# Job Description – Atmospheric Physicist

**The Role**

The role holder will be a physical scientist who will contribute to the Faculty’s research objectives by having responsibility for the running of science experiments on behalf of researchers using the Laboratoire Météorologie Dynamique (LMD) Venus Planetary Climate Model, as well as other atmospheric models. This will include experiment preparation, execution, post-processing and visualisation as part of data analysis supporting research projects. The work will support a Venus mission in preparation.

The role holder will also provide training for internal and visiting researchers and post-graduate students on the use of Venus climate models for undertaking physical science experiments. The role holder will work with external collaborators to ensure that the models utilised for Venus climate studies are maintained and kept up-to-date as new physical parameterisations are developed.

**Key responsibilities**

1. Work with the Professor of Planetary Science and research fellow to design and perform physical sciences experiments using Venus climate models.
2. Liaise with users and collaborators (both internal and external) for the design of physical sciences experiments.
3. Prepare supporting material as input to manuscripts as required.
4. Carry out experiments on behalf of OU researchers to compare data acquired from spacecraft missions with the climate model as they become available.
5. Undertake the in-house training of research personnel (postgraduate students, postdoctoral research associates, visiting researchers and academics) in the operation of the model as required, including visualisation and post-processing software as appropriate.
6. Ensure the timely updating of the model to include new physical parameterisations, using the appropriate version control paradigms.
7. Carry out administrative tasks associated with the work, such as documenting experiments and code updates.

**All Staff are expected to:**

1. Undertake any other duties which may be reasonably required
2. Take reasonable care of the Health and Safety of themselves and that of any other person who may be affected by your acts or omissions at work.

Demonstrate a strong commitment to the principles and practice of equality and diversity

# Person Specification

Skills and experience

#### Essential:

* Educated to doctorate level in an atmospheric physics subject
* Excellent knowledge and experience of Venus atmospheric physics
* Experience in running physical sciences experiments using Venus climate models
* Knowledge of spacecraft atmospheric observations
* Experience in Fortran and Python programming and the ability to produce graphical output from numerical data
* Experience using version control software
* Demonstrated ability to solve problems and come up with new ideas
* Good oral and written communication skills
* Can demonstrate being a good team worker and able to work under own initiative

#### Desirable:

* Experience in conducting physical science experiments using numerical models
* Experience in running Venus atmospheric models

The role holder is expected to work flexibly as required. The exact requirements will vary and will be agreed in advance by the role holder and the line manager.

**Faculty of Science, Technology, Engineering & Mathematics**

The Faculty of Science, Technology, Engineering and Mathematics (STEM) is comprised:

* School of Computing & Communications
* School of Environment, Earth & Ecosystem Sciences
* School of Engineering & Innovation
* School of Life, Health & Chemical Sciences
* School of Mathematics & Statistics
* School of Physical Sciences
* Knowledge Media Institute
* Deanery including teams supporting Curriculum, Research and Enterprise, Laboratory Infrastructure and Faculty Administration

**“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”**

The Faculty of STEM consists of 700 staff and 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting nearly 19,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £17M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.

We are proud of our distinctive values and capabilities underpinning our aspiration:

*We are inclusive:*

* We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience
* We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM

*We are highly innovative:*

* We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation
* Our high quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy

*We deliver significant social and economic impact:*

* We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential
* We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working
* The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers
* Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK

**School of Physical Sciences**

The School of Physical Sciences is a lively and innovative community of approximately 85 academic and research staff and 70 PhD students, mostly based in Milton Keynes. Our curriculum is supported by associate lecturer staff based all over the UK and Ireland whilst each year our physics, astronomy and planetary sciences and interdisciplinary science modules are studied by thousands of students all over the world.

Our research covers a wide range of subjects, broadly aligned with the research disciplines of

• Astronomy

• Physics

• Planetary and Space Sciences

• Space Instrumentation

• Physics Education

We have an extensive suite of world class facilities and laboratories, including advanced analytical instrumentation, experimental and simulation chambers and instrument development laboratories, complemented by regular use of large-scale facilities such as synchrotrons (e.g. Diamond) and a wide array of ground based and space-based telescopes (e.g. VLT, Hubble) as well as our own robotic telescopes in Tenerife. We play a major role in many well-known space missions such as Rosetta and ExoMars. We also apply much of our spaceflight and laboratory expertise to a wide array of real-world problems including medical and environmental applications.

