UK/Australia EO4Agroclimate Sandpit

Delegates Briefing Pack

18-20 July 2023

Sydney NSW Australia

UKRI

Science and Technology Facilities Council

UK/Australia EO4Agroclimate Sandpit: Delegates Briefing Pack

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Dear Participants,

We are thrilled to welcome you to the upcoming UK/Australia EO4Agroclimate Sandpit. This event is an extension of a shared vision between the UK and Australia to foster innovative research and collaboration in the field of Earth Observation (EO), specifically addressing the crucial intersection of agriculture and climate change.

I.   Background

Agricultural science and technology is being increasingly driven by the global challenges of; rising populations, rapid development of emerging economies and global shortages of land, water and energy. These challenges are exacerbated by the impacts of climate change and the need to reduce Green House Gas (GHG) emissions from agriculture. The STFC – UK/Australia EO4AgroClimate Space Programme is using satellite remote sensing data, technology and modelling capabilities to enable farming in both countries to become climate resilient while supporting the UK commitment to cut emissions by 78% by 2035 and to achieve net-zero by 2050. Australia has an emissions reduction target of 43 per cent and net zero emissions by 2050.

The interactions between agricultural practices, the climate and crop production are complex. This international interdisciplinary STFC programme will fund a research, training and capacity building activity combining the UK and Australia's expertise in Earth Observation and climate modelling to develop products to assess the impact that farming practices have on the climate and the effect that climate change has on agriculture production. The high level impact objectives of the programme are as follows:

1. Climate: Applying EO to assess the vulnerability and risk from changing weather patterns, water availability and natural hazards and to provide early warning systems to help prepare to mitigate the impacts from such events.

2. Biosecurity: Assessing the global pest, disease and invasive species threats in a changing climate to understand and prepare for future food uncertainties and to implement smart measures for detection

3. Food security: Monitoring and modelling crop performance and future viability in a changing climate.

4. Trade: Underpinning International trade through environmental standards equivalence, including the interactions between agricultural practices and GHG emissions and monitoring and modelling carbon sources and sinks.

By addressing these objectives, the STFC – UK/Australia EO4AgroClimate Space Programme seeks to push the boundaries of what is achievable in the intersection of agriculture, climate change, and EO technology, promoting a more sustainable, resilient, and prosperous future.

It has become increasingly clear that agriculture and climate change are highly interconnected in ways that present both challenges and opportunities. The Earth Observation sector has access to unique data and technologies that can be used to help address these challenges.

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The concept of this collaboration originated from the recognition that both the UK and Australia possess complementary capabilities and expertise in the EO sector while also facing similar challenges to our agricultural system from the threats of a changing climate. This global challenge is one that can only be addressed through international effort. Therefore the UK/Australia EO4Agroclimate programme aims to develop impacts on a scale much greater than what could be achieved individually.

The EO4Agroclimate Programme is a £4.5 million initiative that aims to fund research collaborations between the UK and Australia, leveraging our combined skills and resources to address the global and national challenges associated with agriculture and a changing climate.

The EO4Agroclimate Sandpit represents a unique opportunity within this broader programme. The event seeks to create a collaborative environment where innovative ideas can be developed, refined, and brought to fruition in the form of funded projects.

II.   The Aims

The EO4Agroclimate programme seeks to stimulate ground-breaking innovation, promote international collaboration, and empower stakeholders with the tools and insights derived from EO data. It aims to bridge gaps in knowledge and capabilities, foster a fertile environment for knowledge sharing, and, ultimately, influence policy and industry practices in both the UK and Australia.

As part of this programme, we are hosting a collaborative proposal writing workshop, more commonly known as a "sandpit", where teams will design and develop project proposals in response to selected problem statements. These problem statements will be centred around three major themes:

1. Crop Performance in a Changing Climate
   - Crop analytics and yield modelling for production optimisation.
   - Threats and opportunities for agricultural production from a changing climate.
   - Biotic and abiotic risks to crop production.
   - Maintaining production under changing water regimes.
2. Biosecurity
   - Situational awareness of trans-boundary risks from pests and diseases.
   - Modelling the trans-boundary risk profile in a changing climate.
   - Quantifying crop losses from pests and diseases.
   - Decision support tools for pest and disease management.

3. Mitigating Agricultural Impacts on the Environment
   - Reducing emissions of air pollutants from agriculture.
   - Achieving net zero in arable production.
   - Improved management of water resources for agriculture.
   - Reducing the reliance on chemicals for pest and disease management.
   - Use of EO to demonstrate adherence to agricultural production standards.

By focusing on these themes, the EO4Agroclimate programme endeavours to catalyse research that will push the boundaries of EO technology while tackling the urgent global and national challenges associated with agriculture and climate change.

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III.   The Meeting

The Logistics:

The Sandpit itself will be held at the National Space Industry Hub (NSIH) (https://www.cicadainnovations.com/programs/national-space-industry-hub). We will also be using breakout rooms at Data61 which is right across the street from the NSIH. This allows for a seamless transition between the two venues for the proposal team sessions over the sandpit.

The National Space Industry Hub (NSIH): Is a state-of-the-art facility based in Sydney. The hub is a beacon for innovators, researchers, and entrepreneurs within the space industry, offering a collaborative and stimulating environment. In case of emergencies at the venue, contact Julie Autuly, Head of Space Tech (+61 478 691 223)

Location: **Cicada Innovations**
National Innovation Centre,
Suite 145/4 Cornwallis St
Eveleigh, NSW, 2015
Australia
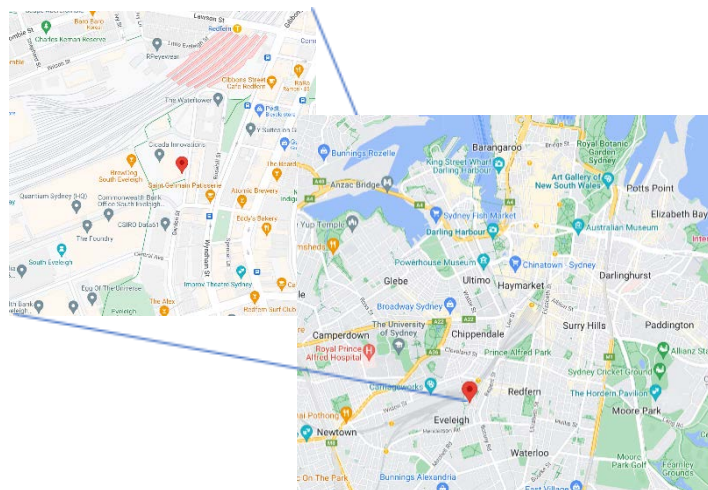
Location: **Data61**
5/13 Garden St
Eveleigh, NSW, 2015
Australia

Data61: Is Australia's leading digital research network, and a flagship initiative of the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Their mission is to create Australia's data-driven future by solving complex challenges through insights, predictions and digital solutions. They carry out high-impact research for the benefit of the Australian and global community, and are an internationally recognised leader in artificial intelligence, data science, and software development.

Data61 collaborates with a vast network of partners across industry, government and academia to help organisations navigate the journey to becoming a digital business. Their team of talented data scientists, software developers and engineers work on a wide range of projects in areas such as agriculture, health and wellbeing, and the environment, as well as emerging areas such as robotics and autonomous systems.

