Geodesist
UKRI – NERC – BGS
Space Geodesy Facility (SGF), Herstmonceux, East Sussex

£30,782 to £33,459 per annum (depending on qualifications and experience)
Full-Time – 37 hours a week (flexible working options may be available)
Permanent Appointment

About us
The British Geological Survey (BGS) is an applied geoscience research centre that is housed in UK Research and Innovation (UKRI) and affiliated to the Natural Environment Research Council (NERC). It is a world leading geological survey that provides a core science mission to inform government of science related to the subsurface and its interfaces and also undertakes applied research for solutions to earth and environmental processes, both in the UK and globally. It is funded directly by UKRI as well as through research grants and via private sector contracts.

BGS has an annual budget of approximately £60 million and employs 650 people. It has two main sites, a head office in Keyworth near Nottingham and the Lyell Centre, which is a joint collaboration with Heriot Watt University in Edinburgh. BGS works with more than 150 private sector organisations as well as having close links with 40 universities and sponsors approximately 100 PhD students each year.

About the role
A vacancy has arisen in our Space Geodesy Team for a highly motivated and enthusiastic Research Scientist to be based at our geodetic observatory in Herstmonceux, East Sussex.

You will be working as part of a small multi-disciplinary team that operates the observatory and carries out research aimed at improving both the accuracy and applicability of its products to international efforts to understand the dynamic Earth. High quality techniques used on site include satellite tracking (laser ranging (SLR) and multi-GNSS) and absolute gravity. In particular its SLR system provides the international community with a wealth of world-leading, high quality (at mm-level of accuracy) range observations to a variety of geodetic, Earth-observing and GNSS satellites in support of many geophysical research areas, including sea level and ice sheet monitoring.

The successful candidate will be required to:

- Become responsible for leading the SGF research effort primarily focused on SLR data analysis for improvements in the International Terrestrial Reference Frame. The SGF is an International Laser Ranging Service (ILRS) Analysis Centre that has developed a competitive orbital/geodetic analysis package. You will gain an insight into the package as a starting point for further enhancement and research impact.
- Recent research undertaken within this role includes work on the identification and mitigation of systematic errors in the SLR technique and the determination of centre of mass corrections (CoM) for SLR geodetic satellites.
• An early research requirement will be to engage with priorities set by the ILRS Analysis Standing Committee for the computation of reference frame solutions, especially towards the laser ranging input to the next realisation of the Int Terrestrial Reference Frame (ITRF2020), expected within approximately 18 months.
• Apply your expertise to a wealth of additional software projects within the SGF’s expanding remit for optical and laser satellite tracking and corresponding data analysis.
• Develop and foster closer research links with the BGS Geodesy and Earth Observation Group by undertaking working visits to the BGS headquarters in Keyworth in Nottingham.
• Establish and maintain collaborative research relationships with external partners in the commercial, defence and academic sectors of the space and geodetic communities, primarily to bring orbital dynamics expertise to these fora.
• Publish journal research articles and present outputs to internal and external audiences ranging from general public to customer groups and at international conferences.

About you

You should have a PhD or equivalent qualification in a science/mathematical or ideally, a geodetic discipline. You should have demonstrable working knowledge in at least one scientific or engineering computing language (python, Perl and Fortran 90 are all used under Linux for SATAN). Being willing and able to keep abreast of developments in geodetic research techniques and theories will be an important part of being successful in this role as the international community strives for ever-improving accuracy.

Over many years, the SGF has built a competitive orbital and geodetic analysis package (SATAN) which is used primarily to compute geodetic reference frame solutions from the global yield of laser ranges to the geodetic satellites (LAGEOS, Etalon). This work at Herstmonceux, which has resulted in a number of recent peer-reviewed research publications, could be placed in jeopardy following both a retirement and a departure of key members of staff. The emphasis, therefore, of your role will be quickly to gain an understanding of this research package and ensure that the work continues and then grows with your input. Initial support for this will be available from a number of sources.

Whilst being able to work on your own and show initiative, you must also be comfortable in a team and be a strong communicator, both verbally and in writing.

There will be a requirement for you to support on a rota basis the observatory’s clear-weather, 24-hour, 7-days a week observational commitment. This will include out of office hours, lone observing shifts for which additional remuneration is available. You must be able to travel to and work at the facility during out of office hours – therefore living within a reasonable distance and holding a valid driving licence would be very helpful as a flexible, independent approach, depending on weather conditions at the site, is of prime importance.

Candidates will also wish to note the requirement of mobility to frequently use stairs to access areas of the site.
What we offer

A generous benefits package is also offered, including a very competitive pension scheme, 30 days annual leave plus bank holidays, free parking and access to flexi-time. We also offer the 'Bike to Work' scheme, free parking and health and wellbeing support.

