FLUVIAL EROSIONAL LANDFORMS

Erosional Landscapes – Fluvial landscapes dominated by erosional processes.

- Erosional landscapes develop as rivers and streams downcut into the landscape in an attempt to reach *base level.*
- Erosional landscapes form in areas where uplift outpaces downcutting.
- *Base level is* the lowest lever a river can erode its channel.
- Once a stream reaches base level, a state of dynamic equilibrium develops; active equilibrium ive channel downcutting ceases, and erosion is matched by deposition over time.
- *Base level* for rivers that drain to the ocean is sea level, while base level for rivers that have interior drainage is the interior basin floor.
- Temporary or *local base levels* may develop where the stream gradient is temporarily reduced to a near level plain, such as where rivers empty into lakes/reservoirs, or where rivers cross valleys, encounter waterfalls, or feed into other water courses.

Erosional Landforms

V-shaped Valleys – Form through the slow downcutting or rivers and streams into resistant rock material (mostly igneous and metamorphic rocks). Valleys cut in this fashion exhibit a V-shaped profile.
Examples: Non-glaciated valleys of Sierra Nevada and Peninsular Mountains

Entrenched Canyons – Form through the rapid downcutting or rivers and streams into less resistant rock material (mostly sedimentary rocks). Entrenched canyons are typically narrow and deep, sometimes thousands of feet deep.
Examples: the Grand Canyon and its many tributaries

Alluvial Terraces – Form when depositional rivers become erosional. After years of deposition, a river begins to downcut into its alluvial (refers to sediment deposited by a river or stream) floodplain, leaving a set of paired terraces on either side of the new channel. Common where stream flow suddenly increases after many years of low flow, or where active uplift occurs periodically but infrequently.

Waterfalls & **Rapids –** Form along rivers and streams where more resistant rock creates a temporary (local) base level. Waterfalls and rapids typically have a less resistant rock layer underlying the more resistant rock layer. As water pours over the lip (called the nickpoint) and down the face of the fall or rapid, the less resistant rock will wear back faster than the more resistant rock creating an overhang that eventually collapses. Over time, erosion of this nature (called headward erosion) will cause a waterfall or rapid to migrate upstream.
Example: Niagara Falls (headward erosion occurs at a rate of 1.3 meters/year)