

RS&P Newsletter

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Say hello to 'Earth Observation Australia'



An update from Stuart Phinn

On 8 November 2017, the Australian Earth Observation Community Coordination Group (AEOCCG) will transition to Earth Observation Australia (EOA) to formally implement the Australian Earth Observation Community Plan 2026, which is available at www.eoa.org.au/aeocp-the-plan.

All of the material previously on the AEOCCG website will now be at www.eoa.org.au.

This activity allows us to begin addressing the five key priorities of our 10 year plan. We would like to take this opportunity to thank everyone in the community who helped us prepare the 10 year plan, and to transition it to a Business Plan, especially Ben Starkey, Sylvia Michael, Glenn Campbell and Jonathan Ross.

Our first activity will be to establish a suitably balanced Steering Committee to work with myself and Jo Edkins at UQ, to begin implementing the Plan's proposed actions. An email will be sent the week of 13 November 2017 to begin this process.

We also want to note that since the Plan was launched in 2016 there have been numerous major developments in Earth Observation in Australia that have been driven by our Plan and our activities around it, notably:

AEOCP 2026 Priority	Action Completed or Underway
1, 2 & 4	<ul style="list-style-type: none"> ▪ Development and submission of an Australian EO community wide submission to the Review of Australia's Space Industry Capability, recommending the establishment of EO as the basis for Australia's space capability. To learn more about the review process, go to: https://industry.gov.au/industry/IndustrySectors/space/Pages/Review-of-Australian-Space-Industry-Capability.aspx To read the Earth Observation Australia submission, visit: www.eoa.org.au/news/2017/9/1/lets-make-earth-observation-count-in-australia ▪ Development and release of the Business Plan and the transition of AEOCCG to Earth Observation Australia on 8 November 2017.



AEOCP 2026 Priority	Action Completed or Underway
2	<ul style="list-style-type: none"> Establishment and operation of the 'Earth Observation for Government Network' as a national forum to develop and deliver continental scale products in the most appropriate manner possible for national government applications.
3	<ul style="list-style-type: none"> To be implemented as part of the development and release of the Business Plan and the transition of AEOCCG to Earth Observation Australia on 8 November 2017.
4	<ul style="list-style-type: none"> Development and submission of a 10 year investment plan for earth observation research infrastructure as part of the National Research Infrastructure Roadmap and Investment Planning processes, 2017-2027. <p>To read the investment plan, visit: www.eoa.org.au/news/2017/9/1/earth-observation-research-and-operational-infrastructure</p>
5	<ul style="list-style-type: none"> Delivery of a workshop on 'Observing the Earth – Opportunities Taking Flight' at the 2017 Science and Technology Australia Science Meets Business Symposium, Sydney, 9 November 2017. <p>For details of the workshop, visit: https://sta.eventsair.com/QuickEventWebsitePortal/science-meets-business-2017/info/Agenda/AgendalttemDetail?id=e3902a3e-e6fd-884a-11b0-39dfb627c448</p> <p>Event information is available at: https://scienceandtechnologyaustralia.org.au/event/science-meets-business-2017/</p>

Australia to establish national space agency

The Australian government announced on September 25 that it plans to establish a national space agency, a milestone sought for decades by the country's space industry and other space advocates.

Senator Simon Birmingham, the Minister of Education, formally announced plans to establish the agency in a speech during the opening ceremonies of the 68th International Astronautical Congress (IAC) in Adelaide. Birmingham said the government was announcing plans to establish a space agency even though a review of the country's space capabilities is ongoing and not scheduled to be completed for several months. "While there is more work to be done in this review, from the extensive consultation process to date, one point is overwhelmingly clear: the case for establishing an Australian space agency is compelling," he said.

The plan to create the agency was also announced by the government in a statement. "A national space agency will ensure we have a strategic long-term plan that supports the development and application of space technologies and grows our domestic space industry," said Senator Michaelia Cash, Acting Minister for Industry, Innovation and Science, in the statement. The announcement contained few details about exactly when the agency will be established, how it will fit into the overall government, and its specific roles and responsibilities. "This agency will be the anchor for our domestic coordination and the front door for our international engagement with so many of you across the world's space industries," Birmingham said in his IAC address.

Australian government and industry officials welcomed the announcement of the planned space agency. Jay Weatherill, Premier of South Australia, which has a concentration of space companies and related activities, announced prior to the IAC that the state would establish a space development fund, at \$1 million a year for four years, to support emerging companies, as well as scholarships and training activities.

Australia was, prior to this announcement, one of just two countries of the 35-member OECD without a national space agency, Iceland being the other. Space advocates in Australia had long sought to establish an agency, arguing the country had failed to capitalise on achievements it made early in the Space Age, such as being one of the first countries after the United States and former Soviet Union to launch a satellite.

Michael Davis, chair of the Space Industry Association of Australia, said at the IAC that the decision to establish a national space agency was a major milestone for the country's space industry, along with hosting the conference itself. "Today, we celebrate two wonderful achievements: the hosting of the world's most important annual meeting of the international space community, and Australia's decision to participate as an equal member of that community," he said. "The planning for this Congress has coincided with a renewed enthusiasm in this country for the potential that space development offers for the future of our nation," Davis said.

To read the full article, visit: <http://spacenews.com/australia-to-establish-national-space-agency/>
 See also: www.abc.net.au/news/2017-09-25/government-to-establish-national-space-agency

farmAR: Helping farmers make sustainable decisions based on satellite data

Healthy land and rich soils are crucial for sustainable agriculture. With farmAR, an agricultural app that uses Earth Observation (EO) imagery, Beril Sirmacek was a finalist in the Copernicus Masters DLR Environment, Energy and Health Challenge.

