



## Interactive Exercises

### Earth/Sun Interactions

- [Energy Balance Model Interactivity.](#)

### The Atmosphere and Oceans

- [Weather Stations Interactivity.](#)

### Weather Systems and Global Climates

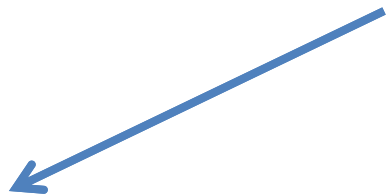
- [Remote Sensing and Climate Interactivity.](#)

### The Biosphere and Soils

- [Remote Sensing and the Biosphere Interactivity.](#)

### Earth's Minerals and Rocks

- [The Virtual Rock Lab Interactivity.](#)



## Remote Sensing and the Biosphere Interactivity



The Biosphere refers to the living components of the Earth's systems and interacts with all aspects of the Earth's environment. The Earth's living organisms respond dynamically to seasonal changes as well as to the unpredictable and variable nature of the climate. Consequently in examining the Biosphere from space we see both predictable, long-term patterns as well as unpredictable, often catastrophic events. The chlorophyll in green plants absorbs solar radiation at specific wavelengths, and we can use these characteristics to monitor changes in vegetation. As the primary producers in most of Earth's ecosystems, the changes we see in vegetation have broad ranging implications for these ecosystems and for us.

Click on one of the aspects of the biosphere to go to an interactive learning exercise.

It is recommended that you explore these exercises in the order they are presented. However, you can choose to do the exercises as many times as you want, and in any order.

Ovládací prvek aktivujete a umožníte jeho používání klepnutím sem.

1. Land Productivity

2. Ocean Productivity

3. Fires

4. Deforestation

5. Ocean Blooms and Pollution

## Land Productivity



The vegetation covering the Earth's land surface can be monitored using satellite imagery because the chlorophyll in green plants has a distinct array of radiative qualities. We can assess not only seasonal changes in natural vegetation but also use this technology to monitor the growth, health and yield of crops.

Click on the "Start" button to begin this interactive learning exercise.

[Crops in Grand Forks North Dakota](#)

[Vegetation changes in Africa](#)

[Inter-annual vegetation changes in Africa](#)

[Earth's Vegetation Changes](#)

START

Interactivity menu

## Land Productivity

Extremely heavy rain before the second image was acquired, changed the spectral properties especially of the bare soil.

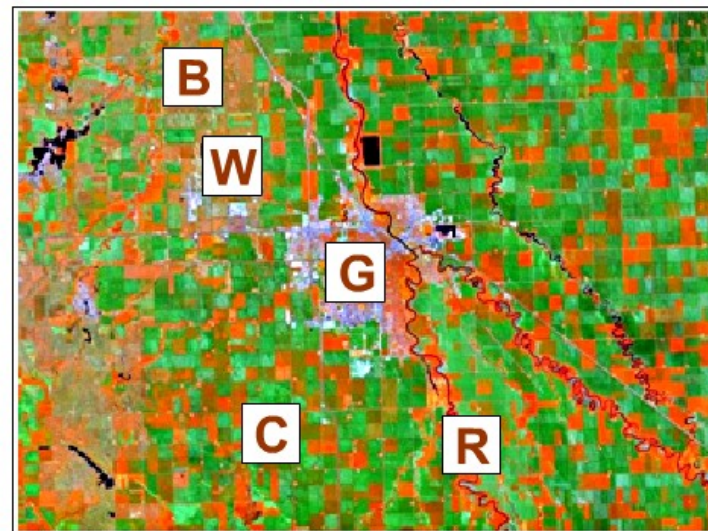
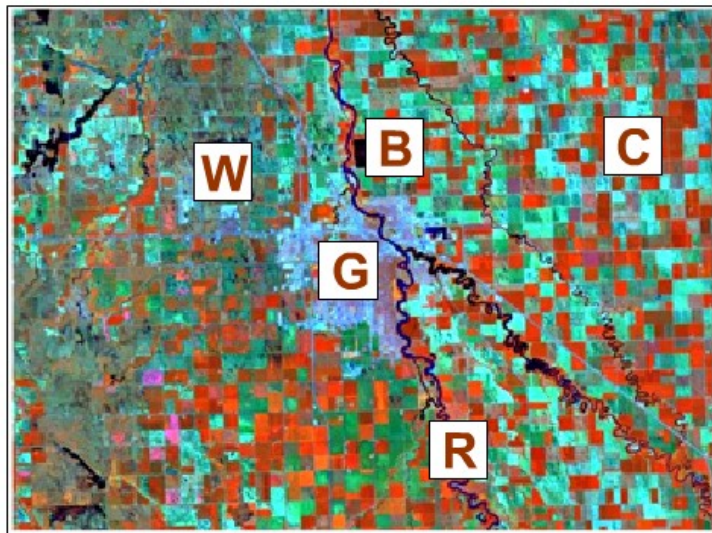
**B** bare soil

