



Basic data visualization in vintage seismic profiles: indications for the interpretation of the ViDEPI database (offshore Puglia, southern Italy)

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Short Note

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ABSTRACT

The Visibility of Petroleum Exploration Data in Italy (ViDEPI) project represents a freely accessible valuable resource for the research community. However, seismic profiles available from this project present several limitations because information such as the basic shape of the seismic wavelets and the seismic polarity are not available. In this study, using subsurface (i.e., 2D seismic profiles) data related to the Marine Zones B, D and F (offshore Puglia) a review of the basic pulse shape and polarity of seismic wavelets, as well as the shape and polarity of principal reflectors has been addressed. Moreover, borehole data (i.e., lithology and sonic logs) have been used to identify abrupt average velocity changes linked to different lithostratigraphic successions recorded as dominant high-amplitude reflectors.

KEY-WORDS: seismic pulse shape and polarity, ViDEPI project, offshore Puglia, velocity analysis, seismic profiles interpretation.

INTRODUCTION

The Visibility of Petroleum Exploration Data in Italy (ViDEPI) project, related to hydrocarbon exploration activities performed in Italy, is the largest and public database in the Mediterranean area including seismic profiles and exploration well logs. The project contains data surveyed since 1957, made available by the Ministry for the Economic Development of the Italian Government. The database is accessible since 2007 on the website www.videpi.com, where analogic scanned documents having a PDF format are

available to be freely downloaded (ViDEPI, 2015). Seven Marine Zones, named from A to G, includes the seismic profiles acquired offshore the Italian Peninsula (Fig. 1a). In detail, the dataset discussed in the present study is located in the Adriatic and Ionian seas, offshore the Puglia administrative regional territory (hereinafter Puglia), within the Marine Zones B, D and F (Fig. 1b).

The seismic lines pertaining to the Marine Zones B and D were acquired in the late 1960s, and the ones falling into the Marine Zone F were obtained during mid-1970s. The releasing of these subsurface data gave, in the recent years, a significant impulse to the research activity on the tectono-sedimentary evolution of the Mesozoic Apulia Platform and its adjacent basins. It also helped to highlight the involvement of this sector of the Adria Plate in the Dinarides-Hellenides (to the East) and Apennines (to the West) orogenic systems during Cenozoic (Figs. 1a, c) (Nicolai & Gambini, 2007; Scisciani & Calamita, 2009; Del Ben et al., 2010, 2015; Santantonio et al., 2013; Festa et al., 2014, 2019a, b; Pace et al., 2015; Volpi et al., 2015; Teofilo et al., 2016, 2018; Milia et al., 2017a, b; Maesano et al., 2020; Cicala et al., 2021, 2022b; Chizzini et al., 2022; Pellen et al., 2022). The importance of the vintage seismic profiles has also been recently underlined by Brancatelli et al. (2022), Cicala et al. (2022a) and Conti et al. (2022). In particular, the present paper represents an upgrade, with an implementation concerning the velocity analysis, of the first attempt by Cicala et al. (2022a) on the recognition of shape and polarity of the seismic pulses, that were missing information on the