Making the invisible visible with a mobile app

The aim of farmAR is to bring information about land and crops directly to the farmer's mobile phone. The application uses Copernicus data and sends the processed satellite data to the app users. Farmers can thus be aware of all the relevant information in the field that is normally invisible to the human eye. This leads to quicker and more efficient decision-making by farmers. On site, they can directly decide about the next work steps and save time and money by reducing unnecessary chemical usage. As a further positive effect, plants become healthier and the soil becomes richer.

Beril's experience in satellite data processing, cloud computing, visualisation, mobile app development and augmented and virtual reality gave her the opportunity to create this service. As one of the top 40 Copernicus Masters entrants in 2016, Beril gained access to the first edition of Copernicus Accelerator, a unique coaching program initiated by the European Commission. With her mentor Martijn Leinweber, Community Manager of ESA BIC Noordwijk, the idea of such an app became more concrete. Shortly after the start of the coaching program, Linda van Duivenbode joined the team and currently contributes to the continuous progress of the project with more than 20 years' experience in business development, project management, market research and innovation management.



Linda van Duivenbode and Beril Sirmacek

Beril and Linda now work closely together on turning the idea of farmAR into reality. Their current focus is to test the full framework with selected potato growers and to bring the app service into line with the Copernicus services, in order to have the framework functioning fully automatically. The team's next goal is to apply for the incubation program at one of the ESA Business Incubation Centres (BICs) in order to continue with the creation of a start-up and get the app ready for market.

Words from the Copernicus Accelerator mentor

Last year in November, I met Beril for the first time at the boot camp in Madrid. Beril told me about her idea to help farmers with an augmented reality solution. Nowadays, we face challenges worldwide due to the growing population, and improvements in the quality and quantity of food are one of the most important topics. There is a great deal of potential in EO data for agricultural applications. Beril's idea could be one solution that offers considerable business potential as well.

Together, we decided on the actions that needed to be undertaken to verify whether her application provides real added value to farmers. First, Beril had to find a co-founder and find an existing agricultural problem worth addressing with her solution. The next objective was to find interested customers, i.e. farmers who are willing to test and use the farmAR application. The last few months proved that Beril is on the right track.

The journey of supporting the team has been an incredible experience for me. It is great to see how Beril is growing as an entrepreneur and that she and Linda are an excellent match. I am proud to see that the team has already gained recognition and valuable support from their network and that they found a farmer to test their product, who is immensely helpful to them in fine-tuning the app for the first release.

Article source: www.space-of-innovation.com/farmar-helping-farmers-making-sustainable-decisions-based-satellite-data/

New method to remotely sense ice sheet subsurface temperature demonstrated

A new instrument, the Ultrawideband Software-Defined Microwave Radiometer (UWBRAD), aims to provide measurements of ice sheet thermal emission to remotely sense internal ice sheet temperature information.

Physical temperature plays an important role in influencing stress-strain relationships in the ice sheet volume, and therefore impacts ice sheet dynamics including deformation and flow across the ice sheet base. Previous studies and models have shown the potential of multi-frequency brightness temperature measurements to obtain deep ice sheet temperature information, given assumed electromagnetic permittivity and other physical parameters such as density and particle grain size. UWBRAD is designed to provide brightness temperature observations over the 0.5-2 GHz range, using multiple frequency channels and full-bandwidth sampling of each channel.

In November 2015, the UWBRAD team successfully demonstrated a four-channel prototype of the UWBRAD on a tower in Antarctica. This ground-based test successfully demonstrated that lower frequencies can sense internal ice sheet temperatures at depths of several kilometres and showed warmer temperatures with increasing depth.



UWBRAD instrument installed in the DC-3T aircraft. The cylinder in the foreground is the deployable 'periscope' antenna, and the instrument electronics are housed in the rack in the background. Image credit: Ohio State University.

In 2016, the UWBRAD team applied the lessons learned from this previous ground-based prototype demonstration to a full 12-channel airborne instrument. Ohio State ElectroScience Laboratory and Research Associates, Mark Andrews and Domenic Belgiovane, conducted its first test flights onboard a Kenn Borek Airlines DC-3T aircraft over Greenland.



No methods currently exist for remotely sensing ice sheet internal temperatures; presently, the only measured information is obtained from a small number of deep ice core sites. As an airborne instrument, UWBRAD could obtain this type of data over wide areas. The airborne tests provided approximately 10 hours of the first ultrawideband microwave radiometer measurements of geophysical scenes including ice sheets. The UWBRAD project team intends to conduct additional test flights.

Article sources: <https://science.nasa.gov/technology/technology-stories/New-Method-to-Remotely-Sense-Ice-Sheet-Subsurface-Temperature-Demonstrated>
<https://ece.osu.edu/news/2016/10/measuring-global-ice-sheets-sky>

Events

The SSSI NSW/ACT regional conference theme this year is 'The Relevance of Spatial in the Digital Economy'.

When: 6-7 December 2017

Where: Mount Panorama Rydges, Bathurst, NSW

To register: go to: www.sssinswconference.com.au/register/

56th PhoWo: Conference Report

John Trinder's report from the 56th Photogrammetric Week in Stuttgart, Germany in September is now on the SSSI website, at: <https://sssi.org.au/knowledge-hub/news/report-on-56th-photogrammetric-week-phowo>