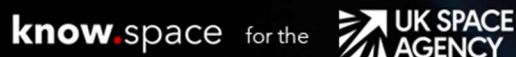


Ariel Monitoring & Evaluation Support

Interim Process & Impact Evaluation Key Findings



Ariel, a major ESA mission scheduled to launch in 2029, will study the atmospheres of over 1,000 planets outside of our solar system (also known as exoplanets), to deepen our knowledge of these worlds and their potential for supporting life. The UK Space Agency has committed investment of £30.3m, in addition to mandatory ESA funding, aiming to:

1. Secure **UK scientific and technical leadership** of exoplanet research, data science and space science by nominal end of mission.
2. Enhance the **reach and reputation** of the UK's space sector
3. **Inspire, attract and retain talent** to upskill our workforce
4. Stimulate **innovation and commercial opportunities** through data science and space technology

National funding has secured UK scientific and technical leadership roles, including contributions from UCL, RAL Space, Cardiff University, and the University of Oxford. This has led to an increase in both the quantity and quality of science outputs. While launch is still several years away, preparatory science led by UK researchers is laying the groundwork for scientific objectives to be achieved in the future.



UK authors contributed to **50%** of all **Ariel-related papers**, publishing **171** following UK Space Agency investment.

UK authors are featured in **12-16%** of all **exoplanet science papers**, yet feature in **45-60%** of the top cited.

31 UK organisations have produced an Ariel-related publication, led by UCL (**70%**) and RAL Space (**18%**).

UK research relevant to the mission is also receiving wider attention, with 5,400 citations on publications released since 2018. Relevant publications have also been referenced in 614+ news articles, including *BBC*, *Forbes*, *CNN*, *National Geographic*, and *The New York Times*, indicating potential for future interest in Ariel mission discoveries.

The UK Space Agency's investment has driven strong international collaboration within a consortium of 600+ scientists and engineers from 16 countries, leading to early reputation and influence gains. This could position the UK for roles on future missions (e.g. large NASA mission concepts) and enhanced soft power, but this will depend on successful delivery of Ariel.



80% of UK authored papers are **internationally collaborative**, which has risen in absolute and relative terms.

UK authors have collaborated with **37 countries** following UK Space Agency investment, compared to **32** previously.

The UK project team received at least **18 awards and prizes** in-part due to roles on Ariel.

Early-career researchers in the project team are developing key technical and managerial skills. Two UK initiatives (while not directly funded by the UK Space Agency) are developing mission-relevant skills in the wider community – the **Ariel Data Challenge** supports AI and Machine Learning innovation, while **ExoClock** is training amateurs and students to conduct astronomical observations of exoplanets. The UK team have also delivered 155 public engagement activities in 19 countries, helping to raise the profile of the Ariel mission, and the UK's role within it.



~50 people work on Ariel in the UK, developing project management, AI, data modelling, and engineering skills.

The **Ariel Data Challenge** is one of the **largest astronomy challenges**, with **2000+** participants from **77** countries.

ExoClock has enabled **10,500** observations from **71** countries, rising from **160** observers in 2021 to **450+** today.

Close industrial-academic collaboration in AI and data science, along with 3 potential follow-on space missions (Prima, Habitable Worlds Observatory, Black Hole Explorer), are key commercial benefits of UK Space Agency investment, and two Ariel-linked companies show strong growth and job creation. Blue Skies Space is launching its first small satellite mission to commercialise space science data access this year, while Spaceflux applies Ariel-developed AI/ML techniques to enhance UK Space Situational Awareness.



£14.6m in **contracts and follow-on funding** secured in-part due to UK Space Agency investment into Ariel so far.

Blue Skies Space employ **14** people, and **UK leadership** over Ariel was a key factor in securing investment.

Spaceflux have secured **4 UK government SSA contracts** and employ **29 people**, becoming a leading provider.

While the mission is still far from launch (after which most sizeable impacts are expected to begin), UK Space Agency investment is already delivering promising impacts for the UK, which are unlikely to have happened otherwise. These could underpin sizeable benefits to the UK space ecosystem, economy and society in the coming years, if progress continues as expected. While there have been challenges with mission development (often beyond UK control), there are strong working relationships, high levels of trust and collaboration between the UK project team, UK Space Agency and ESA. The UK team is seen as delivering effectively despite limited resource.