Regional Earth System Data Lab
4D (lon, lat, time, var)

Vegetation data subset

| GPP | NDVI | EVI | FPAR | Analysis Ready Data Cubes (ARDs) dimmensions |

Lat. Lon. Time

A. Pixel wise analysis

Gap filling → Data standardization $\mu = 0, \sigma = 1$ → PCA

Px. coord: Lat. 5.67°, Lon. -70.5°
Ratio = 0.2 Fraction = 0.46
Day of year

Time Domain s(t) — FT → Frequency Domain S(ω)

PC 1   PC 2   PC 3   RGB map (Fig. 3)

Mean Seasonal Cycle ←

Fast Fourier Power Spectrum → Absolute value of annual oscillation

→ Absolute value of semiannual oscillation

→ Ratio of annual and semiannual oscillation — Seasonality ratio map (Fig. 5)

B. Biotic units analysis

Biotic units map

Spatio-temporal data aggregation → Mean Seasonal Cycle by biotic untis

Frequency analysis → Seasonality ratio by biotic untis in the climate space

Driest month precipitation layer

Seasonaliy of biotic units (Fig. 6)

Seasonality ratio and climate heatmaps (Fig. 7)