

# Dr. Sara (Fenech) Camilleri

[sara.camilleri@northwestern.edu](mailto:sara.camilleri@northwestern.edu)

My research examines the composition of the atmosphere, how it affects human health, and how emission policies can be designed to mitigate those impacts. To achieve this, I work in multidisciplinary teams and use a mixture of methods including atmospheric chemistry modelling, field campaigns, and laboratory work.

## Postdoctoral Positions

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### Faculty of Science University of Malta, Malta

October 2018 – December 2021

*Post-doctoral Researcher*

- Published research on indoor and outdoor air quality and associated health effects in peer-reviewed journals.
- Planned and conducted indoor and outdoor air quality measurement campaigns.
- Supervised postgraduate and graduate students.
- Conducted lab work analysis and was responsible for the calibration and maintenance of instruments.
- Created budgets and procurement for Mobile Air Quality lab (MAQL).
- Communicated results of research to diverse audiences including television programmes.
- Conducted outreach to schools to aid in female participation in STEM subjects.

## University Education

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### Doctor of Philosophy

November 2014 – 2018

Atmospheric and Environmental Sciences, **University of Edinburgh**, Edinburgh, UK

**Project title:** Multiple air pollutants and their health impacts for both present day and future scenarios

**Research:** Analysing the health impacts of multi-pollutants over the UK. This is done using an advanced atmospheric chemistry transport model to simulate the changes in pollutant concentrations for both present days as well as for a range of future pollutant emission and climate scenarios. Results for present-day have been evaluated against EMEP measurements. These results are then used to estimate the changes in UK health burden that arise under these different scenarios. The model used is the UK Chemistry and Aerosol (UKCA) model with focus on the 12 km horizontal resolution using, the Air Quality Unified Model (AQUM).

**Supervisors:** Dr Ruth Doherty (Univ. of Edinburgh), Dr Clare Heaviside & Dr Sotiris Vardoulakis (Public Health England), Fiona O'Connor (Met Office, UK)

**Awards:** Public Health England (PHE) PhD Scholarship

### Master of Science

September 2013 – Sept 2014

Faculty of Science, Department of Physics, **University of Malta**, Malta

**Thesis:** Analysis of WRF Model Wind Parameters Sensitivity to Physics Parameterization Choice in the Central Mediterranean

**Supervisors:** Dr Noel Aquilina (Univ. of Malta)

**Awards:** Master it! Scholarship Scheme

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## **Bachelor of Science in Maths & Physics (Hons.)**

September 2009 – June 2013

Faculty of Science, **University of Malta**, Malta

## **Publications**

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Fenech, S., Doherty, R. M., O'Connor, F. M., Heaviside, C., Macintyre, H. L., Vardoulakis, S., Agnew, P. and Neal, L.: Future air pollution related health burdens associated with RCP emission changes in the UK, *Sci. Total Environ.*, <https://doi.org/10.1016/j.scitotenv.2021.145635>, 2021.

Fenech, S., Aquilina N.J. and Vella, R.: COVID-19-related changes in NO<sub>2</sub> and O<sub>3</sub> concentrations and associated health effects in Malta, *Front. Sustain. Cities*, <https://doi.org/10.3389/frsc.2021.631280>, 2021.

Fenech, S., Aquilina N.J.: Estimation of the NO<sub>2</sub> population exposure in the Northern Harbour district of Malta, *Atmos. Environ.*, <https://doi.org/10.1016/j.atmosenv.2020.117918>, 2020.

Caruana, J., Vella, R., Spiteri, D., Nolle, M., Fenech, S. and Aquilina, N. J.: A photometric mapping of the night sky brightness of the Maltese islands, *Journal of Environ. Manag.*, <https://doi.org/10.1016/j.jenvman.2020.110196>, 2020.

Fenech, S., Aquilina N.J.: Trends in ambient ozone, nitrogen dioxide, and particulate matter concentrations over the Maltese Islands and the corresponding health impacts, *Sci. Total Environ.*, <https://doi.org/10.1016/j.scitotenv.2019.134527>, 2020.

