

the lost landscape:

# A STORY OF DEPOSITION AND EROSION

in the ExoMars rover landing site

a poster by **Joe McNeil** | The Open University

In summer 2023, after a nine month, 400 million km journey, the ExoMars rover 'Rosalind Franklin' will reach its final destination: **Oxia Planum, Mars.**

**Oxia Planum** is a four billion-year-old clay-bearing plain located at the northwestern extreme of Mars' ancient southern hemisphere.

Chosen for its **geological diversity**, abundance of **hydrated minerals**, and **gentle topography**, **Oxia Planum** is an ideal landing site for *Rosalind Franklin*, which will:

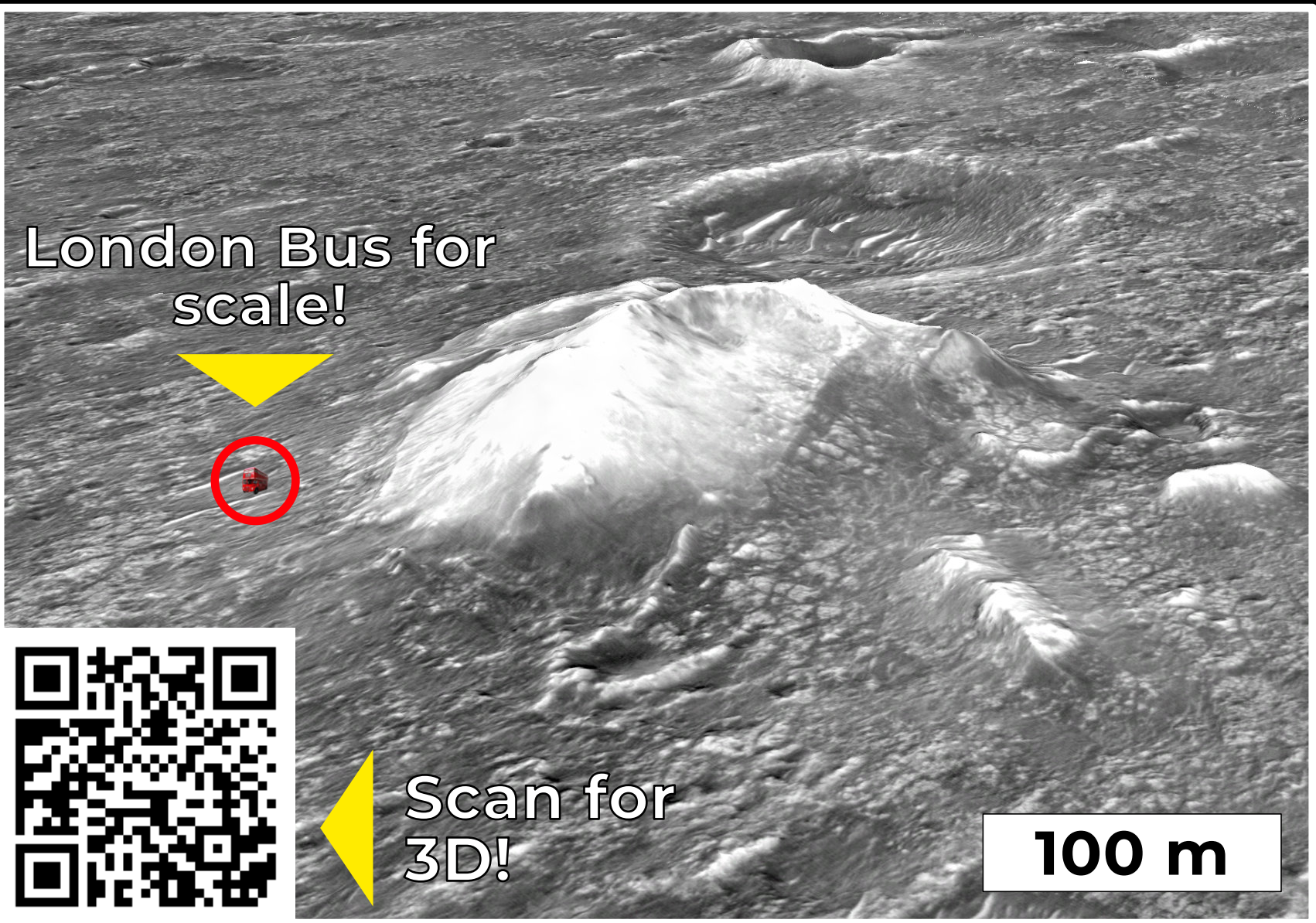
1. explore the subsurface geochemistry
2. investigate the geology at the surface
3. search for evidence of ancient life

In order to place the **rover observations** into a **regional context**, we must have an **understanding** of Oxia Planum's geology **before *Rosalind Franklin* arrives on Mars.**

To do this, geologists must **investigate the features** of Oxia Planum using **high-resolution satellite images** captured by spacecraft in orbit around the red planet.

