Below is a flow direction graph. It represents one river-tree.

- 1. Label each node with its flow accumulation (FA) value.
- 2. River backbone: start at the mouth, go upstream into the stream with largest FA value



Watersheds and watershed hierarchy

A watershed is an area of land where water drains to a common outlet. Because the whole watershed drains to the same point, it represents more or less a homogenous unit of landscape that can be studied on its own. Projects in the geo-sciences start by identifying the watershed they want to study.

Wait a minute: what scale? Clearly if we pick the "mouth" of a river, the entire river drains to it, so the whole river tree constitutes a watershed. What if we did not want to study the whole basin of the Amazon, but only a smaller portion of it? We would like to be able to partition the Amazon basin into sub-basins.

FD and FD give us an elegant way to model a watershed hierarchy. Idea is credited to Pfafstetter.

Pfafstetter watershed hierarchy:

- · Find the backbone of the river.
- Find the largest 4 tributaries of the main river, and draw their basins; number these 2,4,6,8.
- Find the inter-basins between these four tributaries and number these 1,3,5,7,9.

TO DO:

• Pick watershed 3 and recurse. Show its sub-watersheds 31,32,33...39

[•] Show basins 1 through 9 on the FD graph on the other side. Every point in the terrain should be either in a basin or in an inter-basin. If it's not, you did something wrong.