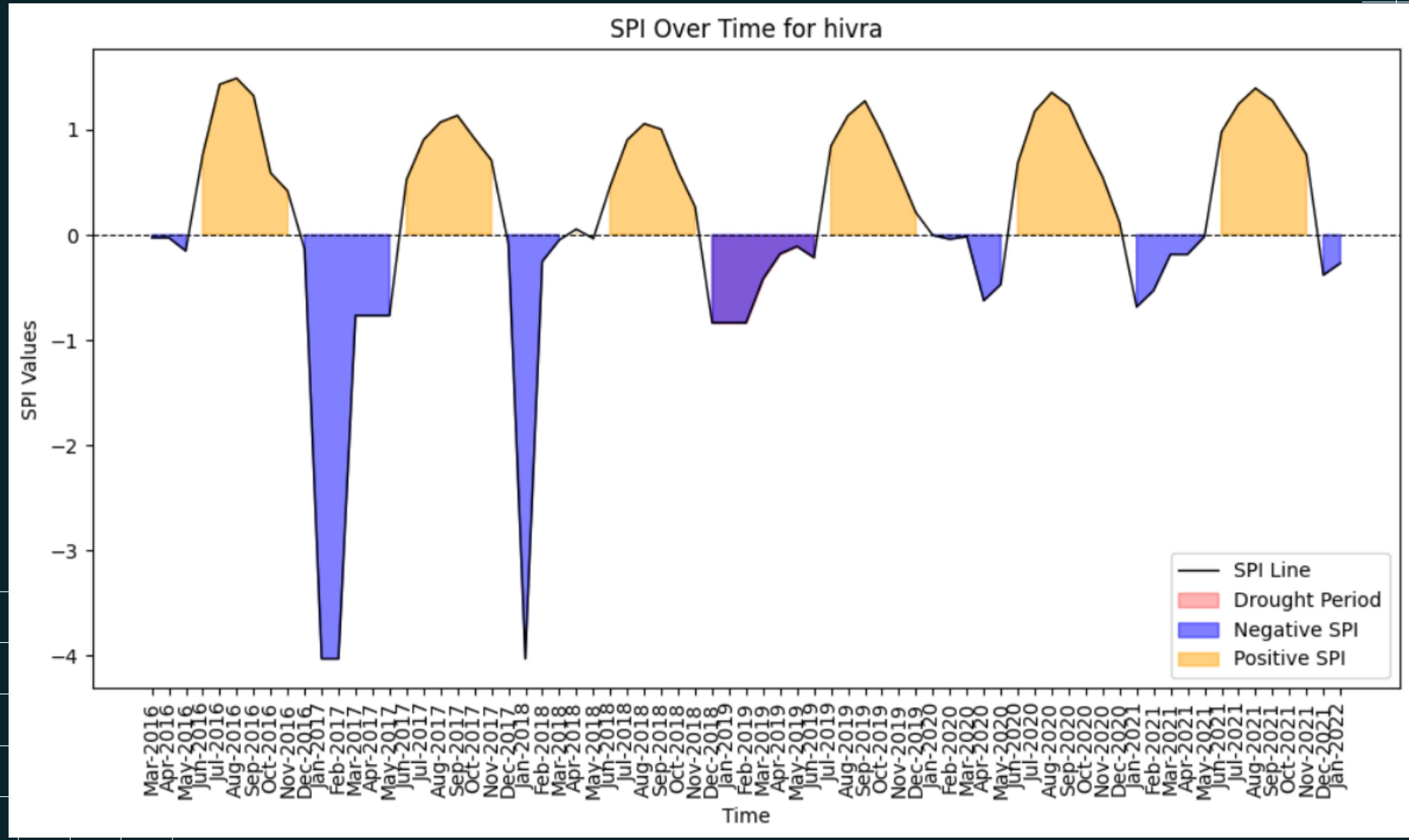
SPI Over Time for betmogra



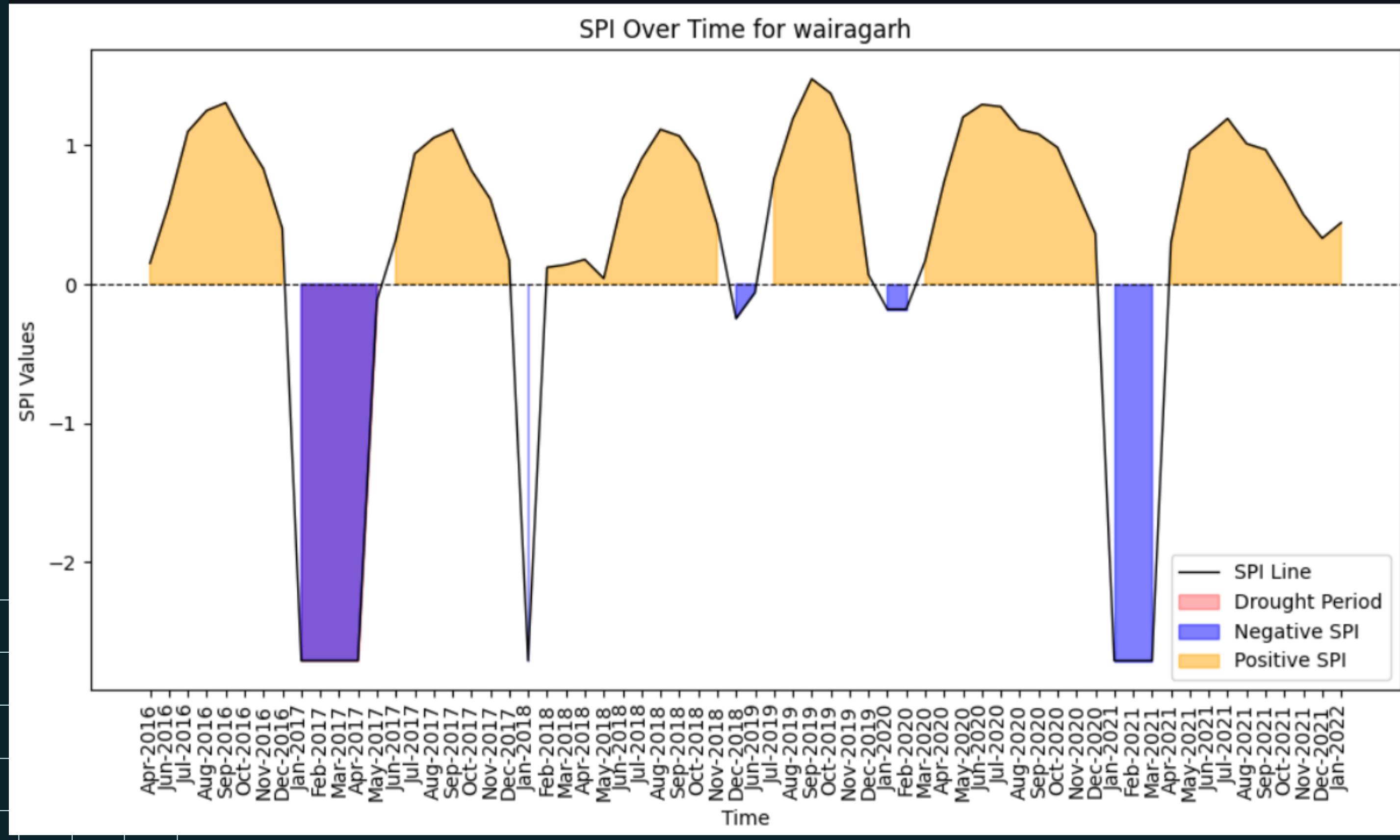
Kesinga



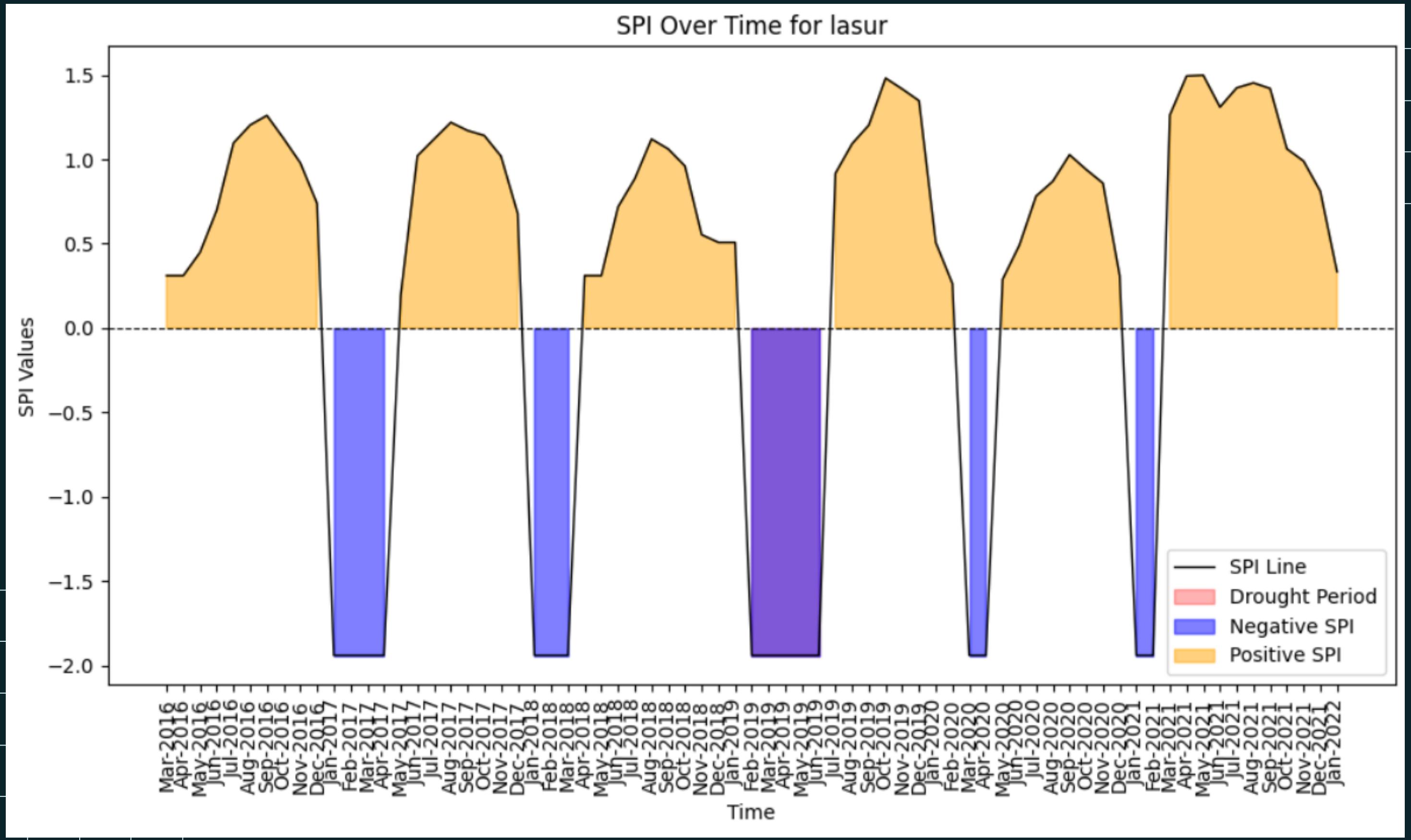
hivra



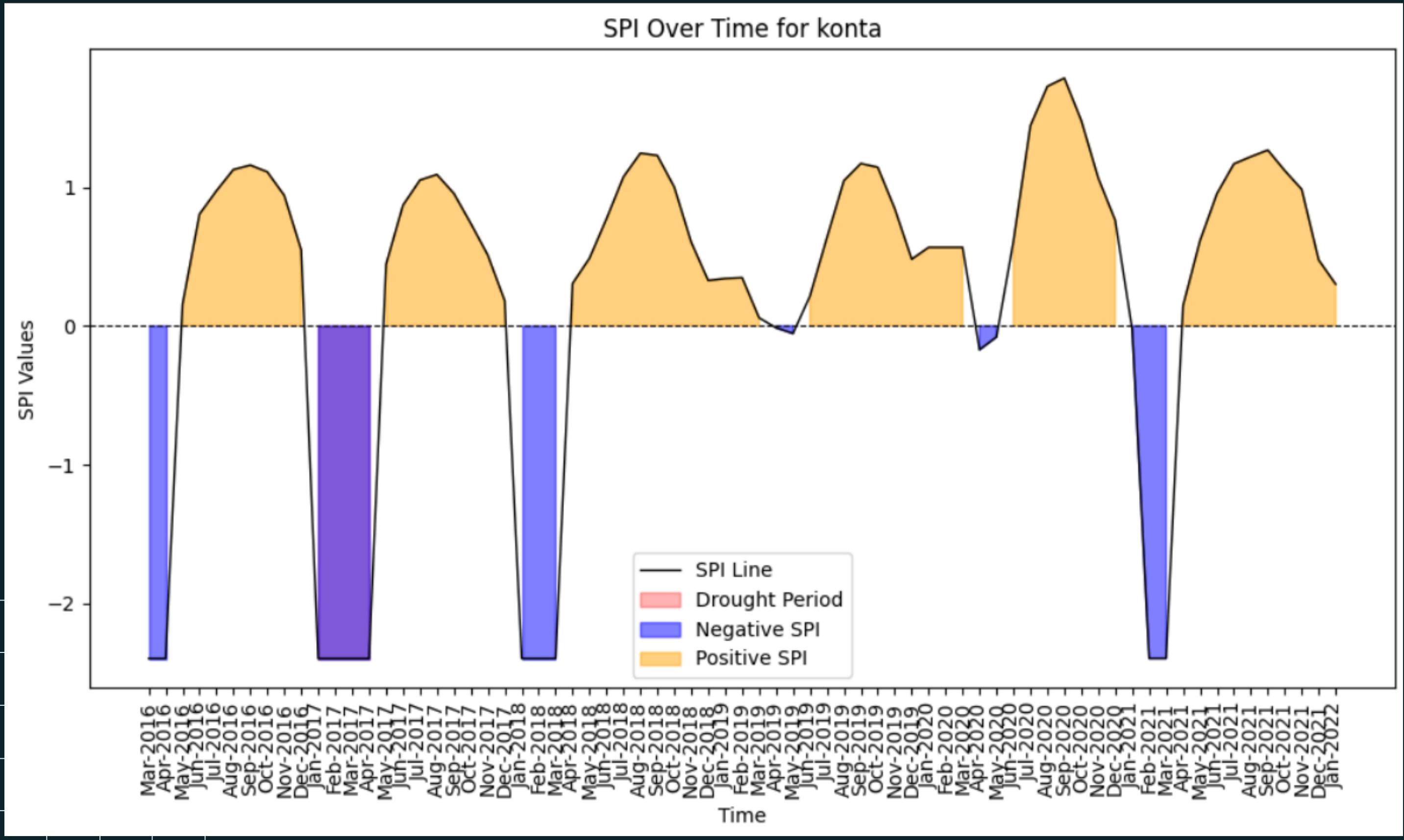
