



# Geochemical Analysis Of Ice Age River Deposits From Turlock Lake Formation, CEMEX Quarry Fresno, Ca



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## Abstract

Nineteen bags of Pleistocene Age river deposited samples were taken from the Cemex Quarry in Fresno, CA. There are three formations in the area, deposited from rivers derived from glaciers, consisting of the Modesto, Riverbank, and Turlock Lake; youngest deposited to oldest respectively.

Phi sizes refer to each of the individual grains diameter, larger sized grains are in the negative spectrum while smaller grains are positive. Each sample has phi size bags that range in sizes from -5 to 4+, excluding phi size -2. For the phi sizes of -3 to -5, each individual rock was measured on its three axis and that data was compiled into an excel sheet. This was to determine the textural maturity of the samples which was derived from a number system for the following categories: roundness, rough/smooth, shiny/dull and grain shape.

QLF ( Quartz, Lithic, and Feldspar) tests were conducted on the phi size 0, -1, and -2. This determines the geochemical weathering and its compositional maturity. The QLF graphs indicate that as the phi size increases the grains become more compositionally mature, consisting of mainly quartz while having minute amounts of lithic and feldspars. Respectively, as phi size decreases the grains become less compositionally mature and consist upwards of 90% lithic.

## Field Area



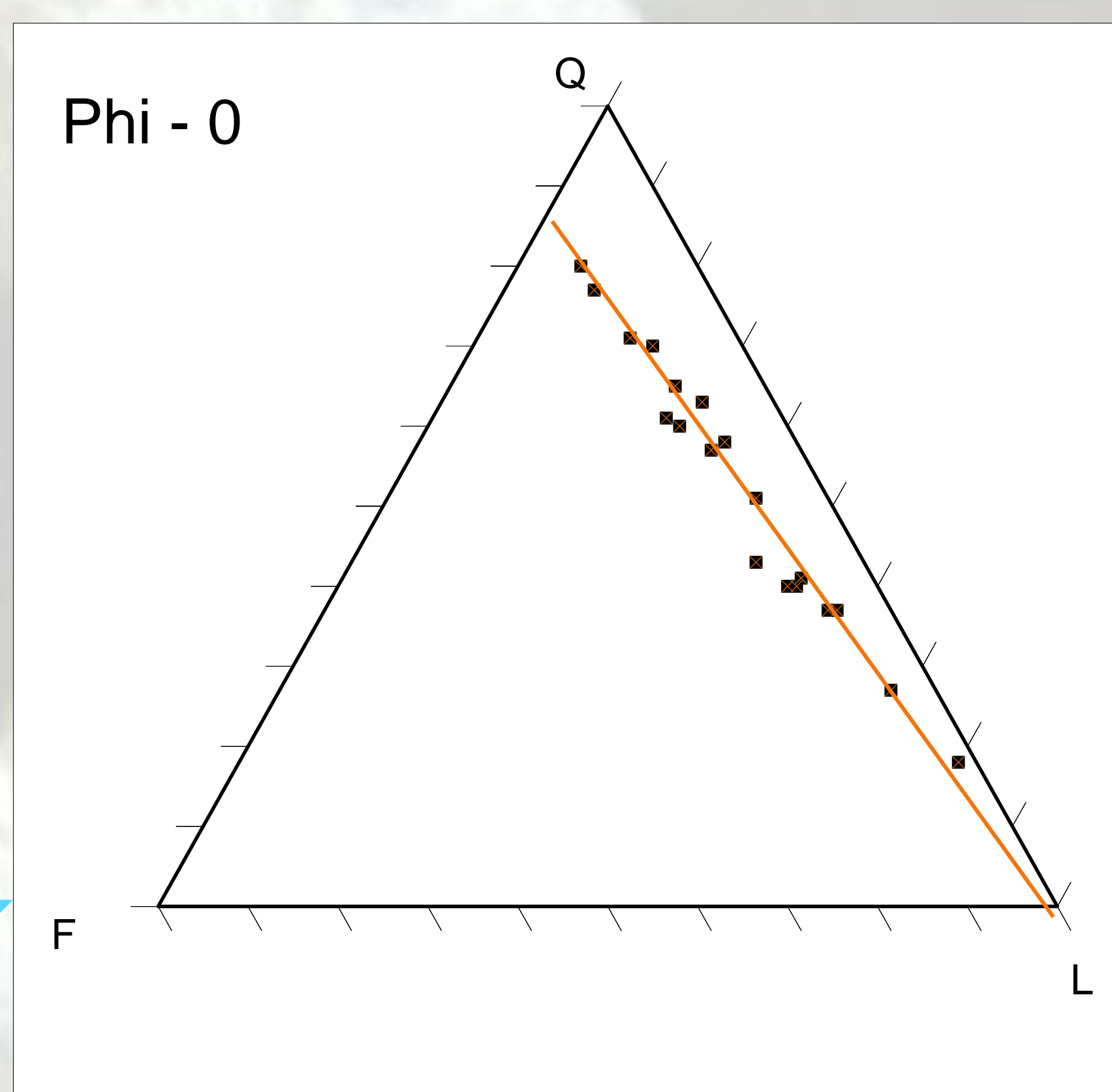
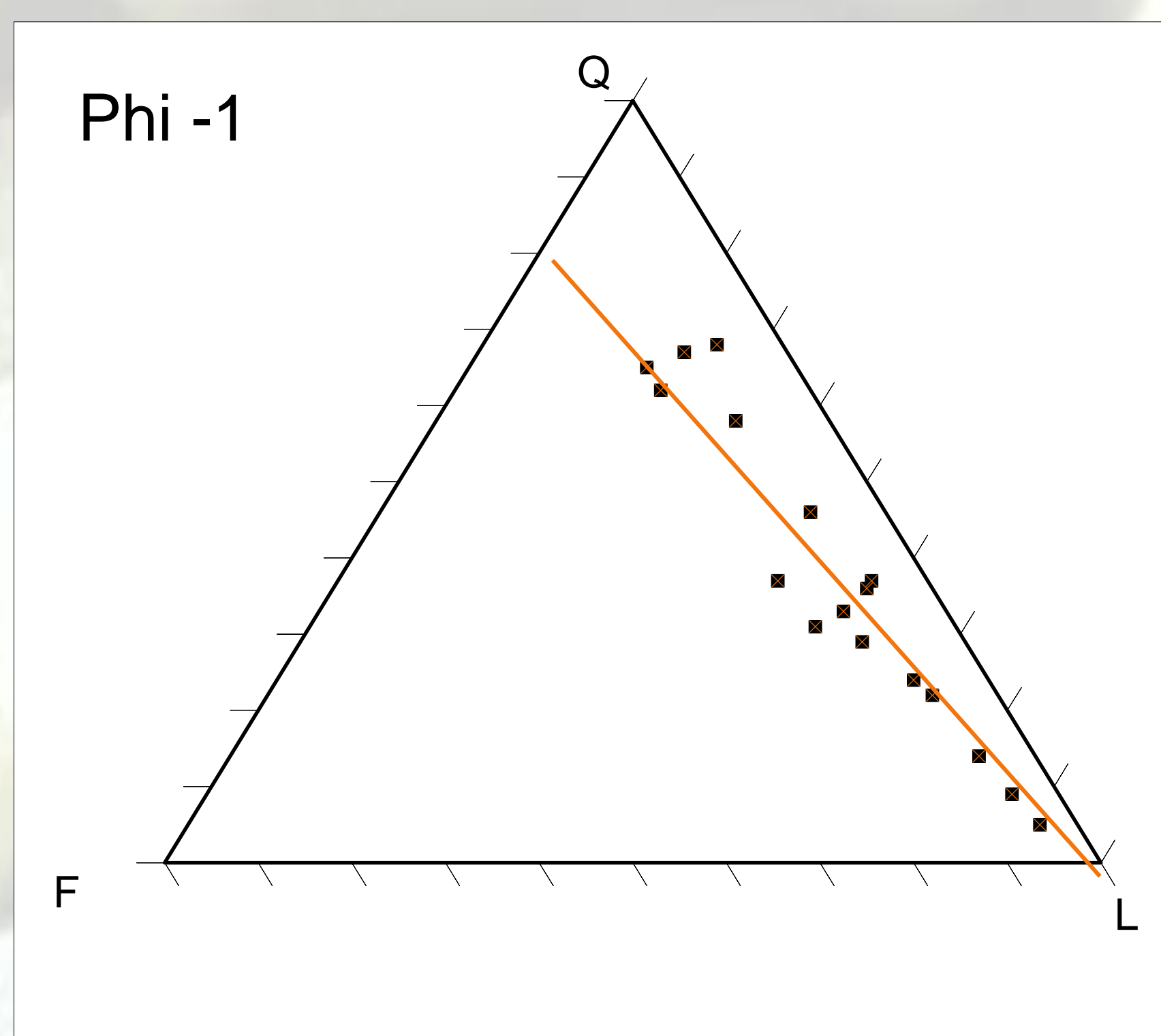
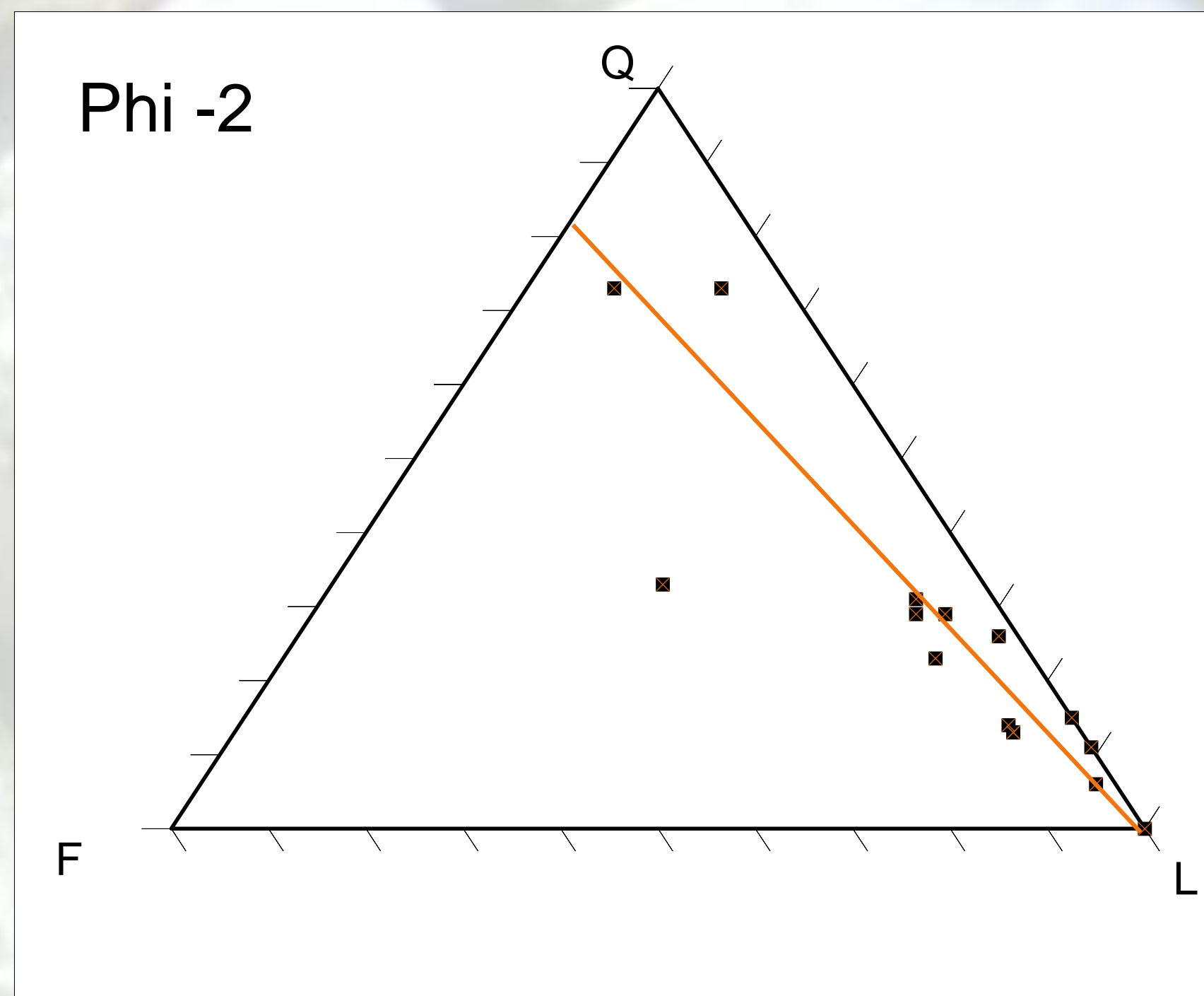
CEMEX Quarry, Friant, CA

- CEMEX founded in 1906 in Mexico
- Friant, CA site running approx. 30 years
- Three glacially deposited formations
- Modesto, Riverbank, Turlock Lake

Larger

Smaller

## Results



## Methods

Step 1	Step 2	Step 3	Step 4
Gather appropriate grain sizes for analysis	Portion each sample into corresponding weigh boat	Using the dissection microscope, count rocks for QLF types	Insert percentages into QLF diagram to create ternary diagram

## Conclusion

- It was hypothesized that the larger the grain size, the more lithified it would be. As weathering took place it would be apparent that the grains would indeed become broken up into their constituents of quartz, lithics, feldspars and other trace minerals.
- As the grain sizes decrease the samples become more rich in quartz, thus making them more compositionally mature.
- Future work to correlate QLF data vs textural maturity of the samples.

## References

- Tri Plot from Graham and Midgley, 2000
- Thank you to the CEMEX quarry for letting us run around their working site gathering samples and taking elevation measurements!



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