

# UK at the forefront of space exploration with biomining experiment

BioAsteroid, a biomining experiment, uses a collection of 12 automatic culturing devices fitted with a layer of material on which the bacteria will be grown in the KUBIK ISS incubator for 3 weeks.

This experimental apparatus, which flew to space station in 2019, is a miniature bioreactor which allows the scientists to study how microbes grow in space and what effect microgravity has on their growth.

The University of Edinburgh and Kayser Space have collaborated on the project which is the first European experiment to be fast-tracked to the International Space Station through the Bioreactor Express programme.

Libby Jackson, Human Exploration Programme Manager at the UK Space Agency, said:

This is another exciting step forward in the commercialisation of research and business in space.

Enterprises such as Bioreactor Express allow anybody who wishes to carry out research or manufacture on the ISS the opportunity to do so. There is great potential for UK businesses and entrepreneurs to utilise the programme, which will help further reduce the costs of exploration and open the opportunities of space to a broader audience.

David Zolesi, Kayser Space Managing Director, added:

Executing the entire BioAsteroid project within one year, the UK has positioned itself at the forefront of two activities that will define the future of the commercial exploitation of space: asteroid mining and fast-track access to microgravity.

The experiment utilises *Sphingomonas desiccabilis* and *Penicillium simplicissimum* – two microbes that, when placed in a liquid, ‘feed’ from the rock surface, extracting ions. This causes the rock to break down and either form soils or release economically attractive elements in ‘biomining’.

Prof. Charles Cockell, University of Edinburgh, said:

By studying biofilm formation of these organisms on the asteroidal material in microgravity, BioAsteroid will investigate how space conditions ultimately affect microbe-mineral interactions,

addressing questions on the biochemistry of the organisms, biofilm morphology and structure, fungal attachment and the ability of the microbes to break down rock, a key process for the future use of microorganisms in space exploration, including the mining of asteroids.

The Science Verification Test for BioAsteroid will take place later this month in Edinburgh, where the microbes will be grown for the first time on the actual flight culturing hardware. The experiment is scheduled to be launched to the ISS with SpaceX in October 2020.

---

## National Drought Group – July 2020 statement

The National Drought Group, chaired by Environment Agency (EA) Executive Director Harvey Bradshaw, met on Monday 13 July 2020 to assess water resources after the driest spring on record. The meeting also focused on the effectiveness of collective action taken across the sector during this period and how to maintain the impetus on preparing for future drought.

The National Drought Group (NDG) in England brings together government departments, water companies, environmental groups and others by coordinating drought action to maintain water supplies and protect the environment.

The Environment Agency and all parts of the water sector have been working together throughout the recent episodes of dry weather to ensure water resources are managed effectively. While the current wet weather has provided some respite, we are keen to take all the action needed to prepare for the future.

It's clear that periods of extended high rainfall and extended low rainfall are becoming more common. We want to ensure that water is collected when available, used efficiently and shared with effective long term plans in place.

The long term risk that demand for water in some parts of England will outstrip supply remains ever-present. The Environment Agency's recently published National Framework for Water Resources sets out the challenges all sectors face for future water management. We expect water companies and other sectors such as agriculture to work together to improve resilience against future extremes of weather.

Returning to more normal business after the Coronavirus pandemic won't be enough to address the climate emergency and tackling climate change must become a default position for everyone. Last week (9 July) we launched our

EA2025 plan, which sets out how we will create climate resilient places and infrastructure by ensuring the nation is prepared for flooding, coastal change and drought over the next five years.

While water companies need to make changes, as set out in our National Framework for Water Resources, we all have a responsibility to protect our water resources for future generations. We want to meet the objectives set out in the government's 25 Year Environment Plan to ensure we pass on an improved environment for our children and grandchildren.