wairagarh



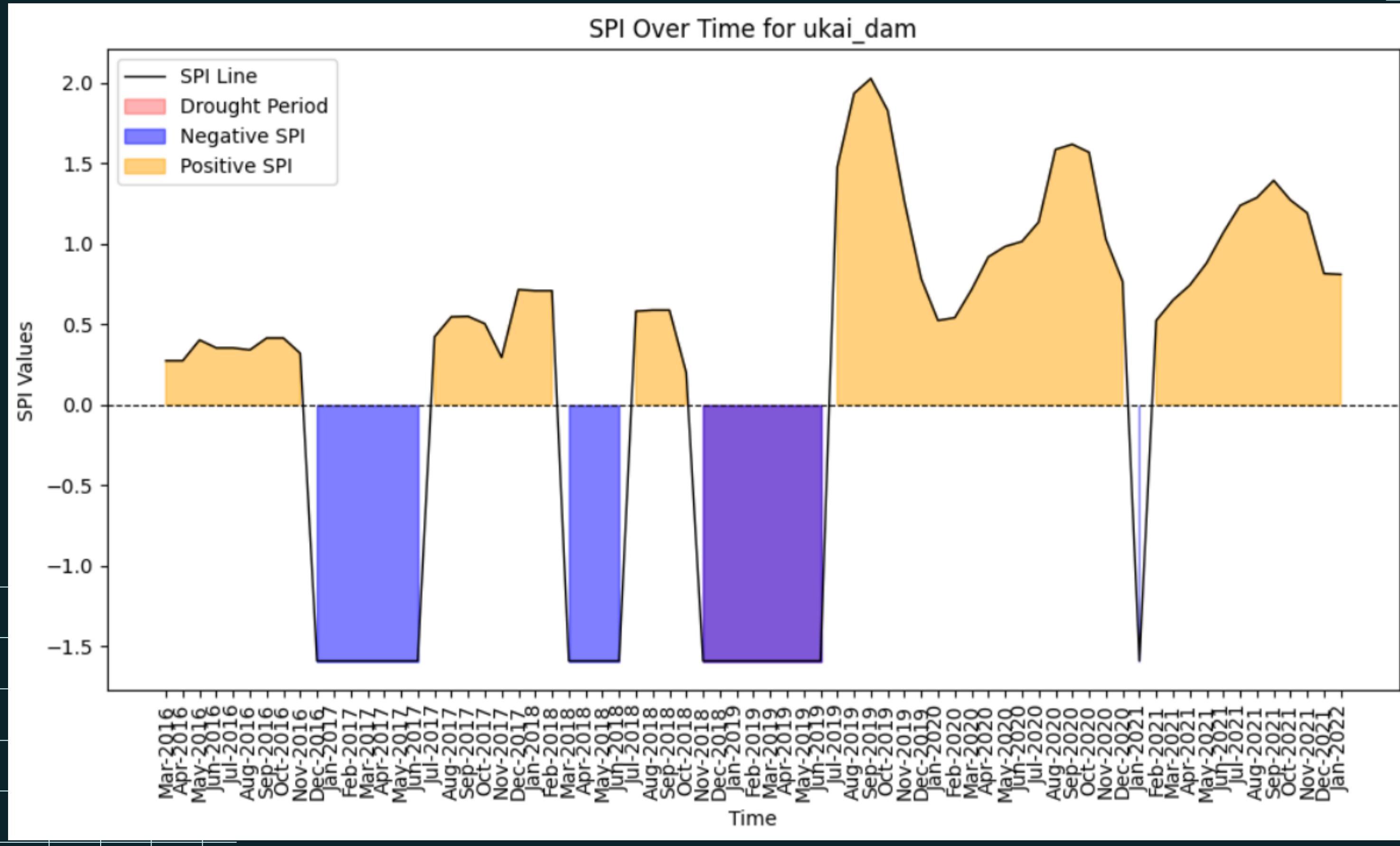
lasur



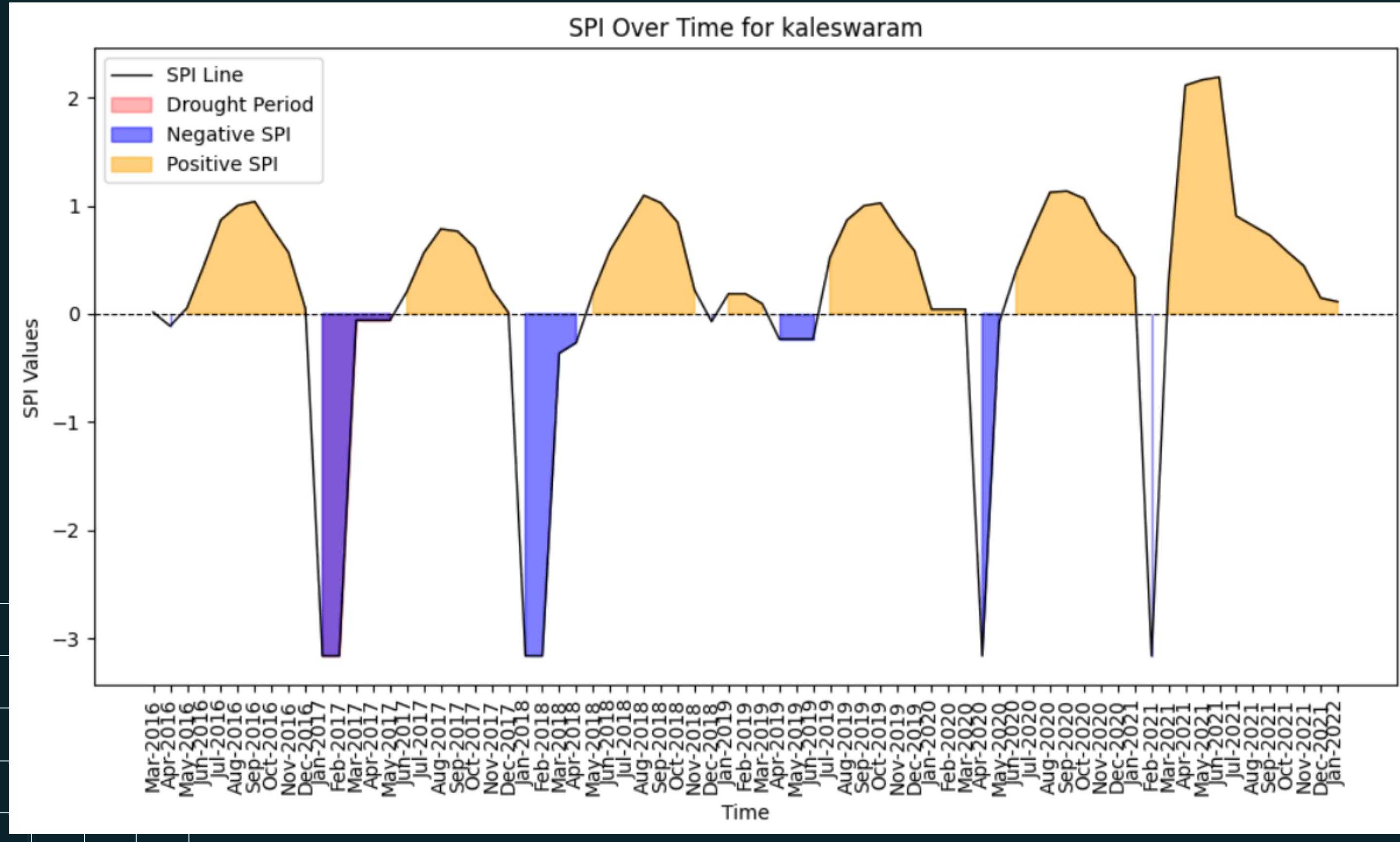
konta



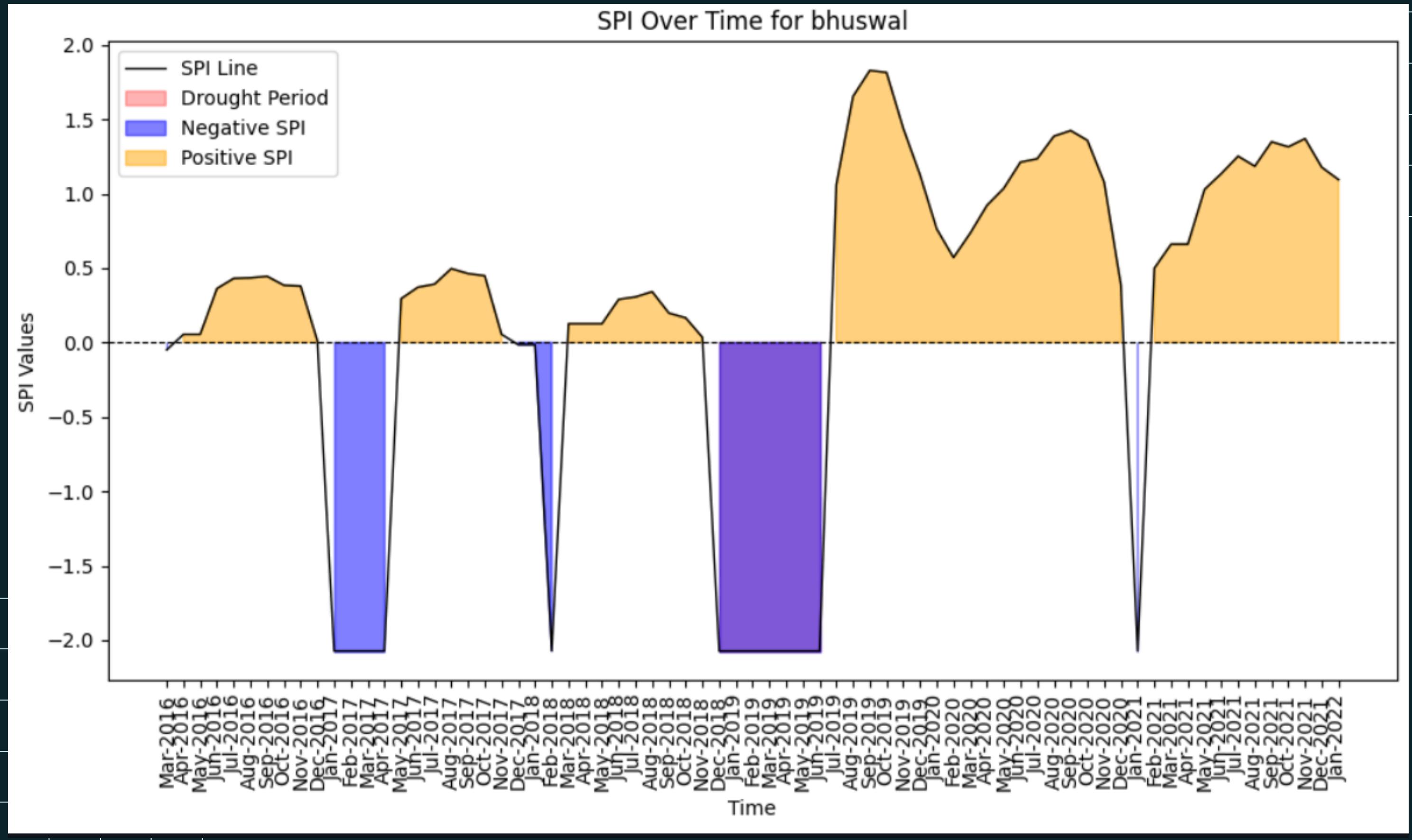
ukai-dam



