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A Double Hotspot Model for the Origin of Line Islands Ridge

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MOTIVATION

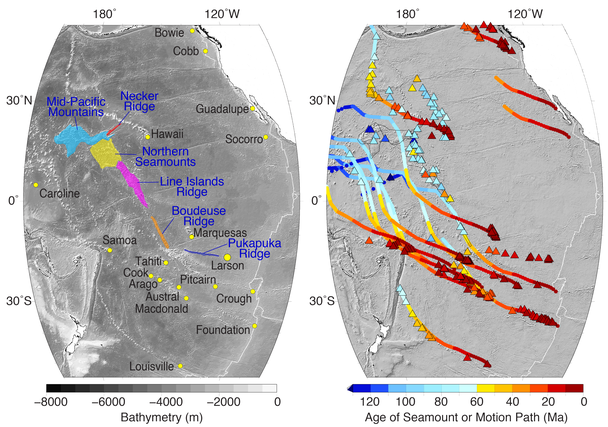
Explore Origin of Enigmatic Line Islands Ridge

- Path of volcanism follows a general absolute plate motion trend
- Lacks classic age-progressive volcanism pattern along Line Islands Ridge

Propose a Double Hotspot Model of Line Islands Ridge

Southern Line Islands Ridge
Crough Hotspot (80 – 100 Ma)
Larson Hotspot (50 – 65 Ma)

Northern Line Islands Ridge
Larson Hotspot (65 – 85 Ma)



PREVIOUS WORK

Age Progressive Single Hotspot Track

Morgan [1972]
Duncan and Clague [1985]

Multiple Hotspots

Crough and Jarrad [1981]
Henderson and Gordon [1982]

Lithosphere Extension

Winterer [1976]
Davis et al. [2002]

DATA & METHODS

Tectonic Reconstruction Software

GPlates, Cannon et al [2014]

Plate Motion Model

Seton et al. [2012]

Seamount Ages

Earth Reference Data and Models [2015]
Clouard and Bonneville [2005]

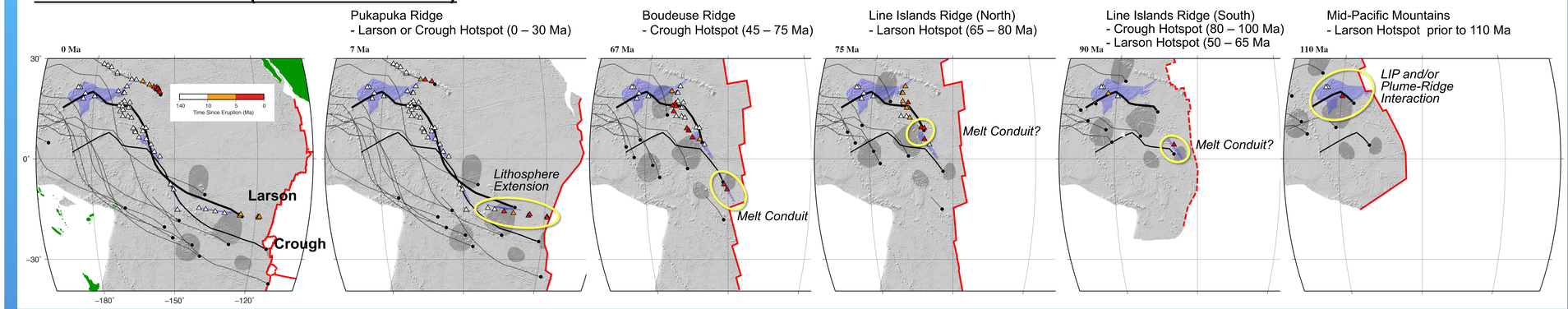
Hotspot Locations

Morgan and Morgan [2007]
Courtillot et al. [2003]

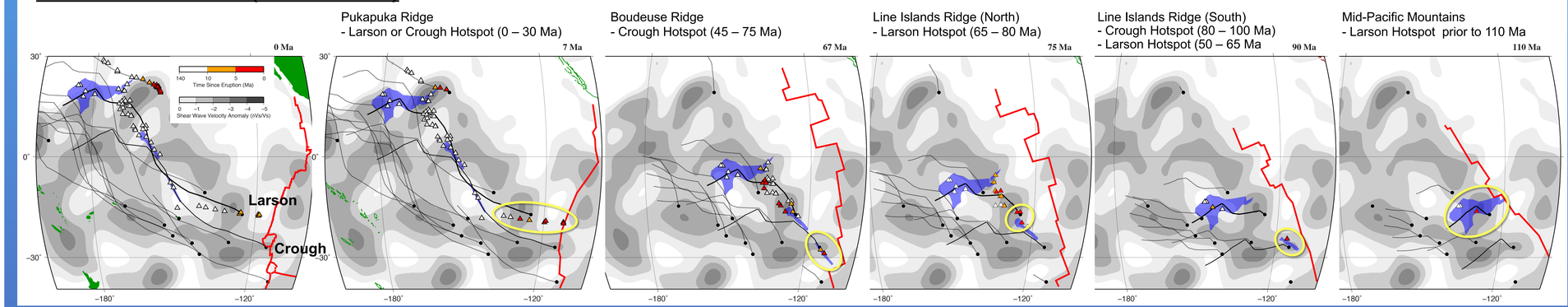
Mantle Shear Wave Anomalies

French and Romanowicz [2015]

RECONSTRUCTION (Fixed Pacific Plate)

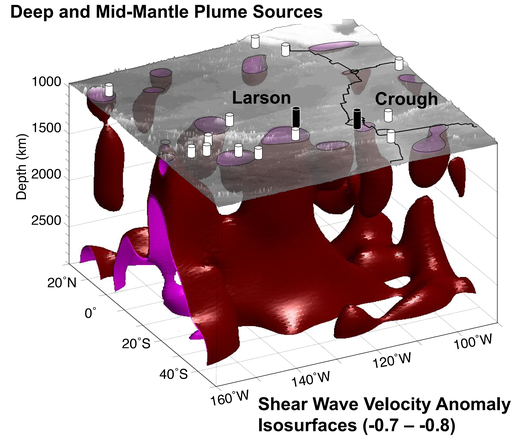


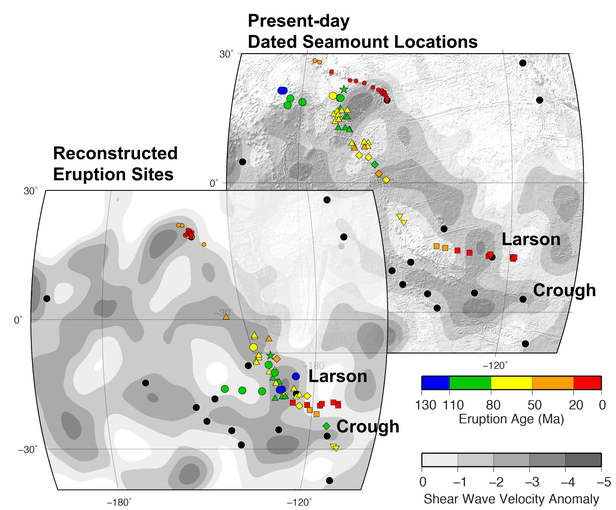
RECONSTRUCTION (Fixed Mantle)



LARSON HOTSPOT JUSTIFICATION

Deep and Mid-Mantle Plume Sources





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Acknowledgments

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