Geomorphology Mid-Semester Project - 2018

Overview

Over the next week, you will work with a partner of your choosing to complete the mid-semester project. The project is a large, digital concept sketch that should show your mastery of concepts we have covered in class since the beginning of the semester.

The base you will work from is a satellite image of a landscape in the Pacific Northwest. The landscape you will investigate in your mid-semester project includes the high topography of a volcano (Mt. Rainier or Mt. Baker), alpine glaciers, steep upland surfaces, gentle lowland surfaces, a fluvial system, and a delta. The diversity of features in your image will allow you to explore a wide range of geomorphic systems and start the process of tracing sediment from its source to its sink.

The format of your concept sketch will be a digital poster built in PowerPoint. We will provide you with a template that includes the central image as well as a larger border to enclose the entirety of your sketch. Please stay within the border and refrain from moving the central image. You can add as many additional smaller images as you like, including maps, cross-sections, diagrams, zoom-ins of interesting features, photographs, etc. You should also use text boxes, arrows, and other PowerPoint tools to annotate and organize your sketch.

You should consult Google Earth and carefully examine the location of the landscape on which you will be focusing. This will allow you to view your area of interest in a wider context and see its relationship to larger systems. It will also allow you to zoom in and view particular areas in greater detail. To do well on this assignment, you will need to utilize these different scales of observation.

Overall, your goal is to integrate your understanding of the specific geomorphic environments, processes, and techniques that we have studied thus far (geotechniques, hillslopes, weathering/soils, hydrology, river channels, glacial, source to sink) into a coherent view of landscape-scale geomorphology.

Your mid-semester project will be due on Friday November 9 at the end of the day (MIDNIGHT). Please send a completed version of your PowerPoint poster via a UVM file transfer (http://www.uvm.edu/filetransfer) to Paul (pbierman@uvm.edu). Note that we will not have class for the next week, so you are expected to use class periods (plus time outside of class) to work on the project. We will be available by email to answer any questions and Mae Kate and Paul will be in class on Friday November 9 to answer any last moment questions.

What to Include

Your concept sketch should identify and detail the following concepts, processes, and landforms. Please review the attached sheet about concept sketches and **make sure that EACH caption includes ALL FOUR LEVELS of thinking (identification, process, prediction, and interactions).**

Make sure that each of these subsections STANDS ALONE on your poster and is CLEARLY titled with the number assigned below and a title in words.

1. Pick a **STEEP SOIL-MANTLED** (not rock) lowland hillslope (label its location on your poster) and explain the HILLSLOPE PROCESSES most likely to affect it. Consider the frequency and scale of the active hillslope and how these processes depend on climate, vegetation, and episodic disturbance. Make sure you include a force balance diagram.

2. **Soils**. Pick a floodplain site, a mature forest site, and an unvegetated mountain site – label them on your poster. Imagine you are digging soil pits. Compare soils between the three different areas, including sketches of how these soil pits would look with horizons labeled.

3. **Source to Sink**. Select a river that starts in the mountains and ends at the coast. Pick three locations (one at the headwaters, one far downstream, and one in between) and label them on your poster. For each site, draw a cross section of the CHANNEL showing important geomorphic elements at that location. CONSIDER changes downstream in channel and flow parameters (width, depth, discharge) and the connectivity between the channel and the adjacent hillslopes.

4. **Geotechniques**. Various techniques (see chapter 2) are useful for interpreting landscape history and process. Pick two places where geotechniques would help you better understand the geomorphology and label them on your sketch. In place one, describe a geochronologic (dating) technique, the data it would generate, and what you would learn ABOUT THE LANDSCAPE with these new data. In another place, take the same approach for a surveying technique.

5. **Geomorphic Hydrology** - Identify two areas with very different infiltration rates. Explain why the infiltration rates differ between the sites and make sure to include a realistic plot for each area showing infiltration rate from the start to end of a rainstorm.

Your concept sketch should include at least several embedded smaller sketches. Each of these smaller sketches should be labeled with concise but informative explanations and each should include all four levels of thinking. We encourage you to explore your landscape from a variety of perspectives, including a range of spatial scales, temporal scales, and vantage points (i.e. map-view versus cross-sectional view).

