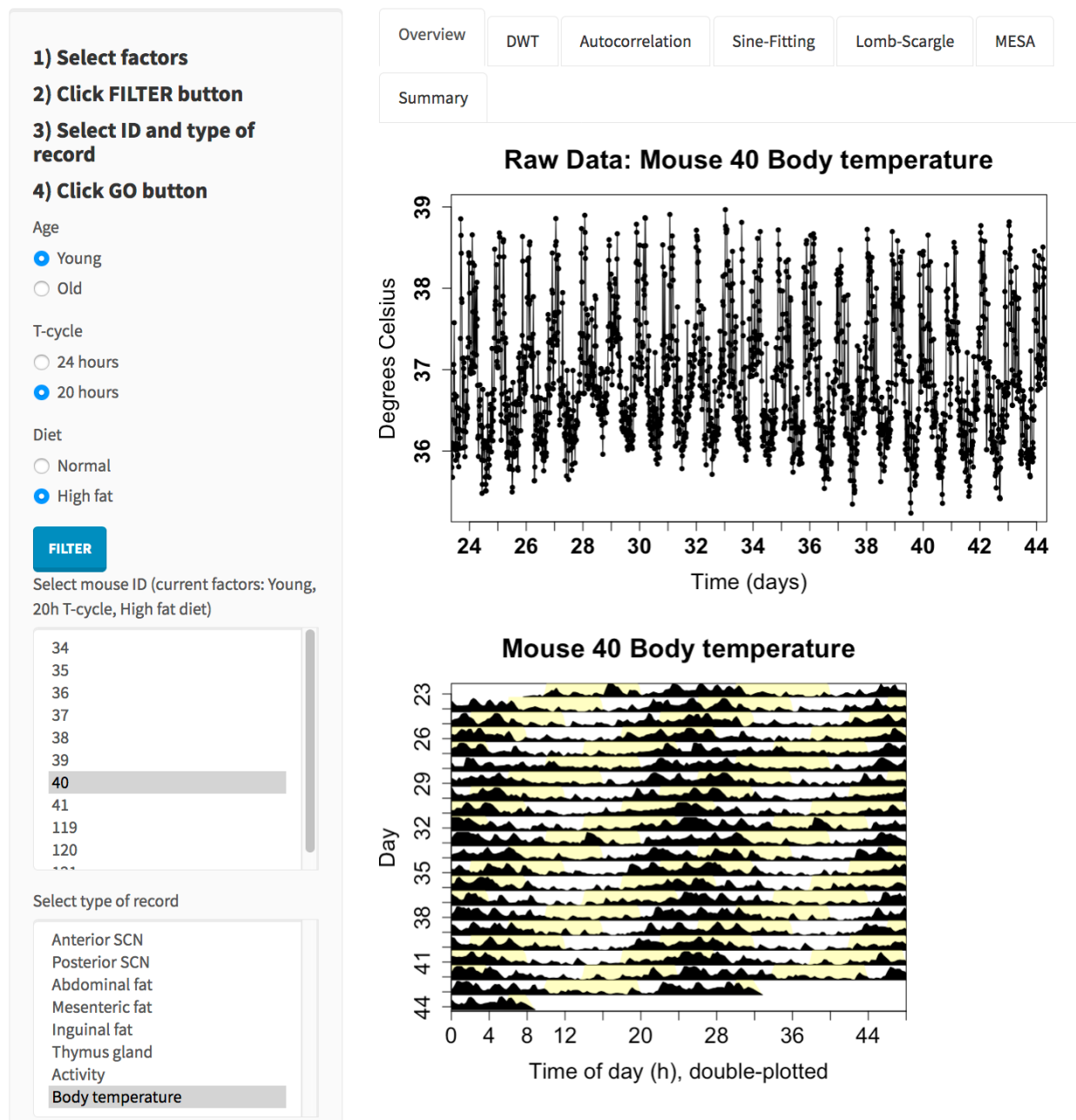
