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<div align="center">Homework 2: Extended Abstract</div>

The sunspot dashboard creates a central interface to interact with the data from SILSO. The interface (figure 1) has three interactive sections: sunspot numbers over time graphed, variability of sunspots graphed, and images of the sun. These allow one to visualize the trends associated with sunspots and align it with the images of the sun.

<div align="center">*Figure 1- Overall Dashboard*</div>
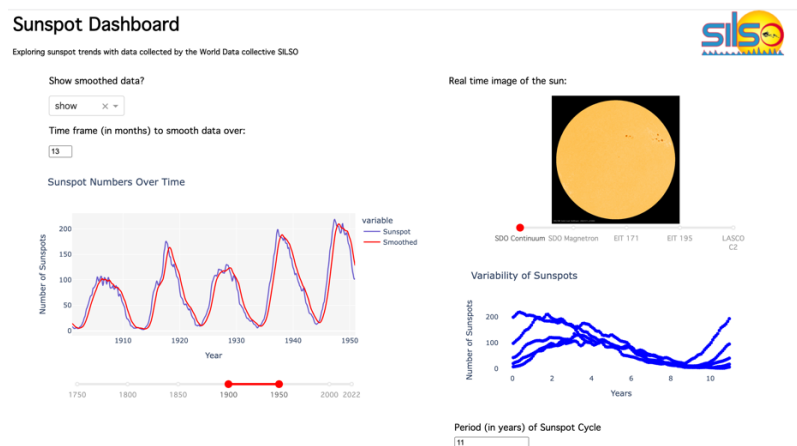
The first visualization is of sunspot numbers over time. The user can select which year range to view on the slider below the graph. Additionally, there is a smoothed line that's period is averaged over can be adjusted by an input box. As an extra credit addition, there is a drop-down menu that can hide the smoothed line (figure 2). This allows the user to see the original data line more clearly.

Figure 2- Sunspots over time with smoothed line hidden
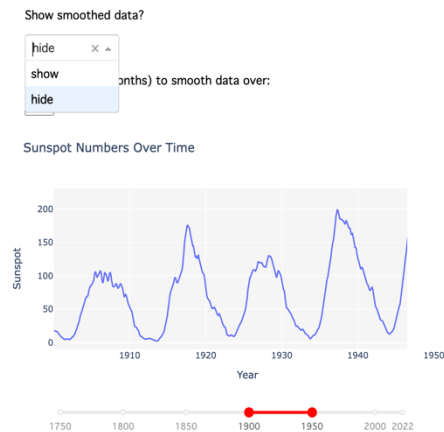
The second graph shows the data overlayed over itself over a user specified period (input box). This allows the user to explore what the period of sunspot cycle is. Finally, a real time image of the sun is displayed. This related the graphs to a visual of what they are representing and helps tie the dashboard together. As an extra credit additional feature, a slider is below the image. The user can slide it and select different views of the sun (figure 3).

Figure 3- Real time image of the sun, with extra credit slider to change image
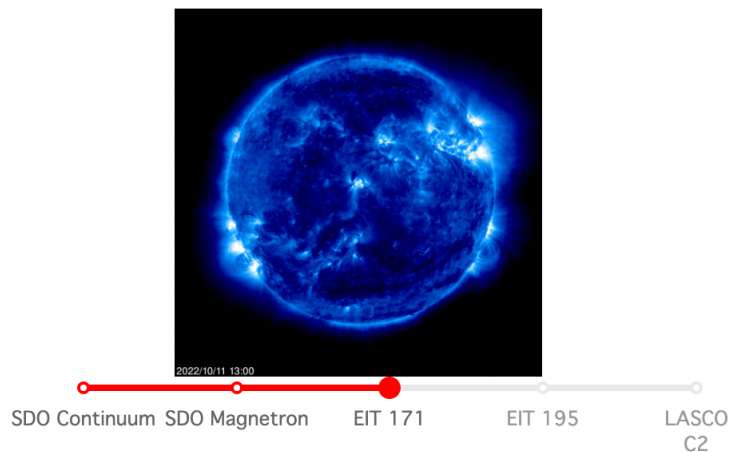
Overall, this dashboard, through its many interactive features and controls, serves to allow the user to understand and interact with sunspot data easily and in one place.

References

Dash Python User Guide. n.d. <https://dash.plotly.com/>.

SILSO, World Data Center - Sunspot Number and Long-term Solar Observations, Royal

      Observatory of Belgium, on-line Sunspot Number catalogue: http://www.sidc.be/SILSO/,

      '1749-2022'