## **Current situation**

Exceptionally dry weather this spring coupled with very high demand associated with "lockdown" led to a rapid fall in river flows and reservoir levels across northern and western England in particular. June rainfall has offered some relief with river flows and reservoir levels improving in all areas compared to the end of May. Drought risks are now far lower but surface water dependent catchments still remain less resilient to further hot, dry weather. This dry period follows an exceptionally wet winter with widespread flooding; but was preceded by periods of exceptionally dry weather and drought across parts of the east and south of England over the last three years.

## **Position of the water companies**

Water companies have enough water for the rest of the summer following the recent wet weather. Some water companies may experience distribution issues if very hot weather returns and leads to very high demand but there is enough water to make Temporary Use (hosepipe) Bans very unlikely this summer. With a return to hot and dry weather through into autumn there is a low risk some companies may need to take action this winter to safeguard supplies for next summer. Today the water industry has launched a public awareness campaign with Waterwise to help all of us use water as efficiently as possible.

## **Environment**

After three years of prolonged dry weather the recent rainfall has provided some respite for the environment, but overall it is still recovering from concurrent episodes of low rainfall over the last three years. There is a risk of high numbers of environmental incidents associated with low flows, fish, algal blooms and wild fire if the weather becomes warm and dry. Sudden rainfall events during an otherwise dry period can cause pollution events and kill fish. Throughout the summer the Environment Agency will continue to report and respond to incidents to reduce environmental harm. We welcome the support of local environmental groups in working with us to assess the environmental conditions and promote water conservation

## **The Environment Agency**

The Environment Agency is:

- Carrying out drought monitoring and incident response through the

summer, prioritising sites impacted by both the recent dry weather and those recovering following the 2018-19 drought event.

- Working closely with all water companies to ensure their drought plans are up to date and activated if necessary.
- Following its own drought plans to manage our response to drought and minimise unnecessary impacts on the environment
- Engaging with agriculture and horticulture abstractors and representative groups to keep them informed of the situation. We are working with farmers, businesses and other abstractors to ensure they get the water they need to be resilient, while also protecting the environment. We have updated our guidance to help farmers continue to abstract during dry weather this summer.
- Driving activity to protect our water resources for future generations through our National Framework for Water Resources. The framework will help reduce demand, set strategic direction to halve leakage rates, develop new supplies, move water to where it's needed and reduce the need for drought measures that can harm the environment. All of this is designed to increase resilience and maintain stable supplies for families and businesses into the future
- Delivering river and habitat restoration projects with our partners to make them more resilient to extreme weather

## **Advice to the public**

While the immediate pressure on water resources has lessened to a degree, we must still be mindful of how we use water. Now is a great time to think about the future and how you can prepare when dry weather returns.

You can install a water butt to capture rainwater so you have additional stores when the sun comes out. Avoid using a hose on your garden and fit a trigger control if you need to.

Today is the Waterwise Annual Conference and the launch of 'Water's worth saving', a new campaign with Water UK to help customers understand the need to save water and simple steps they can take to reduce water use.

If you are an angler, walker, boater or just enjoying the environment, please be our eyes and ears when it comes to spotting potential problems in our rivers, such as fish gasping at the surface or large algal blooms. Report these to the Environment Agency on 0800 807060.

## **Conclusions and next steps**

The NDG reflected on the threat of future drought events under climate change projections and pledged to maintain momentum around drought planning across the sector by making this the focus of a multi-sector meeting later in the year. It committed to work together to ensure preparation is done on a strategic basis to ensure we are ready and resilient. While the need to meet regularly throughout the summer has lessened, the group reiterated the need to respond quickly to emerging situations in less resilient catchments. The groups agreed to hold a lessons learned meeting in Autumn.

---

# UK Government publishes new Border Operating Model

- [Border Operating Model](#) published to provide clarity and certainty for traders and the border industry
- This follows yesterday's announcement of an unprecedented £705 million investment for new infrastructure, jobs and technology at GB-EU border
- The Government also plans to set out vision for world's most effective border by 2025 later this month

Following extensive engagement with industry the Government is today (Monday 13 July) publishing the Border Operating Model. The Model provides clarity and certainty for the border industry and businesses, including technical detail on how the border with the European Union (EU) will work after the transition period and the actions that traders, hauliers, ports and carriers need to take.

