SunDash: Monitoring and Analyzing Solar Activity

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Extended Abstract:

A common measurement of solar activity trends throughout history is the sunspot number. In order to explore historical sunspot activity, data was pulled from the SIDC (Solar Influences Data Analysis Center) and an interactive dashboard was created to allow easier exploration of data for all users. The first element implemented in the dashboard was to plot the sunspot number over time. The user is given the option of whether daily sunspot averages or monthly sunspot averages should be plotted. Once selected, the user is also able to choose a period that will be used to build a smoothed curve. The smoothed curve will show decreased noise, however, may lose precision. This can be visualized in Figure 1.

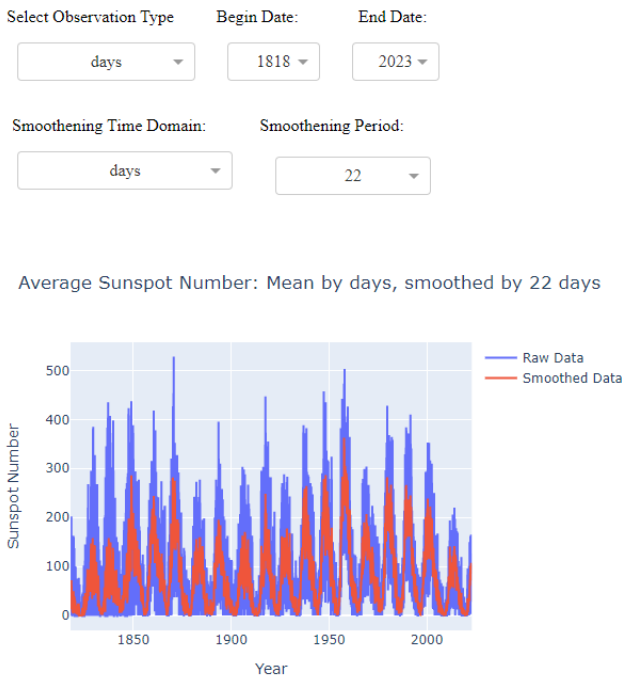

Figure 1: sunspot plot with smoothed curve

Another implementation on the dashboard is plots the sunspot values given a period to cycle over. This feature allows the user to choose how long a sun cycle is, giving insight on what points of the sun cycle have the highest activity. This feature is depicted in Figure 2.

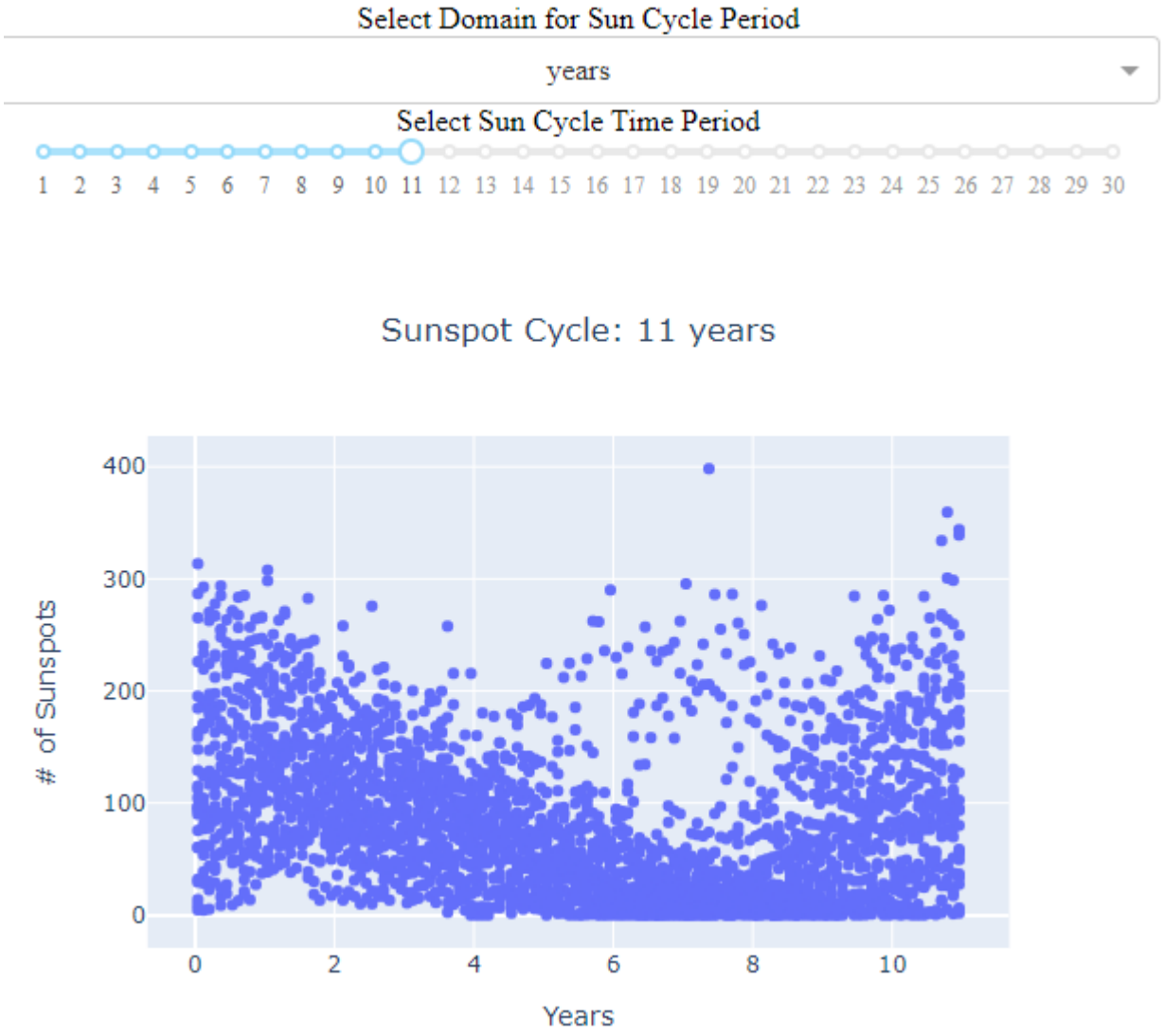

Figure 2: Sunspot Cycle Plot

The final implementation allows the user to get the current image of the sun. This is accomplished as the dashboard pulls from a link that is constantly updating the image of the sun. The user can check for a refresh with a click event button. This is shown in Figure 3.

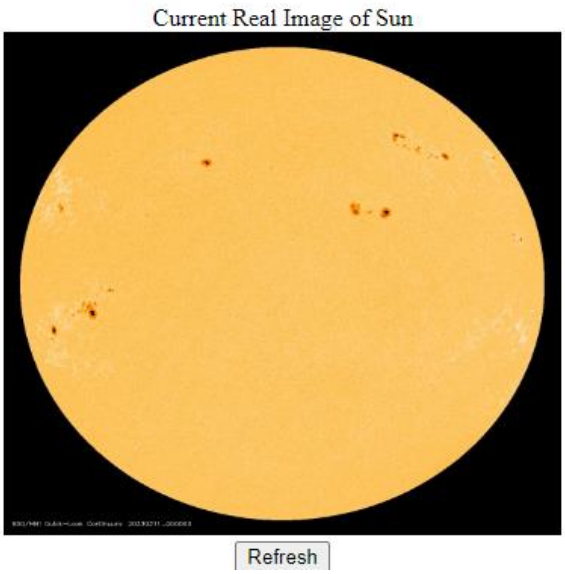

Figure 3: Image of Sun as it appears on dashboard.

References:

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