1. Introduction: interannual variability in modeled (CASA) C flux is in part caused by interannual variability in NDVI (FPAR) (Fig. 1).

2. Justification: Is interannual variability in NDVI explained by climate? Here we examine the sensitivity of NDVI to interannual variability in precipitation and temperature.

3. Data:

Table 1. Data sets used.

<table>
<thead>
<tr>
<th>Resolution (°)</th>
<th>Temporal</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIMMS 3g NDVI</td>
<td>0.05</td>
<td>Semimonthly</td>
</tr>
<tr>
<td>GPCP precipitation</td>
<td>2.5</td>
<td>Monthly</td>
</tr>
<tr>
<td>CRU climatology</td>
<td>0.5</td>
<td>Monthly (base)</td>
</tr>
<tr>
<td>GISS temperature anomaly</td>
<td>2</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Data sets used: long record; global coverage; consistent with higher quality (Fig. 2).
• Use of TRMM precipitation (0.1° × 0.1°, semimonthly, 1998-2010) gives the same result.

4. Methods:

4.1. Conducted Pearson’s correlation analyses at pixel level with varying lags (of NDVI response to climate) on:
- 1982-2009 NDVI – precipitation anomaly time series (monthly, 1×1);
- 1982-2010 NDVI – temperature anomaly time series (monthly, 0.5°×0.5°).

4.2. Accounted for first-order temporal autocorrelation following Dawdy and Matalas (1964). Only significant correlation coefficients (r values with corrected p values <0.05, two-tailed t-test) are shown.

5. Results:

5.1. NDVI – precipitation anomaly correlations:

Fig. 3 NDVI – precipitation correlations for the whole time series (1 month lag).

Results using monthly precipitation here were consistent with those using accumulative precipitation (not shown).
• Strongest for 1-month preceding precipitation;
• Significant in 36% of land pixels;
• Positive in arid and semiarid areas where grasslands and shrublands are the dominant land cover types.

5.2. NDVI – temperature anomaly correlations:

Fig. 6 For the whole time series (no lag).

Strongest for current month temperature (Fig. 6&7);
• Significantly positive in 40% of total land pixels, and 77% of these pixels are north of 35°N (Fig. 6);
• Not associated with land cover types.

6. Conclusion:

- This study confirms a mechanism producing variability in modeled NPP.
- NDVI (FPAR) interannual variability is strongly driven by climate;
- The climate driven variability in NDVI (FPAR) can lead to much larger fluctuation in NPP vs. the NPP computed from FPAR climatology (Fig. 8).

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