School members also contribute to the Open University’s teaching on a large range of modules and we have been at the forefront of many innovations in distance education, including the [OpenScience Lab](http://www.open.ac.uk/researchprojects/open-science/) and the OpenScience Observatories. We are members of [SEPnet](http://www.sepnet.ac.uk/), the South East Physics Network. Our commitment to equality and diversity has been recognised by the award of “Juno Champion” status by the Institute of Physics and an Athena SWAN Silver Award.

We currently offer undergraduate qualifications in Natural Sciences (with a physics route and an astronomy and planetary science route), with a strand which carries Institute of Physics accreditation, and in Mathematics and Physics. We also offer an MSc in Space Science and Technology. We are in the process of refreshing the curriculum at Stage 3, and are drawing up plans for adding an integrated MPhys to our portfolio, including topics in physics, astronomy, planetary and space science.

**Priority Research Areas in the School of Physical Sciences**

**Astronomy**

• The Compositional Universe: exploiting the spectroscopic discovery space from major facilities and projects including ALMA, JWST, SPICA, SOFIA and IRAM/NOEMA, E-ELT, VLT, SKA, JCMT, SALT, LOFAR, ELIPS, Herschel, SDSS-IV, Euclid etc., to study galactic star formation, evaporating exoplanets, and the physics of galaxies in the distant universe. We will further develop our laboratory/observational astrochemistry research to focus on the development of molecular compositional diagnostics.

• The Time-Domain Universe: exploiting the discovery space of new and future telescopes e.g. Gaia, LIGO, PLATO 2.0, TWINKLE, VLT and LSST, in studies such as galactic and extragalactic stellar populations using leading follow-up facilities such as SALT, or (as part of a wider follow-up network) our robotic telescopes, with a focus on key processes such as stellar binarity.

**Physics**

• Biomedical physics: to understand physical phenomena involved in conditions such as cancer and cardiovascular diseases and their treatment through experimental and theoretical investigations of a range of approaches such as electron-driven processes in radiation treatment and imaging, use of nanoparticles for cancer therapy and plasma sources for biomedical purposes.

• Quantum correlated systems: theoretical and experimental study of quantum correlations in atomic, molecular and condensed matter systems, and the development of practical applications such as quantum enhanced devices and the functionalisation of materials, as well as the development of multi-purpose software to treat electronic continua.

• Engineering physics: applied plasma research aimed at developing novel functional materials, understanding electron induced processes in nanofabrication and the development of plasma-driven techniques for advanced materials applications.

**Planetary and Space Science**

• Application of advanced analytical techniques, laboratory simulation, remote observation and modelling to investigate the key processes involved in the formation and evolution of the Solar System and the planetary bodies it contains, including the search for habitable environments and the presence of life.

• Maintain and build high scientific credibility for our analytical expertise by exploiting the performance of existing instruments and updating the analytical infrastructure in order to ensure leading involvement in upcoming sample-return missions, and maintain access to the most important planetary samples. Particular strengths are in the measurement of light-stable isotopes using conventional mass spectrometry and in-situ analysis of samples.

• Development and expansion of our expertise in planetary environments using modelling, remote sensing and the use of field analogues and simulation facilities on Earth, and secure further leading science team involvements in future planetary space missions.

**Space Instrumentation**

• Development of imaging sensors and instruments for space applications, with expertise in a range of wavelengths from IR to X-ray and the study of the effects of radiation damage, in order to secure involvement in future space missions.

• Development of miniaturized analytical instrument systems for planetary exploration missions, particularly for the measurement of volatiles, organic materials and their light stable isotope composition, and securing leading involvement in future planetary exploration missions.

• Knowledge exchange between the UK technology industry and academia, utilising the technologies and expertise in detectors and mass spectrometer systems to provide commercial products and solutions.

**Physics Education Research**

• Remote and virtual experimentation

• Concept inventories

• Interactive online assessment

• Demographic differences in achievement