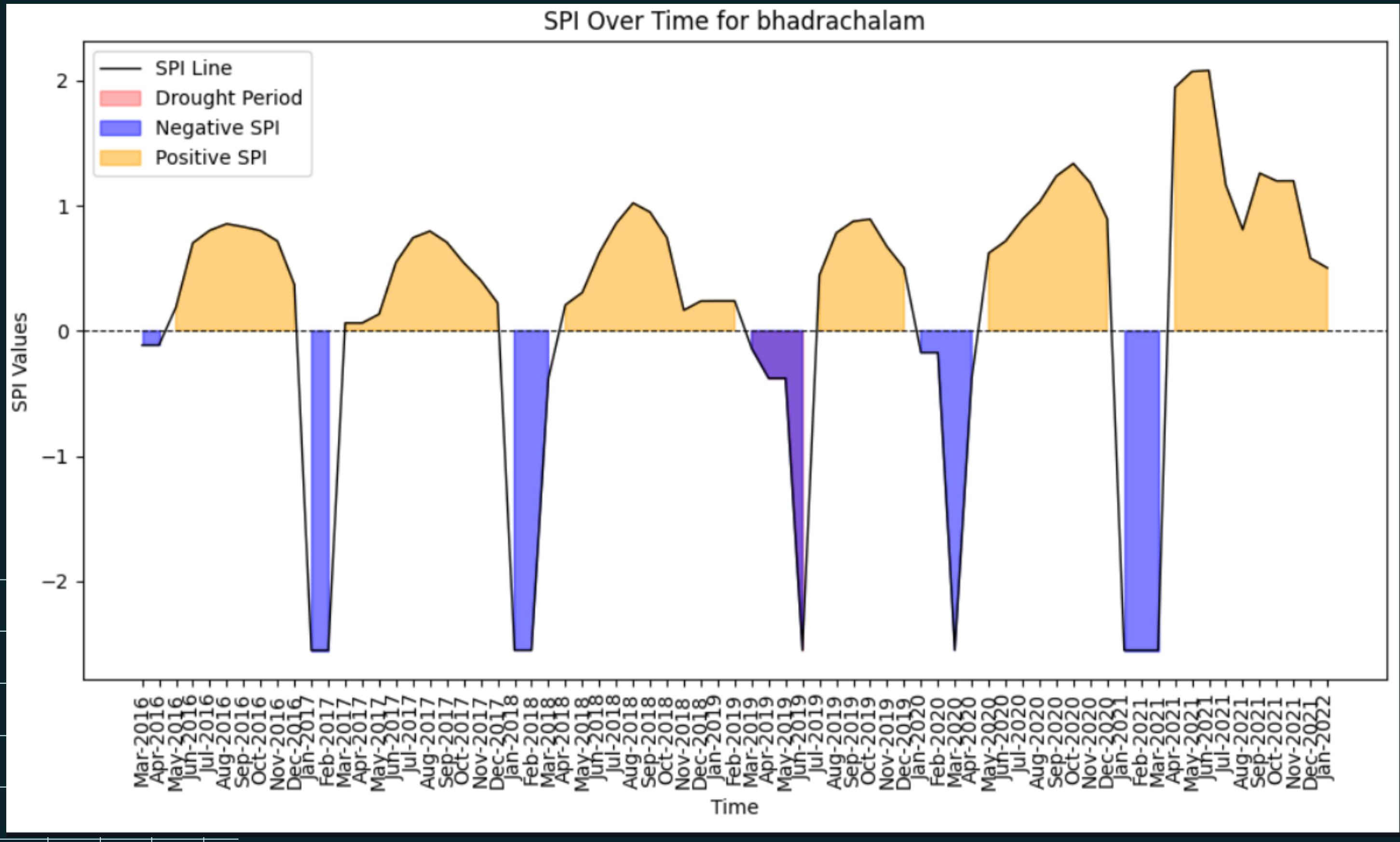
kaleshwaram



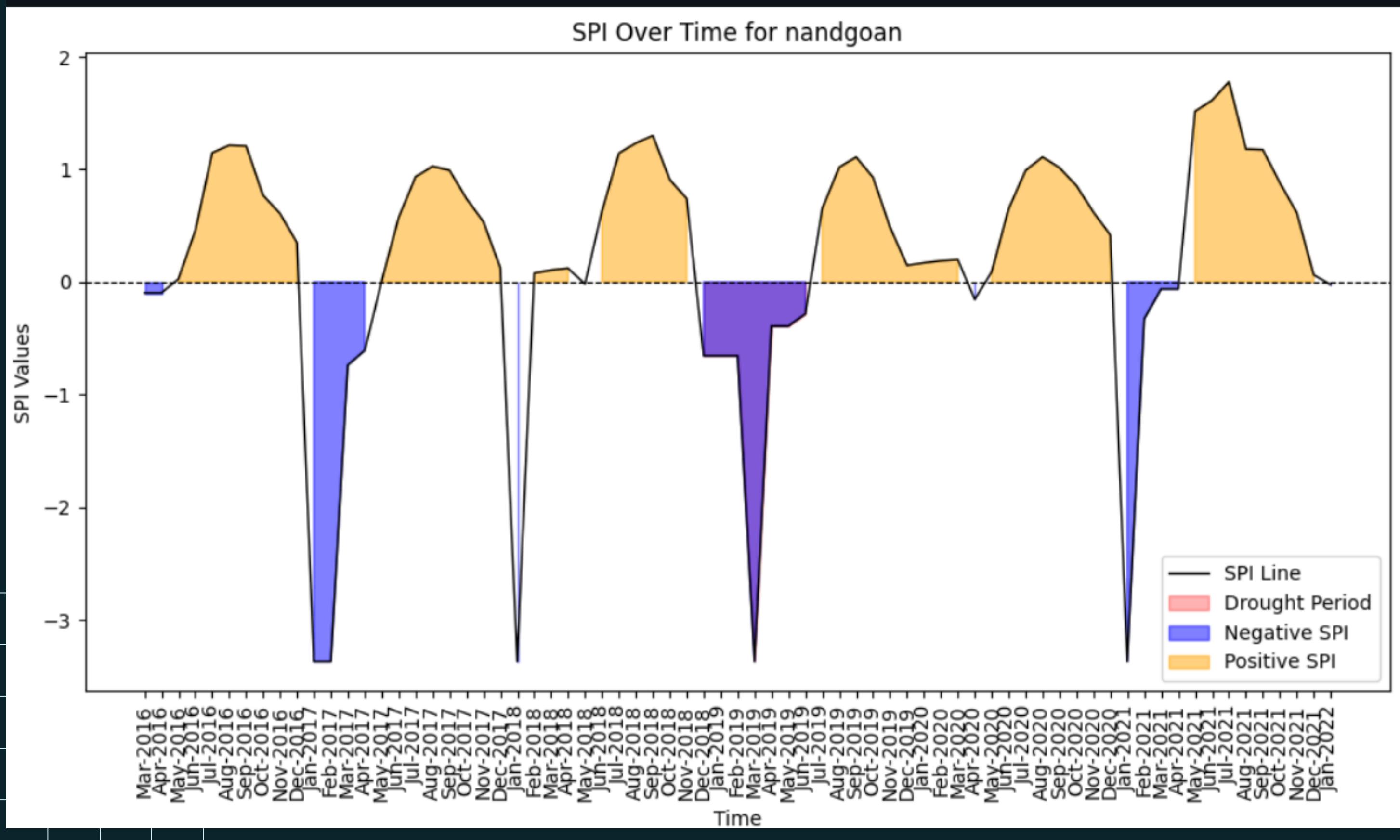
Bhuswal



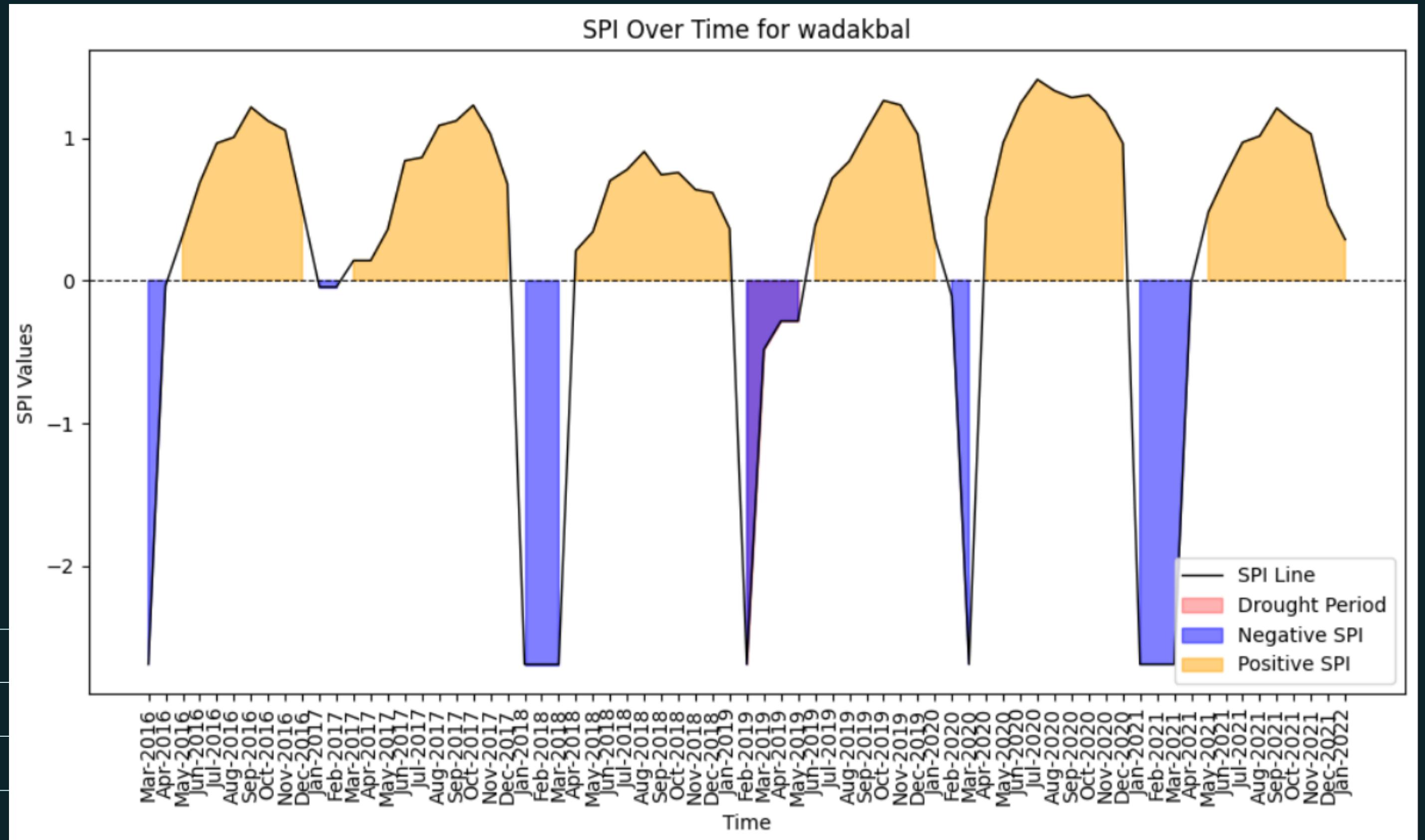
Bhadrachalam



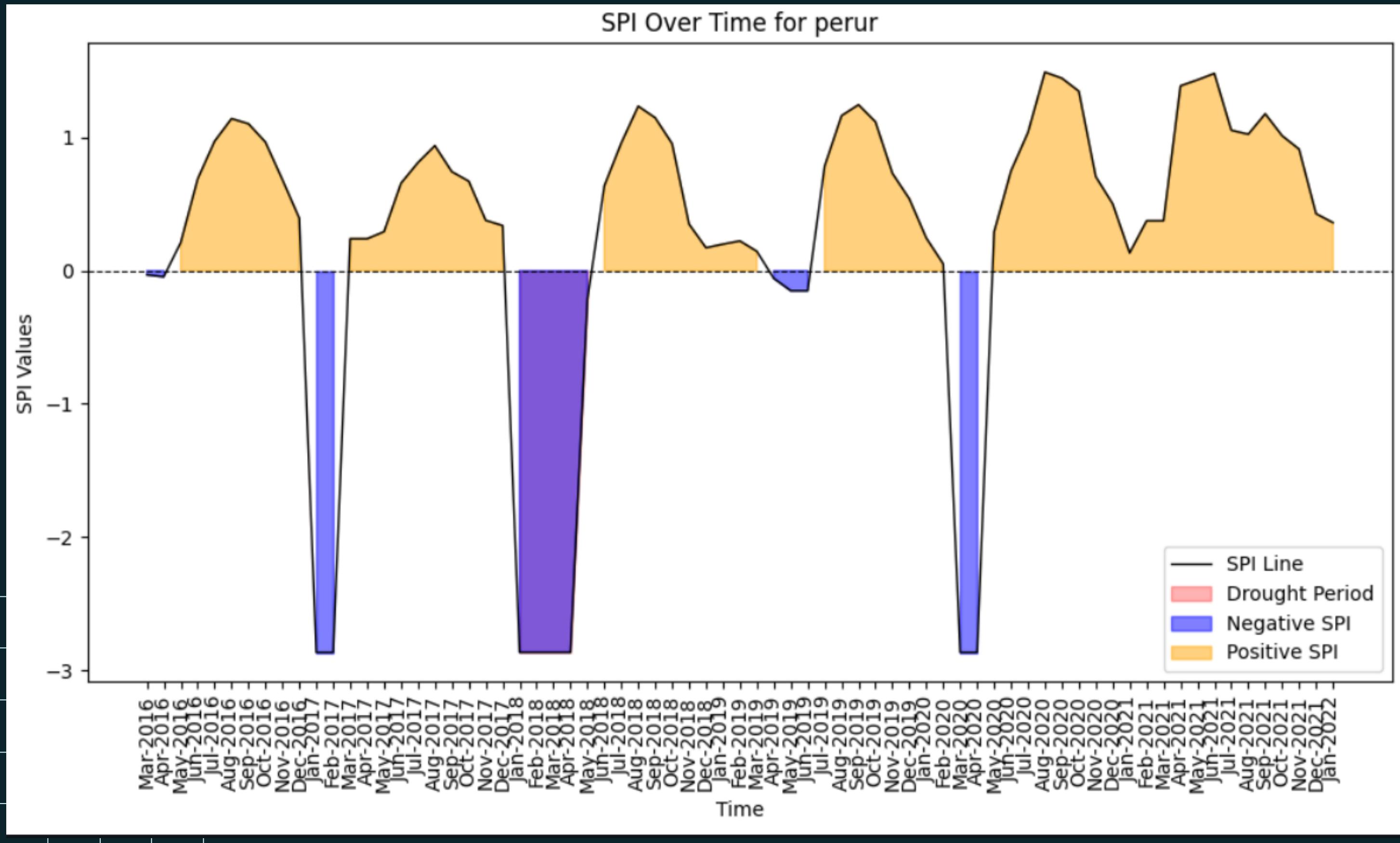
