

Today you will work more on interpreting fluvial environments, in particular determining the style of river from the sedimentary structures and relative proportion of channel and overbank sediments. You will use Gigapan images, high-resolution montages constructed by stitching together many individual photos, allowing you to zoom in and out to see both close-up details and the large-scale structure. Some images have features highlighted as “snapshots” in the lower left of the image. Click on one of the snapshot images to zoom to that part of the photo.

Gigapan 1: Peninsula Formation (Ordovician), Table Mountain, South Africa

Go to the first image at <http://gigapan.com/gigapans/13695>.

1. Look at the areas highlighted in the snapshots labeled “cross bedding” and “more cross bedding.” What type of bedform is represented here?
2. What was direction of current flow? Because we don’t know the orientation of the photo, you can use terms like left, right, into the screen, out of the screen, etc.
3. Look at the area highlighted by the snapshot “bar form.” How did this bar migrate (by lateral accretion, upstream accretion, downstream accretion)?
4. Navigate around the image, looking at the lithology, bed geometry, and sedimentary structures. What type of river do you think this was: meandering or braided? What evidence supports that conclusion?

Gigapan 2: Hampshire Formation (Devonian), West Virginia

Go to the next image at <http://gigapan.com/gigapans/111264>. We’ll focus on the lower part of the cliff, between road level and the first grass-covered ledge. I’ve included an annotated photo to help guide your observations.



5. In this outcrop, sandstone units tend to form more resistant, blocky layers whereas finer-grained sediments form more crumbly and rounded slopes. For each of units 1, 2, and 3 (as labeled above), interpret the depositional environment as channel or overbank.

6. Small-scale cross-bedding is not visible in this photo, I think because the current direction was oriented into or out of the cliff. Describe evidence for lateral, downstream, or upstream accretion of larger bar features in any of the channel units. What type of bar is represented and in what units (1, 2, or 3)?

7. Does this outcrop represent meandering or braided river deposits? What evidence supports your conclusion?