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Reassessing legacy seismic reflection data. Extracting new information through advanced seismic processing schemes.

Ramon Carbonell¹, Yesenia Martinez¹, Irene de Felipe¹, Juan Alcalde¹, Imma Palomeras², Maurizio Ercoli³, Puy Ayarza², and Edson Borin⁴

¹Geosciences Barcelona, (Geo3BCN-CSIC) Spain (ramon.carbonell@csic.es)

²Departamento Geología, Universidad de Salamanca, Spain

³Università degli Studi di Perugia: Perugia, Umbria, Italy

⁴Institute of Computing, University of Campinas, Campinas, SP, Brazil

Hardware and software innovations taking place since the commercial development of seismic reflection imaging in the 60's and early 70's have resulted in various improved powerful seismic imaging solutions. Overall, these have been very successful in contrasting geological environments pursuing a wide variety of different targets. The innovative advances in seismic processing may constitute critical tools when analyzing seismic data acquired in highly heterogeneous geologic environments as they can efficiently increase the resolution power. In addition, they can become relevant when using modern acquisition instrumentation and strategies. Furthermore, these new developments significantly increase the value of legacy seismic reflection data. Currently, reassessing controlled source seismic data is becoming a critical issue mostly due to the increasing difficulties for acquiring new profiles posed by environmental regulations and high prices. However, the knowledge of the subsurface is an asset for our society, for example: land-use planning and management; natural risk assessments; or exploration and exploitation for geo-resources. Here we present examples of analysis schemes such as seismic attribute analysis and Common Reflection Surface stacking applied on a number of old seismic reflection profiles (Deep lithospheric transects as well as high resolution profiles) in an effort to bring up their validity. Results indicate how these leading edge methods contribute to significantly improve the quality of vintage seismic data, significantly reducing reflector uncertainties and easing their interpretation.

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