

SC:475 Time Series Analysis

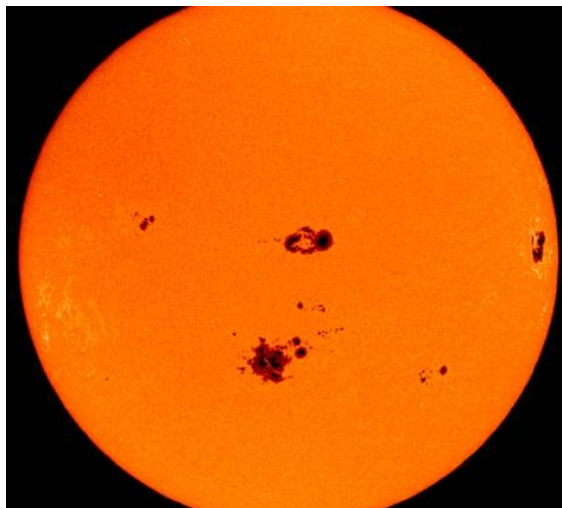
202201207 - Swayam Hingu

202201247 - Goswami Jenil

Project : Time Series Analysis of Sunspot Activity

Abstract:

Sunspots are dark, magnetically active regions on the Sun's surface that follow an 11-year cycle and play a crucial role in space weather and Earth's climate. The dataset, comprising monthly or annual sunspot numbers, offers a rich historical record that captures the evolution of solar activity and its potential influences on Earth's climate, space weather, and technological infrastructure. Understanding sunspot trends and their impact is essential for predicting solar activity, which affects satellite communications, power grids, and climate patterns. This project focuses on analyzing sunspot data as a time series, identifying long-term trends, cyclic variations, and anomalies associated with solar flares and coronal mass ejections. Additionally, we explore correlations between sunspot activity and terrestrial phenomena to assess its broader implications. By leveraging statistical techniques and predictive modeling, this study aims to enhance forecasting accuracy, aiding researchers in space physics, climate science, and technological risk mitigation.



Sunspots