The Accommodation: We have organised accommodation for all delegates at the Darling Harbour Holiday Inn (https://www.ihg.com/holidayinn/hotels/gb/en/sydney/syddh/hoteldetail). The hotel is located in the heart of Darling Harbour, with easy access to the city's attractions and the NSIH. For any issues or emergencies regarding your accommodation, you can reach the hotel's reception at +61-2-92910200

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Transport: Sydney offers a range of public and private transport options. The hotel is about a 20-minute taxi ride from Sydney Kingsford Smith Airport. To reach the NSIH from the hotel, delegates can take a 12-minute taxi ride or a 25-minute journey by public transport (eg a train from Town Hall Station to Redfern Station; or a #308 bus. google maps app is a reliable source of best options).

Darling Harbour Holiday Inn
68 Harbour St,
Sydney, NSW 2000
Australia
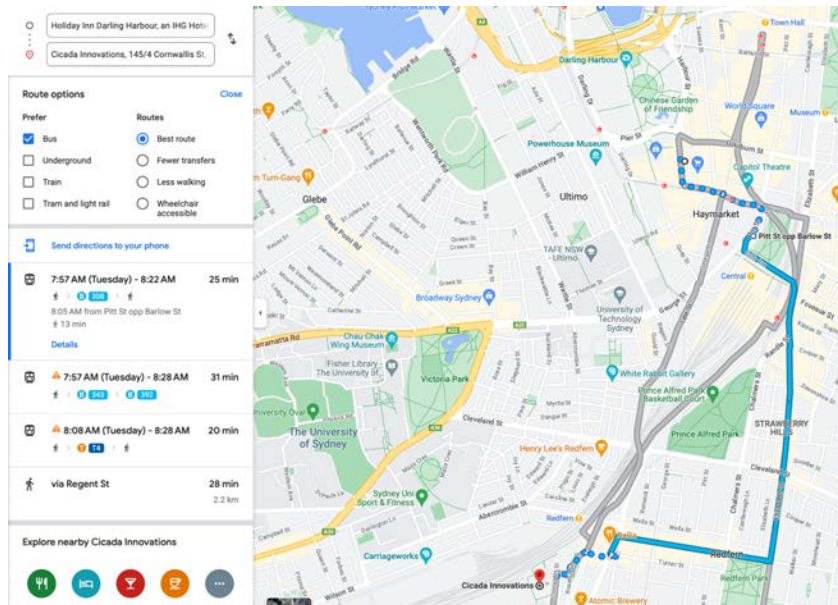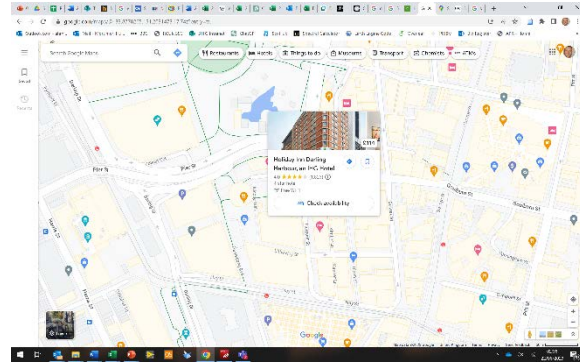
Emergency Services: In the unlikely event that you require emergency assistance, dial 000 for emergency services in Australia.

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IV.   Agenda

Agenda for Monday, 17th July: Acclimatisation Day

Free Day

Throughout the day: Participants are encouraged to take the day to relax, acclimate to the local time zone, and recover from jet lag. Enjoy the surroundings of Sydney, and be sure to rest up for the busy days ahead.

Evening Welcome Reception

18:00 - 21:00: Our welcome reception will take place at the Pumphouse Bar and Restaurant a short 1 minute walk from the hotel https://pumphouse-sydney.com.au at 17 Little Pier St, Darling Harbour. This will be a casual, welcoming event designed to initiate networking and relationship-building among all participants.
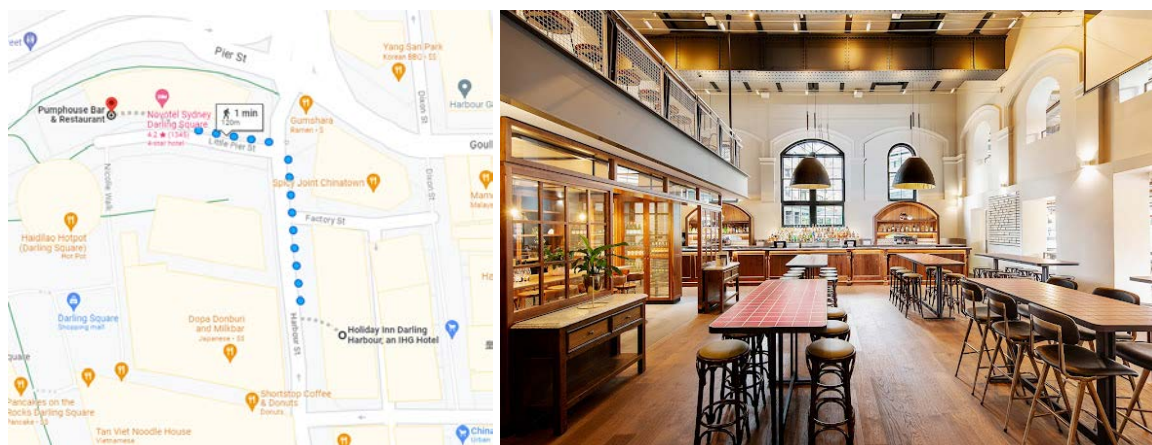
During the reception, we'll cover the following:

18:00 - 18:30 Reception and Networking: Meet and greet with other participants, organisers, and facilitators.

18:30 - 19:00 Introduction to the Event: A brief overview of the high-level themes, objectives, and schedule for the sandpit. We will also touch on the relevance of the sandpit to the broader scientific and social contexts.

19:00 - 19:30 Participant Introductions: A round-robin session where all participants briefly introduce themselves, their background, and their interest in the sandpit.

19:30 - 21:00 Dinner and Informal Networking: Enjoy a meal and continue conversations in a less structured format, allowing relationships to grow organically.

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Agenda for Tuesday 18th July: Day 1

9:00 am - 9:30 am: Welcome & Introduction

Start the day with a warm welcome and an overview of the EO4Agroclimate programme and the Sandpit process.

- Welcome and Acknowledgement of Country - Hugh Mortimer (5 min)
- Introductions and Housekeeping - Hugh Mortimer (5 min)
- Overview of the NSIH and Cicada Innovations - TBA (5 min)
- NSW Space Investment - Paul Hepplewhite (5 min)
- The Sandpit Process - Hugh Mortimer (10 min)

9:30 am - 11:00 am: Plenary Talks

This session will include a series of presentations from our keynote speakers who will outline the challenges the Sandpit is designed to address.