nandgoan



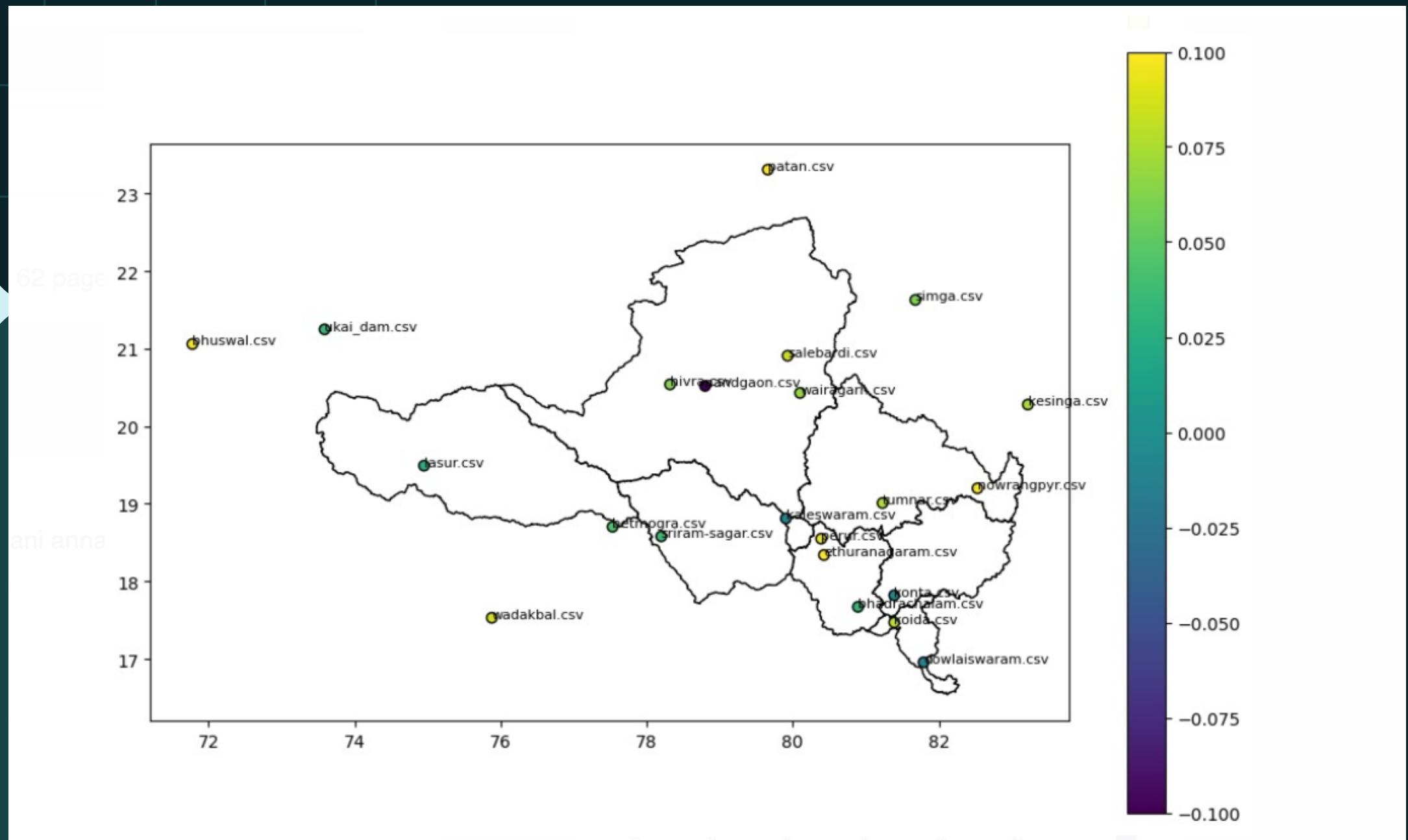
Wadakbal



Perur



Average SPI values



mean of monthly SPI value



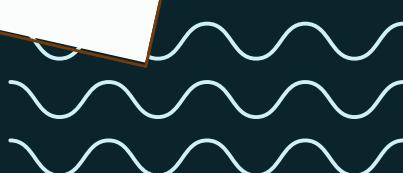
Visualisation Techniques



