



Vegetation response to temperature and rainfall on the eastern shore of Virginia.

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Climatic factors such as precipitation and temperature are central to controlling the productivity and functioning of ecosystems. Understanding these controls is fundamental to our understanding of how these systems will adapt and respond to external factors such as climate change. The relationship between temperature, rainfall and canopy greenness on the eastern shore of Virginia between January 1982 and September 1994 was analyzed using daily synoptic data and satellite derived Normalized Difference Vegetation Indices from the 10-day NOAA AVHRR Pathfinder dataset.

The analysis clearly shows the expected seasonal relationship between NDVI and average temperature. In addition, the influence of maximum and minimum temperatures on the maximum NDVI achieved during a growing season is revealed and the strong correlation between the number of days with extreme temperatures and NDVI reinforces the significance of temperature maxima and minima on canopy greenness. A vegetation-precipitation response lag of approx. 30 days was calculated and we see that the 60-day average rainfall more significantly affects greenness than the maximum rainfall. Even with this significant NDVI-precipitation response, we show that precipitation is a less important control for NDVI on the eastern shore than temperature. From this NDVI-temperature/precipitation response we can see that even with well drained sandy soils, water availability on the eastern shore is not limiting.