- The Challenges and Opportunties in Agriculture for the Sandpit - Jon Styles (10 min)
- The Challenges and Opportunties when using Earth Observation Data (Including New Space Opportunties) - Amy Parker (10 min)
- Sustainability Challenges and Opportunties - Richard Heath (20 min)
- Biosecurity Challenges and Opportunities - Callum Fletcher (15 min)
- Adoption of Agtech in the Grains Industry - Challenges and Opportunities - Darren Plett (15 min)
- An Overview of NSW DPI Research Programs and Facilities - NSW DPI (10 min)
- Q & A: Opportunity for a collaborative discussion (10 min)

11:00 am - 11:30 am: Coffee Break

An opportunity to socialise and network, while enjoying a selection of refreshments.

11:30 am - 1:00 pm: Formal Introductions and Elevator Pitch Session

A chance for participants to get to know each other and start discussions on potential collaborative ideas.

1:00 pm - 2:00 pm: Lunch Break

Enjoy a catered lunch while discussing the morning's proceedings with fellow delegates.

2:00 pm - 4:00 pm: Breakout into Proposal Teams

Delegates will be divided into proposal teams and begin the initial stages of the proposal process in two separate rooms at NSIH and Data 61. These breakout groups will be facilitated to help teams to start shaping their ideas.

4:00 pm - 4:30 pm: Afternoon Break

A short break for refreshments before the final session of the day.

4:30 pm - 5:00 pm: Wrap-Up and Next Steps

Closing remarks for the day and outlining the objectives for Day 2 of the Sandpit.

7:00 pm: Conference Dinner

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End the day with a relaxing dinner at a local restaurant, providing another opportunity for networking and socialising in a less formal setting.

Please note that timings are subject to change and will be confirmed on the day.

Agenda for Wednesday 19th July: Day 2

9:00 am - 9:15 am: Recap of Day 1

A quick summary of the previous day's activities, key points, and ideas, and an overview of the plan for Day 2.

9:15 am - 9:30 am: Question and Answer Session

An opportunity for participants to ask any questions or seek clarifications based on the recap and upcoming activities.

9:30 am - 11:00 am: Breakout into Proposal Teams

The teams will continue to develop and refine their proposals. This session will be held in two rooms at NSIH and Data61, with facilitation provided to support the development of ideas and the proposal writing process.

11:00 am - 11:30 am: Coffee Break

A mid-morning break for refreshments, providing a chance for informal discussions and networking.

11:30 am - 1:00 pm: Continuation of Proposal Team Sessions

Continued collaborative work on proposals, with opportunities for guidance and feedback from facilitators.

1:00 pm - 2:00 pm: Lunch Break

Enjoy a catered lunch while having informal discussions on the progress of the proposals.

2:00 pm - 4:00 pm: Proposal Team Sessions Resume

Teams resume refining their proposals, incorporating any feedback and new ideas from the morning's work.

4:00 pm - 4:30 pm: Afternoon Break

A short break for refreshments before the final session of the day.

4:30 pm - 5:00 pm: Wrap-Up and Next Steps

Summarise the day's activities and outline the plan for the final day of the Sandpit.

As with the previous day, please note that timings are subject to slight adjustments and will be confirmed on the day.

Agenda for Thursday 20th July: Day 3

9:00 am - 11:00 am: Finalising Proposals, developing pitches

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Teams will spend the morning finalising their proposals using the provided templates and forms. This is the time to refine your presentations and anticipate any questions that might come from the panel.

11:00 - Proposals to be submitted

11:00 am - 11:30 am: Briefing and Instructions for Pitches

The facilitator will explain the arrangements for the pitching session and answer any last-minute questions.

11:30 am - 12:30 pm Finalising Pitches

12:30 pm - 1:30 pm: Lunch Break

Enjoy a catered lunch.

1:45 pm - 4:15 pm: Proposal Pitches

Each team will be allocated a 30-minute slot (10 minutes for presentation, 10 minutes for questions, and a further 10 minutes for the review team's private discussions). Teams are encouraged to be clear, concise and persuasive in presenting their innovative ideas.

4:15 pm - 4:30 pm: Afternoon Break

A short break for refreshments before the final session of the day.

4:30 pm - 5:00 pm: Wrap-Up and Next Steps

Closing remarks from the facilitators, outlining the results of the evaluation of the proposals, and an overview of next steps.

Please note that timings may be subject to minor adjustments and will be confirmed on the day.

V.   Sandpit Funding Process

What will be funded ?

The STFC EO4Agroclimate programme team has allocated approximately £1M to fund the most promising projects developed in the Sandpit. It is anticipated that approximately three projects will be funded. These projects will KO as soon as practical after step 5 below has been completed and can last for up to 18 months.

We will consider a range of different project types and scopes but one proviso is that the project must be led by a UK organisation eligible to receive funding from STFC (standard UK research council rules). The project lead may engage as many partners from the UK and Australia as they wish. Projects must address the one or more of the theses described in section II and may include the following activities:

- collaborative R&D to develop techniques for information retrieval from EO data
- developing techniques for integration of EO data with models and other data sources
- integration and testing of service components

- prototyping / demonstrating products and services, and evaluating user feedback
- developing commercialisation / sustainability strategies
- training and capacity building in the research and / or user communities.

The Sandpit

The Sandpit event is an innovative process designed to foster multidisciplinary, collaborative research. The funding process during this EO4Agroclimate Sandpit event operates as follows:

1. Idea Development

The process begins with collaborative idea generation and development during the Sandpit event. Participants work in teams to discuss, explore and ultimately develop research project proposals to address global challenges in agriculture and climate using Earth Observation.

2. Proposal Writing

Teams will articulate their ideas into comprehensive project proposals. Proposals should detail the challenge addressed, the proposed solution, methodologies, and potential impact. Teams are expected to utilise provided proposal forms and templates.

3. Proposal Pitching

Teams will present their proposed projects to a panel of reviewers in a 'Dragon's Den' style pitch. This comprises a 10-minute presentation, a 10-minute Q&A, and a subsequent 10-minute private discussion among the review panel.

4. Proposal Evaluation and In-Principle Funding Award

The review panel evaluates each proposal based on the following predefined criteria:

- **Scientific Excellence**: The proposal should illustrate how the proposed research and development moves beyond the current state of the art. It should demonstrate how it harnesses innovation to provide practical solutions to the pressing challenges of agroclimate. It will also be beneficial if the proposal indicates how the project might lead to further advancements in the field.

- **Partnership Potential**: The strength of the UK-Australia partnership is a crucial factor. Proposals should demonstrate the capacity to foster strong collaborations between the UK and Australia, integrate various disciplines, and ensure meaningful involvement of all partners. Demonstrated support from end-users and the level of co-funding will also be considered as indicators of a strong partnership.

- **Impacts**: The proposal should clearly identify the potential impact of the project on one or more of the themes outlined above. The impact should be demonstrable and meaningful,

providing a tangible pathway for the research results to be put into practice. The expected benefits and how these will be measured should also be described.

- **Leveraged Investment**: The potential for the proposed project to leverage additional investment or resources, including in-kind contributions.

- **Planning and management:** The proposal should present a credible and realistic project plan, detailing the activities and timeline required to deliver the results by March 2025. The tasks, roles, and responsibilities of each partner should be clearly defined. The proposal should also provide a risk assessment and contingency plans to handle potential obstacles.

