

Javier Elío

RESEARCHER | ENVIRONMENTAL SCIENCES | GEOINFORMATICS

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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. Nowadays, I am postdoc in Geoinformatics on Migration Modelling at Aalborg University (Denmark), and member of the research group Applied Marine Microbiology at Høgskulen på Vestlandet (Norway).

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 **Postdoc**, Aalborg University, Technical Faculty of IT and Design, Department of Planning København, 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 (9.5 km), 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 Commission - Joint Research Centre**, European Geogenic Radon Map expert group, Ispra, IT
- 2016 **European Radon Association**, Brussels, BE

Professional Services

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

Funding projects

- 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

- 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

Teaching Experience

LECTURES/SEMINARS

- 2022 **Lecturer**, Geospatial Information Technology: Spatial Data Science 1. A hands-on data science session in Python to train your skills in data science-related tasks, Aalborg University, Copenhagen, DK
- 2018 **Teaching assistant**, 10 day geological residential field-school in SE Spain, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE
- 2017 **Massive Online Course - MOOC**, Monitoring CO₂ geological storage sites, Technical University of Madrid, Madrid, ES
- 2017 **GIS module in MSc Environmental Science**, Lecture: A new indoor radon risk map of Ireland. Geology, School of Natural Sciences, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE
- 2016 **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
- 2016 **Teaching assistant**, 10 day geological residential field-school in SE Spain, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE
- 2013 **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 **Co-supervisor of a Master thesis in Environmental Sciences**, Assessing the contribution of Quaternary deposits to the soil radon budget in Ireland, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE

- 2017 **Co-supervisor of an Earth Science Dissertation**, Evaluating two techniques of soil gas radon detection in application, performance and against indoor radon concentrations, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE
- 2016 **Co-supervisor of a Master thesis in Environmental Sciences**, Linking radon concentrations between the natural and built environments, Trinity College Dublin, School of Natural Sciences, Geology, Dublin, IE

PHD EXAMINER

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

Publications

I have published **24** 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

- 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 Bossew, P., Cinelli, G., Ciotoli, G., Crowley, Q.G., de Cort, M., **Elío**, J., Gruber, V., Petermann, E., Tollefsen, T., 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 Javier **Elío**, Quentin Crowley, Ray Scanlon, Jim Hodgson, Stephanie Long, Mark Cooper, Vincent Gallagher, 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 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, *Frontiers in Marine Science*, <http://dx.doi.org/10.3389/fmars.2020.552688>
- 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., 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 **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 System 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., Environmental 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 International*, <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 CO₂ 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-Poncela, L.S., Sainz-Fernández, C., Pous, J.,** Evaluation of the applicability of four different radon measurement techniques for monitoring CO₂ 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.,** CO₂ and Rn degassing from the natural analog of Campo de Calatrava (Spain): Implications for monitoring of CO₂ 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 CO₂ geological storage projects. application of multi-criteria 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 CO₂ 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.,** CO₂ soil flux baseline at the technological development plant for CO₂ 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 CO₂, *International Journal of Greenhouse Gas Control*, <http://dx.doi.org/10.1016/j.ijggc.2012.04.006>

BOOK CHAPTERS

- 2019 European Commission, Joint Research Centre – Cinelli, G., De Cort, M., Tollefsen, T. (Eds.): *European Atlas of Natural Radiation*, Publication Office of the European Union, Luxembourg, 2019. ISBN 978-92-76-08259-0, Catalogue number KJ-02-19-425-EN-C, EUR 19425 EN. Printed by Bietlot in Belgium 2019 – 190 pp. – 30.1 cm— 42.4 cm, <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 CO₂ storage in saline aquifers and possible effects of CO₂ leakages in the groundwater system, *Geologic Carbon Sequestration: Understanding Reservoir Behavior*, http://dx.doi.org/10.1007/978-3-319-27019-7_5