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Soil data sharing in EU, a survey of available soil datasets found in the scientific literature

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In the context of work at the EU Soil Observatory (EUSO), an attempt is made to make a survey of EU supranational soil-related datasets in the EU, stemming from various sources. This work describes efforts made in the EUSO Working Group on Soil Data to find such data availability from a systematic literature search. Understanding the soil data availability due to research and innovation (R&I) investment is crucial to enhance the knowledge capacity and limit anthropogenic disturbance on soil dynamics in current global climate changes. When working at supranational scales, the international peer review literature reveals the data availability. Therefore, most research papers rely on datasets collected under supranational institutional efforts, rigorous laboratory standards and high representativeness of sample-to-population scale variability. On soils, we based all our main productive activities. Increasing our knowledge of soil properties, mapping and modelling its processes helps to quantify the capacity and define thresholds of pressures that need to be respected to prevent irreversible changes. To this end, a systematic bibliographic search was carried out using Scopus and the Web of Knowledge (WoS) and their research performance assessment tools which provide extreme value in understanding the data impact on the scientific community and the related output to the policy development and practical benefit for the society. The main objective of the present work is to prepare an inventory of the produced soil-related EU-wide data related to soil, published in the international peer review

literature. A simple query was used to collect the vast majority of peer-review scientific contributions in Scopus and WoS. The search is limited to the topic areas of soil science, geomorphology, geology, agricultural sciences, ecology and other related environmental sectors. From the original search (WoS=481, Scopus=260) we identified 616 articles, with 125 duplicates. The contribution shows how to merge results from citation and abstract databases (SCOPUS and WoS). The screening process of the resulting database was carried out in collaboration with the Sub-WG data from EU projects. Practically, soil datasets were listed and counted following inclusion and exclusion criteria using the spreadsheet developed in the EUSO Working Group on soil data. Data from the bibliometric analysis were further analysed in R through the Bibliometrix R package. The metadata analysis shows that 85% of soil datasets used in publications for soil assessment at the EU scale belong to i) Land Use and Coverage Area frame Survey (LUCAS) soil module followed by ii) Geochemical Mapping Of Agricultural And Grazing Land Soil (GEMAS), and iii) World Soil Information Service (WoSIS)which represent the harmonized collection of legacy soil profiles. This indicates that harmonization procedures among the primary sources are still needed to increase data numerosity and improve models and estimations. In a future extension of the work, we will provide the list of publications with the related soil datasets and metadata. This work contributes to a common ground for a future EU soil data infrastructure and monitoring system (EU and national collaborations) linked to the European Soil Observatory EUSO.