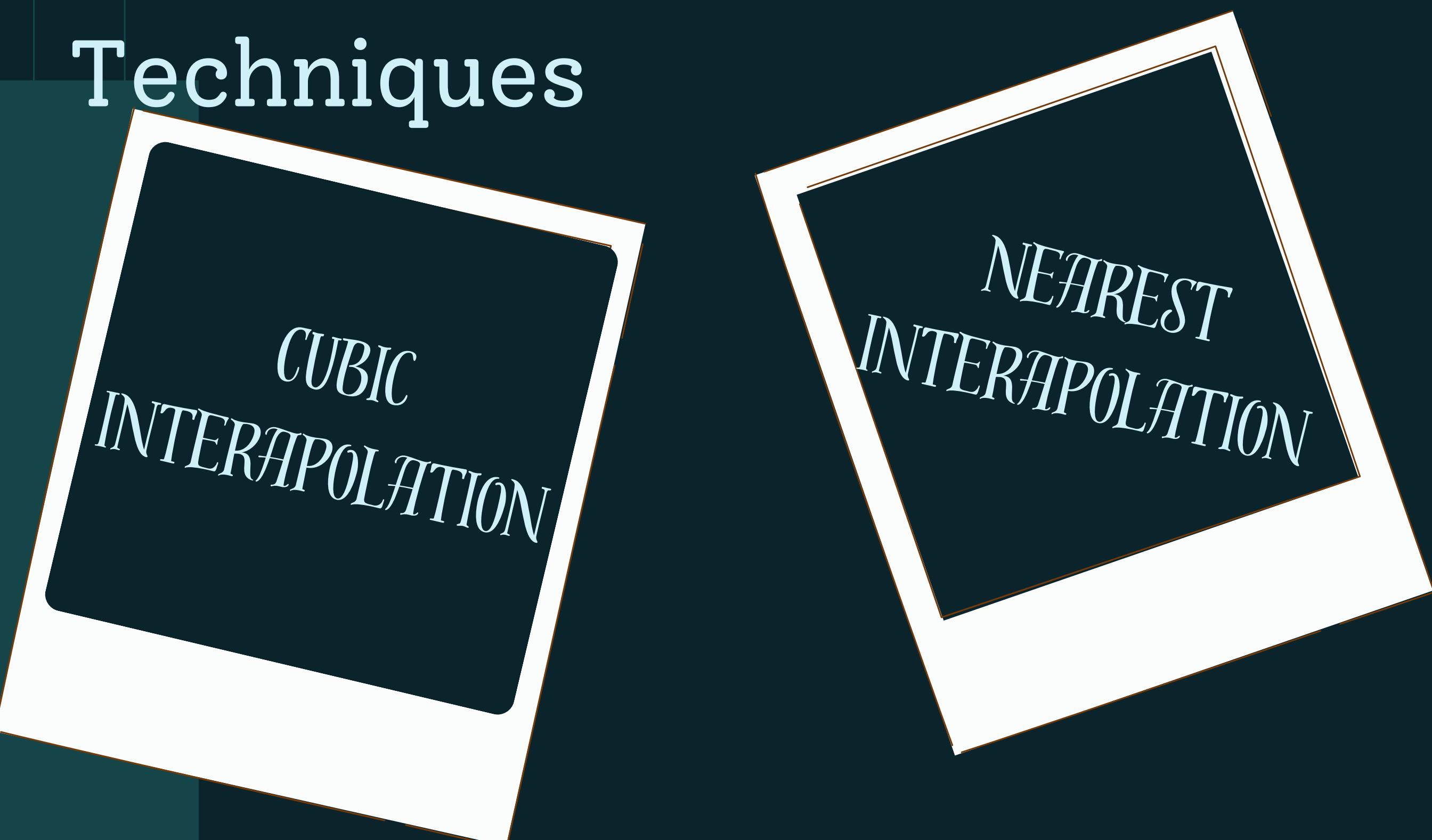
*BAR
PLOTS*

*HEATMAPS
&
SCATTER
PLOTS*

*TIME
SERIES*

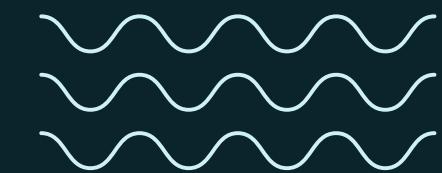


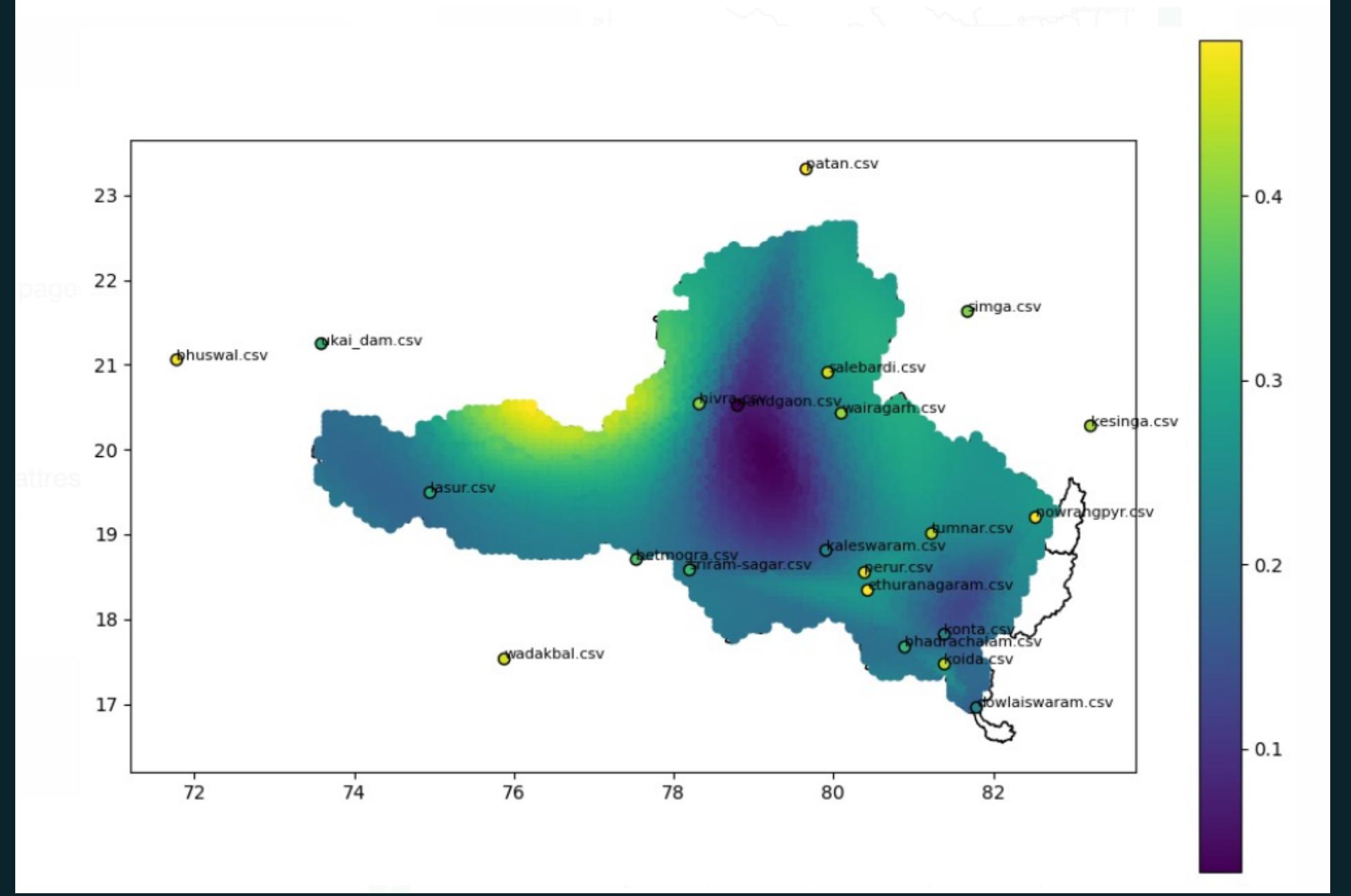
Interpolation Techniques



