

GEOB 103: Lab Assignment #4
Geomorphology from Space
Due Date: Friday March 30, 2012

Instructions and Resources

Answers to the questions below may be typed or handwritten. IT IS NOT NECESSARY TO PRINT THE ENTIRE ASSIGNMENT. To conserve resources, you are encouraged to view the images on the computer. Print the answer pages only and answer the questions on these answer pages. Please ensure that all handwriting is legible.

All images needed to complete the assignment are included in this document. However, you are strongly encouraged to further explore these places using [Google Earth](#). Please download the Google Earth kml file from the course website to access these sites, or use the lat/long coordinates in the figure captions to fly there.

Reminder: This is an independent assignment. General discussion is encouraged, but you should not work collaboratively in writing the answers to the questions. Any identifiable plagiarism will result in the papers involved receiving a mark of zero.

GEOB103 Assignment 4 – Answer Pages

Name: _____ Student #: _____ Section: _____

Part I

Degrading, Aggrading, and Graded River Systems

Figure 1 Mamore River, Bolivia ($14^{\circ}11'2.69''S$, $65^{\circ}2'25.68''W$)

1. Is this a degrading, aggrading, or graded fluvial system? (1 mark)
2. Why is there a broad swath of vegetation on either side of the channel? (2 marks)
3. Name at least four landforms of this fluvial system that are visible in the image. (2 marks)

**Figure 2(a) Snake River, Idaho ($46^{\circ} 3'10.12''N$, $117^{\circ} 1'31.70''W$) and
Figure 2(b) Oblique view of Snake River**

4. Is this a degrading, aggrading, or graded fluvial system? (1 mark)
5. Like the Mamore River channel in Figure 1, the Snake River channel in Figure 2 has many twists and turns and often doubles back on itself. What is this called? (1 mark)

Would you expect the twists and turns in the Snake River to migrate more than those in the Mamore River? (1 mark)

Explain why (1 mark)

GEOB103 Assignment 4 – Answer Pages

Figure 3(a) Tsang Po River, Tibet (29°18'58.99"N, 90°54'53.32"E)

Figure 3(b) MacKenzie River Delta (68°24'36.46"N,134°11'32.47"W)

6. Are these rivers degrading, aggrading, or graded fluvial systems? (1 mark)

7. Which is greater in these systems: sediment supply or transport capacity? (1 mark)

8. Would you expect to find deposits of fine (silt and clay) or coarse (sand and gravel) material in these systems? (1 mark)

**Part II
Glacial Landforms**

Figure 4 Channeled Scablands, Washington (47°48'31.48"N, 119°20'8.96"W)

9. What is the feature that runs from the top-left to the bottom-right of this photo? Is it erosional or depositional? (2 marks)

10. Where are these landforms formed? What is their composition? (2 marks)

Figure 5(a) Tikchik Lakes, Alaska (59°54'N 158°50'W)

Figure 5(b) Finger Lakes, New York (42°44'N76°44'W)

11. How were these lake systems formed? (2 marks)

Part III

Fluvial Processes in Arid Climates

Figure 6 Uvs Nuur basin, Mongolia (50°09'N 91°00'E)

12. In Figure 6, the area around the lake appears to be dry (other than the patches of marshland where tributaries enter), while there are patches of green vegetation on the mountains to the north (the top of the image). Why isn't the area around the lake vegetated? (Hint: in this region, moist air comes from the north.) (2 marks)

13. In Figure 6, if you were to start in the northern mountains and swim downstream, how would the type of material on the streambed change? (1 mark)

Part IV

Fluvial and Colluvial Processes

Figure 7(a) Texas Creek Alluvial Fan and "Big Slide" (50°33'48.00"N, 121°49'12.91"W)

Figure 7(b) Oblique view of Texas Creek

14. Tributary creeks to the Fraser River have deposited alluvial fans, or in the case of Texas Creek, have been the sites of debris flows. Shown in (a) and (b) is the old Texas Creek alluvial fan, and the smaller modern alluvial fan (at the end of the creek).

How did the growth of the alluvial fans towards the Fraser River cause the landslide shown on the other side of Fraser River? (Hint: What happens on the cut-bank of a meander?) (2 marks)

Part I

Degrading, Aggrading, and Graded River Systems



Figure 1 Mamore River, Bolivia ($14^{\circ}11'2.69''S$, $65^{\circ}2'25.68''W$)

