

How isostasy impacts on the fluvial landscape -

2018 Q1B

I have studied how isostasy impacts on the fluvial landscape. Fluvial readjustment occurs when the crust rebounds after an ice age. The sea level falls, relative to the crust, and the river must then erode downwards again to reach the sea level. This leads to river rejuvenation. This is when the river must erode downwards again and it takes on characteristics of a river in the youthful stage, flowing very quickly and eroding vertically into the riverbed. Isostasy can have a huge impact on the fluvial landscape, creating some very distinct features.

Knickpoints

A knickpoint is the point at which the river becomes rejuvenated. During fluvial readjustment and river rejuvenation, the rejuvenation starts at the river's mouth and then moves upstream and erodes. This process forms a V-shaped valley and this in turn destroys the old profile of the river.

Sometimes a waterfall can form at a knickpoint due to the sudden movement. As each knickpoint migrates upstream, the older knickpoints are removed through erosion. This happens until the river has fully adjusted to the new sea level or base level of the river. Knickpoints can be seen on the River Nore in Co. Kilkenny.

Paired Terraces

When fluvial or readjustment occurs, a new valley floor is created in its old floodplain. This creates a valley within a valley. The river's previous floodplain is elevated above the new valley floor on either side. This forms paired terraces. These can be seen on the River Barrow in County Kilkenny.

Incised Meanders

When the fluvial rejuvenation occurs, the river has much more energy and thus more erosive power. The meanders formed prior to rejuvenation are deepened due to the new erosive strength of the river. This can form steep cliffs at the outer sides of meanders. These are called incised meanders or entrenched meanders. A famous example of incised meanders can be seen on the San Juan River in Utah, USA.