

# Javier Elio

RESEARCHER | ENVIRONMENTAL SCIENCES | GEOINFORMATICS

Haugesund (Norway)

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*Expert on environmental research, statistics, spatial data analysis, and modelling*

## Career Summary

I am an engineer with 15+ years of research and teaching experience, with a solid background in statistics, spatial data analysis, and modelling. My main research area is environmental science, with a particular interest in natural hazards and climate change.

My research interests are:

- Natural hazards and climate change
- Environmental risk assessment
- Statistics, spatial data analysis, and geostatistics
- Geographic information systems
- R language

## Education

- 2009-13 **Ph.D. in Environmental Science**, Technical University of Madrid, Madrid, ES.
- 2007-09 **M.Sc. in Environmental Research, Modelling and Risk Assessment**, Technical University of Madrid, Madrid, ES.
- 1998-05 **M.Eng. in Mining Engineering. Specialization: Natural Resources and Environment Management**, Technical University of Madrid, Madrid, ES.

## Experience

- 2020-22 **Assistant Professor / Postdoc**, Aalborg University, Technical Faculty of IT and Design, Department of Planning, Copenhagen, DK.
- 2019-19 **Assistant Professor**, Western Norway University of Applied Sciences, Department of Safety, Chemistry and Biomedical laboratory sciences, Haugesund, NO.
- 2016-18 **Postdoctoral Research Fellow**, Trinity College Dublin, Geology, Dublin, IE.
- 2014-14 **Research Assistant**, Technical University of Madrid, School of Mining and Energy Engineering, Madrid, ES.
- 2009-13 **PhD Candidate**, Fundación Ciudad de la Energía, CO2 Geological Storage, Ponferrada, ES.
- 2007-09 **Research assistant**, Technical University of Madrid, School of Mining and Energy Engineering, Madrid, ES.
- 2005-07 **Tunnel Engineer**, Obrascon Huarte Lain SA, AVE Colmenar-Soto del Real, Western tunnel (9.5km), Madrid, ES.

## Invited Positions

- 2018-18 **Visiting Research Assistant**, Trinity College Dublin, Geology, Dublin, IE.
- 2013-13 **Research Stay**, University of Florence, Dipartimento di Scienze della Terra, Florence, IT.

## Professional memberships

- 2019 **Applied Marine Microbiology**, Western Norway University of Applied Sciences, Haugesund, NO.
- 2017 **European Geogenic Radon Map expert group**, European Commission - Joint Research Centre, Ispra, IT.
- 2016 **European Radon Association**, Brussels, BE.

## Professional Services

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- 2019-19 **Expert**, International Atomic Energy Agency, Regional Workshop on Development of Radon Maps and the Definition of Radon-Prone Areas, Vilnius, LT.
- 2018-18 **Expert**, International Atomic Energy Agency, Expert Mission on radon regulations implementation, Nicosia, CY.
- 2018-18 **Expert**, International Atomic Energy Agency, Expert Mission to advice on radon detection, mapping and analysis, Lima, PE.
- 2018-18 **Expert**, European Commission - Joint Research Centre, Working Group Meeting on Indoor Radon Dose, Ispra, IT.

## Funding projects

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- 2017-18 **An All-Ireland Geogenic Indoor Radon Map**, Geological Survey Ireland, Dublin, IE.
- 2016-17 **Radon monitoring and hazard prediction in Ireland**, Irish Research Council - Enterprise Partnership Scheme Fellowship 2015, Dublin, IE.

## Honours and awards

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- 2019 **Roland Schlich Early Career Scientist's Travel Support grant**, European Geosciences Union, Vienna, AT.
- 2019 **European Radon Association Award**, European Radon Association, Brussels, BE.
- 2016 **Extraordinary PhD Award**, Technical University of Madrid, Madrid, ES.
- 2014 **Gómez-Pardo Foundation Award**, Spanish Royal Academy of Doctors, Madrid, ES.
- 2012 **International Mobility Program Grant**, Social Council at the Technical University of Madrid, Madrid, ES.
- 2009 **Doctoral Research Grant**, Ciudad de la Energía Foundation, Ponferrada, ES.

## Training and teaching experience

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### LECTURES/SEMINARS

- 2022-22 **Geoinformatics: Spatial Data Science 1**, A hands-on data science session in Python to train skills in data science-related tasks. Aalborg University, Copenhagen, DK.
- 2018-18 **Geological residential field-school**, Teaching assistant, 10 day geological residential fieldschool in SE Spain, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE.
- 2017-17 **GIS module in MSc Environmental Science**, Practical exercise: a new indoor radon risk map of Ireland. Geology, School of Natural Sciences, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE.
- 2017-17 **Massive Online Course - MOOC**, Monitoring CO2 geological storage sites, Technical University of Madrid, Madrid, ES.
- 2016-16 **Geological residential field-school**, Teaching assistant, 10 day geological residential fieldschool in SE Spain, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE.
- 2016-16 **Michaelmas Semester 2016 - Geology Seminar Series**, Modelling Indoor Radon Concentration: Towards a High-Resolution Indoor Radon Map of Ireland, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE.
- 2013-13 **Summer school in Carbon Capture and Storage**, Surface and subsurface monitoring of a CO2 storage site: theory and practice, University of León, Ponferrada, ES.