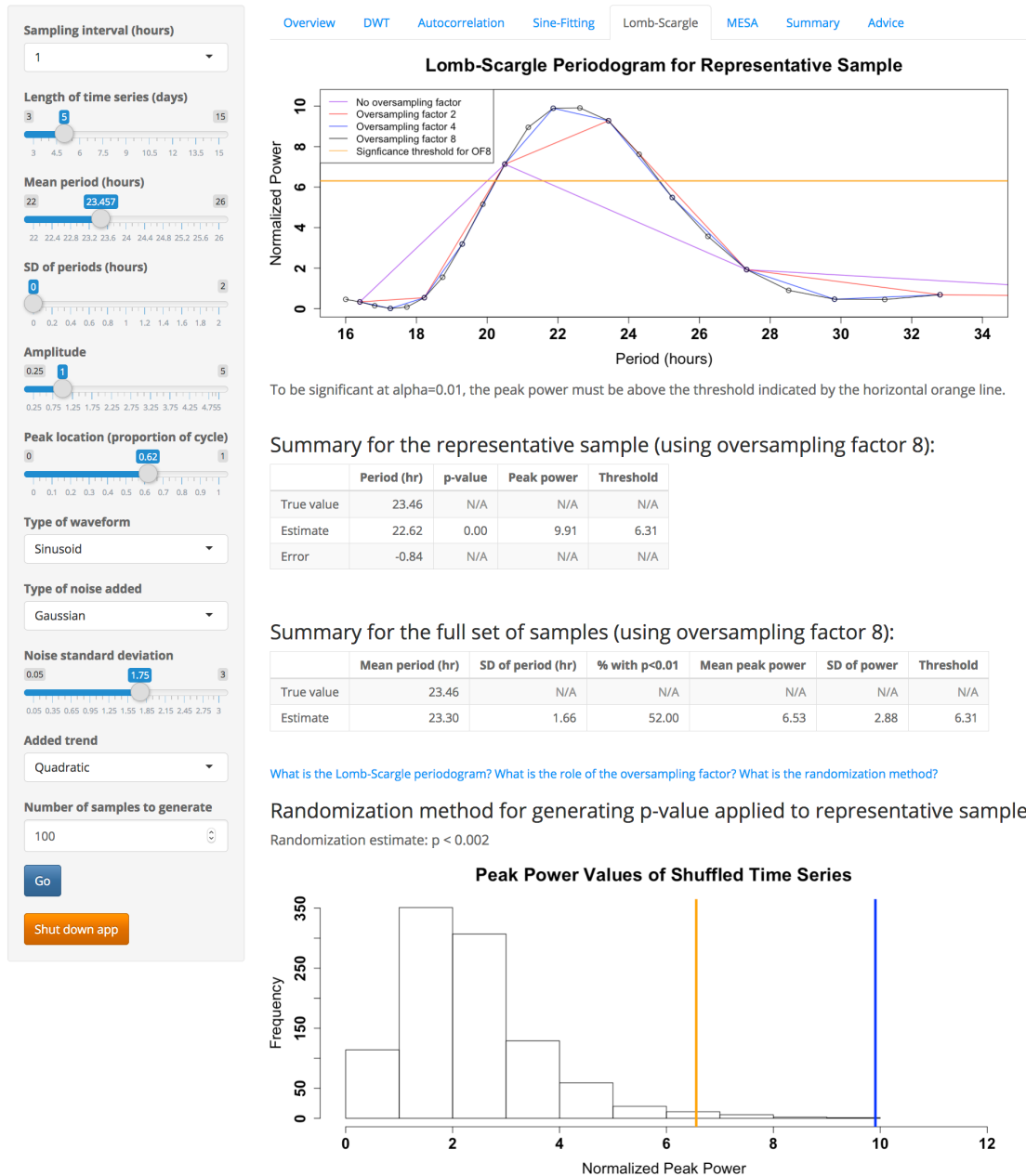


