Abstract:
For several years, the Radioactivity Environmental Monitoring group of the Joint Research Centre (JRC) of the European Commission has been working on a European Atlas of Natural Radiation. This Atlas is intended to familiarise the public with the radioactive environment, to give a more balanced view of the annual dose that it may receive from natural radioactivity and to provide reference material and generate harmonized data for the scientific community. The Atlas is a collection of maps of Europe displaying the levels of natural radioactivity caused by different sources such as indoor radon, cosmic radiation, terrestrial gamma radiation, terrestrial radionuclides in soil and bedrock. One of these aims is to map a variable which measures “what earth delivers” in terms of geogenic radon potential, due to heterogeneity of data sources across Europe and the need to develop models for estimating a harmonized quantity which adequately measures or classifies the radon potential. Such a European Geogenic Radon Map will give the possibility to characterize areas for radon risk where indoor radon measurements are not available. One approach to develop this map is through multivariate estimation; here, it means to use information from several quantities which are physically related to radon, to assess a radon quantity of interest. Some countries which have several input quantities available, have already been testing this scheme. Although work on the geogenic radon map has been under way for several years, it has proven more complicated than thought initially. To discuss all these topics with the scientific community, the International Workshop of the European Atlas of Natural Radiation was organized in Verbania in Italy in 2015. All participants were invited to contribute papers to a special issue based on selection of abstracts. This special issue on geogenic radiation and its potential use for developing the geogenic radon map addresses the following topics:

• Uranium, Thorium and Potassium concentration in bedrock and soil: geochemical and radiometric data; databases; maps;
• Terrestrial gamma dose rate: data sources; decomposition of the ambient equivalent dose rate into its components;
• Soil radon: databases; importance of permeability; radon potential definition;
• Geology: databases; simplified geological classification; using geology as predictor;
• Relationship between all these quantities and indoor radon, and radon risk index. We are certain that these papers will contribute to the progress of geogenic radon mapping, both at the European and national levels, as well as the preparation of the European Atlas of Natural Radiation. We would greatly like to acknowledge the members of the scientific committee of the workshop, the
meeting participants, all the authors and reviewers for their enthusiasm and support to this
delight. Without their efforts and involvement, this special issue would not have been possible.

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