### SUPERVISION

- 2017-17 **Co-supervisor of a Master thesis in Environmental Sciences**, Trinity College Dublin, School of Natural Sciences, Geology, Assessing the contribution of Quaternary deposits to the soil radon budget in Ireland, Dublin, IE.
- 2017-17 **Co-supervisor of an Earth Science Dissertation**, Trinity College Dublin, School of Natural Sciences, Geology, Evaluating two techniques of soil gas radon detection in application, performance and against indoor radon concentrations, Dublin, IE.

- 2016-16 **Co-supervisor of a Master thesis in Environmental Sciences**, Trinity College Dublin, School of Natural Sciences, Geology, Linking radon concentrations between the natural and built environments, Dublin, IE.

#### EXTERNAL SENSOR

- 2017-17 **External PhD examiner**, Technical University of Madrid, Thesis: "Integration of remote sensing and statistical techniques for detecting CO2 leaks in geological storage areas through the study of natural analogues, Madrid, ES.

## Publications

I have published **25** peer-reviewed journal articles, chapters or books on Environmental Science topics. I have also presented my research at 4 invited talks, and in several national and international conferences.

#### PEER REVIEWED ARTICLES

- 2022 Elío, J., Georgati, M., Hansen, H.S., Keßler, C., Migration studies with a Compositional Data approach: a case study of population structure in the Capital Region of Denmark, ArXiv, <https://arxiv.org/abs/2201.02451v1>.
- 2021 Fernandez-Anez, N., Meyer, A.K., Elío, J., Kleppe, G., Hagen, B.C., Frette, V., Behaviour of smoldering fires during periodic refilling of wood pellets into silos, Journal of Loss Prevention in the Process Industries, <http://dx.doi.org/10.1016/j.jlp.2021.104565>.
- 2021 Sun, X., Alcalde, J., Bakhtbidar, M., Elío, J., Vilarrasa, V., Canal, J., Ballesteros, J., Heinemann, N., Haszeldine, S., Cavanagh, A., Vega-Maza, D., Rubiera, F., Martínez-Orio, R., Johnson, G., Carbonell, R., Marzan, I., Travé, A., Gomez-Rivas, E., Hubs and clusters approach to unlock the development of carbon capture and storage – Case study in Spain, Applied Energy, <http://dx.doi.org/10.1016/j.apenergy.2021.117418>.
- 2020 Elío, J., Crowley, Q., Scanlon, R., Hodgson, J., Long, S., Cooper, M., Gallagher, V., Application of airborne radiometric surveys for large scale geogenic radon potential classification, Journal of the European Radon Association, <http://dx.doi.org/10.35815/radon.v1.4358>.
- 2020 Bossew, P., Cinelli, G., Ciotoli, G., Crowley, Q.G., de Cort, M., Elío, J., Gruber, V., Petermann, E., Development of a geogenic radon hazard index—concept, history, experiences, International Journal of Environmental Research and Public Health, <http://dx.doi.org/10.3390/ijerph17114134>.
- 2020 Kaile, N., Lindivat, M., Elío, J., Thuestad, G., Crowley, Q.G., Hoell, I.A., Preliminary Results From Detection of Microplastics in Liquid Samples Using Flow Cytometry, NA, <http://dx.doi.org/10.3389/fmars.2020.552688>.
- 2019 Elío, J., Crowley, Q., Scanlon, R., Hodgson, J., Long, S., Rapid radon potential classification using soil-gas radon measurements in the Cooley Peninsula, County Louth, Ireland, Environmental Earth Sciences, <http://dx.doi.org/10.1007/s12665-019-8339-4>.
- 2019 Nisi, B., Vaselli, O., Elío, J., Giannini, L., Tassi, F., Guidi, M., Darrah, T.H., Maletic, E.L., Delgado Huer-tas, A., Marchionni, S., The Campo de Calatrava Volcanic Field (central Spain): Fluid geochemistry in a CO2-rich area, Applied Geochemistry, <http://dx.doi.org/10.1016/j.apgeochem.2019.01.011>.
- 2019 Elío, J., Cinelli, G., Bossew, P., Gutiérrez-Villanueva, J.L., Tollefsen, T., De Cort, M., Nogarotto, A., Braga, R., The first version of the Pan-European Indoor Radon Map, Natural Hazards and Earth Sys-tem Sciences, <http://dx.doi.org/10.5194/nhess-19-2451-2019>.
- 2018 De Miguel, E., Barrio-Parra, F., Elío, J., Izquierdo-Díaz, M., García-González, J.E., Mazadiego, L.F., Medina, R., Applicability of radon emanometry in lithologically discontinuous sites contaminated by organic chemicals, Environmental Science and Pollution Research, <http://dx.doi.org/10.1007/s11356-018-2372-9>.
- 2018 Barrio-Parra, F., Elío, J., De Miguel, E., García-González, J.E., Izquierdo, M., Álvarez, R., Environ-mental risk assessment of cobalt and manganese from industrial sources in an estuarine system, Environmental Geochemistry and Health, <http://dx.doi.org/10.1007/s10653-017-0020-9>.
- 2018 Elío, J., Crowley, Q., Scanlon, R., Hodgson, J., Zgaga, L., Estimation of residential radon exposure and definition of Radon Priority Areas based on expected lung cancer incidence, Environment In-ternational, <http://dx.doi.org/10.1016/j.envint.2018.02.025>.

