

TMMOB Jeoloji Mühendisleri Odası

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ENVIRONMENTAL GEOCHEMISTRY AND ENVIRONMENTAL RISK ASSESSMENT IN CAMPANIA REGION (ITALY): A MULTI-SCALE EXPERIENCE



Konuřmacı

Prof. Dr. Stefano ALBANESE

Konuřma Tarihi ve Saati

20 Nisan 2021, Salı, Saat 20:30

1. Date and place of birth: 07/10/1975 - Avellino (Italy)

2. Actual position: Associate Professor of Geochemistry since 1st October 2015 at the Department of Earth Sciences, Environment and Resources of the University of Naples Federico II, Italy. He is in charge of the classes of "Geochemistry" (6 CFU), for the BSc in Geology, and of "Geochemical Site Characterization and Risk Analysis" (6 CFU), for the MSc in Geology and Applied Geology at University of Naples Federico II (UNINA)

3. Education

- PhD in Earth Sciences at Department of Geophysics and Volcanology - University of Naples "Federico II" obtained on 17/01/2006

- MSc in Geological Sciences (thesis in Applied Geochemistry) at the Faculty of Sciences University of Naples "Federico II" obtained on 22/03/2001.

4. Bibliometric data at 26.01.2021

Scopus

- 112 Documents
- 2892 citations by 1848 documents
- H-Index: 33

WOS

- 91 documents
- 2.025 citations
- H-Index: 28

5. Main scientific fields of interest and topics

Prof. Albanese research activity is mainly focused on

- a) the development of geochemical prospecting techniques for the environmental monitoring at local and regional scale;
- b) the definition of geochemical background/baseline reference values for the principal and potentially toxic metals in soils at continental and regional scale;
- c) the development of operative models for the quantitative assessment of ecological and health risks at regional scale.
- d) the application of new statistical and geostatistical methods for the management of geochemical data and their reliable mapping

He has also developed environmental epidemiology studies to relate the distribution pattern of the contaminants in different natural media with the increased incidence of cancer in some areas of the Campania region (Italy).

The research on the continental scale definition of background/baseline values in soils comes from the long lasting collaboration between Prof. Albanese and the members of the ‘EuroGeoSurvey Geochemistry Expert Group’ since 2004 when he took part in the international research project “FOREGS - European Geochemical Baseline Mapping” which has been completed in 2006 with the publication of the “Geochemical Atlas of Europe” (<http://weppi.gtk.fi/publ/foregsatlas/>).

Subsequently, from 2008, as a member of the Italian research unit for the realization of the EuroGeoSurveys Geochemical Mapping of Agricultural and Grazing Land Soil of Europe (GEMAS) (<http://www.eurogeosurveys.org/projects/gemas/>), Prof. Albanese participated as an author to several scientific papers targeting the interpretation of the distribution patterns of both geochemical baseline/background levels of different chemical elements and some chemical-physical properties in the continental soils. As part of this research activity, he has also co-wrote the book “Chemistry of Europe’s Agricultural Soils” for which he edited, as co-author, the chapters relating to the distribution of arsenic and radioactive elements in European soils.

Furthermore, as part of the collaboration with the EuroGeoSurvey Geochemistry Expert Group, Prof. Albanese participated in two research spin off: one dedicated to the geochemical characterization of natural and mineral water intended for human consumption in Europe (with the publication of results in international journals in 2010-2011) and one aiming at the definition of a common operating method for the characterization of human impact in Europe’s urban areas (“URGE” Project). Within “URGE” he has published a systematic study of the sources of anthropogenic contaminants in urban environments (in 2011).

Regarding the research activity aiming at the definition of operative models for the quantitative assessment of environmental risks, Prof. Albanese has made specific studies on different areas of Campania region in Italy, on the province of Huelva in Spain and on the Zambian Copperbelt in Africa.

An intense work to assess actual health risk for people living in Campania region was made also through the results obtained from the application of new passive air sampling methods for air monitoring between 2015 and 2018 within the framework of the project “Campania Trasparente” (<http://www.campaniatrasparente.it/>) funded by the local regional government. For “Campania Trasparente” Prof. Albanese was in charge of two actions, one focusing on geostatistical elaboration and mapping of regional geochemical data and one focusing on air monitoring.

