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Elevation 66 in El Cerrito

**Geologically consistent inversion of geophysical
data; a role for joint inversion**

Abstract: The joint interpretation of multiple geophysical data sets, over single domain exercises, offers a path to increased fidelity of the final earth model. There are many integration approaches from simple sequential cooperative interpretation/inversion through to more complex simultaneous joint inversion schemes. Joint inversion workflows are hampered, though, by the lack of constitutive petrophysical relationships between rock properties, for example seismic velocity and electrical resistivity. In these situations, alternate approaches are used, such as cross-gradients to promote structural similarity of property volumes, independently from petrophysical links, or fuzzy c-clusters. I will

describe some of the approaches used for joint interpretation and inversion of multiple geophysical data sets, but will focus on work our group has done using cross-gradients, both in a true joint inversion scheme and then also using reference models to guide the inversion to a more geologically reasonable model.

Speaker Bio:



Randall Mackie is a Research Geophysicist with CGG working with the Multi Physics Imaging group based in Milan, Italy since 2011. Specializing in electromagnetic modeling and inversion, he has been involved in the development of numerical modeling and inversion codes including magnetotellurics (MT), controlled source EM (CSEM), gravity, and magnetics. In recent years his efforts have concentrated on the development of robust and practical joint inversion algorithms. Prior to CGG, Randy was working with SLB (2007-2011), and Geosystem (1997-2007), a small geophysical contracting company that was based in Milan, Italy.