- 2017 Elío, J., Crowley, Q., Scanlon, R., Hodgson, J., Long, S., Logistic regression model for detecting radon prone areas in Ireland, *Science of the Total Environment*, <http://dx.doi.org/10.1016/j.scitotenv.2017.05.071>.
- 2016 Elío, J., Ortega, M.F., Nisi, B., Mazadiego, L.F., Vaselli, O., Caballero, J., Chacón, E., A multi-statistical approach for estimating the total output of CO<sub>2</sub> from diffuse soil degassing by the accumulation chamber method, *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2016.02.012>.
- 2015 Elío, J., Ortega, M.F., Nisi, B., Mazadiego, L.F., Vaselli, O., Caballero, J., Quindós-Ponceta, L.S., Sainz-Fernández, C., Pous, J., Evaluation of the applicability of four different radon measurement techniques for monitoring CO<sub>2</sub> storage sites, *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2015.06.021>.
- 2015 Elío, J., Ortega, M.F., Nisi, B., Mazadiego, L.F., Vaselli, O., Caballero, J., Grandia, F., CO<sub>2</sub> and Rn degassing from the natural analog of Campo de Calatrava (Spain): Implications for monitoring of CO<sub>2</sub> storage sites, *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2014.10.014>.
- 2014 Llamas, B., Mazadiego, L.F., Elío, J., Ortega, M.F., Grandia, F., Rincones, M., Systematic approach for the selection of monitoring technologies in CO<sub>2</sub> geological storage projects, application of multicriteria decision making, *Global Nest Journal*, <http://dx.doi.org/10.30955/gnj.001241>.
- 2014 Ortega, M.F., Rincones, M., Elío, J., Del Olmo, G.J., Nisi, B., Mazadiego, L.F., Iglesias, L., Vaselli, O., Grandia, F., García, R., De La Vega, R., Llamas, B., Gas monitoring methodology and application to CCS projects as defined by atmospheric and remote sensing survey in the natural analogue of campo de Calatrava, *Global Nest Journal*, <http://dx.doi.org/10.30955/gnj.001242>.
- 2014 Nisi, B., Vaselli, O., Tassi, F., Elío, J., Ortega, M., Caballero, J., Rappuoli, D., Mazadiego, L.F., Origin of the gases released from the Acqua Passante and Ermeta wells (Mt. Amiata, central Italy) and possible environmental implications for their closure, *Annals of Geophysics*, <http://dx.doi.org/10.4401/ag-6584>.
- 2013 Vaselli, O., Nisi, B., Tassi, F., Darrah, T., Bruno, J., Elío, J., Grandia, F., Del Villar, L.P., Gas Discharges for Continental Spain: Geochemical and Isotopic Features, *Mineralogical Magazine*, <http://dx.doi.org/10.1180/minmag.2013.077.5.22>.
- 2013 Nisi, B., Vaselli, O., Tassi, F., Elío, J., Huertas, A.D., Mazadiego, L.F., Ortega, M.F., Hydrogeochemistry of surface and spring waters in the surroundings of the CO<sub>2</sub> injection site at Hontomín-Huermeces (Burgos, Spain), *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2013.01.012>.
- 2013 Elío, J., Nisi, B., Ortega, M.F., Mazadiego, L.F., Vaselli, O., Grandia, F., CO<sub>2</sub> soil flux baseline at the technological development plant for CO<sub>2</sub> injection at Hontomin (Burgos, Spain), *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2013.07.013>.
- 2012 Elío, J., Ortega, M.F., Chacón, E., Mazadiego, L.F., Grandia, F., Sampling strategies using the "accumulation chamber" for monitoring geological storage of CO<sub>2</sub>, *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2012.04.006>.

#### BOOKS AND BOOK CHAPTERS

- 2019 Cinelli, G., De Cort, M., Tollefsen, T. (Eds.), *European Atlas of Natural Radiation*, Publication Office of the European Union, <http://dx.doi.org/10.2760/520053>.
- 2016 Elío, J., Ortega, M.F., Mazadiego, L.F., Nisi, B., Vaselli, O., Garcia-Martinez, M.J., Monitoring of soil gases in the characterization stage of CO<sub>2</sub> storage in saline aquifers and possible effects of CO<sub>2</sub> leakages in the groundwater system, *Geologic Carbon Sequestration: Understanding Reservoir Behavior*, [http://dx.doi.org/10.1007/978-3-319-27019-7\\_5](http://dx.doi.org/10.1007/978-3-319-27019-7_5).