Please bear in mind that each criterion is equally important. We encourage you to pay attention to these guidelines while preparing your proposals. Our goal is to identify and fund projects that promise to significantly advance our understanding and capacity to address the global challenge of agriculture in a changing climate.

5. Internal Approval and Agreement Development

Following the Sandpit, project teams return to their respective institutions to obtain internal approval for their projects. During this period, partnership and collaboration agreements are also developed, with any necessary negotiations and adjustments made to ensure alignment among all involved parties.

6. Final Approval and Project Commencement

Once proposals receive full internal approval and any agreed changes have been incorporated, the partnership agreements are finalised, and the projects can start. The projects are monitored regularly to ensure progress as planned and deliver the expected outcomes.

This revision process ensures that the innovative ideas generated during the Sandpit event can transition smoothly through various stages of validation and approval, finally culminating in impactful, funded projects that can address significant global challenges.

VI.   Participant List

	Name	Organisation
United Kingdom	Lisa Emberson	York University
	Bryony Taylor	CABI
	Richard Lucas	Aberystwyth University
	Jadu Dash	Southampton University
	Clive Blacker	Agrivation Limited
	Simon Pearson	Lincoln University
	Nicholas Corker	CEH
	Matt Payne	Leicester University
	Michelle Hamilton	STFC/RAL Space

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	Melina Zempila	STFC/RAL Space
	Gerardo Lopez Saldana	Assimila
Australia	Clare Murphy	University of Wollongong
	Darren Kriticos	Cervantes
	Andy Steven	CSIRO
	Roger Lawes	CSIRO
	Luke Barrett	CSIRO
	Tom Bishop	University of Sydney
	Zhiyong Wang	University of Sydney
	Yan Zhou	University of Queensland
	Owen Aitken	Australian National University

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VII.　Participant Biographies

This section will provide brief biographies of the participants. This will give each delegate an opportunity to know more about the fellow delegates' backgrounds and areas of expertise.

EO4Agroclimate Organising Team			
Hugh Mortimer E: hugh.mortimer@stfc.ac.uk	UK STFC Rutherford Appleton Laboratory (STFC/RAL Space)		Dr Mortimer is a senior research scientist at the Science & Technology Facilities Council (STFC) Rutherford Appleton Laboratory, RAL Space, and Principle Investigator on two international Earth Observation science programmes; The UK/China Newton Agritech programme and the UK/Australia AgroClimate Space Programme, where I act as the principal investigator and programme manager. The Newton Agritech programme is a joint £32M international research activity that uses EO data and technology to help address the UN SDG's agricultural challenges in China. The AgroClimate Space Programme is a £4.5M activity between the UK and Australia that uses EO data and technology to develop climate change mitigation and adaptation activities in agriculture In addition to being Principle Investigator on the STFC Newton Agritech Programme and Dr mortimer coordinates various research activities in the area of remote sensing of biotic and abiotic for plant health studies. Dr Mortimer has led work in this area under projects funded by the UK research councils, Natural Environmental Research Councils (NERC), the Biotechnology and Biological Sciences Research Council (BBSRC) and for the European Union under a Framework 7 grant.. Prior to this Hugh worked at the National Physical Laboratory, helping to develop a Spectral Calibration Facility based on interferometric techniques, before completing his DPhil at Oxford University in 2008. During his time at Oxford, Hugh developed a Static imaging Fourier Transform Spectrometer (SHIFTS), which has led to

			the development of the microFTS instrument which was funded under a technology award that Hugh won in 2009. This research is motivated by the need to provide high accuracy spectroscopic instrumentation that is highly miniaturised and stable in hostile environments.
Jon Styles E: jon.styles@assimila.eu	Assimila		Jon is Assimila's Director and has worked in Earth observation and environmental research for more than 25 years. After gaining a PhD from the University of Reading he worked in technical roles on the data processing systems and cal/val for ERS-1 and Envisat. During secondment to Macdonald Dettwiler and Associates in Canada he worked on the Radarsat ground segment as team leader for the ScanSAR mode processor. He subsequently moved into a management and consulting role and has managed over 50 projects in Earth observation applications development, environment and climate change. He now leads Assimila's R&D activities in quantitative crop analytics, yield modelling and pest and disease risk management. His international experience includes extensive work across Europe as well as in the USA, Canada, China, Japan and South America.
Andy Shaw E: andy.shaw@assimila.eu	Assimila		Andy is an Earth Observation application expert with 25+ years experience operating at the interface between commercial, government and research sectors having held influential positions within all three domains. With an extensive network of contacts and a track record of successful projects, Andy provides informed insights into the complex world of satellite Earth observation offering fresh ideas and strategic advice to a range of clients. Andy is currently Director and Principal Consultant at Assimila Ltd, a company specialising on EO science, applications and services. He is also a Director and Space Programme Lead for Resilience Constellation

			Management Ltd, a start up seeking to develop geospatial solutions to climate resilience challenges for government and commercial clients worldwide. Prior to this, Andy held senior positions at the NERC National Centre for Earth Observation and the Satellite Applications Catapult. .
Lara Krasnostein	UK Government Science & Innovation Network (Australia)		I completed a PhD in Pharmacology in Australia, then moved out of the lab to promote other people's best science. I have now accumulated over 10 years' experience working across the intersection of government, universities and industry. In 2014, I moved to Israel to immerse myself in that exciting science and innovation ecosystem. I then joined the UK Science & Innovation Network (SIN) in 2017 at the British Embassy in Israel establishing important networks across both countries to create many opportunities for impactful international activity. In 2021, COVID19 brought me home where I now head the UK Science & Innovation Network in Australia, for the British High Commission. SIN is a UK Government initiative to build international partnerships, facilitate greater collaboration and promote the UK's strength in science on the global stage. With wide-reaching relations in Israel and Australia, I feel privileged and excited to be your gateway to UK science and innovation. SIN Australia has spearheaded activity for the UK-Australia Space Bridge; a Government-to-Government agreement signed 2 years ago to enhance cooperation across both nations to boost respective space industries. SIN's leadership supported several commercially-focused joint research projects in Earth Observation for Agriculture.

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Stephen Ward E: mail@stephenward.net	Symbios		Originally from the UK, Stephen has worked in Australia – via a few years in Japan – since 2000. He specialises in international Earth observing satellite programmes, in their design and inception and execution. Stephen has undertaken multiple studies and consulting assignments for space agencies and companies around the world. Much of his work has involved international coordination of EO programmes. In support of this he maintains the Earth Observation Handbook, the CEOS Database, and the eoPortal website – all recognized as definitive references by the EO community.
Jasmine Muir E: jasmine@symbioscomms.com	Symbios|SmartSat CRC		Jasmine Muir is a consultant for Symbios, providing advice on Earth observation programs and research to Australian government and international space agencies. She is also the Principal Scientist in Earth Observation at SmartSat CRC, where she leads the development of the agriculture research program. The program uses Earth observation technologies to enable Australia to meet global food production needs through sustainable agricultural practices. Dr Muir has a PhD in Remote Sensing, a Masters in Geographical Information Science, and a Bachelor of Science (Ecology) from the University of Queensland. She has a broad range of experience leading and developing Earth observation applications and products to improve management decisions in various industries such as agriculture, water resources, forestry, land management, and mining.

