

Finnish Doctoral Program in Geology & HU Doctoral Program in Geosciences

Field Course



LATE CENOZOIC CRUSTAL EXTENSION AND COEVAL MAGMATISM IN DEATH VALLEY, CA:

WHAT DRIVES EXTENSION?

October 17-25, 2015

led by

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Participants

Doctoral students and supervisors (max. 18)

Immediate costs per student participant

Airfare, lodging, and field transportation in total 1700 € to ca. 2000 € (pending on EUR/USD exchange rate)

5 ETC Credits

Preliminary assignment, daily field program, evening discussions, concluding conference, course report

Preliminary Itinerary

Sat, Oct 17: Arrive Las Vegas, NV. Stay at Excalibur Hotel & Casino and acclimate to Pacific Time Zone

Sun, Oct 18: Final acclimate in Las Vegas in AM; drive from Las Vegas to Shoshone, CA, in PM. Stay at Shoshone Inn Oct 18-25, 2015.

Mon, Oct 19: Regional Geology

Craton

Mesoproterozoic Pahrump Group (Crystal Sps Fm, Beck Sps Dolomite, Kingston Peak Fm)

Miogeoclinal deposits (Neoproterozoic Noonday Dolomite to Lower Cambrian Bonanza King Fm)

Mesozoic thrusts

Cretaceous Teutonia Batholith

Rosetta stone of Tertiary extension at Francis Tank

Tues, Oct 20: Owlshhead Mountains and Rhombochasms

Owlshhead Mountains

-Pre-extension history

-Geophysics (isostatic gravity and magnetics)

12-14 Ma volcanic stratigraphy, chemistry, and isotopes

-Extensional structures

Rhombochasms and Extension: the Garlock and Southern Death Valley Fault Zones

Wed, Oct 21: Shadow Valley Basin and the Kingston Range

Kingston Range-Mesquite Mountains Detachment Fault

Slide blocks, glide blocks, and megabreccias: Stratigraphy of Shadow Valley Basin and the role of the Kingston Range

Amargosa Chaos and its regional significance

Thurs, Oct 22: Central Death Valley Volcanic Field

Regional Geophysics

10-8 Ma Shoshone Magmatic System

-Stratigraphy on Anniversary Ridge

-Shoshone Pluton v Shoshone Volcanics

-Synmagmatic dikes in the Shoshone Pluton, Chocolate Sauce, and doming of the Shoshone Magmatic System (**LONG HIKE** to Straight Canyon ± Chocolate Sauce with discussion(s) of structure, chemistry, and isotopes along the way)

Fri, Oct 23: Central Death Valley Volcanic Field (concluded)

Review regional geophysics

Stratigraphy, geochemistry, and isotopes of 8-6 Ma Greenwater Magmatic System

Stratigraphy, geochemistry, and isotopes of 6-4 Ma Funeral Magmatic System

Gold Valley Detachment Fault and geology of the upper/lower plate

Sat, Oct 24: Death Valley

Pre-, syn-, and post-extension stratigraphy: The Artist Drive, Furnace Creek, and Funeral fms

Dante's View and Black Mountain Fault

Turtlebacks and Size 32 Canyon

Split Cinder Cone and Southern Death Valley Fault Zone (again)

Ramo's Crater

Tecopa Lake Beds and the end of extension

Dinner on Oct 24: Farewell Dinner and Concluding Conference: a review of what you have seen and heard, and a lively discussion (we hope) of the original question: **What Drives Extension?**

Sun, Oct 25: Drive from Shoshone to Las Vegas in AM. Participants have option to 1) fly home this date, or 2) spend night in Las Vegas and fly home on Monday, Oct 26. If opt for 1, **DO NOT** schedule flights from Las Vegas before 3PM on Oct 25. You won't make it!