**What your society is doing at home and abroad**

# Beyond Earth…

***We are delighted to announce that 2021 will be the Geological Society's themed 'Year of Space', write Flo Bullough & Megan O'Donnell.***

The thematic year programme, as set by the Society's Science Committee, aims to raise the profile of geoscience, promote public engagement, and provide exciting, informative and inspiring themes around which to frame our education, outreach, conferences, publications, meetings and other activities throughout the year.

The Year of Space will see the Society direct its gaze upwards, beyond the earth beneath our feet, towards the lesser explored corners of our universe. Space science seeks to answer some of life's biggest questions—why are we here, how did life evolve, and are we alone? To answer these questions, space and planetary scientists search for clues in the rocks, dust, gas and other matter that help them understand the formation and development of planets, moons, stars and perhaps other life in our universe. Space also offers scientists a novel platform from which to study Earth; using remote sensing and satellite technology to obtain high-resolution spatial and temporal data detailing our planet's state and rate of change.

Space science relies on the observation and measurement of many characteristics largely un-observable with the naked eye, the ability to deal with long timescales, and to visualise interconnected systems at vast scales—a trio of skills honed by geosientists in the study of internal planetary processes, rock systems beneath our feet and the landscapes we see all around us. Exploring space offers us the ability to expand our horizons; conduct fieldwork, take samples, measure and observe at the very limit of our capabilities.

From the rocky matter of meteorites, comets and asteroids, to the search for extra-terrestrial life, and the study of the planetary systems that could support it—the geosciences underpin much of present-day space science. Two ongoing NASA research expeditions to Mars have geological aims at the core of their missions. The NASA Curiosity rover analyses rock, dust and soil samples to determine the structure and chemistry of Martian rocks in the quest to find evidence that suggests the planet could have supported life, and the NASA InSight lander uses geophysical techniques such as seismology, measurements of heat flow and precision GPS tracking to better understand and monitor the planet's internal structure and physical characteristics. Excitingly, InSight is thought to have heard its first Marsquake on 6th April 2019, which suggests there may be more to the tectonic activity of other planets than we currently understand!

Geoscientists are also interested in the metal and mineral resources in asteroids, the search for Earth-like exoplanets (habitable bodies beyond our Solar System), the study of non-rocky planets like Jupiter and Saturn, and ultimately traces of early life on our planet and others. With so much still unknown, every day of space exploration provides never before seen data for scientists to digest and analyse. The joint Japan Aerospace Exploration Agency (JAXA) and European Space Agency (ESA) Bepi-Columbo mission to Mercury, launched in 2018 and expected to land in late 2025, will collect data about the planet's magnetosphere, giving us insights into the composition of the planet's core.

2021 will see two more field missions to Mars from NASA and ESA, scheduled to land on the planet in February and March of that year, boasting drilling capabilities to take deeper geological samples than have ever been achieved before. The China Mars program is also planning a test mission for 2021 that will lay the groundwork for the first martian samples to be brought back to Earth. Alongside a year of exploration firsts, we look forward to highlighting and celebrating the contributions of the geosciences to our exploration and understanding of the science beyond Earth.

**Get Involved!**

We are looking to run activities during the **Year of Space** to celebrate and explore the relationship between space and geoscience, and we want to hear **your** ideas and proposals for:

- Meetings and conferences
- Education and outreach activities
- Public engagement initiatives

We are aiming to run a diverse programme of events that will showcase the variety of links between geoscience and space, which could include exhibitions, presentations, scientific conferences, resources for teachers and science communicators, artistic collaborations, and more! You can also continue to submit ideas and proposals for the 2020 Year of Life.

Email **outreach@geolsoc.org.uk** to discuss your ideas with us.

See our website for past examples and details of how to propose an event. Or email **conference@geolsoc.org.uk**.

*Drill hole on Mount Sharp left by NASA's Mars Curiosity rover in 2019. Credit: NASA/JPL-Caltech/ MSSS*