Hints for Success

Review the concept sketch guidelines at the end of this handout and follow them explicitly. Make sure to include everything mentioned above. Expect to spend the 6+ class hours (Monday and Wednesday and Friday class periods) working on this project as well as at least that much time outside of class. Edit and proofread your captions carefully and pay close attention to detail. SPELL CHECK. Make sure to stay within the border provided on the template. Most importantly, make a back-up version of your sketch frequently (we suggest storing back-up versions on external hard drives, flash drives, your UVM network space, and ideally all of the above!)

Evaluation

Your projects will be evaluated using the following criteria:

Content and ideas (80%) – Your sketch should include all of the pieces mentioned on the previous page. Smaller maps, images, and drawings you include should be relevant and seamlessly-integrated into the larger poster. Captions should contain ALL FOUR LEVELS OF THINKING and must be factually correct. You should strive to integrate your understanding about the specific geomorphic environments/processes we have studied so far this fall into a larger, coherent understanding of landscapes as a whole.

Overall organization, flow, and readability (20%) – The best sketches are clear, easy to read, and to the point, but with sufficient detail and correct spelling and grammar. The flow of ideas should be logical and clear. The reader should feel that the sketch is approachable and that they can navigate through the progression of ideas without getting lost (we suggest showing your sketch to a friend to check). The poster should be professional and visually-pleasing; imagine that you will be presenting it at a scientific conference (which is exactly what you will be doing at the end of the semester!).

Your concept sketch is due **FRIDAY November 9 at the end of the day (MIDNIGHT).** Assignments handed in on Saturday will lose 10% of their grade and assignments handed in on Sunday will lose 20% of their grade. Without prior agreement, assignments will not be accepted after Sunday. Please plan ahead for this project.

Looking Ahead

Keep in mind that you will revisit this same landscape for your final project at the end of the semester. You will have a chance to revise your mid-semester project, incorporating our suggestions and the additional knowledge you gain throughout the latter part of the fall. You will also incorporate a more integrated understanding of landscapes that will be the focus of the course over the coming weeks. Accordingly, we encourage you to view this mid-semester project not as a single stand-alone assignment but as a representation of your learning throughout this course.

Concept Sketches - Creating the Most Effective Sketch

Concept sketches are annotated diagrams that described a system and how it works. Concept sketches deal with spatial and temporal information in a variety of ways that not only identifies the landforms and features but also explains processes and makes predictions while identifying inter-relationships between labeled objects and places.

The most effective concept sketches will have the following characteristics:

1. The sketch will be neat, with clear diagrams and readable captions
2. The sketch will be approachable and intuitive, with a logical flow of ideas that is easy for the reader to follow
3. The sketch will have thoughtful, concise captions that address four specific levels of thinking:
    a. **Identification** of a feature
    b. Explanation of the relevant **process**
    c. Formulation of **predictions** regarding the temporal evolution of the feature
    d. Description of the **inter-relationships** and linkages with other features across space
4. The sketch will use arrows, text boxes, etc., to seamlessly and intuitively link different elements
5. The sketch will include smaller maps, cross-sections, photographs, diagrams, or other visual aids that are integrated into the larger sketch.

2018 Grading Rubric - Geomorphology mid-semester project

NAMES:

CONCEPTUAL ASPECTS							
	(2 pt) Captioning and connection	(2 pts) Identification	(5 pts) Process	(4 pts) Prediction	(3 pts) Interactions	(16 pts) Sum	Comments
1. Hilllslope Processes						0	
2. Comparison of three soil pits (floodplain, mature forest, unvegetated mountain)						0	
3. Source to sink						0	
4. Application of two geotechniques (chronology and surveying)						0	
5. Geomorphic hydrology						0	
					Sum	**0**	**of 80**

VISUAL ASPECTS							
	(3 pt) Neatness and readability of captions	(3 pts) Neatness and readability of visual aids	(4 pts) Overall organization of sketch	(3 pts) Connectivity of sketch elements	(7 pts) Flow of ideas	(20 pts) Sum	Comments
Overall appearance						0	
					Sum	**0**	**of 20**

Overall Comments:			
	OVERALL TOTAL SCORE:	**0**	**of 100**