**C** crops

**W** water

**R** river

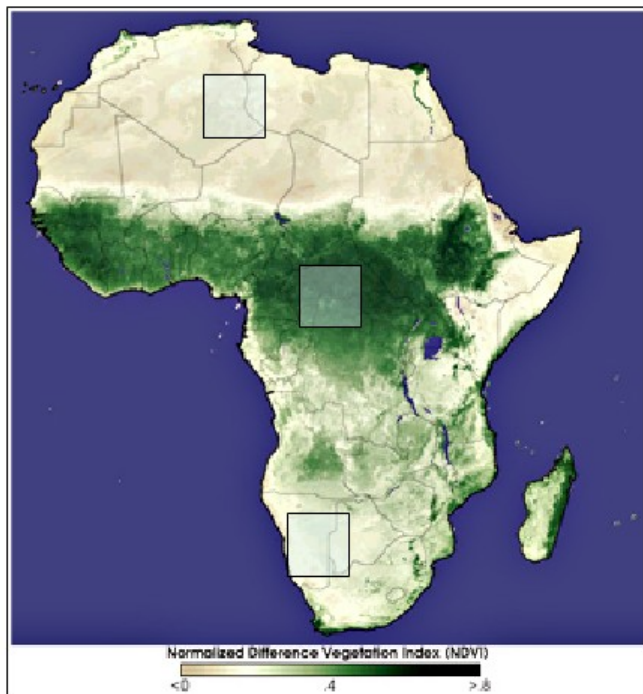
**G** GrandForks



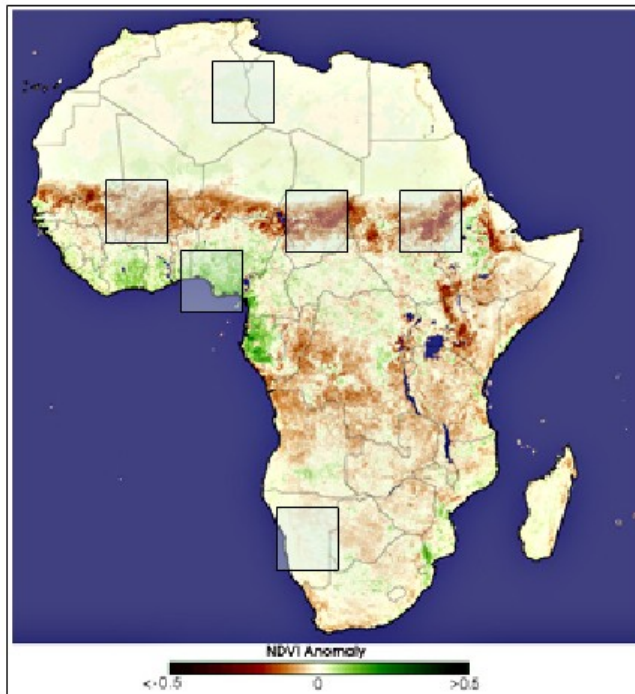
Crops in Grand Forks North Dakota

## Land Productivity

Inter-annual vegetation changes in Africa. Label these images using the icons provided to show inter-annual change.