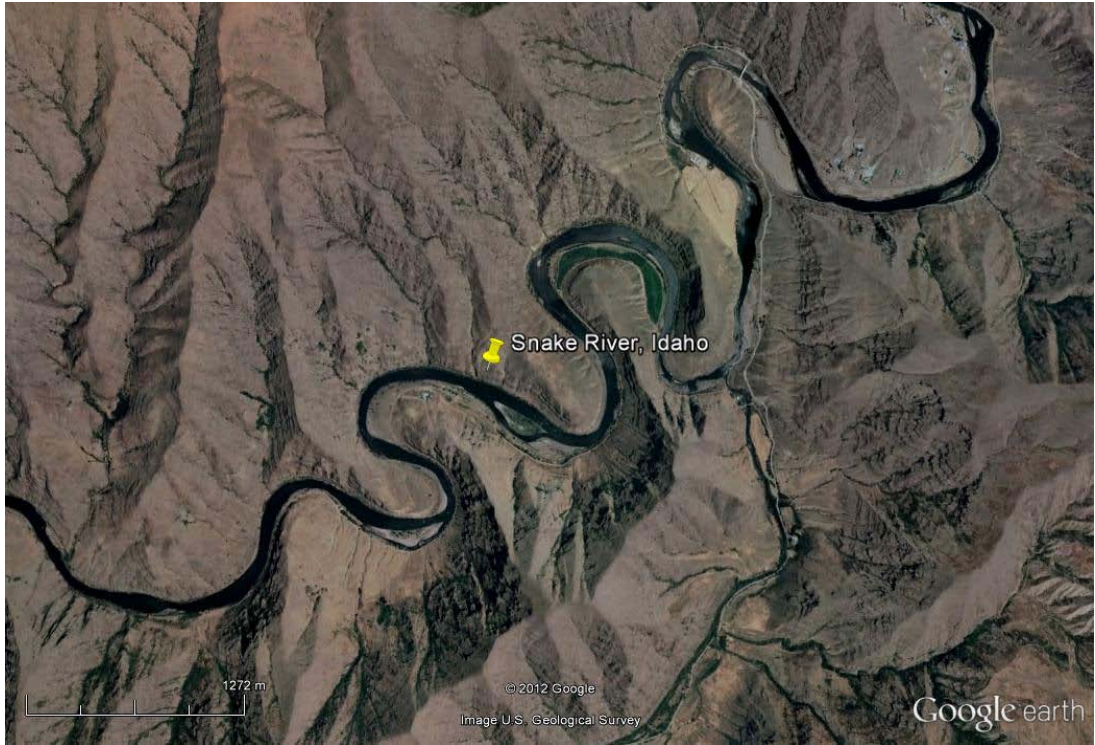


Figure 2 (a) Snake River, Idaho ($46^{\circ} 3'10.12''N$, $117^{\circ} 1'31.70''W$)



Figure 2 (b) Oblique view of Snake River

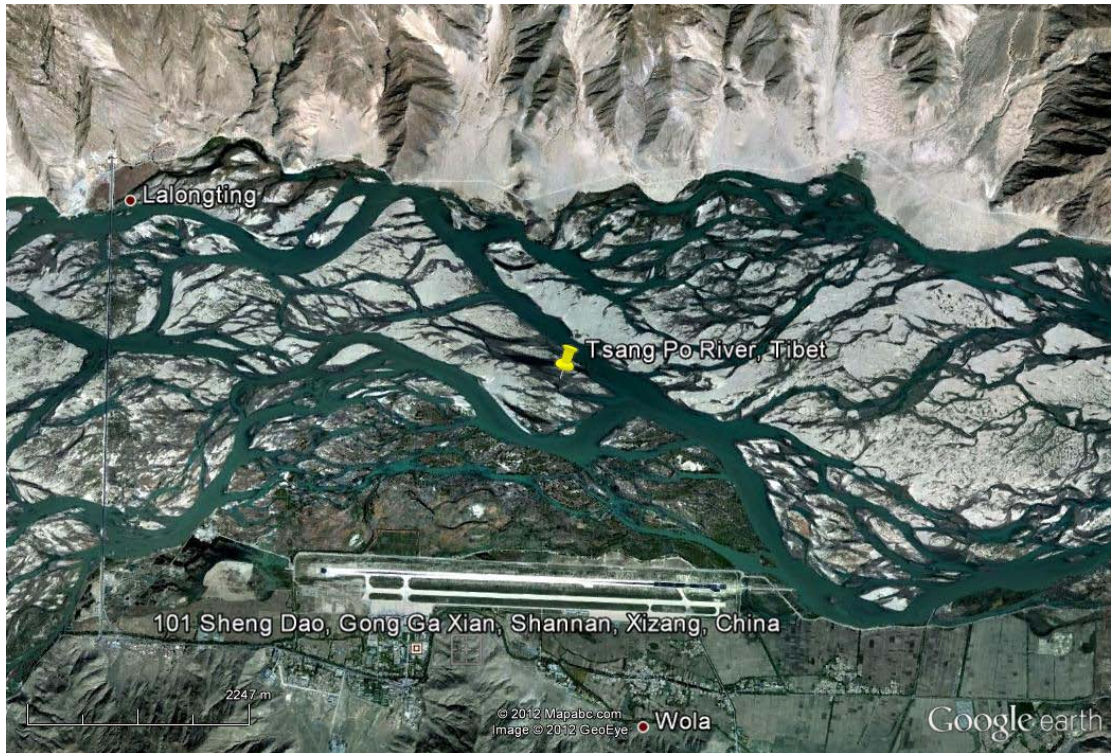


Figure 3 (a) Tsang Po River, Tibet ($29^{\circ}18'58.99''\text{N}$, $90^{\circ}54'53.32''\text{E}$)



