I.   **Normalized Difference Vegetation Index (NDVI)**

The Normalized Difference Vegetation Index (NDVI) is a measure of the amount and vigor of vegetation on the land surface and NDVI spatial composite images are developed to more easily distinguish green vegetation from bare soils.

1.1 FORMULA OF NDVI

$$(NIR - R) / (NIR + R)$$

In Landsat 4-7, NDVI = (Band 4 – Band 3) / (Band 4 + Band 3). In Landsat 8-9, NDVI = (Band 5 – Band 4) / (Band 5 + Band 4)

1.2 IMPORTANCE OF NDVI

NDVI is especially useful for continental- to global-scale vegetation monitoring because it can compensate for changing illumination conditions, surface slope, and viewing angle. That said, NDVI does tend to saturate over dense vegetation and is sensitive to underlying soil color.

1.3 FACTORS INFLUENCE NDVI

Normalized Difference Vegetation Index (NDVI) is an important indicator reflecting the state of regional climate and environment, which is affected by precipitation, temperature, soil water content, and so on.

1.4 ADVANTAGES AND DISADVANTAGES OF NDVI

NDVI (normalized difference vegetation index)

- NDVI PROS. It helps us to detect abnormal changes in the growth process of the crop. ...
- NDVI LIMITATIONS. As we can see, the NDVI provides us with a lot of information, but it does not focus on a problem. .

1.5 LIMITATIONS OF NDVI

- NDVI can only capture linear relationships between near infrared (NIR) and red difference, limiting its ability to account for higher-order spectral channel relations. The limitations of NDVI include difficulty in calculation due to atmospheric conditions, limited number of usable bands, and dependence on sunlight

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1.6 ACCURATE OF NDVI

- Overall, the classification accuracy was **97%** with a 0.7% bias for forest and 2.3% bias for nonforest

1.7 ORIGIN OF THE NDVI

Origins: Developed from work done by Tarpley et al. and Kogan with the National Oceanic and Atmospheric Administration (NOAA) in the United States. Characteristics: Uses the global vegetation index data, which are produced by mapping 4 km daily radiance.

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