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Rowena Smith	CSIRO		Rowena is the Executive Officer, responsible for the executive coordination of the recently implemented AquaWatch Australia Mission, a joint initiative between the SmartSat CRC and CSIRO and strenghtens collaborations across both organisations. Rowena is also responsible for executive coordination to the CSIRO Centre for Earth Observation. Rowena has over 30 years of exensive experience working in science and education institutions including working directly with governmental departments and organisations advising on development, implementation and measurement of strategic directions. Rowena holds qualifications from the University of Canberra in administration and project management.
UK Participants			
Simon Pearson	University of Lincoln		Simon Pearson is Professor of Agri-Food Technology and Founding Director of the Lincoln Institute of Agri-Food Technology at the University of Lincoln (LIAT). LIAT is an interdisciplinary research group with a track record for developing robotic, AI and digital solutions to complex challenges faced by the agri-food system. For instance, he led a significant STFC Newton AgTech project with UKCEH that integrated remote sensing with a novel robotic rover to measure and map field soil moisture. In addition, his team are now running a significant Defra/IUK project deploying remote sensing, crop modelling and novel ground sensors to maximise the nitrogen use efficiency of UK winter wheat (NUE Profits). He is CO-I of the EPSRC Agriforwards CDT in agricultural robotics, joint with Cambridge and UEA, and a member of the BBSRC SAF SAP. Simon has an industry background, including as a technologist for UK retailer Marks and Spencer as well as running a significant farming enterprise in the UK.

Bryony Taylor	CABI		I am the Digital Development Coordinator for Modelling and Data Science at CABI, where I have worked for 17 years. In my early career I developed expertise in invasive species management and impact, biosecurity, integrated pest management and biopesticide product development. During this time, I conducted fieldwork and projects in several locations including China, India, Indonesia, Kenya, Papua New Guinea and Trinidad. Over the past 10 years, I have worked on projects which utilise data derived from earth observation sources to predict outbreaks of plant pests and diseases, and to predict the efficacy of applications of fungal biopesticides based on environmental conditions. I am currently the project executive for several projects/programmes including EO4AgroClimate, Pest Risk Information Service (PRISE) and Global Burden of Crop Loss (GBCL). EO4Agroclimate uses EO data to improve datasets for biosecurity risk mapping of pest and disease and biocontrol suitability (irrigation data layer, protected agriculture map and canopy temperature data layer). PRISE is a project funded initially by the UK Space Agency to develop an EO based crop pest risk information system. PRISE is now funded through the CABI PlantwisePlus programme for which I am a task manager. PRISE deploys decision support advice to smallholder farmers in Africa. GBCL is a programme convened by CABI which aims to improve food security by supporting data-driven decision making in agriculture. The project combines multiple global datasets to estimate attainable yield, actual crop loss, attribution of biotic and abiotic losses and associated economic burden.

Lisa Emberson	York University		I am a Professor in Environmental Science and have worked for the past 20 + years studying various aspects of air pollution and climate change in relation to agriculture, forest and semi-natural ecosystems in Europe, Asia, Africa (and most recently Australia). I am interested in:-
			• Emissions of pollutants (and radiative forcing species – NOx, CH4, NH3, Black Carbon) and GHGs (CO2, N2O) from the agriculture sector. Research involves developing emission inventories and methods and identifying emission reduction interventions (assessing synergies and trade-offs of co-emitted species) and using remote sensing to evaluate 'bottom-up' emission inventories.
			• Impacts of air pollution and climate change on agricultural and ecosystems. We have developed a crop model (DO3SE-Crop) that can estimate the combined effects of pollution (ozone and aerosols) and climate variables on crop development, biomass and yield. I'm interested in developing this model for climate extremes (e.g. heat and drought stress) as well as in using remotes sensing to parameterise and evaluate crop model results.
			• Policy to support technological and behavioral change for emission reductions i.e. technologies (e.g. feed supplements) that reduce CH4 emissions from livestock but also dietary transition and changes in global consumption and trade to reduce livestock numbers.
			• Stakeholder engagement to understand the barriers to implementation of various technological and behavioral change measures to reduce emissions.

Jadu Dash	Southampton University		Professor Jadu Dash specialises in pure and applied remote sensing, particularly using innovative algorithms to derive information about the state and condition of the ecosystem from Earth observation (satellite) data and study the impact of climate and anthropogenic changes on the ecosystem. He works closely with the European Space Agency and in particular, has a strong contribution to its flagship Sentinel programme. He developed one of the operational satellite land product to estimate canopy chlorophyll content of vegetation and pioneered novel space-time data analysis techniques to derive automatic information on vegetation type and condition. His recent work focusses on utilisation of satellite remote sensing data to answer some of the global developmental changes which ranges from predicting crop in in small holder farms in Africa to mapping the distribution of Sargassum Seaweed in across the Atlantic. Prof Dash has received research funding of over £12 million as PI/Co-I, published more than 120 papers and supervised 24 PhD student. He is the founding director of Southampton Geospatial an interdisciplinary centre for Geospatial excellence at the University of Southampton. https://www.southampton.ac.uk/people/5wzysq/professor-jadu-dash
Clive Blacker	Agrivation Limited		

| Nicholas Corker | CEH | | Nicholas is an agricultural engineer with 30 years' experience of working in agri-environment research and extension. For the last 12 years based at UKCEH & responsible for innovation management. UKCEH produced the first national Land Cover Map of Great Britain in 1990 establishing routines for annual Land Cover Maps and land cover change data (https://www.ceh.ac.uk/data/ukceh-land-cover-maps). In 2016 Nicholas lead the Land Cover® plus: Crops commercialization project, the first national EO derived map of the UK's arable crops within 2 million land parcels (https://www.ceh.ac.uk/data/ceh-land-cover-plus-crops-2015) This data product is commercially viable, its research value has enabled the science of ecologically mediated services (eg. Pollinators) via two major cross – council programs from the Pywell group 1) exploring sustainable intensification 2) zero Carbon in crop and livestock systems:
● ASSIST (https://assist.ceh.ac.uk/)
● AgZero + (https://www.ceh.ac.uk/our-science/projects/agzero)