For a salary at the top end of the advertised range, you will also need to meet the desirable criteria detailed on the TopCareer.jobs website.

Please note that any internal BGS staff applying for this post would, if successful, be appointed to new UKRI Terms and Conditions and pay (if not already on them).

How to Apply

Applicants are required to include a cover letter outlining their suitability for this role. We would stress the importance of this paperwork in our selection process. A well thought through application addressing the advertised essential and desirable criteria for the post will be considered far more favourably than a generic covering letter and CV.

Applications are being handled by UK Shared Business Services, to apply please visit our job board at https://www.topcareer.jobs/Vacancy/irc253277_10661.aspx

Applicants who are unable to apply online should contact us by telephone on +44 (0)1793 867000.

Closing date for receipt of applications is 28 June 2020.

BGS provides a range of flexible working options including flexible working patterns, compressed hours and home working so if you have a need for flexibility, please raise this in the recruitment process when your needs, balanced with the requirements of the role, will be fully considered.

We are committed to promoting equality and diversity across our organisation as well as across all areas of our science community. As such, we aim to have a workforce with employees from all backgrounds with people who are passionate about earth science and who share our commitment to work for the good of the environment and the benefit of society.

We will actively seek to avoid discrimination on the grounds of age, disability, race (including colour, nationality, ethnic or national origin), sex or sexual orientation, being trans or a member of the non-binary community, being married or in a civil partnership, being pregnant or on maternity leave, disability, race (including colour, nationality, ethnic or national origin), religion, sex or sexual orientation.

The British Geological Survey is an Investors in People organisation and has achieved Bronze status for Athena SWAN – a scheme that recognises an organisation’s commitment and progress in developing a diverse and inclusive workforce.

![disability confident](image1.png)  ![Athena SWAN Bronze Award](image2.png)  ![INVESTOR IN PEOPLE](image3.png)
### Specific Skills Criteria

**S = Shortlist Stage**

**I = Interview Stage**

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<th>Essential</th>
<th>Desirable</th>
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<td><strong>QUALIFICATIONS</strong></td>
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<td>PhD or equivalent in a science, mathematical, geophysical or related discipline and/or equivalent work experience (S)</td>
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<td>Full UK driving licence (S)</td>
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<td>UK or international passport (S)</td>
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<td><strong>EXPERIENCE</strong></td>
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<td>Relevant research and/or work experience, preferably in data analysis techniques, and demonstrable evidence of a practical problem-solving ability (S&amp;I)</td>
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<td>Experience in processing geodetic observations in order to monitor, for example, plate tectonic motion (S&amp;I)</td>
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<td>Will ideally have experience in processing SLR and/or GNSS observations (S&amp;I)</td>
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<td>Experience in effectively managing own time and workload including multiple simultaneous tasks and in working within a small mixed team of scientists and non-scientific staff (S&amp;I)</td>
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<td><strong>KNOWLEDGE</strong></td>
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<td>Broad knowledge of Earth system science, ideally including geodynamics and geodesy (S&amp;I)</td>
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<td>Knowledge of Earth Science and related observations; role of reference frames; need for mm-accuracy (S&amp;I)</td>
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<td>Understanding of statistical and applied mathematical techniques to extract information from observations, often in the presence of noise. Recognition of need for mm-level accuracy in observations and products (S&amp;I)</td>
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<td>Knowledge in the UNIX (Linux or Solaris) operating system, at user level (S&amp;I)</td>
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<td>Demonstrable working knowledge in at least one scientific computing language e.g. Python, Fortran-90, C (S&amp;I)</td>
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<td><strong>SKILLS AND ABILITIES</strong></td>
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<td>Prepared to learn a variety of technical skills immediately on appointment and continue to develop skills and knowledge in areas of numerical analysis/mathematics perhaps outside their specialism (I)</td>
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<td>Good verbal, written and presentational skills and an ability to communicate science and geophysical problems and concepts to both specialists and non-specialists (S&amp;I)</td>
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<td><strong>PERSONAL QUALITIES</strong></td>
<td><strong>MOTIVATION</strong></td>
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| • Understanding of mathematical and statistical concepts, including large-scale optimisation systems (I)  
• Fluent in written and spoken English (S&I) | • Must be willing to travel for conferences and workshops.  
• Must be able to travel to and work alone at the facility for out-of-hours observing shifts (I)  
• Mobility to frequently use stairs to access areas of the site (I) | • Experience in formally or informally leading or managing others (S&I)  
• Experience in providing either formal or informal training to others (S&I)  
• Demonstrates strong curiosity in extracting information from data and a drive to resolve problems (S&I)  
• Displays an enthusiasm for their science and a desire to develop this further (I)  
• Demonstrates an interest in their own Continuing Professional Development (I) | • Demonstrates an interest in the work of BGS, NERC and UKRI (I) |