

# Samuel M. Illingworth PhD

E: [s.illingworth@mmu.ac.uk](mailto:s.illingworth@mmu.ac.uk) • T: +44 (0) 161-247-1203 • Manchester, UK  
[uk.linkedin.com/in/samillingworth](https://uk.linkedin.com/in/samillingworth) • [orcid.org/0000-0003-2551-0675](https://orcid.org/0000-0003-2551-0675)

## Summary

---

A Senior Lecturer in Science Communication, with a background in the atmospheric sciences and expertise in public engagement and outreach. My current research involves using different media (such as a poetry and games) to engender meaningful dialogue between experts and non-experts. I have an MA in Higher Education, and am a Senior Fellow of the UK's Higher Education Academy, with publications in geoscience, science communication, and pedagogy journals.

## Employment History

---

### Senior Lecturer in Science Communication, Manchester Metropolitan University, UK

*(May 2014 – Present)*

As a Senior Lecturer in Science Communication, my responsibilities include researching pedagogic technique and scientific communication practice, and helping to promote science as a fundamental part of our culture and society. I am also the Programme Leader for the MSc in Science Communication, which includes units in Qualitative Research, Medical Writing, and SciArt.

### Postdoctoral Research Assistant, University of Manchester, UK

*(October 2012 – May 2014)*

My research was primarily concerned with using satellites, aircraft and drones to make measurements of greenhouse gases. Whilst at the University of Manchester, I also devised and delivered an interdisciplinary, undergraduate unit that taught students how to communicate effectively using theatrical technique.

### Daiwa Scholar, Daiwa Anglo-Japanese Foundation

*(September 2010 – April 2012)*

I was selected as a 2010 Daiwa Scholar, and from September 2010 to April 2012 I lived and worked in Tokyo, Japan. As part of the scholarship I devised and lectured a course at the Tokyo Institute of Technology, which was centred on the need for effective communication in scientific research, and how this can be achieved. Because of this work I was also invited to lecture at Tsinghua University in Beijing, China.

## Education

---

### MA in Academic Practice (Merit), Manchester Metropolitan University, UK

*(September 2015 – July 2016)*

My dissertation was a piece of action research which involved working with undergraduate and postgraduate students from across Manchester Metropolitan University to determine how collaborative writing groups could be used to counteract student disengagement.

## **Postgraduate Certificate in Academic Practice (Distinction), Manchester Metropolitan University, UK**

*(September 2014 – July 2015)*

A nationally recognised qualification for teaching and academic practice in Higher Education.

## **PhD: 'The Suitability of the IASI instrument for Observing CO from Space', University of Leicester, UK**

*(October 2007 – July 2011; graduated 14<sup>th</sup> July 2011)*

In my thesis, I investigated the capability of the Infrared Atmospheric Sounding Interferometer (IASI) satellite to measure atmospheric concentrations of carbon monoxide. Work from my PhD has been published as five separate papers in peer-reviewed journals. In my second year, I was awarded the prize for the best communication skills of any postgraduate student in the University.

## **MPhys (four-year degree) in Physics with Space Science and Technology (First Class Honours degree – 87%), University of Leicester, UK**

*(September 2002 – July 2006)*

In my second year, I was awarded the Phillips Prize, in recognition of achieving the highest mark in my year. Furthermore, in my final year I was awarded the departmental prize, in appreciation of having achieved the highest overall degree mark in my graduating class.

## **Key Skills**

---

### **Communication:**

I have been an invited keynote speaker at many international universities, conferences and science festivals, where I have spoken about various aspects of my research, and about science communication in general. I have also developed, and continue to develop, many public engagement programmes for children, students, and adults of all ages, and over the past three years have directly engaged with over 15,000 members of the public. With regards to digital communications, I write several very successful and popular blogs, which can be read on my website ([www.samillingworth.com](http://www.samillingworth.com)), and which have a combined yearly readership of over 30,000 people. In addition to this I am very active on Twitter ([@samillingworth](https://twitter.com/samillingworth)), where I tweet about science communication and public engagement research and practice to my 3,500+ followers.

### **Teaching:**

I am the Programme Leader for the MSc in Science Communication at Manchester Metropolitan, and teach across the entire Faculty of Science and Engineering. This includes providing bespoke training to undergraduates, postgraduates, and members of staff on how to communicate in an effective and engaging manner. I have a Postgraduate Certificate in Academic Practice, an MA in Higher Education, and am a Senior Fellow of the Higher Education Academy in the UK. Whilst at the University of Manchester, I devised and delivered an accredited course on effective communication skills, and whilst in Japan I taught a course at the Tokyo Institute of Technology, which lead to further lecturing at Tsinghua University in Beijing. I am currently supervising four PhD students.

