# Dr. Seán **Blake**

Space Weather Researcher


## Mail

**blakese@**
tcd.ie
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nasa.gov

## Web & Git

seanblake.ie
github.com/terminusest


## Programming

Python ★★★★★
Matlab ★★★☆☆
C++ ★★☆☆☆

## Interests

Computers
Poker
Running
Piano

## About

I am a motivated astro/geophysics researcher with 6 years of experience in data analysis and scientific research, currently working at NASA Goddard Space Flight Center. The focus of my research is **Space Weather**, or how the Sun causes geomagnetic storms that can damage grounded infrastructure. I am experienced with geophysical modeling, analysing large datasets, machine learning, data visualisation and historical research.

## Work Experience

2018-now **Postdoctoral Researcher at NASA GSFC**
*Based in the NASA Goddard Space Flight Center in Maryland, USA. Currently researching extreme geomagnetic storm dynamics, historical superstorms, the extent of the auroral oval and localized geoelectric field enhancements.*

2017-2018 **Postdoctoral Researcher at Trinity College Dublin**
*Gathered and processed magnetotelluric data around Ireland as part of SWEMDI: the Space Weather Electromagnetic Database for Ireland.*

2016-2018 **Director of CodifyDublin.com**
*Founded Codify Ltd. which provided data science and computer programming workshops in Dublin. Designed curriculum, organised classes and taught approximately 150 students.*

2014-2016 **Workshop Leader with Student2Scientist.org**
*Ran computer science and physics workshops for secondary level students and teachers.*

2013 **Intern with DIAS Geophysics Section**
*Surveyed various locations in Ireland and analysed geomagnetic data as part of the IRETHERM magnetotelluric geothermal energy project.*

## Education

2013-2017 **Ph.D. in Astrophysics.** **Trinity College Dublin, Ireland**
• Co-funded by EirGrid to research the effects of space weather on the Irish power network.
• Thesis entitled *Monitoring and Modelling Geomagnetic Storms and Their Effects in Ireland* was the first detailed study of the Irish power network and its vulnerability to space weather events.

2014-2015 **Postgraduate Certificate in Statistics** **Trinity College Dublin, Ireland**
35 ECTS course on frequentist statistics

2009-2013 **B.A. Mod. in Astrophysics, II.I** **Trinity College Dublin, Ireland**
Thesis entitled: *Simulating a Convective Cell in the Solar Interior*

# Skills

**Scientific Computing**

- Extensive experience with **Python** both in developing code for scientific applications and teaching. Also familiar with **Matlab** and **C++**.
- Experienced with analysing large datasets, **machine learning** and numerical physics simulations.
- Developed software for magnetic observatories in Ireland which provides real-time analysis of geomagnetic data (e.g., **Magie.ie**).

**Academic Research**

- Experienced with space weather and geophysics research, including GICs, power network modelling and magnetotellurics.
- Experienced with analysing geomagnetic and geoelectric time series.
- Practical experience with installing and maintaining geomagnetic observatories, as well as undertaking magnetotelluric surveys around Ireland.

**Communication**

- Presented novel scientific research at a number of international conferences.
- Strong teaching experience with students of all levels. Designed and taught curriculum for CodifyDublin programming courses, as well as scientific computing courses for secondary level students.

# Academic Publications

- **Blake, S.P.**, Pulkkinen, A., et al. (2020). *Estimating Maximum Extent of Auroral Equatorward Boundary using Historical and Simulated Surface Magnetic Field Data*, Journal of Geophysical Research: Space Physics
- Hayakawa, H., **Blake, S.P.**, et al. (2020). *The Extreme Space Weather Event in February/March 1941* The Astrophysical Journal,
- Bhaskar, A., **Blake, S. P.**, et al. (2020). *An analysis of the Trouvelot's Auroral Drawing on 1/2 March 1872: Plausible Evidence for Recurrent Geomagnetic Storms.* Journal of Geophysical Research: Space Physics, 125,
- Marsal, S., **Blake, S. P.**, et al. (2020). *Including the Temporal Dimension in the SECS Technique*, Space Weather, 0–2
- **Blake, S. P.**, Pulkkinen, A., et al., (2020). *Magnetic Field Measurements from Rome during the August-September 1859 Storms*, Journal of Geophysical Research: Space Physics, (September), 1–54.
- Campanyà, J., **Blake, S. P.**, et al. (2019). *Modeling Geoelectric Fields in Ireland and the UK for Space Weather Applications.* Space Weather, 17(2), 216–237.
- **Blake, S. P.**, Gallagher, P.T., et al. (2018). *A Detailed Model of the Irish High Voltage Power Network for Simulating GICs.* Space Weather, 16(11), 1770–1783.
- **Blake, S. P.** (2017). *Modelling and Monitoring Geomagnetically Induced Currents in Ireland.* PhD Thesis, University of Dublin, Trinity College,
- **Blake, S. P.**, Gallagher, P. T., et al. (2016). *Geomagnetically induced currents in the Irish power network during geomagnetic storms.* Space Weather, 14(12), 1136–1154.