Solid Earth

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Discussions

Interactive comment on "Subduction or delamination beneath Apennines? Evidences from regional tomography" *by* I. Koulakov et al.

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Received and published: 2 March 2015

The manuscript by Koulakov et al. presents a new model of both P and S velocities in the upper mantle under Italy and the Alps. The agreement between the P and S models is, I believe, something new, indicating a possibly important progress in our understanding of this region via seismic imaging. So far as the seismology is concerned, I think this manuscript can be published in its present form (but please take a look at my specific comments below).

The tectonics discussion is also well written and interesting but I feel that I am not sufficiently competent to provide an insightful review of that, so I will mainly comment on the seismology. I assume that the manuscript will be reviewed by a tectonicist as well?

Other comments:

main question about algorithm: you are presenting a P and an S model together, however, I believe each of the two models are obtained in a separate inversion. Or, is there some a-priori constraint linking P to S anomaly? I think it would be good to be explicit on this.

P865 L8-9 "the value of damping" –> what "damping" are we talking about, i.e. what is minimized? roughness (and how do you define roughness), norm (and how do you define norm), etc.

P867 L17 in both P and S anomalies. –> in both P and S models.

P868 L26 active mounting building –> active mountain building

P868 L28-29 The observed in our tomography model high P velocity anomaly –> The high P velocity anomaly observed in our tomography model

Fig. 4: you labeled all the panels "P anomalies", but I believe you are showing both S and P models, aren't you?

Fig. 5: you should state explicitly in the caption which image was obtained after reducing the damping, both for the horizontal and vertical sections.

Lapo Boschi, Paris, March 2, 2015

Interactive comment on Solid Earth Discuss., 7, 859, 2015.