Fenech, S., Doherty, R. M., Heaviside, C., Macintyre, H. L., O'Connor, F. M., Vardoulakis, S., Neal Lucy and Agnew Paul: Meteorological drivers and mortality associated with O<sub>3</sub> and PM<sub>2.5</sub> air pollution episodes in the UK in 2006, *Atmos. Environ.*, <https://doi.org/10.1016/j.atmosenv.2019.06.030>, 2019.

Aquilina N.J., Fenech S.: The Influence of Meteorological Parameters on Indoor and Outdoor Radon Concentrations: A Preliminary Case Study. *J Environ. Pollut. Control*, 2(1): 107,2019.

Fenech, S., Knox, J., Borg, M., Camilleri, C., and Rizzo, Alex: Estimating impacts of land use change on evapotranspiration for three agricultural crops in Malta-A preliminary Assessment, *Journal of Agri. Science*, 2019.

Fenech, S., Doherty, R. M., Heaviside, C., Vardoulakis, S., Macintyre, H. L., and O'Connor, F. M.: The influence of model spatial resolution on simulated ozone and fine particulate matter: implications for health impact assessments, *Atmos. Chem. Phys.*, <https://doi.org/10.5194/acp-2017-1074>, 2018.

Pope, R. J., Butt, E. W., Chipperfield, M. P., Doherty, R. M., Fenech, S., Schmidt, A., Arnold, S. R., and Savage, N. H. The impact of synoptic weather on UK surface ozone and implications for premature mortality, *Environ. Res. Lett.*, 11, 1–10, <https://doi.org/10.1088/1748-9326/11/12/124004>, 2016

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## Conference Presentations

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“Trends in ambient ozone, nitrogen dioxide, and particulate matter concentrations over the Maltese Islands and the corresponding health impacts.”

*February 2020:* Oral presentation at the Early Career Learning (ECI) Training School as part of the INDAIRPOLLNET (INDoor AIR POLLution NETwork), Valencia, Spain.

“Mortality associated with O<sub>3</sub> and PM<sub>2.5</sub> air quality episodes in the UK in 2006”

*September 2018:* Poster presentation at the International Global Atmospheric Chemistry (IGAC) Conference 2018, Takamatsu Kagawa, Japan.

“The impact of chemistry-climate model spatial resolution for simulating Ozone and PM<sub>2.5</sub> concentrations and their health effects.”

*July 2017:* Oral presentation at the Royal Meteorological Society (RMetS) Impact of Science Student Conference 2017, Exeter, UK.

*May 2017:* Poster presentation at the Annual Air Pollution Meeting, Birmingham, UK.

“Quantifying uncertainties in multi-pollutants health impacts in urban/rural regions across the UK”

*September 2016:* Poster presentation at the International Global Atmospheric Chemistry (IGAC) Conference 2016, Colorado, Boulder, US.

“Air pollution control measures and climate change effects on multi-pollutants and their health impacts”

*June 2015:* Oral presentation at the Royal Meteorological Society (RMetS) Annual Student Conference 2015, Manchester, UK.

*April 2015:* Oral presentation at the School of GeoSciences 2015 Research Conference, Edinburgh, UK.

*March 2015:* Oral presentation at the UKCA + meeting 2015, Leeds, UK.

## Employment Experience

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*Tutoring and Demonstrating*

November 2014 – 2018

School of Geosciences, University of Edinburgh, UK

- Lead undergraduate tutorials and labs in
  - Final year: Atmospheric Dynamics
  - First courses: Meteorology: Weather and Climate

## Awards

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**Early Career Presentation Award Session 1: Atmospheric Chemistry and Urbanization**

September 2016

IGAC Science Conference, Boulder Colorado USA

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### **Poster Presentation Award**

July 2016

RMetS Student Conference, Manchester UK

### **Voice of Science Award**

July 2015

RMetS Student Conference, Birmingham UK

## **Administration**

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*RMetS Student Committee (Co-chair)*

January 2016 – July 2017

- Leading a team of 12 early-career researchers to organize the annual RMetS Student Conference for over 100 students
- Reading abstracts and organising the layout of the conference program
- Organising social events for the students to aid networking

## **Skills Summary**

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- **Operating systems:** Linux and Microsoft Windows
- **Programming and software:** R, Python, ArcGIS and Fortran