

Outline

- Introduction
- Methods
- Results
- Discussion

Velocity Models for the Highly Extended Crust of Death Valley, California

First Paper Presentation

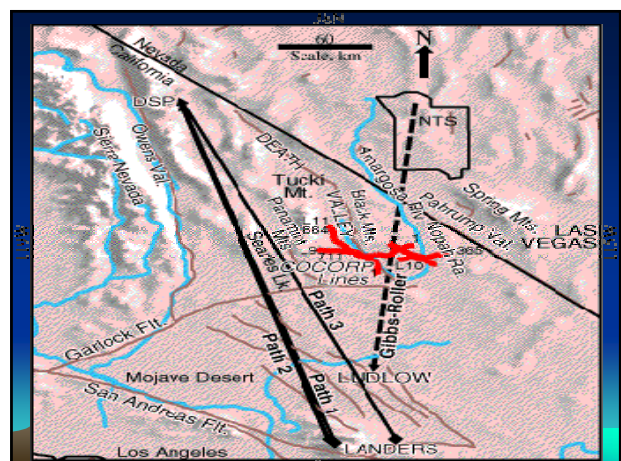
Asaad E. Al-Zawwad

214303

11-Oct-2006

Introduction

- Previous proposals
- The central Basin and Range province, including Death Valley, has been subject to Cenozoic crustal extension. 20% extension across the province
- In the Death Valley area 50-100% extension.



Introduction

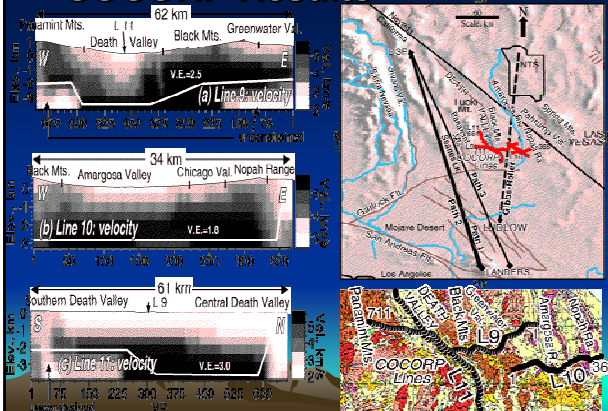
- The Consortium for Continental Reflection Profiling (COCORP) collected data across the Death Valley domain in 1982



Introduction

- Test for the degree of extension
 - pure shear* models
 - fluid layer* models
- Available seismic data is used as a test for the vertical motions.

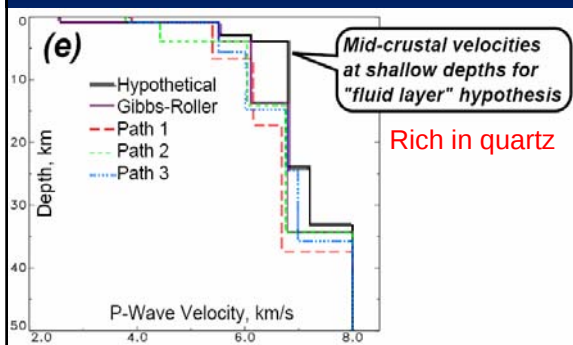
COCORP Results



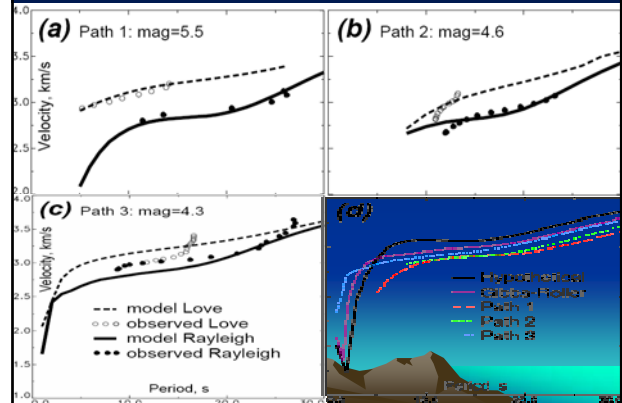
Methods

- First : optimization of first-arrival time picks for upper crustal velocities. Done by picking first-arrivals from shot gathers collected on COCORP Death Valley lines 9, 10 and 11
- Second: surface-wave dispersion analysis of regional earthquake phases to constrain crustal velocities from 3 km to the Moho. They developed an interactive modeling program to calculate curves by trial and error. This method gives average velocity variations.

Discussion



surface-wave Results



Discussion

- Because of the absence of major Moho deflection Pure shear mechanism require additional processes to operate in the lower crust below 15 km to achieve 100% extension.
No evident for other processes
- The addition of magmatic material to the lower crust hypothesis explain the observed extension and because there was no velocity alterations in the upper 15 km, so it is almost conceded with the results but still no explanation for the unchanged upper crust