### **Teamwork and Leadership:**

From 2013 to 2015 I was the representative for early career researchers at the European Geosciences Union (EGU), a role that involved the representation of over 5,000 postgraduate and early career scientists. In this role, I had to ensure that all early career researchers had a clear and discernible voice throughout the Union at all levels. I am now a member of the EGU Outreach and Programme committees, and am also an elected member of the Institute of Physics' Communicators

Group. I have been elected into several other positions of authority where I have acted as a benevolent, thoughtful and proactive leader. These posts include the Deputy Editor of Leicester University's newspaper, and the President of the Leicester University Theatre society.

### **Writing:**

I currently serve as associate editor for several public engagement peer-reviewed journals, and am the chief executive officer of the forthcoming (2018) EGU and Copernicus journal 'Geoscience Communication.' As well as writing scholarly papers, books, and scientific blogs (including writing for the Public Library of Science and Scientific American) I have a lot of experience in the creation of successful plays, newspaper articles, poetry, and short stories. I have run several successful writing workshops, and have also written for the radio. Several of my theatrical works have been performed in the UK, including by the Royal Shakespeare Company (RSC), and I have performed my poetry across the UK at numerous spoken word festivals and events, including the Edinburgh Fringe Festival and the Green Man Music Festival.

### **Computer Skills:**

These include a thorough knowledge of Excel and Microsoft office, as well as UNIX, LaTeX, SPSS, NVivo, and the IDL programming language.

## **Current Research**

---

With a background in using aircraft, drones and satellites to perform in situ and remote sensing measurements of greenhouse gases, my current research is now concerned with why we are making measurements like these, and how beneficial they are to the rest of society.

One aspect of science communication involves looking at the way in which the sciences are communicated between scientists and members of the public. I am particularly interested in moving beyond the deficit model of explanation, and instead incorporating upstream engagement and co-development strategies to develop genuine two-way dialogues between 'experts' and 'non-experts'. Such methodologies are not only beneficial to the members of society who are affected by the issues that are described by the research (e.g. biotechnology, engineering, sustainability, and climatology, etc.), but also to the scientists doing the research, who can draw on the tacit, local knowledge of the communities to improve their own knowledge and understanding. For example, working with local residents on flood mitigation and adaptation strategies can better safeguard these communities against flood risks, as well as reveal localised information about flooding patterns and behaviours that can help researchers to improve their models and preventative recommendations.

My research also involves looking at how different media (such as art, poetry and theatre) can be used to facilitate these conversations between experts and non-experts, and I have been developing a series of facilitated workshops with local community groups to create a two-way dialogue about climate change. As well as finding out how climate change is affecting local citizens, this approach also seeks to identify the mitigation and adaptation strategies that would be most useful for Manchester to adopt in order to become a carbon zero city by 2050. By using a series of arts-based workshops I am exploring issues of climate change with these community groups in an innovative and safe environment, where everybody is given a voice. This approach will yield information that is not only of use to local policy makers and government, but also to the scientists who are researching effective climate change mitigation mechanisms, allowing them to incorporate this local knowledge, and thereby helping to ensure that any proposed activities are more likely to be of genuine benefit to the local communities.

## Funding

---

### **National Environmental Research Council, 2015, Driving Air Quality, 3 months, £5,000.**

I was the co-investigator for this project, which involved developing a series of events and activities to raise awareness of atmospheric pollutants with members of the public. In my role, I was responsible for liaising with Manchester Airport to deliver a campaign to their staff members, and was also in charge of evaluating the project and helping to write the final report to NERC.

### **The Royal Society, 2016, History of Science Poetry, 12 months, £2,740.**

I am the PI for this project, which investigated which scientists throughout history have written poetry, and why they have done so. By examining this, the project also aims to demonstrate how poetry can be used to expand scientists' understanding of the world. I manage the, conduct the research and must produce a final report. This work has been commissioned by Manchester University Press, with the monograph of the work due to be published in 2018.

### **Edinburgh University, 2016, En-GAUGE-ing the Public, 9 months, £17,800.**

I am the PI for this project, which involves using poetry and games to engender co-creation between experts and non-experts. This work took place in Manchester, Bristol and Edinburgh and is part of the NERC-funded Greenhouse gAs UK and Global Emissions (GAUGE project). I managed the budget, developed the activities and carried out the evaluation.

### **Greater Manchester Combined Authority, 2016, The Effective Communication of Environmental Hazards, 36 months, £4,500.**

I am the Director of Studies for the PhD that this funding is attached to. This funding will be used by the student (Maria Loroño) to help further develop their research activities throughout the duration of their PhD project. I was successful in my application for this funding because the Greater Manchester Combined Authority are confident in my ability as a world-leading expert in the field of science communication.

### **National Environmental Research Council, 2017, Climate Consortium, 12 months, £119,071.**

I am a co-investigator for this project, which aims to coordinate and enhance the significant existing expertise and knowledge-base in the UK on public engagement with climate change. I am in charge of managing work package 2, which involves developing methods of co-production, plus identifying audiences and networks.