Additional activities include:
● CEH Land Cover®plus Fertilisers and CEH Land Cover®plus Pesticides Honey Monitoring Scheme : https://honey-monitoring.ac.uk/
● Pollinators: https://www.ceh.ac.uk/our-science/projects/uk-pollinator-monitoringscheme
Parallel developments include a range of biodiversity recording app's for field use:
● https://www.ceh.ac.uk/data/web-based-apps & farm based environmental planning tools eg.
● E:planner (https://e-planner.ceh.ac.uk/About) & a range of automatic biodiversity recording arrays https://www.ceh.ac.uk/ukceh-ami-trap-automated-monitoring-in |
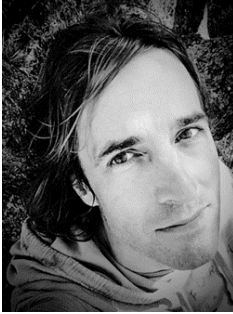
			sects AgZero + has an EO work package exploring soil carbon and its relation to the wider farmed environment, a new national data set on hedgerows is planned and the team are interested in pollinator strips and other 'non-farmed' areas that contribute to ecologically mediated services. Staff page: https://www.ceh.ac.uk/staff/nicholas-corker
Matt Payne	Leicester University		Matt Payne is passionate about leveraging Python to address Earth Observation challenges. During his PhD, he focused on investigating the deforestation effects resulting from oil palm expansion in the Peruvian Amazon. One of his notable accomplishments was the creation of a Convolutional Neural Network that effectively mapped oil palm using Planet NICFI data. He has since contributed to the development of PyEO (Python for Earth Observation), a comprehensive library that facilitates the processing, classification, and reporting of land cover changes utilizing Sentinel-2 imagery (https://github.com/clcr/pyeo_1). Currently, Matt is engaged in studying the optimal distribution of pyrolysis stations for converting agricultural waste into renewable energy, and he is working on implementing this project on a cloud computing platform.
Richard Lucas	Aberystwyth University		Professor Richard Lucas holds a Sêr Cymru Research Chair within the Earth Observation and Ecosystem Dynamics (EOED) Research Group (RG), Department of Geography and Earth Sciences (DGES), Aberystwyth University. He has also held positions at the University of New South Wales Australia, the Australian Federal Government and Swansea University (UK). He has expertise in quantifying and understanding the response of terrestrial and coastal ecosystems and environments to change (including that associated with climatic variation), through integration of Earth observation data from various sources. He has also developed innovative methods for extracting relevant information on terrestrial ecosystems at scales ranging from individual trees to the

			global. Key achievements include the generation and public release of the Australia's Mangrove Portal and Plant Biomass Library, the development of the Earth Observation Data for Ecosystem Monitoring (EODESM) system for routine monitoring of land cover and change, and advancing both the retrieval of forest biomass and structural attributes at regional to global scales and local to global characterisation, mapping and monitoring of mangroves. He currently leads the Living Wales project which is facilitating the development of national land cover monitoring to support national and international conservation and sustainable use of environments. He studied Biology and Geography (1983-1986) at the University of Bristol, where he also obtained his doctorate (1986-1989) and, in 2017, completed an Advanced Diploma in Leadership and Management from the Australian Institute of Management, Sydney.
Gerardo Lopez Saldana	Assimila		Gerardo's work is focused on the use of Earth observation data, geocomputing and data assimilation methods to characterise the land surface. His main research interests are fire in the Earth system and the Carbon cycle. Some of his previous work includes: developing an operational wildfire monitoring system using direct readout EO data for Mexico and Germany; Working at UCL as part of the ESA-GlobAlbedo team, helped to create the longest land surface Albedo data record; as part of the FP7 MELODIES project at the University of Reading developed a methodology to improve greenhouse gas emission inventories; through novel use of Earth observation for assessing annual land cover and land use changes.

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Michelle Hamilton	STFC/RAL Space		I am a research scientist and project manager in the Radiometry group at RAL Space. I am a Physical Chemist by training and my research interests lie in spectroscopy and instrument development for remote sensing applications. These tools can be used to gain insight into agritech issues including monitoring the health of crops and the automatic speciation of woodlands. Marrying these ideas leads to the ability to identify specific diseases and stress and monitor their spread in longitudinal studies. These datasets are also valuable for understanding the impact of land use profiles on climate change, for example as different plant species store carbon more or less effectively and their populations wax and wane over time. At RAL Space, we have a suite of instrumentation including our own hyperspectral imaging system, integrating subsystems mounted on a UAV to take on these challenges. Our development has taken lab-based instrumentations into the field, and seen them deployed both nationally and internationally. I have a particular interest in the calibration and validation of the measurements we make. It is essential to be confident in the quality of the data we collect as inaccuracy would propagate through any subsequent aggregated analysis that attempts to draw broader conclusions.
Daniel Gerber	STFC/RAL Space		I've been working as a Remote Sensing Scientist at RAL Space in the UK for 18 years. In the Remote Sensing Group, I was working on satellite data retrievals, and acting science lead for several airborne and balloon borne instruments. I took part in multiple field campaigns, including a maiden flight campaign with the Stratospheric research aircraft Geophysica in Darwin (Australia) in 2005. In my current role in the Millimetre-wave Technology Group, I provide science support for several future EO missions, and support the development of new receiver technologies. My primary responsibility is being the lead investigator of the ESA Earth Explorer candidate mission

			"Keystone", a novel THz limb-sounder for the upper atmosphere. In addition to research and development, I'm sitting on various advisory groups, i.e., the spectral implementation group, the UKRI Space Coordination Group, and the STFC Space Working Group. For the last 6 years I have also been serving as UK delegate to ESA's Data Operations Scientific and Technological Advisory Group (DOSTAG), reviewing and commenting on the ESA EO programme.
Melina Zempila	STFC/RAL Space		Physicist with 10+ years of expertise in UV and global solar radiation, radiative transfer modeling and calibration of solar instruments.
Australian Participants			
Owen Aitken	Centre for Entrepreneurial Agri-Technology, Australian National University		I am based at the Australian National University in Canberra, with a few roles occupying my time. The first is as an ANU Vice Chancellor's Entrepreneurial Professor and Director of the Centre for Entrepreneurial Agri-Technology (CEAT); CEAT is one of two ANU Innovation Institutes. At CEAT, I lead a small team whose job it is to increase linkages between students, researchers and the agri-tech industry. Many of the challenges facing the agri-sector are complex, with solutions to those challenges requiring industry to work with researchers from a diverse range of disciplines. I see exciting opportunities for interdisciplinary teams from the ANU to work with industry to create solutions to the complex

			challenges facing the agri-sector. This includes harnessing the Earth observation capabilities of the ANU to create step-changes in agricultural production. My second role is as a professor of plant science in the Research School of Biology. I teach a range of undergraduate and postgraduate courses, and run a research lab. A major focus of my research is assessing the impact of environmental gradients on plant physiological processes. I am particularly interested in the impacts of temperature on carbon uptake by photosynthesis and carbon use by respiration, both in the cropping sector and natural ecosystems (from the Arctic to the tropics). I have been an Editor for the international plant journal, New Phytologist, since 2007.
Clare Murphy (Paton-Walsh)	University of Wollongong		My research is focused on understanding the changing composition and chemistry of the atmosphere, with long term interests in fire emissions, air quality and remote sensing of the atmosphere. More recently I have branched out into the study of biogenic emissions as these are poorly constrained in Australian emissions inventories. I currently serve as co-chair of the International Global Atmospheric Chemistry (IGAC) project and as a member of the International Commission on Atmospheric Chemistry and Global Pollution (iCACGP). Prior to my time as an Australian academic, I was a part-time researcher, full-time mother and I studied for my own PhD at the University of Wollongong. Before emigrating to Australia in 2002, I worked for 12 years as a government scientist in the UK's National Physical Laboratory.

| Darren Kriticos | Cervantes Agritech | | Prof. Kriticos is Co-founder and Managing Director of Cervantes Agritech. Prior to launching Cervantes Agritech, Darren was a Senior Principal Research Scientist with CSIRO in Canberra, Australia, where he led teams of scientists and software engineers to develop and apply generic modelling systems to better manage pests across the biosecurity continuum. Notable successes included forecasting the invasion risks posed by Fall Army Worm in Australia; Helicoverpa armigera in the USA, Brown Marmorated Stinkbug threats to South America and Australasia and Oriental Fruit Fly in Europe.