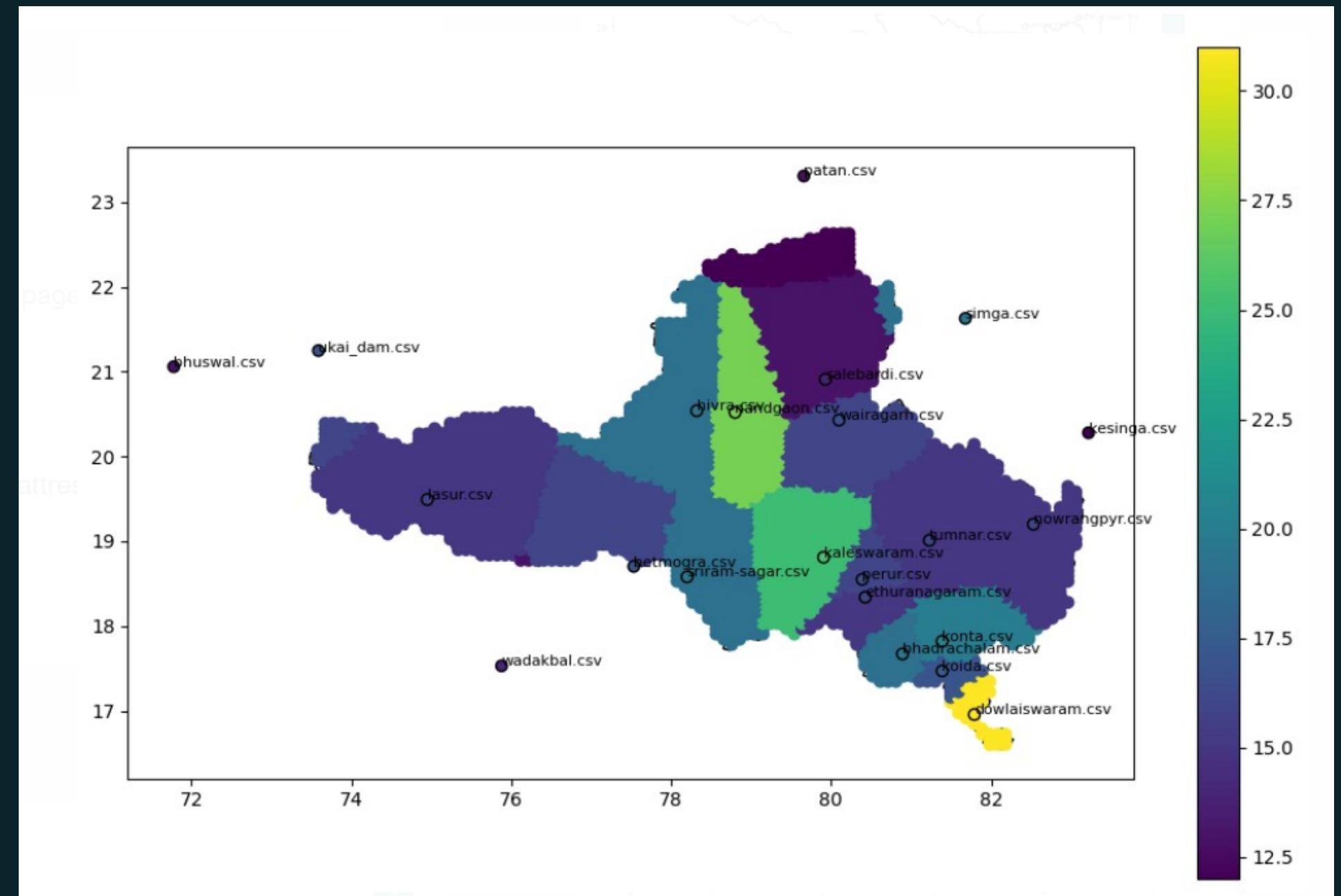
Probability (%)	SPI	Drought category
2.30	$\text{SPI} \geq 2.00$	Extreme wet
4.40	$2.00 > \text{SPI} \geq 1.50$	Very wet
