Comment on essd-2022-26
Enrico Tavarnelli (Referee)

Referee comment on "A new digital Lithological Map of Italy at 1:100.000 scale for geo-mechanical modelling" by Francesco Bucci et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2022-26-RC2, 2022

Review report by Enrico Tavarnelli for manuscript n. essd-2022-26 by Francesco Bucci, Michele Santangelo, Lorenzo Fongo, Massimiliano Alvioli, Mauro Cardinali, Laura Melelli and Ivan Marchesini titled: "A new digital Lithological Map of Italy at 1:100.000 scale for geo-mechanical modelling ", submitted to Earth System Science Data.

This paper presents the results of the compilation of the first Lithological Map of Italy (LMI). This is achieved through a detailed and genuinely multidisciplinary approach, that integrates field mapping, stratigraphic investigation and structural analysis, coupled with a wealth of data from a wide literature in the considered region. The topic dealt with in the study is of prime aid to anyone that has an interest in understanding the geological evolution of Italy and the resulting distribution of lithologic formations or formational groups. Moreover, the study illustrates an example of applicability of universal concepts of the role of lithologic distribution in the analysis of geomorphological hazard and land management. The study is based on a sound and comprehensive database that may be implemented through time, thus providing a very useful tool to the geological community. The compilation approach relies on grouping of polygons that contain information on the most representative lithologies cropping out in the investigated area. Not only the advantages, but also the limits imposed by grouping of lithologies are listed and discussed. The Authors’ interpretations are consistent with the data presented, and the resulting Lithological Map of Italy (LMI) is a very well-concieved and convincing product.

The manuscript is well written and well organised, with English and presentation forms that are overall very good. The illustrations and tables are all clear, legible and very much informative. The quality of the contribution, in all its parts, is overall high-to-very high. Good credit is given to the existing literature, both methodological and regional. However, I believe that the manuscript would benefit from a slight extension of the reference list, with citation of a few papers that are listed separately in this review report. Unfortunately, the suggested missing references happen to arise from my own research, and in general I am reluctant to self-advertise my work. But the submitted manuscript refers to topics where my collaborators and I have long worked and published; thus I
believe that a slight extension of the reference list with inclusion of the mentioned contributions would be highly beneficial for the reader.

I found this an extremely stimulating contribution and believe that it will make a very interesting title for a genuinely international and multidisciplinary audience. It is my opinion that the manuscript may be accepted for publication almost as it stands, with only the incorporation of a few sentences (with related references listed below), and the insertion of minor alterations to the text for the sake of an improved legibility. Therefore, I recommend without reservations that this manuscript is accepted for publication on Earth System Science Data only pending on minor suggested revisions, that are listed separately.

I require no anonymity and wish that all my comments are forwarded to the Authors. I hope that my review is received as a constructive and supportive indication, that may assist the Authors to achieve an even more suitable paper, and the Editor in formulating a final, positive decision in the interest of Earth System Science Data and of its wide, international readership.

Siena, Italy, June 21st, 2022

Sincerely,

Enrico Tavarnelli

Please also note the supplement to this comment: https://essd.copernicus.org/preprints/essd-2022-26/essd-2022-26-RC2-supplement.pdf