

REPLY TO THE COMMENT

of VINCENZO FESTA, GERARDO ROMANO, AGATA SINISCALCHI & SIMONA TRIPALDI
(IJEGE, 2 (2024): 5-7, DOI: 10.4408/IJEGE.2024-02.O-01)

ON THE ARTICLE**“ENGINEERING-GEOLOGICAL INSIGHTS INTO THE GYPSUM-BEARING
DEPOSITS OF PUNTA DELLE PIETRE NERE (PUGLIA REGION, ITALY)”**

(IJEGE, Special Issue 1 (2024): 39-45, DOI: 10.4408/IJEGE.2024-01.S-05)

DOMENICO CALCATERRA^(*), ALFONSO CORNIELLO^(**), DIEGO DI MARTIRE^(*),
GIOVANNI FORTE^(**), STEFANIA STEVENAZZI^(**) & RITA TUFANO^(*)

^(*)University of Naples Federico II - Department of Earth, Environment and Resources Sciences - Naples, Italy

^(**)University of Naples Federico II - Department of Civil, Building and Environmental Engineering - Naples, Italy

Corresponding author: domcalca@unina.it

The authors would like to express their thanks to the discussers FESTA *et alii* for the interest in our paper and the related comments. In this reply we present our explanations, hoping that the latter will help to clarify the points raised by the discussers.

Primarily, the Authors of the cited Article did not focus their research on the origin of gypsum deposits (an issue covered by a wide literature), but rather on their delimitation in the subsurface, whose presence is a limiting factor for the land use, as the case of Lesina Marina shows.

In particular, the results of the study refer to the sector of the area depicted in Figure 3, where direct and indirect investigations are concentrated, including some pre-existing surveys and other ones executed by the Authors.

As regards the NW area, only one ERT survey was conducted. Its interpretation represents a first contribution of knowledge, which obviously needs further in-depth investigations.

Given the above, the following are some comments on the arguments presented in the Comment by FESTA *et alii*.

- (a) In the “Data and Methods” section, an inconsistency in the data in Figure 3 is pointed out.

Actually, a careful reading of the caption and legend of the above figure offers sufficient information, as Figure 3 is intended to highlight the density and location of site investigations that, over time, have been carried out in the area. The oldest investigations, clearly indicated in the caption as well as in the legend (Pre-existing investigations), sometimes presented contrasting results. Hence, new investigations (*e.g.*, S1), also highlighted in the legend (New investigations), were conducted by the Authors to settle controversial situations.

- (b) The most relevant comment concerns the ERT (Fig. 5) reported in the “Results” section.

The electro-stratigraphic cross-section is scarcely commented in the text mainly because it is outside the area of interest (*i.e.*, the one, in Figure 3, where the investigations are most concentrated) and secondarily for length limitation of the paper required by the Journal. The ERT was carried out to gain an initial knowledge between Lesina area, where gypsum deposits are extensively present, and the area of specific interest, where boreholes have highlighted the absence of significant gypsum deposits in the subsoil. It is precisely because we are aware of the variability in values that gypsums can exhibit in terms of resistivity, only areas with resistivity values greater than 50-60 Ωm have been assigned to this lithology. Areas with values of a few Ωm were related to possible clayey-sandy soils saturated with brackish water (given the established local marine ingression). It is clear this indirect investigation alone is not enough to ensure the safe use of this area, making further and more focused investigations necessary.

- (c) In the “Results” section, further remarks concern SAR data. To this regard, it should be noted that, as already stated in the Article, the ENVISAT dataset was not processed, but only interpreted: therefore, it cannot be considered “original data,” as defined in the Comment. The only original processed dataset is related to COSMO-SkyMed images (2015-2018). Moreover, we did not consider making a comparison with what REFICE *et alii* (2016) reported, as our focus was on the area depicted in Figure 3.

In conclusion, as clearly shown in Figure 3, the absence (or minimal presence) of gypsum in the subsoil can be confirmed only for the southeastern portion of the area depicted, where extensive site investigations have been conducted over time.

REFERENCES

- CALCATERRA D., CORNIELLO A., DI MARTIRE D., FORTE G., STEVENAZZI S. & TUFANO R. (2024) - *Engineering-geological insights into the gypsum-bearing deposits of Punta delle Pietre Nere (Puglia Region, Italy)*. Ital. J. Eng. Geol. Env., Special Issue 1: 39-45. Doi: 10.4408/IJEGE.2024-01.S-05
- FESTA V., ROMANO G., SINISCALCHI A. & TRIPALDI S. (2024) - *Comment on the Article “Engineering-geological insights into the gypsum-bearing deposits of Punta delle Pietre Nere (Puglia Region, Italy)”*. Ital. J. Eng. Geol. Env., 2: 5-7. Doi: 10.4408/IJEGE.2024-02.O-01
- REFICE A., PASQUARIELLO G., BOVENGA F., FESTA V., ACQUAFREDDA P. & SPILOTRO G. (2016) - *Investigating uplift in Lesina Marina (Southern Italy) with the aid of persistent scatterer SAR interferometry and in situ measurements*. Environ. Earth Sci., 75: 243-256; Doi: 10.1007/s12665-015-4979-1

Received February 2025 - Accepted March 2025