

Figure 9: This ternary diagram is designed to display a general path of evolution of magmas based on their alkali, iron, and magnesium content. The red curved arrow shows a very general path that melts take compositionally as they evolve.

In figure 9 is shown an evolutionary path alongside data from the Aleutian Arc. When compositions are above the evolutionary trend the melts are considered tholeiitic whereas below indicates calc-alkaline. Thus, prior observations in major element concentrations are further supported by the evolutionary path of the Aleutian Arc data. The wide spread of the data indicates that a lot of evolutionary or diversification processes occur at the convergent margin creating a range of compositions.

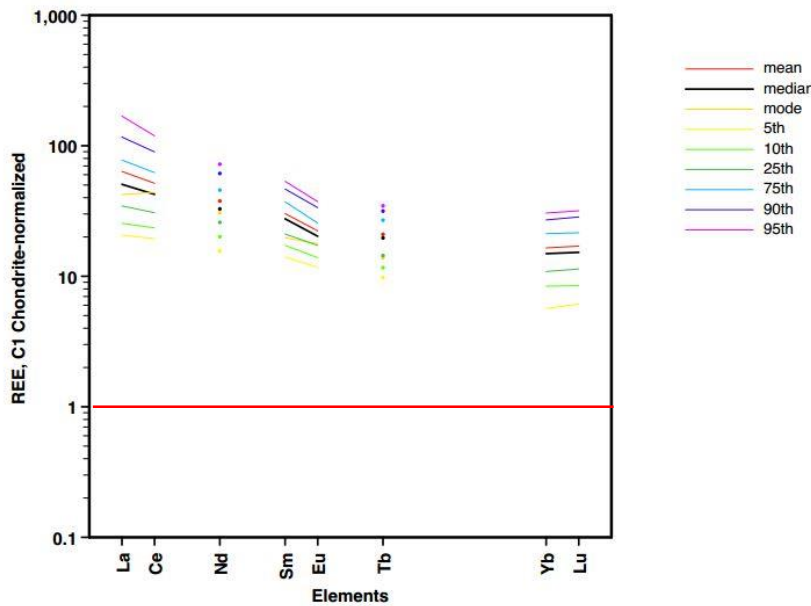


Figure 10: This spider diagram of trace elements functions as an indicator for the incompatible element content in a magma. The horizontal line represents an ideal unaltered mantle source rock.

In figure 10 the trace elements of the lanthanide contraction series are normalized against a standard undepleted mantle source. All the percentile trends are well above the 1 to 1 concentration line which indicates that these elements are more logarithmically more concentrated in the Aleutian Arc melts than they are in the mantle.

Thus, based off major and trace element trends we can deduce that the Aleutian Arc is a predominantly calc-alkaline melt producing locality at which a great deal of melt evolution likely takes place.