CIRCADA-E: Circadian App for Data Analysis - Experimental Time Series



Supplemental Figure 1. Partial screenshot of CIRCADA-E, displaying body temperature data for a mouse from the dataset in (Leise et al., 2018). The user clicks the radio buttons to choose the desired age, T-cycle, and diet, then clicks the FILTER button to update the set of mouse IDs. After clicking on a mouse ID and type of record, the selected record is directly uploaded from the OSF site <https://osf.io/seyhph/>. Yellow in the actogram-style graph indicates when lights were on.

CIRCADA-S: Circadian App for Data Analysis - Synthetic Time Series

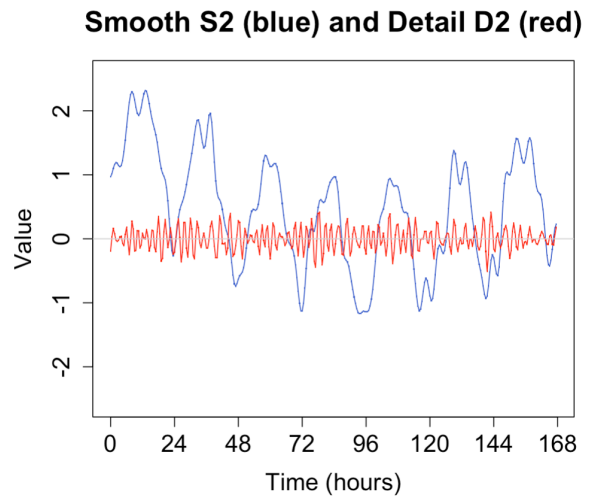
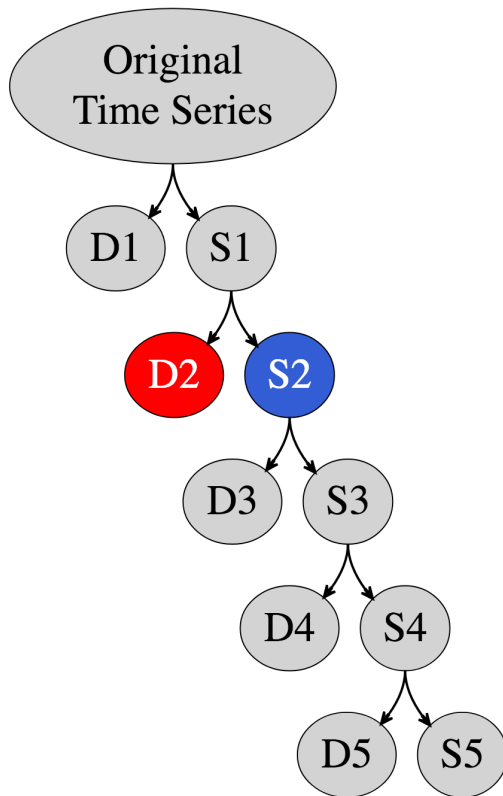


Supplemental Figure 2. Partial screenshot of CIRCADA-S Lomb-Scargle periodogram tab. Estimated period values are compared to the true value used to generate the synthetic data, and the effect of oversampling factor on the period resolution is demonstrated. Clicking the blue-font questions provides explanations of the method and related topics in a popup window. An example of using shuffled time series to compute the p-value is displayed; the red vertical line marks the peak value for the sample time series, to compare against the histogram of peak values of shuffled time series.

DWT algorithm demonstration

Click the button to advance through levels of DWT algorithm, viewing the smooth and detail at each scale. Click info link above for a brief explanation of the process.

Next level



The period range associated with each DWT level is determined by the time step (sampling interval). In this example, the time step is 0.5 hours, so the 1st level is associated with periods from roughly 1 to 2 hours. The 2nd level is associated with 2 to 4 hour periods, and so on. Here D5 will be the circadian component (period range ~16-32h), while S5 can be interpreted as the underlying trend. Also note that there may be distortions at the beginning and end of the graph, especially at the larger scales, due to edge effects of the transform, so those portions are removed when the length of the time series allows.

Supplemental Figure 3. Partial screenshot of the CIRCADA-S DWT tab demonstrating the DWT decomposition. Clicking on "Next level" steps through the DWT scales until reaching the circadian component.

Reference

Leise TL, Goldberg A, Michael J, Montoya G, Solow S, Molyneux P, Vetrivelan R, and Harrington ME (2018) Recurring circadian disruption alters circadian clock sensitivity to resetting. To appear, European Journal of Neuroscience.