Africa's average veg index

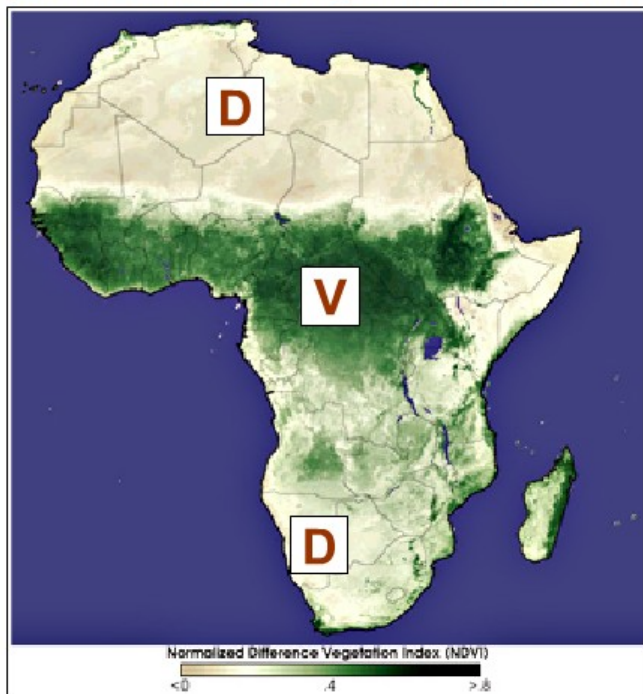


Drought 1984-85

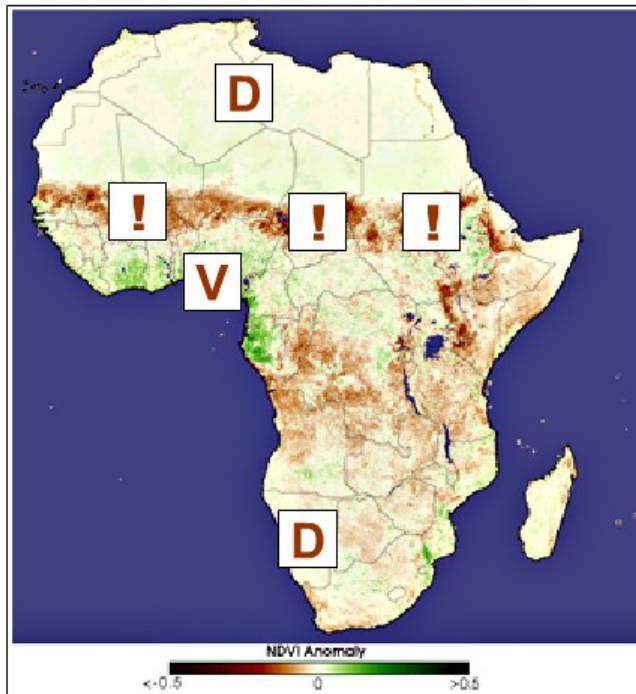
- V** vegetated
- D** desert
- !** drought

## Land Productivity

The image on the right shows the African continent during the drought of 1984-85. This drought in association with poor infrastructure and regional unrest led to devastating famine and considerable loss of life.



Africa's average veg index

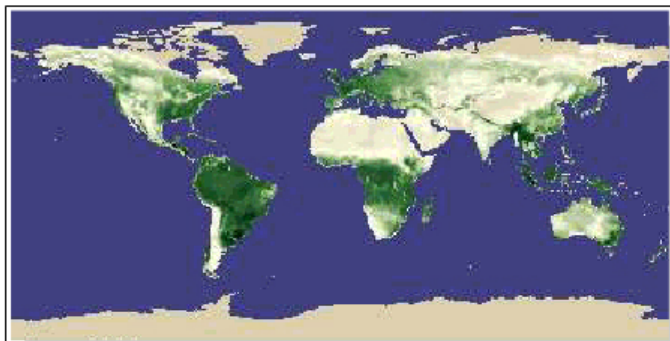


Drought 1984-85

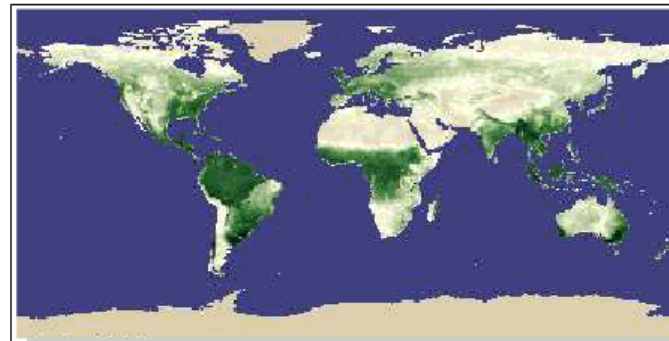
- D** desert
- !** drought

## Land Productivity

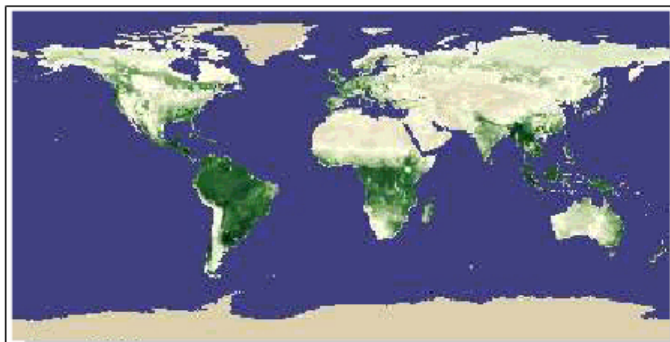
Drag these images into the frame provided to show the correct chronological order.



