RS #4: IMAGE ANALYSIS (Interpretation and analysis)

- Interpretation and analysis of RS imagery involves the identification and/or measurement of various **targets** in an image in order to extract useful information about them.

Can be any feature or object which can be observed as image

Targets may be a point, line, or area feature.

They can have any form - from a bus in a parking lot or plane on a runway, to a bridge or roadway, to a large expanse of water or a field.

The target must be distinguishable; it must contrast with other features around it in the image.

- Data format: 1) Analog 2) Digital

- **Analog**: The interpretation and identifications of targets is RS imagery is done manually by human interpreter. This is done using imagery displayed in a pictorial or photograph-type format, independent of what type of sensor was used to collect the data and how the data were collected
- **Digital**: Remote sensing images represented in a computer as arrays of pixels, with each pixel corresponding to a digital number, representing the brightness level of that pixel in the image

- **Digital processing & analysis** can be performed using computer is the RS data are available in digital format.

- Digital processing and analysis are often done to supplement and assist human analyst (rarely carried out to completely replace manual interpretation). It may be used to enhance data as a prelude to visual interpretation.

- Recognizing targets is the key to interpretation and information extraction. Observing the differences between targets and their backgrounds involves comparing different targets based on any, or all, of the visual elements.

- Visual elements:

1) Tone: Relative brightness or color of objects in an image
   -Tone is the fundamental element for distinguishing between diff. targets or features.
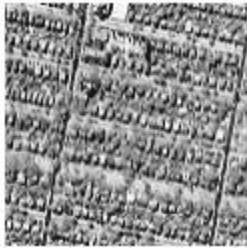   -Variations in tone allows the elements of shape, texture and pattern of objects to be distinguished.

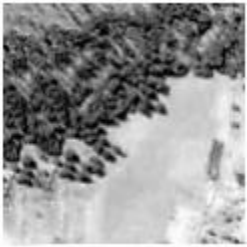2) Shape: General form, structure, or outline of individual objects

3) Size: Function of scale

4) Pattern: Spatial arrangement of visibly discernible objects

5) Texture: Arrangement & frequency of tonal variation in particular areas of an image

6) Shadow: Provide an idea of the profile and relative height of a target or targets which may make identification easier

7) Association: Takes into account the relationship between other recognizable objects or features in proximity to the target of interest