# IMAGE PROCESSING
# Lecture-6

Applications of
Color

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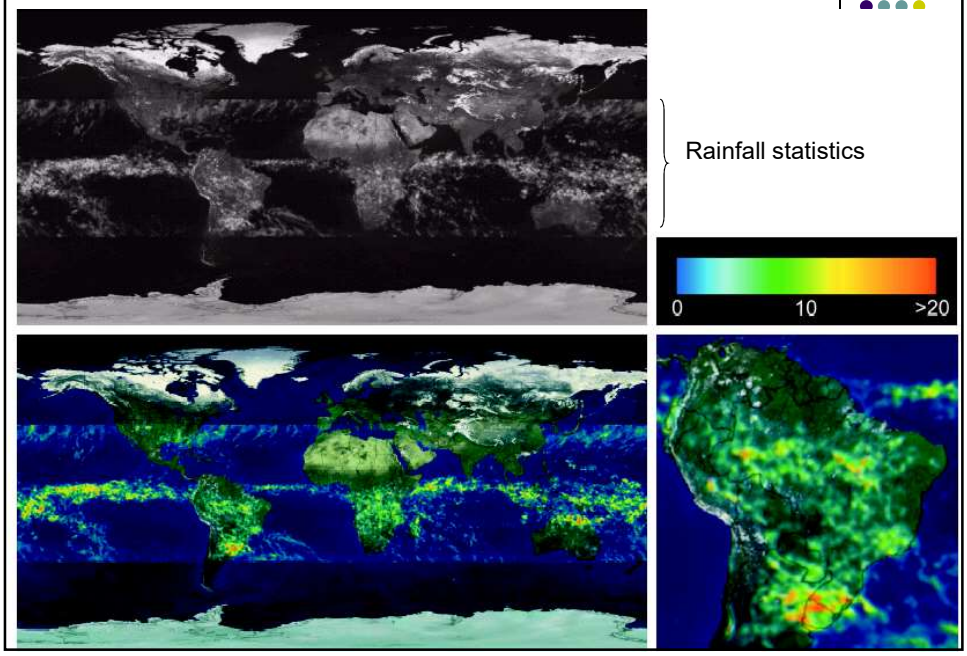
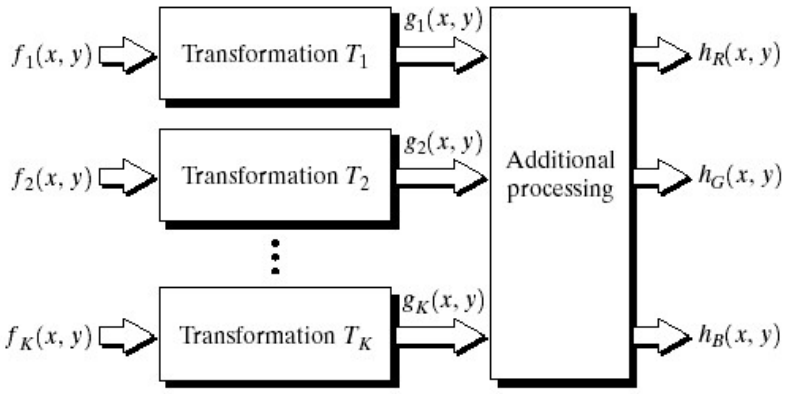


# Combine multiple Images

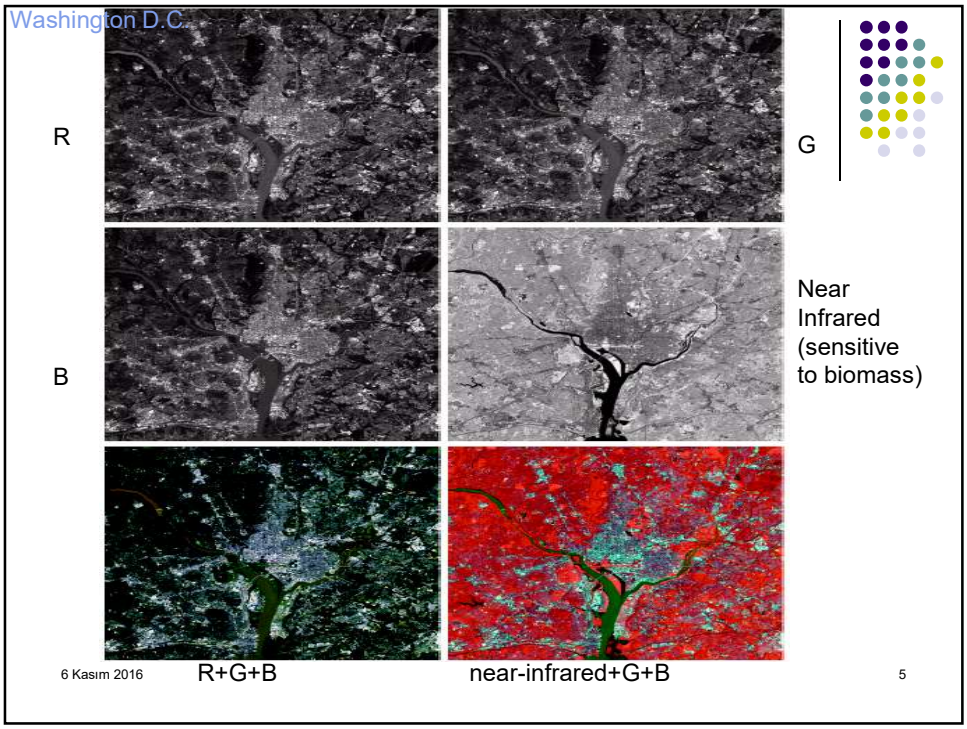





# Satellite Sensor

**TABLE 1.1** Thematic bands in NASA's LANDSAT satellite.

| Band No. | Name | Wavelength (μm) | Characteristics and Uses |
|---|---|---|---|
| 1 | Visible blue | 0.45–0.52 | Maximum water penetration |
| 2 | Visible green | 0.52–0.60 | Good for measuring plant vigor |
| 3 | Visible red | 0.63–0.69 | Vegetation discrimination |
| 4 | Near infrared | 0.76–0.90 | Biomass and shoreline mapping |
| 5 | Middle infrared | 1.55–1.75 | Moisture content of soil and vegetation |
| 6 | Thermal infrared | 10.4–12.5 | Soil moisture; thermal mapping |
| 7 | Middle infrared | 2.08–2.35 | Mineral mapping |




# How to deal with color vector?

- Per-color-component processing
  - Process each color component
- Vector-based processing
  - Process the color vector of each pixel
- When can the above methods be equivalent?
  - Process can be applied to both scalars and vectors
  - Operation on each component of a vector must be independent of the other component

## Contrast Enhancement

- Use histogram manipulation (E.g. histogram equalization) on only **intensity** component.
- Processing on RGB matrix leads to color distortion.

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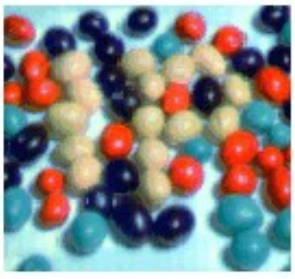
## Histogram Equalization on RGB

BEFORE



AFTER

http://documents.wolfram.com/applications/digitalimage/UsersGuide/3.4.html

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## Spatial Filtering

- Blurring: any are fine
  - average filter on RGB components
  - average filter on intensity(Y) components
- High-pass filter (E.g. unsharp)
  - process on intensity components
- General: work on intensity components

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## Selective Color Changing

6 Kasım 2016

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# @Movies