On December 31st 2020 the transition period with the EU will end, and the UK will operate a full, external border as a sovereign nation. This means that controls will be placed on the movement of goods between Great Britain (GB) and the EU.

Recognising the impact of coronavirus on businesses' ability to prepare, the government took the decision in June to introduce border controls on imports coming into GB from the EU in three stages up until 1 July 2021. This flexible and pragmatic approach gives industry sufficient time to make necessary arrangements and prepare.

As part of these preparations, an unprecedented £705 million has been announced for new infrastructure, jobs and technology to ensure GB border systems are fully operational when the UK takes back control of its border after the end of the transition period. This will include £470 million to build infrastructure such as border control posts, and £235m for IT systems and around 500 more Border Force personnel to ensure our borders are safe and secure.

This is the first time the Government has published an operating model for the border. It covers all of the processes and systems, across all government departments, that will be used at the border. It provides clarity on the end to end journey for moving goods across the border – with information about controlled goods and new government systems that will support trade. The

Border Operating Model will lay the groundwork in support of the Government's objective to have the world's most effective border by 2025.

Chancellor of the Duchy of Lancaster Michael Gove said:

The publication of the Border Operating Model is an important step which gives business the certainty and direction they need to prepare for the end of the transition period when the UK becomes an independent trading nation for the first time in nearly 50 years.

We are committed to working closely with businesses and the border industry to help deliver not just a fully operational border at the end of the transition period, but also the world's most effective and secure border by 2025.

There are a number of actions traders need to take to prepare for the end of the transition period, including:

- Get a customs intermediary. Intermediaries can help traders find the information needed to complete formalities and submit the required declarations, for example customs information to HMRC systems. This simplifies the declaration processes for traders. If you decide not to use an intermediary, you will need to make declarations yourself.
- Apply for a duty deferment account. Traders who import goods regularly, may benefit from having a duty deferment account. This enables customs charges including customs duty, excise duty, and import VAT to be paid once a month through Direct Debit instead of being paid on individual consignments.
- Prepare to pay or account for VAT on imported goods.
- Ensure you have International Driving Permits.
- Apply for a GB Economic Operator Registration and Identification (EORI) number. This is required for all businesses moving goods into or out of the UK.

The full Border Operating Model will be published on GOV.UK and you can check what actions your business needs to take to trade with the EU at [gov.uk/transition](https://www.gov.uk/transition).

---

## **Civil news: increase to 'payments on account' applications**

News story

We are increasing the number of applications for payments on account that can

be submitted within any 12-month period.



Amendments are being made to the 2018 civil contract to increase the number of payments on account applications that can be submitted.

Providers can now submit a maximum of 4 applications instead of 2 within any 12-month period. This change to the contract came into force on 13 July 2020.

We have made changes to the Client and Cost Management System (CCMS) to support this amendment.

The updated versions of the specification (general provisions 1-6) for the 2018 civil contract and 2018 civil contract (education and discrimination) are now available on GOV.UK.

### **Further information**

[Standard Civil Contract 2018](#) – for updated versions of the 2018 civil contract specification (general provisions 1-6) and the 2018 Civil Contract (education and discrimination specification (general provisions 1-6)

Published 13 July 2020

---

## **[Graphics Editor – Southampton](#)**

News story

We have an exciting new vacancy at MAIB and are looking for someone to join our publications team.



Your key responsibilities will include:

- Creating, preparing and proofing artwork for inclusion in MAIB publications
- Preparing layouts, formatting text to stylesheets and preparing files for print and online publication
- Publishing on GOV.UK and maintaining MAIB's social media channels
- Working to short deadlines and fast turnaround times

For further information about this position and how to apply see [Civil Service Jobs, Graphics Editor, Ref: 58406](#).

Closing date: 27 July 2020

Published 13 July 2020