Figure 3 (b) MacKenzie River Delta ($68^{\circ}24'36.46''\text{N}$, $134^{\circ}11'32.47''\text{W}$)

Part II
Glacial Landforms



Figure 4 Channeled Scablands, Washington ($47^{\circ}48'31.48''\text{N}$, $119^{\circ}20'8.96''\text{W}$)



Figure 5 (a) Tikchik Lakes, Alaska ($59^{\circ}54'N$ $158^{\circ}50'W$)

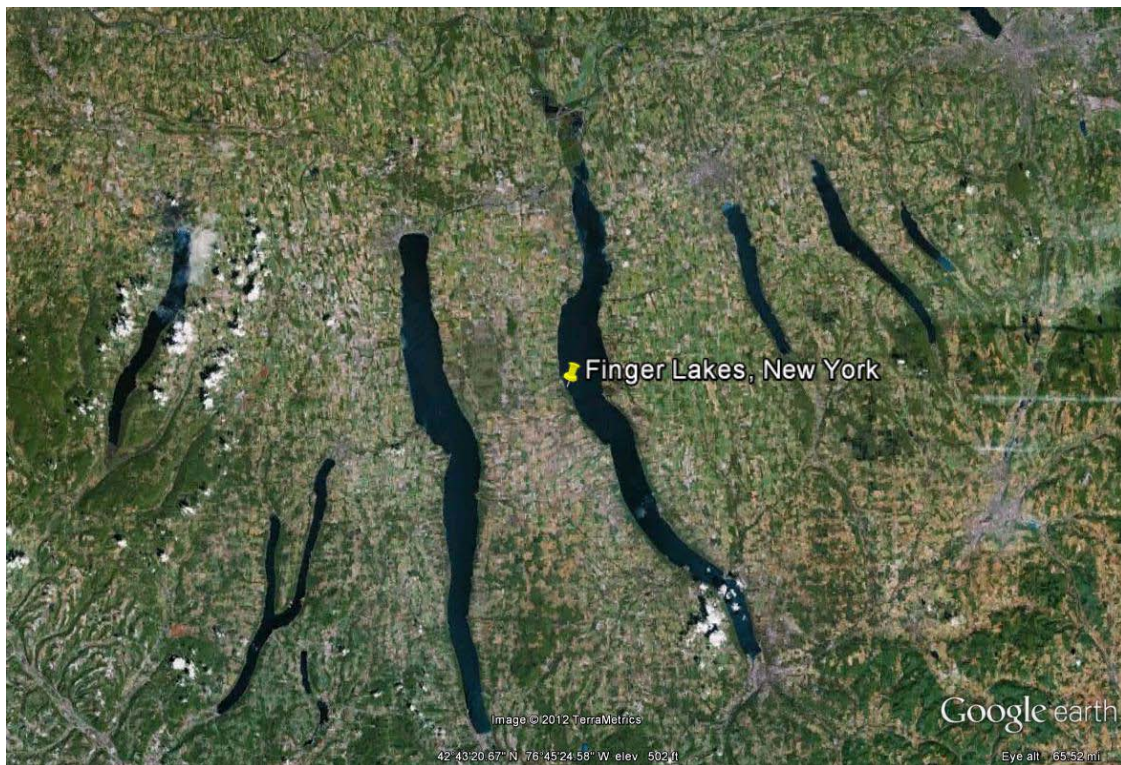


Figure 5 (b) Finger Lakes, New York ($42^{\circ}44'N$ $76^{\circ}44'W$)



Figure 6 Uvs Nuur basin, Mongolia (50°09'N 91°00'E)

