

SPITFIRE Doctoral Training Partnership (DTP)

Research Experience Placement Project 2018

Lead Supervisor:	Dr Tracy Moffat-Griffin Dr Andrew Kavanagh
Email:	tmof@bas.ac.uk
University/Research Organisation:	British Antarctic Survey
Department:	Atmosphere, Ice and Climate (Tracy) Space Weather and Atmosphere (Andrew)
Project Title:	Space weather impacts on the Antarctic middle atmosphere

Total Student Support Costs:	£2500 (£200 for 10 weeks plus £500 research and training support grant)
<i>Based on a minimum of £200/week full time for a minimum of 8 weeks and maximum of 10 weeks and a £500 Research and Training Support Grant.</i>	

Proposed Start Date: Monday 18th June	Proposed End Date: August 24th
<i>Projects should run over the summer vacation and we recommend that projects will have terminated by 21 September 2018.</i>	

Brief Summary – please provide a brief summary (maximum 300 words) of the project.

The project will be looking for a response in the middle atmosphere dynamics and temperature to space weather events, specifically energetic particle precipitation. The student will be using data from the MF wind radar and the mesospheric temperature spectrometer, both located at Halley station in Antarctica, which has been gathered over the past 16 years. Additionally they will using a combination of satellite observations and model output (Solar forcing parameters for CMIP6) to determine when space weather events have occurred.

The student will be supervised jointly by Dr Tracy Moffat-Griffin (Atmosphere, Ice and Climate) and Dr Andrew Kavanagh (Space Weather and Atmosphere); expertise will also be provided by other members of the groups. The student will be located in one of the student rooms, close to one of the supervisors, alongside other PhD/REP students. They are welcome to attend any of the science seminars and will get to see research from the different areas of BAS.

The project will provide experience of developing software to analyse different long term datasets and interpreting the results.

Any publications/proposals that directly result from the students work will be credited appropriately.

During the course of this project the student will have a taste of what it is like to work in a research group environment. They will learn about data processing and analysis and develop their programming skills on this project.

Please give an indicative timescale for the student's work over the length of the project: (maximum 150 words).

Project structure:

1. Familiarisation with the datasets that will be used (1 week)
2. Development of software to read in the different data types (1 week)
3. Identify times of low, medium and high space weather activity using geomagnetic activity indices and sort wind and temperature data accordingly to look for changes.(4 weeks)
4. Identify times of particle precipitation using satellite data and sort wind and temperature data accordingly to look for changes. (3 weeks)
5. Combine findings from previous two studies and write up findings (1 week)

Proposed procedure for appointing students, including selection criteria:

Please identify specific criteria that should be considered for the selection of placement students e.g. specific quantitative skills that may be required, subject knowledge etc. If a student has been pre-selected, or the research area has been led by the student, please provide the student's contact details, and a summary of their suitability for the SPITFIRE DTP REP programme.

The student should be doing a numerate degree and have basic physics knowledge. Knowledge of basic atmospheric physics/space weather, data processing and statistical analysis would be preferred. They should have some programming experience.