Specifically, (i) the studies on Domizio-Flegreo littoral and Agro Aversano (the results of which were published in 2011 and 2012) focused on the discrimination of the main sources of contamination in areas with a predominant agricultural vocation by means of Pb isotope ratios; (ii) the studies on Sarno River Basin (whose results were published between 2013 and 2015) showed that some potentially toxic metals released into the environment from local industries and companies, are likely to migrate, through the trophic chain, from soil and water to exposed human beings; (iii) the Gulf of Naples and Salerno studies (the results of which were, in part, published in 2013 and, in part, are still being developed/published) focused on the determination of the contaminant distribution pattern in marine sediments through the use of GIS and compositional data analysis; (iv) the studies on the province of Huelva (Spain) (which were published in 2011 and 2012) focused

on the determination of the local reference values for background and baseline and the assessment of environmental risks by the use of the fractionation and multivariate statistical analysis techniques; (v) the studies on the provincial territory of the Zambian Copperbelt (published in 2014) resulted in the development of a methodology for the implementation at the regional scale of a pseudo-quantitative risk analysis useful in the prioritization of environmental restoration measures in areas heavily impacted by human activities, with low available resources and characterized by an extreme variability of the land use.

The study on air pollutants through passive air samplers and bulk deposition collectors allowed to determine areas of Campania region where the risk for inhalation of some organic pollutants such as PAHs and OCPs is relevant compared to the one generated by soils.

During the whole career, Prof. Albanese have been deepening the knowledge of several statistical and geostatistical unconventional tools for an advanced approach to geochemical data treatment and their spatial representation.

He has active international collaborations with:

- Prof. J. M. Nieto (Universidad de Huelva)
- Prof. Shihua Qi and Prof. Chengkai Qu (China University of Geosciences, Wuhan, China)
- Dr. Timo Tarvainen (Geological Survey of Finland)
- Dr. Martiya Sadeghi (Geological Survey of Sweden),
- Prof. Guo-Li Yuan and Qingjie Gong (China University of Geosciences, Beijing, China)
- Prof. Shouye Yang (Tongji University, Shanghai, China)
- Dr. Gevorg Tepanosyan and dr. Olga Belayeva (Center for Ecological-Noosphere Studies National Academy of Sciences, Armenia).

6. Participation in funded national/international research projects

- 2019 –2021.

PRIN 2017 Project (“Role of soil-plant-microbial interactions at rhizosphere level on the biogeochemical cycle and fate of contaminants in agricultural soils under phytoremediation with biomass crops (Rizobiorem)”). Duration: 3 years.

Responsible for the T1.2 Task: “Geochemical Methods” (Work Package 1 - Detailed assessment of spatial variability of contaminants)

- January 2014 – December 2014.

LIFE11 ENV/IT/275 ECOREMED project (“Implementation of eco-compatible protocols for agricultural soilremediation in the DomizioFlegreo littoral -AgroAversano NIPS”). Duration: 5 years (1/2012-12/2017). Responsible for the B1b Action: “Geochemical characterization of agricultural soils”.

- June 2012 – December 2013.

LIFE11 ENV/IT/275 ECOREMED project:”Implementation of eco-compatible protocols for agricultural soil remediation in the DomizioFlegreo littoral - Agro Aversano NIPS”. Duration: 5 years (1/2012-12/2017). Member of the research team for the B1b Action: “Geochemical characterization of agricultural soils”.

- January2012 – December 2014.

PON01_01966 ENERBIOCHEMproject (“Filiere agro-industriali integrate ad elevata efficienza energetica per la messa a punto di processi di Produzione Eco-compatibili di Energia e Bio-chemicals da fonte rinnovabile e per lo valorizzazione del territorio”. Duration: 3 years(1/2012 to 12/2014). Member of the research team for the OR5b action: “Analisi deicontaminantiinorganici”.

- 2008 –2014

EuroGeoSurveys “Geochemical Mapping of Agricultural and Grazing land soil (GEMAS Project). Duration: 6 years (2008 to 2014). Member of the Italian research team (http://gemas.geolba.ac.at/Group_GEMAS.htm).

- 2003 – 2006

Forum of European Geological Surveys (FOREGS project) - European Geochemical Baseline Mapping. Duration: 5 years (2000 to 2006). Member of the Italian research team (<http://weppi.gtk.fi/publ/foregsatlas/article.php?id=7>).

7. Editorships

- 2017 – actual.

Editor in Chief of Journal of Geochemical Exploration.

- 2010 – 2016.

Associate Editor of Journal of Geochemical Exploration.

8. Affiliations

1. Italian Association of Medical Geology (AGM Italia). 2010 to present.

2. Geochemical Society. 2013 to present

3. Association of Applied geochemists. 2017 to present

4. European Association of Geochemistry

5. European Geoscience Unnion

6. Honorary member of the 9th Commission on Applied #Geochemistry by Chinese Society of Mineralogy, Petrology and Geochemistry