

## ***Interactive comment on “Alpine tectonic wedging and crustal delamination in the Cantabrian Mountains (NW Spain)” by Jorge Gallastegui et al.***

**Anonymous Referee #1**

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Review of manuscript: Alpine tectonic wedging and crustal delamination in the Cantabrian Mountains (NW Spain) Jorge Gallastegui, Javier A. Pulgar, Josep Gallart

The manuscript focuses on the deep crustal structure of the southern part of the Cantabrian Mountains and the transition to the adjacent Cenozoic Duero basin imaged by the deep seismic reflection profile ESCIN-2. The authors present a geological cross-section of the area integrating published data (ESCIN-2, a refraction profile and a conductivity model) with a depth model of ESCIN-2 obtained by 2-D seismic modelling, a gravity model coincident with ESCIN-2 and all geological/geophysical data available (wide-angle/refraction and MT data). The manuscript provides a crustal scale view across one part of the Cantabrian Mountains, which is valuable, however, the approach is very technical. Indeed, the study would benefit from a more developed discussion linking observations/modelling done on one section with the geological evolution of the

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whole Cantabrian/Pyrenean mountain belt.

Detailed comments: I.10 p.1 dip of the thrust is 30 to 36°; what is the geometry of the thrust? Is it a ramp or does it form a ramp flat structure? It would be interesting to have a more detailed description of the fault system.

I.10 p.2 reactivation of older Variscan structures: what is the criteria to demonstrate that the structures are Variscan?

I.20 p.6 lower and upper crust: how can they be recognized, based on what criteria?

I.25 p.6 boundary between upper and middle crust: how defined? What is the nature of this interface?

I.25 p.8 What is “Campillo uplift”?

I.30 p.8 Band D (how interpreted)

I.30 p.9 The comparison/differences with the Pyrenees (and other chains?) need to be better developed and can not be based only on statements.

I.20 p.10 Crustal roots of the Pyrenees are connected to those of the Cantabrian Mountains (this is neither shown nor is there a reference that supports this statement).

I.25 p.10 Westward migration of the Alpine deformation: what is the evidence? Provide either observations or references

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