Part IV
Fluvial and Coluvial Processes

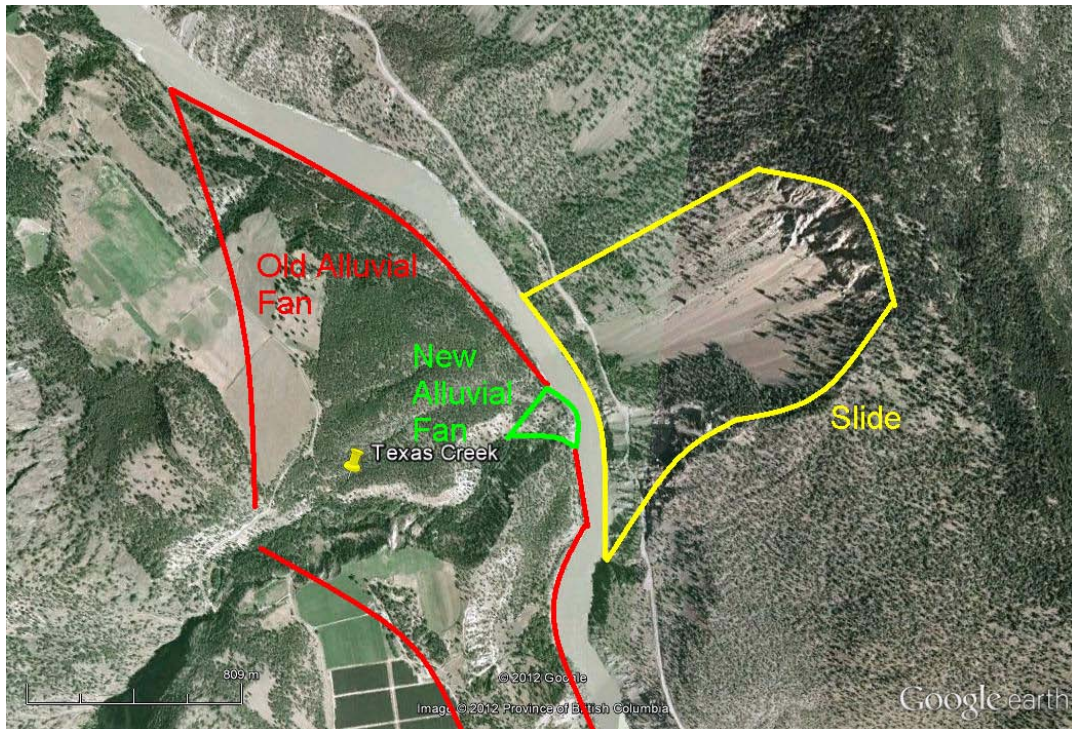


Figure 7(a) Texas Creek Alluvial Fan and "Big Slide" (50°33'48.00"N, 121°49'12.91"W)

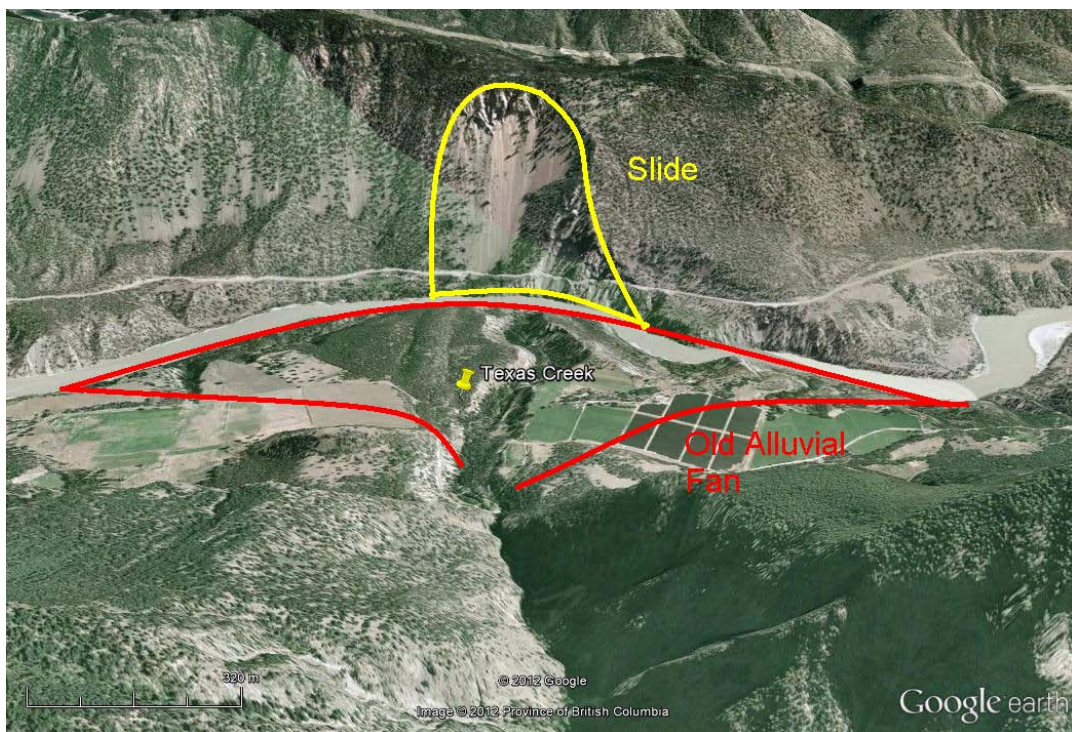


Figure 7(b) Oblique view of Texas Creek