## MY PROJECT: MOUNDS IN OXIA PLANUM

Fig. 1

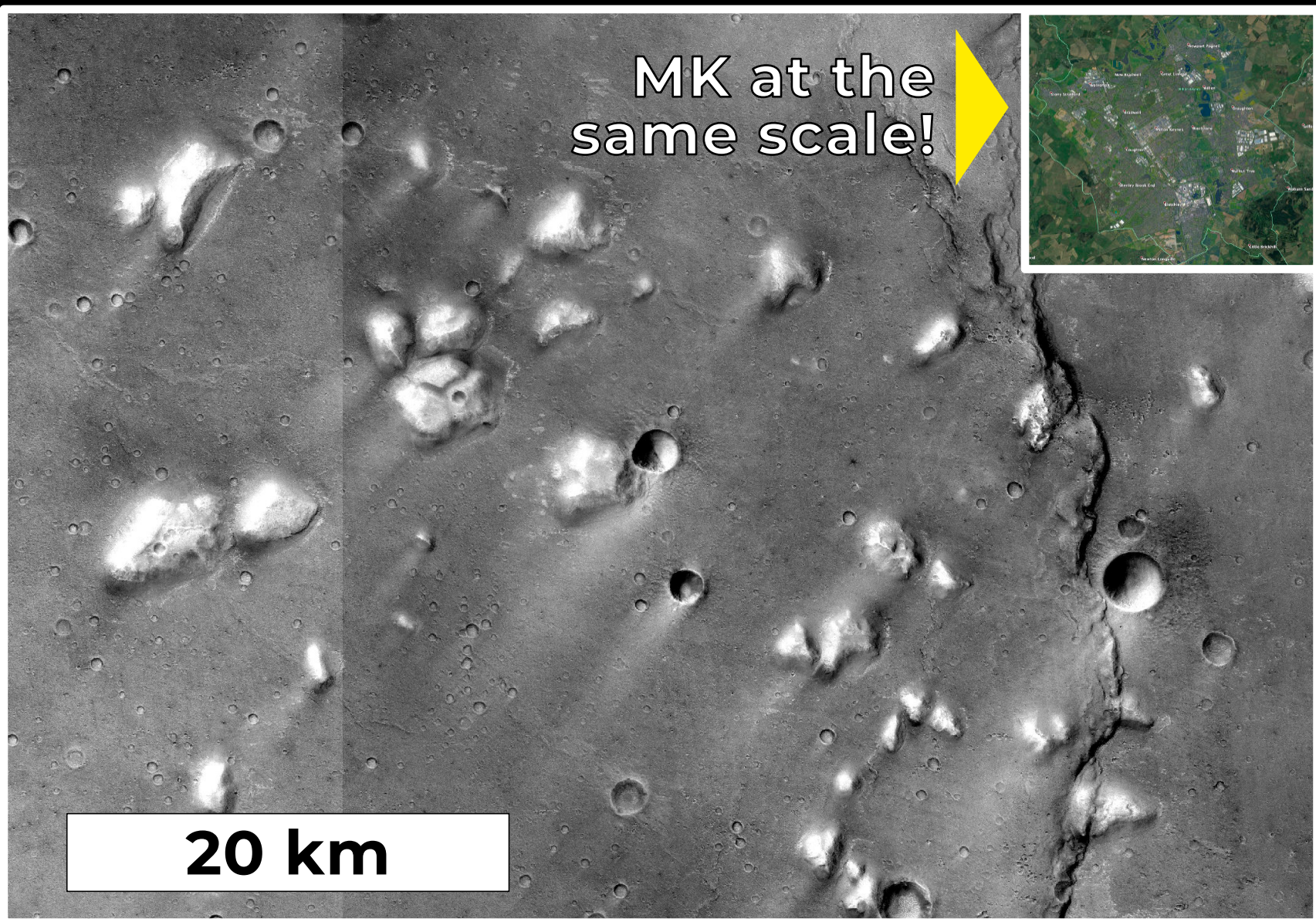


Some of the most striking features of the Oxia Planum region are thousands of **isolated kilometre-scale hills and mounds** that rise above the clay-bearing plains (Fig. 1, 2).

they can be a few hundred metres wide...

or several kilometres!