## Most Important and Relevant Publications

---

### **Total number of publications (including books): 27; h-index: 11; citations: 443**

Jack, K. & Illingworth, S. (in press). Saying it without saying it': using poetry as a way to talk about important issues in nursing practice. *Journal of Research in Nursing*.

Connerade, J.P. & Illingworth, S. (2017). *Science Meets Poetry 5*. CreateSpace.

Illingworth, S. and Prokop, A., (2017), Science communication in the field of fundamental biomedical research. *Seminars in Cell & Developmental Biology*, 70, 1-9.

Illingworth, S. (2017), *Seminars in Cell & Developmental Biology*, Delivering effective science communication: advice from a professional science communicator, 70, 10-16.

Illingworth, S., & Allen, G. (2016). *Effective Science Communication: A Practical Guide to Engaging as a Scientist*. IOP Publishing Ltd.

Illingworth, S. (2016). Are scientific abstracts written in poetic verse an effective representation of the underlying research?. *F1000Research*, 5:91.

- Illingworth, S. M., McLean, M., & Patel, D. (2016). A Case Study of Interdisciplinary Live Projects in Art and Chemistry. *Brookes eJournal of Learning and Teaching*, 8(1).
- France, J. L., Illingworth, S., et al. (2016), Measurements of  $\delta^{13}\text{C}$  in  $\text{CH}_4$  and using particle dispersion modelling to characterize sources of Arctic methane within an air mass, *J. Geophys. Res. Atmos.*, 121, 14,257–14,270.
- Filho, W., Adamson, K., Dunk, R.M., Azeiterio, U.M., Illingworth, S., and Alves, F. (Eds.) (2016). *Implementing Climate Change Adaptation in Cities and Communities*, Springer Publishing.
- Redfern, J., Illingworth, S., & Verran, J. (2016). What does the UK public want from academic science communication? *F1000Research*, 5:1261.
- Illingworth, S., Redfern, J., Millington, S., & Gray, S. (2015) What's in a Name? Exploring the Nomenclature of Science Communication in the UK. *F1000Research*, 4:409.
- Illingworth, S. M. & Roop, H. A. (2015). Developing key skills as a science communicator: Case studies of two scientist-led outreach programmes. *Geosciences (Switzerland)*, 5(1), 2-14.
- Illingworth, S. M., Lewis, E., & Percival, C. (2015). Does attending a large science event enthuse young people about science careers?. *JCOM*, 14(2).
- Blake, J., & Illingworth, S. (2015). Interactive and Interdisciplinary Student Work: A Facilitative Methodology to Encourage Lifelong Learning. *Widening Participation and Lifelong Learning*, 17(2), 108-118.
- Muller, C. L., Chapman, L., Johnston, S., Kidd, C., Illingworth, S., Foody, G., and Leigh, R. (2015). Crowdsourcing for climate and atmospheric sciences: current status and future potential. *International Journal of Climatology*, 35(11), 3185-3203.
- Illingworth, S. M., Allen, G., Newman, S., Vance, A., Marenco, F., Harlow, R. C., et al. (2014). Atmospheric composition and thermodynamic retrievals from the ARIES airborne FTS system - Part 1: Technical aspects and simulated capability. *Atmospheric Measurement Techniques*, 7(4), 1133-1150.
- Illingworth, S., Allen, G., Percival, C., Hollingsworth, P., Gallagher, et al. (2014). Measurement of boundary layer ozone concentrations on-board a Skywalker unmanned aerial vehicle. *Atmospheric Science Letters*, 15(4), 252-258.
- Illingworth, S. M., Muller, C. L., Graves, R., & Chapman, L. (2014). UK citizen rainfall network: A pilot study. *Weather*, 69(8), 203-207.
- Allen, G., Illingworth, S. M., O'Shea, S. J., Newman, S., Vance, A., Bauguitte, S. J. –B, et al (2014). Atmospheric composition and thermodynamic retrievals from the ARIES airborne TIR-FTS system - Part 2: Validation and results from aircraft campaigns. *Atmospheric Measurement Techniques*, 7 (12), 4401-4416
- Muller, C. L., Roberts, S., Wilson, R. C., Remedios, J. J., Illingworth, S., Graves, R., et al. (2013). The Blue Marble: A model for primary school STEM outreach. *Physics Education*, 48(2), 176-183.
- Hilton, F., Armante, R., August, T., Barnet, C., Bouchard, A., Camy-Peyret, C, Illingworth, S., et al. (2012). Hyperspectral earth observation from IASI. *Bulletin of the American Meteorological Society*, 93(3), 347-370.
- Illingworth, S. M., Remedios, J. J., Boesch, H., Ho, S. P., Edwards, D. P., Palmer, P. I., & Gonzi, S. (2011). A comparison of OEM CO retrievals from the IASI and MOPITT instruments. *Atmospheric Measurement Techniques*, 4(5), 775-793.