Cervantes Agritech's mission is to develop environmental analytics and forecasting systems to help managers to better prepare for and deal with their agricultural pest problems, preventing invasions and gaining foresight into emerging pest problems. To achieve this Cervantes develops and applies species bioclimatic niche models to inform pest risk assessments, and process-based population dynamics models to provide real-time pest forecasts at local scales. Cervantes is the developer of CLIMEX and DYMEX software packages. |
| Andy Steven | CSIRO | | Dr Andy Steven is the Leader for Strategy and Blue Growth in CSIRO's Oceans & Atmosphere Division. He has led many significant multi –institutional projects on information systems including recently eReefs on the Great Barrier Reef Australia and the SIMA-Austral project on salmonid farming in Chile. Andy is active in policy development and Industry engagement and recently led the UN High Level Panel of Ocean Sustainability Blue paper on Coastal Development. Internationally, Andy works across the Indo-Pacific to develop the tools and capacity to enable a sustainable and equitable blue economy for the region. |

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Roger Lawes	CSIRO		I enjoy developing and delivering data driven and model based solutions to nutrition, production, finance, insurance and environmental problems in agriculture. I have worked in mediterranean, semi-arid, sub-tropical, tropical and rangeland agricultural systems, and was the lead investigator and project designer behind the Graincast crop monitoring technology. https://research.csiro.au/graincast My research publications are available here: http://www.researcherid.com/rid/B-3538-2010 I developed an online fertiliser tool for precision agriculture that is available here: http://optimiser.csiro.au
Luke Barrett	CSIRO		I am a senior research scientist with CSIRO Agriculture and Food, based in Canberra, Australia. My research focuses on the ecological and evolutionary dynamics of plant-microbe interactions in agricultural and natural systems. Current projects include research on pathogen evolution and resistance durability in agricultural crops, and the use of gene-drives to control agricultural pests.

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Tom Bishop	University of Sydney		Tom Bishop is the Academic Director of the Sydney Informatics Hub which is a Core Research Facility at the University of Sydney. He is a Professor in the School of Life & Environmental Science where his research interests are in modelling and predicting the variation of environmental properties in space and time with an emphasis on applying this to the domains of soil, agriculture and hydrology. His main teaching is related to applied statistics, environmental science and GIS. He is an Associate Editor for the European Journal of Soil Science and Soil Research and on the Editorial Board of Geoderma and Pedosphere. Prior to starting work at the University of Sydney in 2007 he held postdoctoral positions at the University of Florida in the USA, Rothamsted Research in the United Kingdom and the University of New South Wales. He completed his PhD in Precision Agriculture in 2002 at the University of Sydney.
Zhiyong Wang	University of Sydney		Zhiyong Wang is an Associate Professor and Director of the Multimedia Computing Laboratory at the School of Computer Science, The University of Sydney, Australia. His research interests focus on multimedia computing and its applications, including multimedia information retrieval, summarization, multimedia data mining, multimedia content understanding, multimedia content creation, human-centered multimedia computing, computer vision, computer graphics, remote sensing, and pattern recognition. His research is at the intersection of AI, big data, and experiences as the foundation for many emerging fields such as Digital Twins and Metaverse, has contributed to the pioneering applications in many domains such as agriculture (e.g., plant species identification and weed detection), earth observation, security, medicine, and health (e.g. Freezing of Gait detection for Parkinson's Disease patients). He is an Associate Editor of ACM Computing Surveys, and Neurocomputing, and was the President of Australia Pattern Recognition Society (APRS).

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Yan Zhou	University of Queensland		Dr. Yan Zhao is a remote sensing scientist. His reserarch employs remote sensing observation of agricultural systems to reveal their spatial and temporal patterns and to promote earth observation techniques and modelling. His current interest is focused on developing improved algorithms, data inputs and thematic outputs which enable the mapping of the cropping systems and their dynamics from the field to national scales. Such maps enable better informed approaches to agricultural management, including precision agriculture, food security and agricultural markets. Dr. Zhao uses both machine and deep learning, and data driven agro-climatology modelling techniques in his work. He worked closely with institutes and industry partners across Australia to develop the applications using different earth observation platforms, including drones, aeroplanes and satellites, for Australia's dryland cropping system.
Keynote Speakers			
Jon Styles	Assimila		Jon is Assimila's Director and has worked in Earth observation and environmental research for more than 25 years. After gaining a PhD from the University of Reading he worked in technical roles on the data processing systems and cal/val for ERS-1 and Envisat. During secondment to Macdonald Dettwiler and Associates in Canada he worked on the Radarsat ground segment as team leader for the ScanSAR mode processor. He subsequently moved into a management and consulting role and has managed over 50 projects in Earth observation applications development, environment and climate change. He now leads Assimila's R&D activities in quantitative crop analytics, yield modelling and pest and disease risk management. His international experience includes extensive work across Europe as well as in the USA, Canada, China, Japan and South America.

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Richard Heath	Australian Farm Institute		Richard has been the AFI's Executive Director since June 2018, previously serving as the General Manager – Research. Prior to joining the AFI, Richard was Associate Professor of Agronomy and Farm Management at the University of Sydney and before that was involved in a large family farming business in North West NSW. Richard is a director of the Grains Research and Development Corporation and sits on the Advisory Committee for CSIRO Agriculture and Food. He is a Nuffield scholar and was a director of Nuffield Australia.
Amy Parker	CSIRO		Dr Amy Parker joined CSIRO in November 2018. Amy is an up- and down-stream Earth Observation (EO) specialist with ten years of experience spanning satellite operations and mission planning, EO data management and EO applications research and development. She leads the CSIRO Centre for Earth Observation including Australia's first-ever sovereign EO satellite capability, NovaSAR-1. Amy's award winning research uses Synthetic Aperture Radar to measure displacements of Earth's surface. She holds a PhD in volcanology and geophysics from the University of Bristol, UK, and an undergraduate first class honours degree in Geophysics from the University of Liverpool, UK. Amy has also previously held an Australian Research Council Discovery Early Career Research fellowship at Curtin University, WA. Amy is a member of the international Committee on Earth Observation Satellites (CEOS) Working Group Disasters and has previously represented CEOS on the inter-governmental Group on Earth Observations (GEO) programme board. In Australia, Amy is Vice President of Earth Observation Australia Inc. and sits on the advisory board of the Australian Space Data Analytics Facility located in Western Australia.