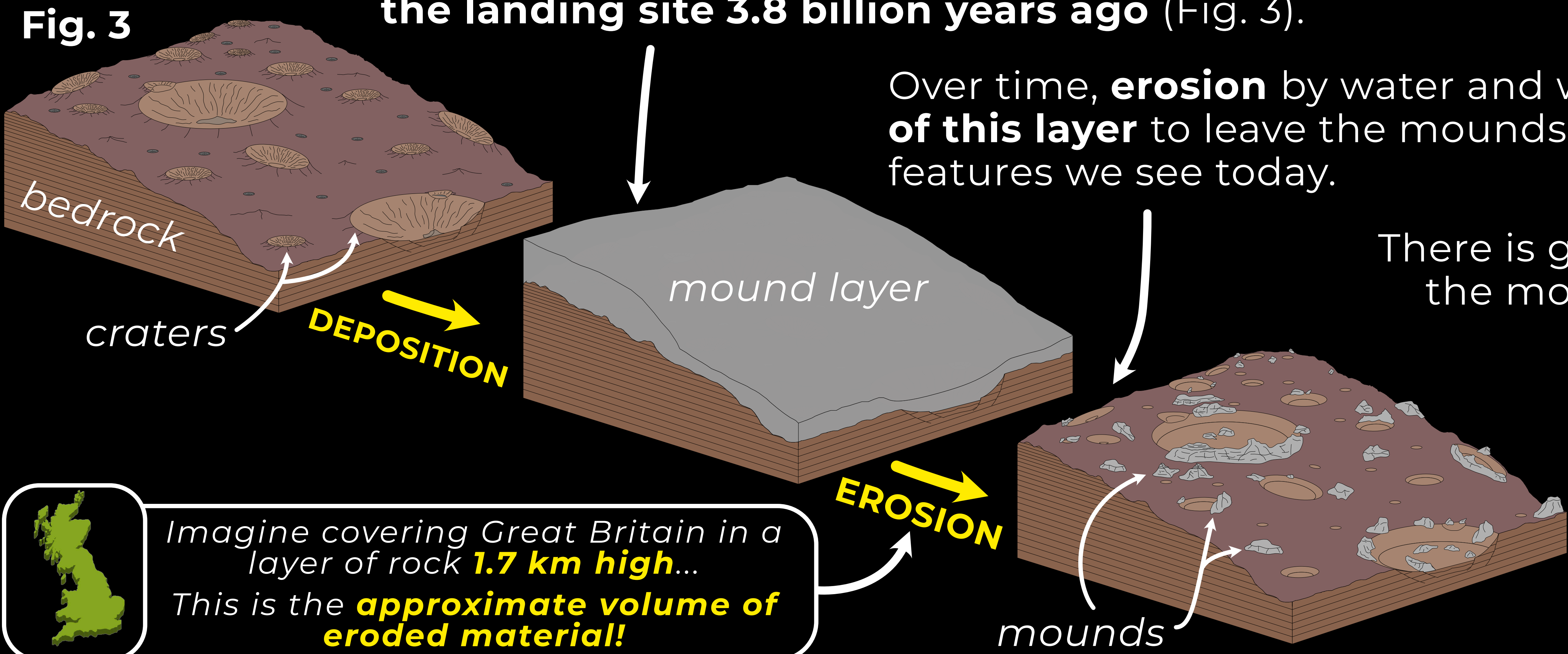
Fig. 2



**But...** we don't know **what they are**, **how old they are**, or **why they are so abundant!**

So, I identified **>14,000 mounds**, calculated their **heights**, and made observations of their **geology**.

Fig. 3



The mounds are the remnants of a 500 metre thick **layer of rock** that **covered the landing site 3.8 billion years ago** (Fig. 3).

Over time, **erosion** by water and wind **removed most of this layer** to leave the mounds as the upstanding features we see today.

There is geologic evidence that the mounds **interacted with water** in the past...

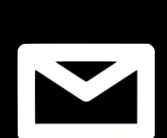
so they could be **important astrobiological targets** for the rover to explore!



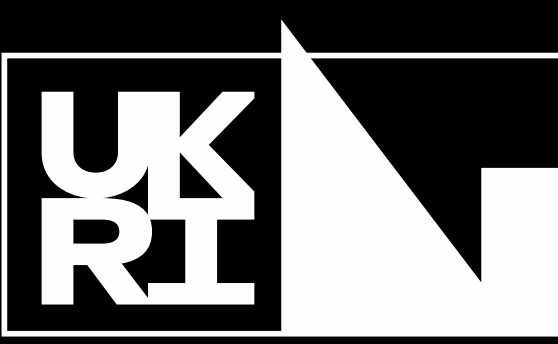
Scan for publication with plain language summary!



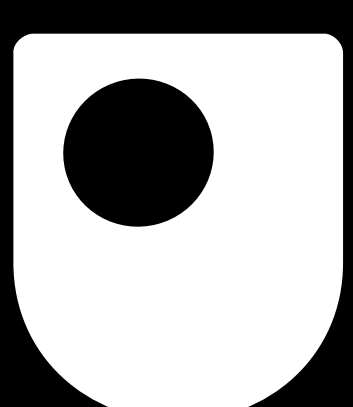
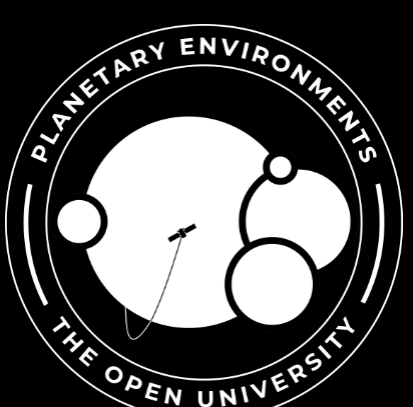
@joseph\_mcneil



joe.mcneil@open.ac.uk



Science and Technology Facilities Council



The Open University