Geophysical Research Abstracts
Vol. 18, EGU2016-17063, 2016
EGU General Assembly 2016
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# Constraining the deformation and exhumation history of the Ronda Massif, Southern Spain

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The Ronda peridotite, southern Spain is comprised of four peridotite units hosted within metasedimentary units of the Betic Cordillera, Western Alps. These four areas of differing mineral facies are termed: the Garnet Mylonite , the Foliated Spinel Peridotite, the Granular Spinel Peridotite and the Foliated Plagioclase Peridotite. Whilst two of these units show a strong NE-SW foliation, the granular unit has no foliation and the Plagioclase facies shows a NW-SE foliation. The massif is separated from the metasedimentary host through a mylonite shear zone to the NW and thrust faults to the SE.
The Garnets contain rims of Kelyphite which when combined with the rims of Spinel on the Plagioclase crystals illustrate the complicated exhumation of this massif. The Kelyphite shows the breakdown of garnet back to spinel and pyroxene showing the deeper high pressure high temperature mineral is under shallowing conditions whereas in contrast to this the low pressure low temperature plagioclase crystals have spinel rims showing that they have been moved into deeper conditions. The P-T-t pathway of the massif suggests slow exhumation to allow for partial recrystallisation of not only the garnets and plagioclases but of a 100m band of peridotite between the Foliated Spinel Peridotite and the Granular Spinel Peridotite facies.
The tectonic model for the Ronda Peridotite that best describes the field data and subsequent lab work of this study is Mantle Core complex and slab roll back models. These models support mantle uprising during an extensional event that whereby slab roll back of the subducting lithosphere provides uplift into a void and emplacement into the crust. Further extension and final exhumation causes rotation of a mantle wedge into its present day position.