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Callum Fletcher	GRDC		Callum Fletcher is Manager – Biosecurity at the Grains Research and Development Corporation (GRDC). In this role he manages the various investments that GRDC has made in biosecurity and surveillance in Australia's grains industries. These programs have a particular focus on improving preparedness and response in the event of an exotic plant pest or disease incursion that may threaten the nation's second largest agricultural industry. With over twenty years' experience working in the agricultural science sector, he has most recently held biosecurity and research positions at AUSVEG and Plant and Food Research in New Zealand.
Darren Plett	GRDC		Darren is the Manager, Agriculture Technology at GRDC and is responsible for the ideation, business case development, procurement, and management of investments into a broad range of agriculture technologies that will benefit the Australian Grains Industry. He manages investments into research and development with partners including universities, state agriculture departments, start-ups and large multinational companies. The investments all fall under the broad agricultural technology banner but include projects with both 'researcher-facing' and 'grower-facing' technologies. He manages several investments to develop methods to enable crop pre-breeders and breeders to phenotype plant traits accurately, cost-effectively and with high throughput. He also manages investments into projects to develop tools to enable growers to make management decisions using information from technologies including satellite-based sensors. Previously, he was the Technology & Development Lead at the Australian Plant Phenomics Facility and was responsible for identifying research infrastructure needs within the Australian plant science community,

			developing business cases for investment in infrastructure, sourcing novel plant phenotyping technologies and platforms and, most importantly, implementing these novel technological solutions to provide real impact for the agricultural research sector. Darren grew up on mixed farm close to Winnipeg, Canada and completed his BSc and MSc degrees at University of Manitoba. He completed a PhD in agricultural biotechnology at the University of Adelaide in 2008 and subsequently worked on improving abiotic stress tolerance and nutrient use efficiency in cereal crops in collaboration with organisations including DuPont Pioneer and USAID.
Allen Benter	NSW DPI		Allen Benter is the leader of Climate Digital Agriculture within NSW Department of Primary Industries, based at the Orange Agricultural Institute. He leads a cross-discipline team of agricultural and computer scientists developing custom sensors and sensor networks, cloud-based and machine learning applications. Current projects include working with farmers on their farms to demonstrate the role of digital technologies in adaptation to climate change; development of hardware/software for field data collection; and predicting climate-influenced animal and aquatic disease risk.
The Panel			

| David Lamb | Food Agility CRC | | Professor David Lamb is a physicist and has worked in precision agriculture for more than 25 years. In this time, he has led more than 40 R&D projects and championed the concept of smart farming.

He led the launch of Australia's first SMART Farm at the University of New England and, more recently, the Global Digital Farm at Charles Sturt University in Wagga Wagga, NSW.

A passionate advocate for rural and regional connectivity, and STEM-led innovations in farming, David has completed numerous reviews of telecommunications challenges and opportunities for Australian agriculture. He is also an advisor on many agricultural sector-specific technical innovation groups and communities of interest.

David currently serves as Australian representative for the International Society for Precision Agriculture. In 2016 he received the McClymont Distinguished Professorship (Research) at UNE in recognition of his ongoing service to agriculture innovation and research leadership, and in 2022 the Pierre C. Robert Award from the International Society of Precision Agriculture for his contribution to precision agriculture science and technology.

In addition to his role as Chief Scientist at Food Agility, he holds adjunct and visiting Professor appointments at University of New England, Charles Sturt University and the University of Technology Sydney. |
| **Carl Seubert** | SmartSat CRC | | See above for details. |

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Mark Cheung	CSIRO		My research interests lie at the intersection between astrophysics, space weather, high-performance computing, machine learning and remote sensing. After completing my undergraduate degree at the University of Adelaide, I moved to the Max Planck Institute for Solar System Research in Germany to study magnetic activity on the Sun. Thereafter I moved to the US and worked at Lockheed Martin Advanced Technology Center on a number of NASA missions, most notably the Solar Dynamics Observatory.
Amy Parker	CSIRO		See above for details.
Darren Plett	GRDC		See above for details.
Callum Fletcher	GRDC		See above for details.
The EO4Agroclimate Organising Team	STFC/RAL Space, Assimila		Hugh Mortimer, Jon Styles and Andy Shaw

VIII.   Proposal Proforma Template

This Proposal Proforma Template is designed to guide you in the preparation of your proposal for the UK/Australia EO4AgroClimate Sandpit. The template outlines the necessary sections and provides guidance on the information required to evaluate the merit of your proposed project. The proposal should clearly articulate your research idea, its scientific excellence, potential impacts, planning and management strategies, and the strength of your UK-Australia partnership. While staying within the prescribed word limits, ensure that your proposal is comprehensive, well-articulated, and demonstrates alignment with the evaluation criteria of the sandpit. Your thorough and complete response will enable the evaluation panel to fully appreciate the scope, relevance, and potential impact of your proposed project.

Please ensure your proposal does not exceed 6 pages in length. Remember to clearly and convincingly present how your project aligns with the predefined criteria.

The review panel evaluates each proposal based on the following predefined criteria (weighting in brackets):

- **Scientific Excellence: [20%]** The proposal should illustrate how the proposed research and development moves beyond the current state of the art. It should demonstrate how it harnesses innovation to provide practical solutions to the pressing challenges of agroclimate. It will also be beneficial if the proposal indicates how the project might lead to further advancements in the field.
- **Partnership Potential: [10%]** The strength of the UK-Australia partnership is a crucial factor. Proposals should demonstrate the capacity to foster strong collaborations between the UK and Australia, integrate various disciplines, and ensure meaningful involvement of all partners. Demonstrated support from end-users and the level of co-funding will also be considered as indicators of a strong partnership.
- **Impacts: [30%]** The proposal should clearly identify the potential impact of the project on one or more of the themes outlined above. The impact should be demonstrable and meaningful, providing a tangible pathway for the research results to be put into practice. The expected benefits and how these will be measured should also be described.
- **Leveraged Investment: [30%]** The potential for the proposed project to leverage additional investment or resources, including in-kind contributions.
- **Planning and management: [10%]** The proposal should present a credible and realistic project plan, detailing the activities and timeline required to deliver the results by March 2025. The tasks, roles, and responsibilities of each partner should

be clearly defined. The proposal should also provide a risk assessment and contingency plans to handle potential obstacles.

Guidance (you may delete after reading):

Please keep this to a maximum of 4 pages.

Keep to 11pt, Calibri or Arial Font

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1. **Cover Page (150 words max)**

   - Project Title

   - Applicant Information (Names, affiliations, contact details) <Joint UK-Australia leaders required>

   - Proposed Duration

   - Total Funding Requested

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2. **Non-Technical Summary (150 words Max.)**

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3. Executive Summary (300 words max)

- Brief overview of the project

- Key objectives and expected outcomes

4. Introduction and Background (500 words max)

- Context of the proposal

- Current state of the field

- Gaps that the project will address

5. Objectives/Aims (400 words max)

- Specific goals of the project

- Connection to the agroclimate challenges

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6. Case For Support (1500 words max)

- Methodology

- Project impacts (National and International)

- Leveraged Investment

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7. Partnership and Collaborations (500 words max)

- Description of the UK-Australia partnership

- Role of each partner, integration of disciplines

- Support from end-users and level of co-funding

- Potential for leveraging additional resources

8. Project Management and Timeline (750 words max)

- Project plan, including key activities and milestones

- Roles and responsibilities of each partner

- Risk assessment and contingency plans

9. Resource Summary, Budget and Justification (500 words max)

- Detailed budget outline

- Justification for each budget item

10. Personnel (300 words max)

- Description of team members

- Roles and responsibilities

11. References

- Relevant citations

12. Letters of Support (if applicable)

- Support from collaborators, stakeholders, or advisors

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Notes: