GEOGRAPHY 485: Remote Sensing I
Fall 2021

Quiz #2 - 25 points

Please answer the following questions in complete sentences, unless stated otherwise. You are welcome to refer to course materials and other resources while working on answers, but all questions should be answered using your own words and following the UO academic guidelines regarding plagiarism and academic conduct. The Canvas 'simcheck' automatic review site will be used on all submissions.

1. Pick a remote sensing application from https://gisgeography.com/remote-sensing-applications/ that interests you. a) Briefly describe the application you chose, b) Describe a remote sensing platform (i.e. spectral wavelengths, orbit, spatial resolution, temporal resolution) that would be best suited for studying this application. [5 points]

Example: Mapping regional economic activity at night. My instrument would be sensitive to wavelengths in the visible range so that I could detect night-time lights (a proxy for economic activity). My platform would have a polar orbit which overpasses my study region at the same time every night. This would ensure there are no diurnal biases in my data (e.g. higher economic activity at 10pm vs. 2am). My instrument would have a moderate spatial resolution (30 m) and swath width (200 km) which would be sufficient for resolving night-time lights in small villages and towns in my region. My platform would have a 10–15 day revisit time because I am mostly interested in resolving seasonal or interannual changes in economic activity/night-time lights.

2. What is the difference between a 'land cover' and 'land use'? Provide three examples of both. Is remote sensing better suited to mapping land cover or land use? [5 points]

3. Complete the confusion matrix on Page 2 by computing the producer's, user's, and overall accuracy. Explain why the *producer's accuracy* of the "Glacier" class is poor but the *user's accuracy* is good [5 points]

4. What is spectral unmixing? Why is it useful? Provide an example scenario in which spectral unmixing might be useful [5 points]

5. What is path radiance? What causes it? Why is it necessary to subtract path radiance from at-sensor radiance before conducting a multi-year change detection study? [5 points]

	Snow	Glacier	Water	Forest	Rock	Total	UA
Snow	93	12	0	0	0	105	
Glacier	3	37	0	0	0	40	
Water	0	0	125	18	3	146	
Forest	0	0	21	356	2	379	
Rock	0	0	0	0	201	201	
Total	96	49	146	374	206	871	------
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