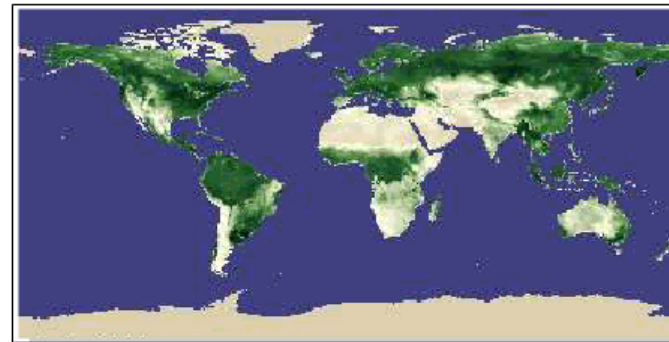
January



April



July

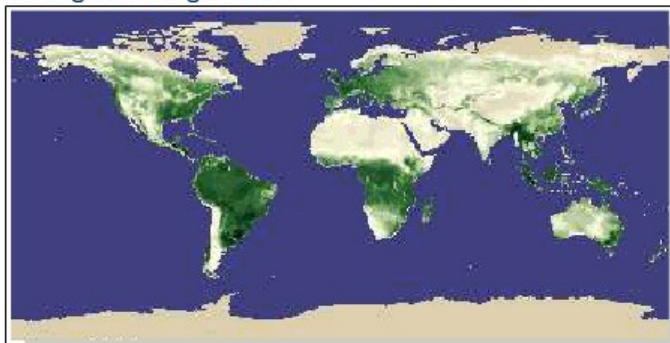


October

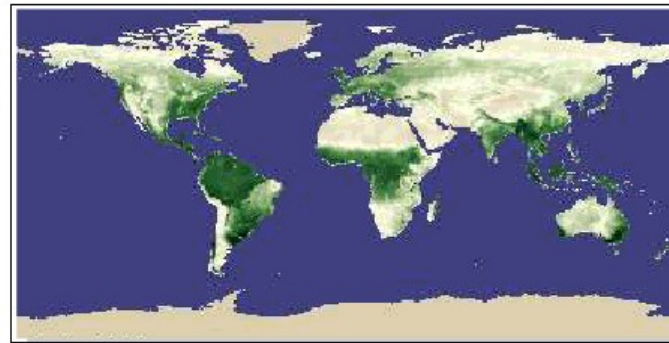
Help / Hint

## Land Productivity

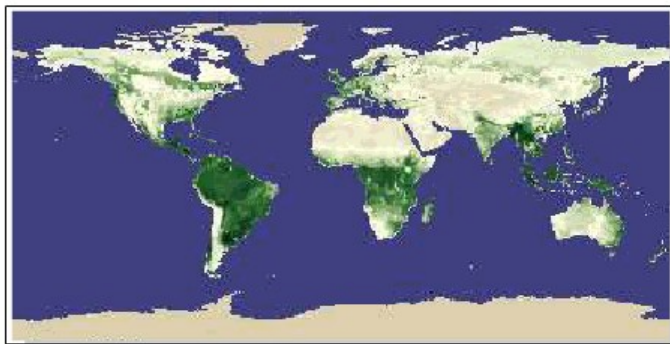
By following the leading edge of vegetation as it moves polewards during Spring and Summer, we can identify seasonal changes in vegetation



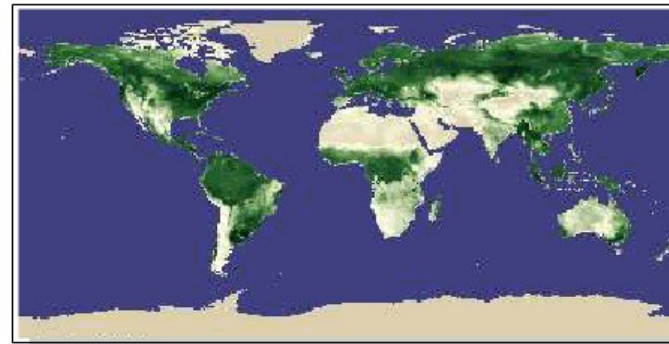
January



April



July



October

Interactivity menu

Next



