Ecology 190 | Reading Assignment 4
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Predicting Vernal Pool Habitat Using Remote Sensing Technology

What is the research question? Where do vernal pools form and for how long might they persist (found in the Abstract; more could be done in the text to identify this specifically as your research question).

What are the hypotheses and are they testable? I was unable to find a hypothesis that would be tested. Instead, the question would be answered through a largely explorative research approach using Landsat data to find where vernal pools might form. A good place to put a hypothesis might have been in the putative CART model diagram (since the values given were claimed to be arbitrary, a good guess of the values could have been given as the hypothesis).

Why is this research important (policy related, further scientific understanding etc…)? This research has applications for amphibian conservation. Another impact of this research that could be mentioned is the prediction of seasonal breeding grounds for mosquitoes, which would be useful for controlling insect-borne diseases like malaria and West Nile virus.

Will the proposed methods address the research question and hypotheses? Yes. Looking at where as well as the duration vernal pools form would be relevant to developing amphibians. Despite the higher resolution of Lidar and the forest and cloud-penetrating SAR, DEM is chosen because of the need to study a large geographic area economically. This seems like a good choice. It might be useful to incorporate a flood model like the one Townsend described, to see where it might predict vernal pools, and especially a flood model based on Lidar data to see what results the use of higher resolution imagery might yield. (There is an unfinished sentence in the Implications paragraph on p. 5.)

Is the project feasible within the timeline, budget, and resources for a PhD program? Yes, but the total grant money ($72,000?) wasn't entirely used, and the timeline seems fairly broad. Some of the work could be done in less time—acquiring Landsat/DEM images and integrating variables into ArcGIS could probably both be done in one semester instead of over a whole year.

What recommendations would you make to improve the research questions, methods, and feasibility? It would have been very helpful to find a link in the Introduction between your research interests in the paper and how they meet NASA's Earth Science Enterprise goals. The Implications section would also have been another good place to address this.

Pattern and Process of Urbanization in Nang Rong District, Thailand: Adapting Methodologies for Characterizing Deforestation to the Study of Urban Growth

What is the research question? 1) How can the process of urban land conversion be characterized during its initial stages, and how does it differ from other land conversion processes? 2) What LULC types are most likely to be converted to urban uses in areas of rapid urban extensification? 3) What are the ecological implications of conversion from one land cover type vs. another (e.g. infilling lowlands vs. developing agricultural land)? (The title of this section is "Research Question," but 3 questions are given.)

What are the hypotheses and are they testable? No hypotheses could be found, just a description of the research question, methods, and feasibility/impact.

Why is this research important (policy related, further scientific understanding etc…)? It will help us gain a better understanding of urbanization and land cover change.

Will the proposed methods address the research question and hypotheses? There is not much description on how the third research question will be addressed. The explanation of remote sensing procedures in the Methodology section was very thorough. However, a more detailed explanation of the urban growth model could have been given under Feasibility and Impact, since it is only mentioned briefly there, but it is stated to be one of the goals of your analysis.

Is the project feasible within the timeline, budget, and resources for a PhD program? The timeline is only for the course of 9 months (1 school year) instead of the 3 years of the grant, and the full budget was not used (only $24,000 out of $72,000?).

What recommendations would you make to improve the research questions, methods, and feasibility? It was good to read in the Research Question section how the topic of LCS was likely linked to NASA's goals. However, specifically which of NASA's goals would be met by this research? Of the 6 ESE categories, this research looks like it would best fit under Carbon Cycle, Ecosystems, and Biogeochemistry, but there is not enough of a connection made between LCS and these topics.