9.20	$1.50 > \text{SPI} \geq 1.00$	Moderate wet
68.20	$1.00 > \text{SPI} \geq -1.00$	Normal
9.20	$-1.00 \geq \text{SPI} > -1.50$	Moderate drought
4.40	$-1.50 \geq \text{SPI} > -2.00$	Severe drought
2.30	$-2.00 \geq \text{SPI}$	Extreme drought

Drought Intensity

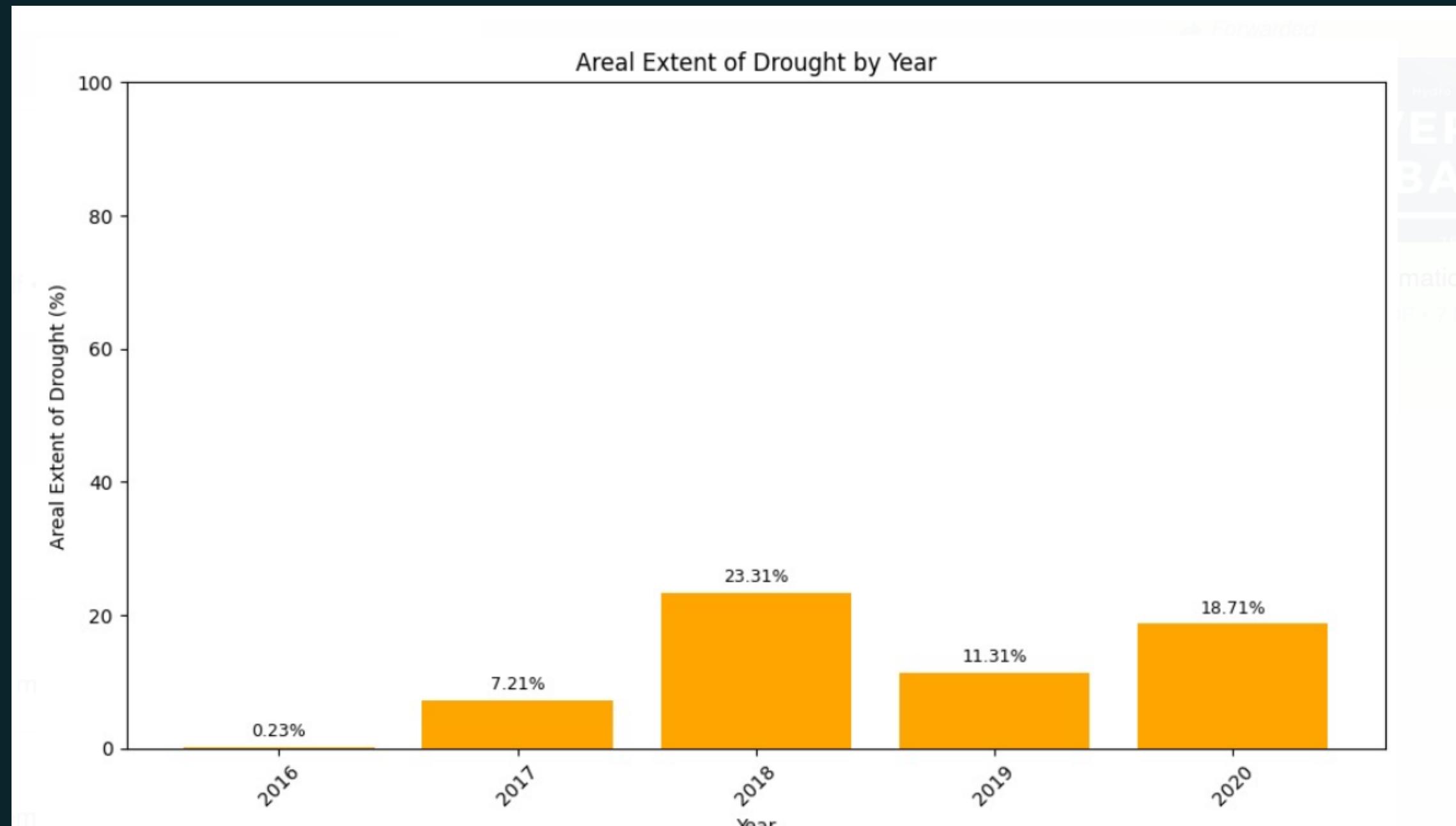




Spatial Interpolation of SPI values



Spatial interpolation of Drought Frequencies



AREAL EXTENT VS YEAR