

# EGM310: GIS and Remote Sensing

Week 11, Part 3: Visual Interpretation

# Deriving information from imagery

- We are often interested in answering questions using remote sensing:
  - How much of the Earth's surface is covered by glaciers?
  - How much forest area has burned in a given year in California?
  - How has land use changed over time in an area?
- Remote sensing images are raw data
- In order to answer these questions, we have to interpret the images
  - Visually
  - Automated Classification (W11, P5)

- We are well-practiced in interpreting images
- Draw on experience, prior knowledge
- Remote sensing images:
  - often an unfamiliar perspective
  - unfamiliar scale, resolution
  - use other parts of EM spectrum



# Elements of interpretation

- Shape
- Size
- Pattern
- Tone (hue/colour)
- Texture
- Shadows
- Site
- Association (context)
- Resolution





# Shape, Size, Association, Context

- Shape: form/outline of object
- Size: how large is object? (in context of image scale)
- Association: how are objects arranged relative to others?
- Context: Where on Earth are we?



- Texture: frequency of tonal change
- Smooth (low-frequency)
- Rough (high-frequency)
- Depends on object size relative to image scale





- Pattern: spatial arrangement
- Repetition of form
- Can occur in both natural and constructed objects



- Tone: difference in relative brightness (or colour)
- Often, different plant types have different reflectances





- Outline of shadows can help with interpretation
- Can also hinder interpretation by obscuring objects
- Can also enhance topography in images



- We want to turn the raw data in images into information
- Remote sensing images can be difficult to interpret
- Using context and clues in images can help
- With practice, it does get easier

- Lillesand, Kiefer & Chipman – Chapter 1
- Campbell & Wynne – Chapter 5
- Natural Resources Canada [Remote Sensing Tutorials](#)
- [GlacierMap](#)
- Google Earth/Google Maps