**A cursory look at a few urban and rural landscapes via Google Earth**

Lab Exercise 1  
ESM 215, Winter 2021  
Due by 4 PM, Wednesday Jan 13. Please submit via GauchoSpace

**Part A. Coastal landscapes of northern Santa Barbara County, CA**

1. Start up Google Earth

Fly to "Lompoc, CA." Zoom in and out locally to get a feel for the area and then add a circle 10 km in diameter, centered on Lompoc. (Hint: you can use the ruler tool and temporarily save the circle measure.)

Using the table below answer the following questions (feel free to re-format the table from portrait to landscape view if you prefer):

2. Record the latitude and longitude of the image center.

3. How many landscapes are apparent in the image?

    a) no landscape boundaries obvious

    b) 1 dominant landscape

    c) 1-10 distinctive landscapes

    d) 10-100 distinctive landscapes

4. For the most extensive “landscape” in your circular region of interest, how would you describe the land cover in terms of human influence?

    a) pattern of land cover shows little or no human activity or influence (<1% of area affected)

    b) human activity dominates 1-10% of the area

    c) human activity dominates 10-50% of the area

    d) human activity dominates 50-75% of the area

    e) human activity dominates 75-100% of the area

5. For that same landscape, how would you describe land cover pattern?

    a) no obvious pattern

    b) a patchwork or mosaic of well defined patches

    c) land cover mainly shows gradations in vegetation or other surface features

    d) a mixture of patches and gradients

6. For that same landscape, what appear to be the main sources of land cover pattern (specify up to 3)?

    a) topography

    b) land-water boundaries

    c) geology and soils

    d) land use

    e) hydrography (rivers and floodplains)

    e) non-human  disturbances (E.g., landslides, avalanches, fires, floods)  (please specify)

    f) other source of pattern (please specify)

7. For that same landscape, how would you describe the road networks?

    a) area generally roadless

    b) area sparsely roaded, no obvious pattern

    c) moderate road density (0.1-1 km/km2), roads following topography (stream valleys, ridges, contours)

    d) moderate road density (0.1-1 km/km2), roads in a rectilinear grid

    e) high road density (> 1 km/ km2), roads following topography (stream valleys, ridges, contours)

    f) high road density (> 1 km/ km2), roads in a rectilinear grid

**Part B. A small sample of urban and rural landscape landscapes**

Repeat Part A for these 6 additional "landscapes."

Urban landscapes

1. [Ann Arbor, Michigan](https://en.wikipedia.org/wiki/Ann_Arbor,_Michigan)  
2. [Aix-en-Provence, France](https://en.wikipedia.org/wiki/Aix-en-Provence)  
3. [Dodoma, Tanzania](https://en.wikipedia.org/wiki/Dodoma)

Rural landscapes

4[. Monteverde Cloud Forest, Costa Rica](https://en.wikipedia.org/wiki/Monteverde_Cloud_Forest_Reserve)

5. [Hubbard Brook Experimental Forest, New Hampshire](https://hubbardbrook.org/)

6. [Big Thicket National Preserve, Kountze Texas](https://en.wikipedia.org/wiki/Big_Thicket)

For each location, be sure to zoom in to a circle 10 km in diameter, centered on the pin, as in Part A.

Review your tabulated results and then answer the following discussion questions.

Richard Forman defines a landscape as "A mix of local ecosystem or land use types in repeated over the land forming a landscape, which is the basic element in a region at the next broader scale composed of a non-repetitive, high-contrast, coarse-grained pattern of landscapes." Using this definition:

* How readily were you able to identify distinct landscapes in your selected areas?

Fairly readily, since I was looking for the main components of each region.

* Were landscapes easier to recognize over larger areas (zoomed out) or as you zoomed in?

For the most part they were easier to recognize from a zoomed out view but I often zoomed in to check the details when distinguishing between more similar looking landscapes.

* Did the land cover patterns seem to be organized hierarchically (regions comprised of landscapes, landscapes comprised of locally repeating ecosystems?

Yes, I think of ecosystems coming together to form land cover classes and those come together to make up a landscape.

* Using the time slider to go back through earlier images, how stable did landscape patterns appear to be over 10-30 years?

They all seem fairly stable, at least at the resolution to which we can zoom in for the older images. We can see changes in the agricultural lands, especially in Big Thicket. There has been reforestation in the Big Thicket preserve since the 1990’s which could be due to recovery from a fire event or the land use could have changed from agriculture to being established as a preserve. If we could zoom in further, we would probably see shifts in the buildings and possibly expansion of the built environment in the cities, especially the younger cities like Lompoc and Ann Arbor but the general features and patterns of the landscapes were fairly stable.

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| **Parts A & B** | |  |  |  |  | Characteristics of the most extensive landscape intersected by your 10km-diameter circle. | | | | |
| Site | Latitude | Longitude | Scene width (km) | Place name | # landscapes | Human activity | Landcover Pattern | Source of Pattern | Road networks | Notes |
| A | 34°38’N | 120°26’W | 10 | Lompoc, CA | C | B | B | A,C | C | Open Pit Mines |
| B1 | 42°12’N | 83°39’W | 10 | Ann Arbor, MI | C | E | B | D | D | Low-mid density urban |
| B2 | 43°31’N | 5°31’E | 10 | Aix-en-Provence, France | C | E | B | D | E | High Density Urban |
| B3 | 6°09’S | 35°45’E | 10 | Dodoma, Tanzania | B | D | D | A,C,D | F | High Density Urban |
| B4 | 10°18’N | 84°47’W | 10 | Monteverde Cloud Forest, Costa Rica | B | B | A | A | A | Forest |
| B5 | 43°54’N | 71°41’W | 10 | Hubbard Brook Experimental Forest, NH | A | A | A | A | A | Forest |
| B6 | 30°28’ | 94°20’ | 10 | Big Thicket National Preserve, TX | C | C | C | C | B | Farmland |