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3D Seismic characterization of the Spanish Research Facility for storage of CO_2 in Hontomín (Burgos, Spain)

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A large multidisciplinary project is being developed as part of the Spanish research facility for the geological storage of CO2 in Hontomín (Burgos, Spain). Within this multidisciplinary experiment, a 35km2 3D seismic reflection survey was acquired by CGGVeritas in Summer 2010. The main aims were the structural characterization of the seal, the reservoir and its surroundings. The acquisition consisted in 22 lines of geophones, with a station separation of 25 m. The receiver lines were separated by 275m and oriented North-South. The source lines were oriented West-East and separated by 250m. The source point separation was 25 m. The topography and difficult logistics of the study area forced a mixed source acquisition (Vibroseis $\sim$74% + explosives $\sim$26%). Up to now, conventional seismic reflection processing has been applied, with special emphasis on source equalization and static corrections. The rough topography and the high heterogeneity of the shallow subsurface made the static corrections a key step in the processing sequence. Hence, an accurate first break picking was carried out, including manual and automatic picking. Automatic picking algorithms were tested with the aim of selecting the most worthwhile method. The applied processing resulted in a detailed 3D seismic image of the target, that will be used as a baseline model by all groups involved in this project.