The Geology of Africa: *East Africa and the Great Rift Valley*

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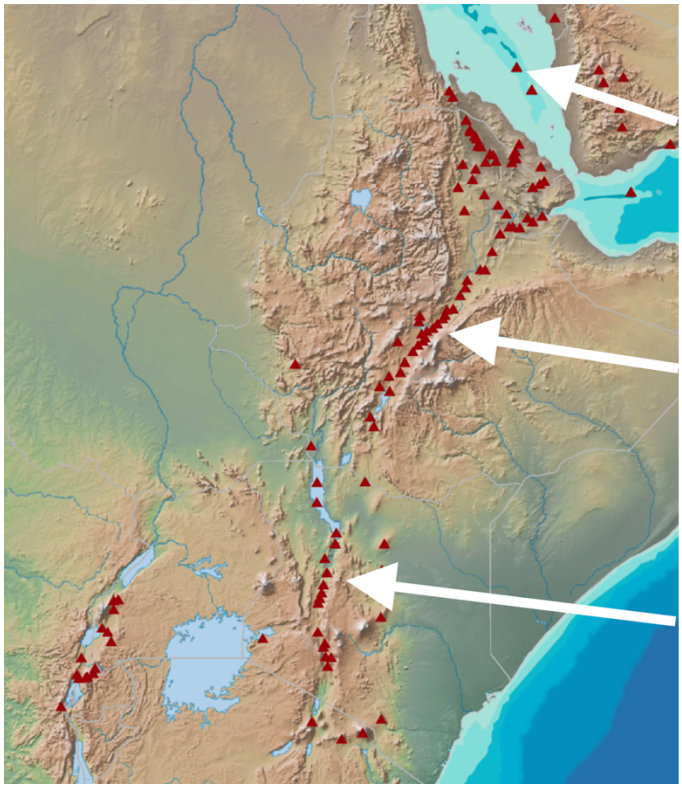
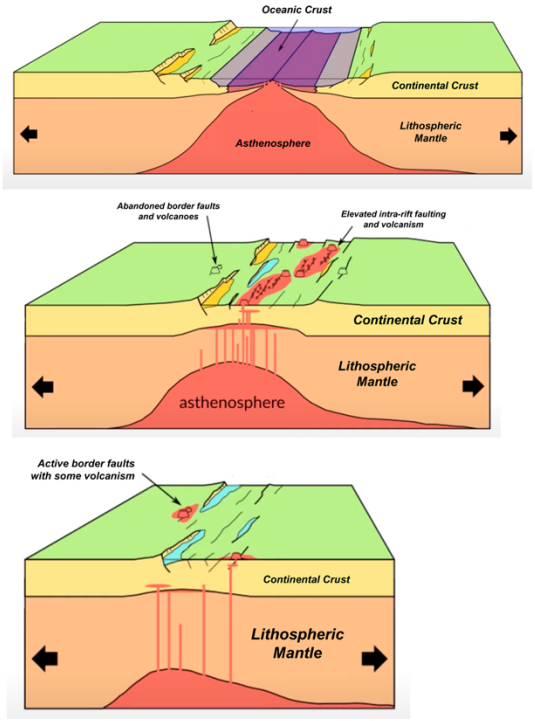
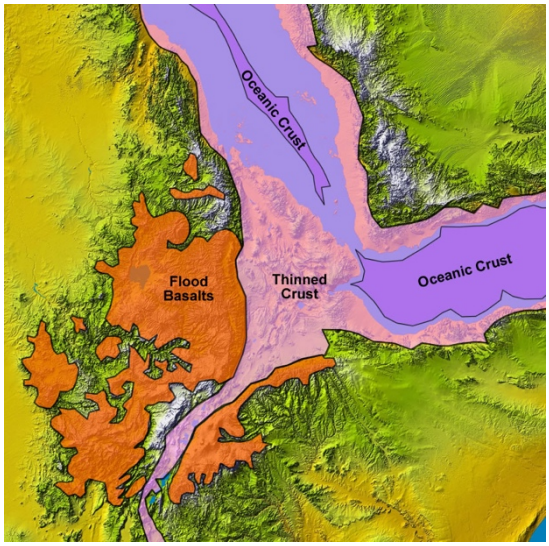
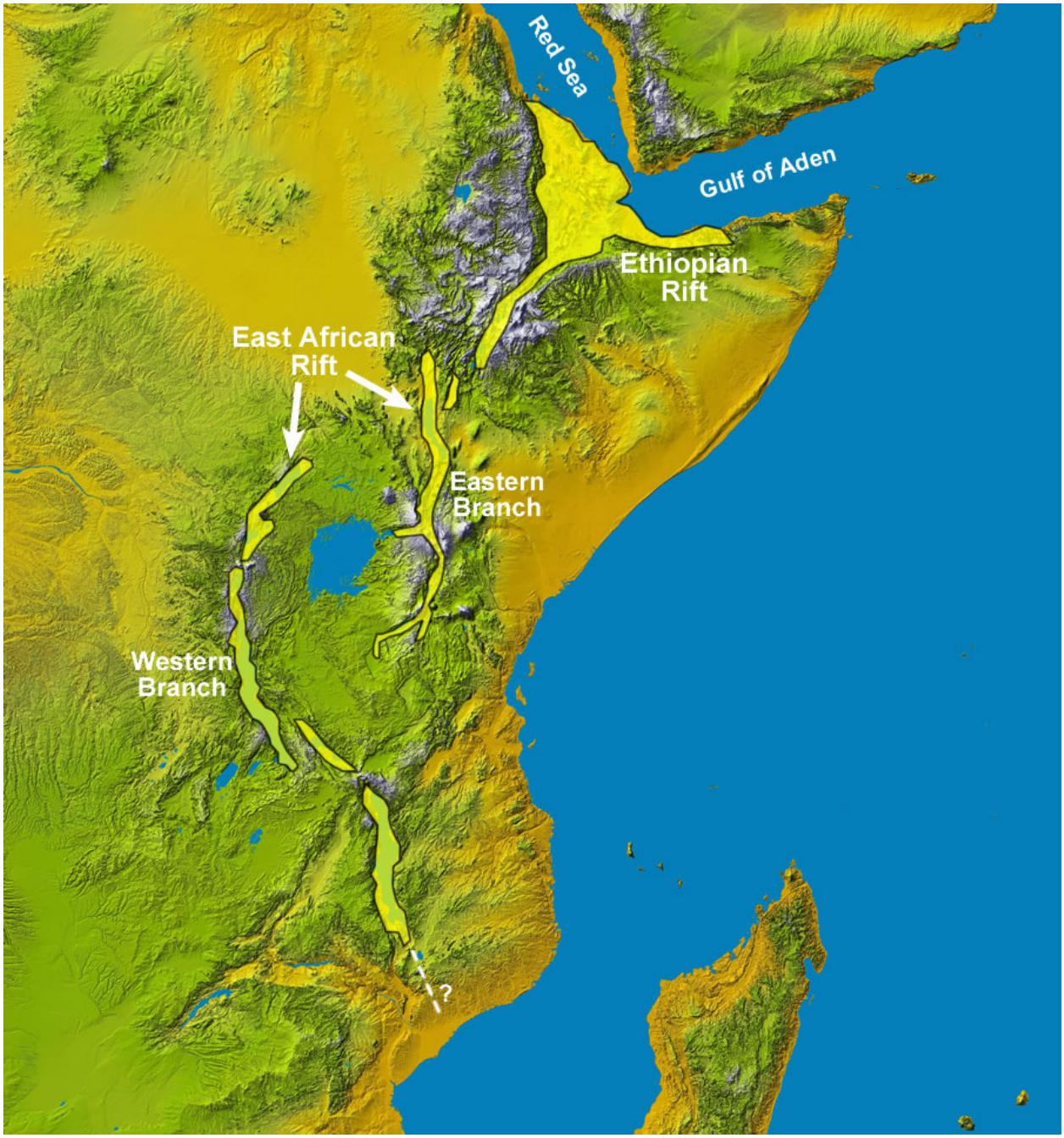




The diagram above shows the distribution of volcanoes along the Great Rift Valley, including Ethiopia, Kenya, and Tanzania. For the Gulf of Aden and the Red Sea, tectonic forces have separated the Arabian peninsula from Africa, resulting in oceanic crust forming as the Arabian plate rifts apart from Africa. Rift development decreases to the south, along with depth to the ductile asthenosphere.



The Afar triangle is an area of very thin crust (pink color) that occurs at a triple junction of tectonic boundaries, including the Red Sea, the Gulf of Aden, and the Ethiopian Rift. Older flood basalt deposits in Ethiopia (orange color), reflect the rising mantle plume that is driving the rift process.



In the diagram above, the African Rift Valley splits into two sections, a western branch and an eastern branch. The split is likely due to the thick, stable crust of the Tanzania craton, which is resistant to the extensional tectonic forces. Therefore, the the rift appears to bifurcate around the cratonic crust.