

## WorldWind 2: Fluvial Landforms

See the previous exercise for instructions on getting started with WorldWind.

- Your task in this exercise is to explore locations that include examples of fluvial landforms you've studied in class and in the readings. You'll use World Wind or Google Earth to see views of these features, and you should use the navigation tools to get different angles and visualize the topography – the *form* is obviously important to a *landform*. Your goal will be to complete a *Landform Scavenger Hunt* so you may want to skip ahead to see what you're looking for.
- We'll start by finding for named locations. WorldWind: Use the **Place Finder to Search** for the location. Select the best choice in the list, then click **Go** to zoom into the location you've selected. Turn on the imagery suggested in the table. [Google Earth : use Local Search. Ctrl-L for lat/long grid.]

Location	State/Country	Imagery/Layers	Instructions
Dinosaur	Colorado	NLT Landsat Visible	Then go due north along 109°W meridian to 40.54°N
Victoria Falls	Zimbabwe	NLT Landsat Visible	
Niagara Falls	New York	NLT Landsat Visible	
Cataratas del Iguazu	Brazil/ Argentina	NLT Landsat Visible	

- For the following locations, use Ctrl-C to copy the code from this document – I'll also put this part on the web page as a word document – then in World Wind, paste it with Ctrl-V (or if this doesn't work, use Paste Coordinates in the Edit menu). Make sure you get the entire text string that starts with "worldwind://" and ends with the number after "&tilt=". Unless indicated otherwise, **use a vertical exaggeration of 2.0** – this is an especially important setting since it is part of what determines where the central cross-hair target is located. **The feature we're looking for should be in the cross-hairs.** Unless otherwise indicated, use NLT Landsat7 Visible as the image to display (turn off other images). Zoom out and rotate around to see the regional context; paste again if you get lost.

**Google Earth variation:**

You can't paste in the entire string into Google Earth, but you can enter the latitude, longitude string into the "Fly To" box, and press Search. So we've provided a lat, long string for each location, just after the location name. For example, paste the string "63.06966, -150.25563" into the Fly To box, and Search will take you there. This will position you to the right location; from there you should zoom out to about 50 km altitude (unless indicated otherwise), and explore with tilting and such.

Mississippi River, Greenville Mississippi:	33.26986, -91.13400
worldwind://goto/world=Earth&lat=33.26986&lon=-91.13400&alt=55528&dir=-88.9&tilt=18.3	
worldwind://goto/world=Earth&lat=33.29512&lon=-91.26949&alt=58458	
Mackenzie Delta:	68.39613, -134.05853
worldwind://goto/world=Earth&lat=68.39613&lon=-134.05853&alt=53524&dir=13.1&tilt=22.4	
Victoria Falls, Zimbabwe:	-17.925 25.857
worldwind://goto/world=Earth&lat=-17.92500&lon=25.85700&alt=15000	
Rio Paraguay, Argentina/Paraguay:	-27.32499, -58.64907
worldwind://goto/world=Earth&lat=-27.32499&lon=-58.64907&alt=48201&dir=13.1&tilt=22.4	
Rakaia River, New Zealand:	-43.57162 171.74863 (alt: 20 km)
worldwind://goto/world=Earth&lat=-43.57162&lon=171.74863&alt=18776&dir=4.6&tilt=31.3	

San Juan River, southeastern Utah: worldwind://goto/world=Earth&lat=37.21500&lon=-109.99800&alt=1715889	37.215 -109.998 (alt: 15km)
Death Valley, California: worldwind://goto/world=Earth&lat=36.82808&lon=-117.17971&alt=5811&dir=33.5&tilt=76.3	36.82808, -117.17971
Clark Fork near Missoula, MT: worldwind://goto/world=Earth&lat=46.87179&lon=-114.08221&alt=15000	46.8719 -114.083
Rio Negro, Patagonia, Argentina: worldwind://goto/world=Earth&lat=-40.04017&lon=-64.59254&alt=15000	-40.040189 -64.592531
Itkillik River, Alaska North Slope (hit space bar to use default vertical view angle): worldwind://goto/world=Earth&lat=70.05553&lon=-151.19922&alt=31327	70.05553, -151.19922
Near Tucumcari, New Mexico: worldwind://goto/world=Earth&lat=-40.04019&lon=-64.59253&alt=15000	34.921793 -104.031200
Llobregat River, Barcelona, Spain: worldwind://goto/world=Earth&lat=41.33706&lon=2.09843&alt=1522887	41.337059 2.098435
Porcupine River, Alaska, above Fort Yukon: worldwind://goto/world=Earth&lat=66.77977&lon=-144.20064&alt=20354&dir=128.0&tilt=46.2	66.77977, -144.20064

### Landform Scavenger Hunt

Your task is to explore the above locations (including the 4 placefinder ones), and try to find the following landforms, related feature, or evidence of process. For each, provide the location and visual evidence that leads you to this conclusion. The first one is provided as an example:

<b>river meander</b> (EXAMPLE) Evidence: length of river is greater than the valley length due to the tortuous turns of the river. Nearby are characteristic meandering river features: oxbow lakes, meander scars, point bars. Single channels are also typical of meanders.	Location: <u>Greenville, Mississippi</u> .
<b>waterfall</b> (ok, this one's easy) Evidence:	Location: _____
<b>escarpment</b> Evidence:	Location: _____
<b>point bar</b> Evidence:	Location: _____
<b>braided river</b> Evidence:	Location: _____
<b>entrenched meanders</b> Evidence:	Location: _____
<b>oxbow lake</b> Evidence:	Location: _____

<b>channelization</b> Evidence:	Location: _____
<b>alluvial fan</b> Evidence:	Location: _____
<b>suspended sediment</b> Evidence:	Location: _____
<b>anastomosing river</b> Evidence:	Location: _____

Now, select one of the sites provided, and one additional one you need to find, and copy a screen shot to a word processor (we have MS Word in the lab), by using Alt-Print Screen (hold the Alt key down, then click the Print Screen button on your keyboard, near the upper right), then paste (Ctrl-V) into the document. Add text identifying the location, and then print each on a separate page. For each, interpret the landscape, labeling the relevant features. Identify at least four features on each printout. *Note that these features need not be from the list, but are just things you can see in the image that help you interpret them; for example, you might see a point bar or an oxbow lake (features in the list) but also a cutbank (not one of the features in the list) that helps you to identify a meandering river. Or in addition to the (light-colored) suspended sediment you might see next to it clear (dark) water, and both should be labeled. Anything visible that contributes to the interpretation might be good to label.*