

Dalhousie University Advanced Field School
SUMMARY REPORT

Submitted to:

Offshore Energy Research Association of Nova Scotia
(OERA)

to fulfill the requirements of the Student Research Travel Program

Submitted

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INTRODUCTION

The Dalhousie Advanced Field School course took place from April 26th to May 23rd, 2016. Over the course of the month, students completed four major projects and were familiarized with the geology of the visited regions. These regions include Rainbow Gardens (NV), Death Valley (Ca) and Poleta (Ca). Working towards a better understanding of geologic concepts, students learned the applications of geologic theory. With an emphasis on group work, students built strong relationships and developed their communication skills. The field course was a success and the students have departed with a skill-set that they will certainly help them in both academic and professional pursuits.

TRIP DETAILS

Students spent a total of four weeks in the southwestern United-States. The trip itinerary is included following this project summary.

The first camp was at Valley of Fire, NV where students completed a sedimentary project in the Rainbow Gardens region. Focusing on an appointed 50m-segment of the Cenozoic stratigraphy, students were given 2 days to produce a stratigraphic log of their section. On the third day, students presented their findings to each other and used this information to reconstruct the paleoenvironment of the region. From these observations, this region was dominated by Playa Lake systems in the late Mesozoic-early cenozoic.

Next, we moved camp to Death Valley, Ca. Here, we began with a quaternary and geomorphology project which involved mapping the Kit Fox alluvial fan. The main purpose of the project was to correctly find and identify faults as well as providing relative ages to the wash. The heat of the valley combined with complete exposure was an added challenge for the students. Further, the aerial extent of the fan made it so that students had limited interaction with instructors. This forced them to be thorough in their observations so that any questions could be answered at camp based on their field notes. Lastly, this independence necessitated excellent time and project management.

Following the fan exercise, students travelled to Monarch Canyon. Here, they were charged with an interdisciplinary problem: mapping both the structural and metamorphic components of the area. Students completed cross sections and lithologic map with metamorphic assemblages concluding that this area is dominated by pelitic assemblages and defined by a Cenozoic detachment fault related to the principal, regional SW extension.

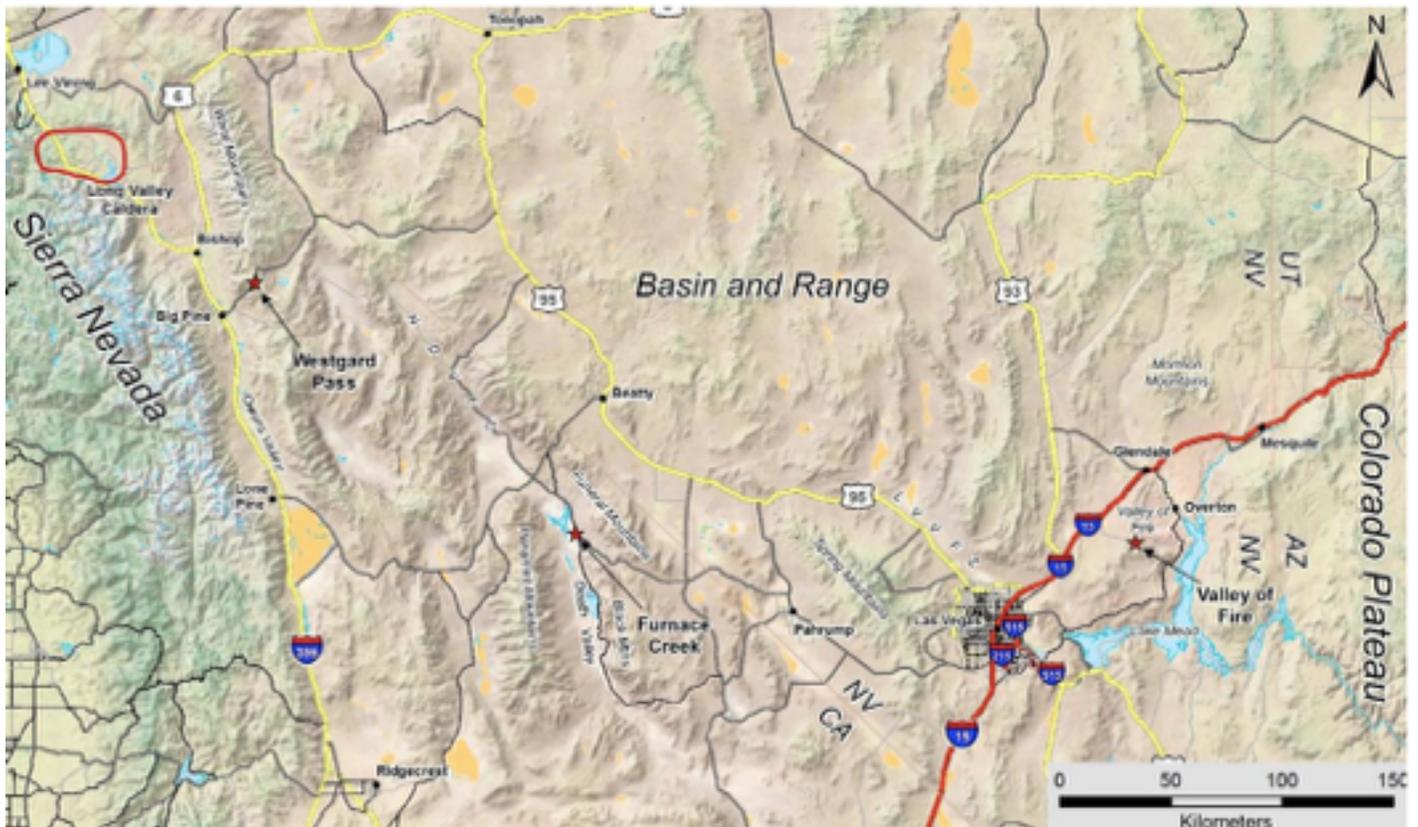


Above: Students enjoy a field trip to Badwater Basin (Death Valley).
Below: Petroglyphs near Monarch Canyon (student for scale).



Finally, students arrived at the White Mountains where they spent the last week and a half completing an independent map of the Poleta Folds Region. The multiple folding and faulting events make this area especially challenging and it was up to the students to identify the units and trace the evolution of folds in order to correctly map the area. Students delved deeper into this history by providing a stratigraphic column and cross-sections. For many, this was the most valuable exercise as it combined all skills learned in previous assignments. It also underlined the advantage of independent work and the importance of teamwork: collaboration aligns the flexibility of individual interpretations.

In addition to the four main projects of the course, students were further familiarized with the regional geology during several day-trip excursions. These included the Long Valley Caldera, cinder cones, Mormon Point, Badwater Basin, Armagosa Valley and the Redwall Fan (Panamint Valley).



Map of Field course region. Red stars mark camp sites. (Source: google maps, 2016)