

Faculty of Science  
31 January 2020



CREATE CHANGE

# Faculty of Science: 2019 Report for the Remote Sensing Research Centre



# Remote Sensing Research Centre

## Message from the Director of the Centre

The Remote Sensing Research Centre (RSRC) continued as the leading Australian EO applied research, training and national coordination centre in 2019 and further established our role as a leading global contributor to the development of EO applications as basis of the rapid expansion of the Space 2.0 industry and assessment of the United Nations Sustainable Development Goals. We continued to underpin State and Territory and Commonwealth operational use of EO and played a fundamental role in establishing Australia's firsts Space Agency, with a major focus on EO.

Our main achievements in core areas of the centre's strategic plan:

### 1. Research Coordination and Training:

- Completion and graduation of five PhD students to full time jobs in industry and government in Australia and overseas.
- Commencement of five new PhD students.

### 2. Core Projects:

- Joint Remote Sensing Research Program continued to address State and Territory research requirements and translate these to operational activities.
- Joint Remote Sensing Research Program provided the basis for first successful meetings of Australia's Earth Observation for Government Network, which is now taking research to operational activities for our national government agencies.;
- Coral reef mapping capabilities and their applications was significantly expanded through our lead role in planning and delivery the global Allen Coral Atlas (<https://allencoralatlas.org/>) and the first highly detailed maps of the extent of coral on the Great Barrier Reef.
- Success in ARC DECRA round, attracting leading ecosystem function EO applications expert Dr William Woodgate from CSIRO.
- Success in obtaining long term (2020-2026) funding for core research to operations activities in commercial environments, with S.Phinn co-leading the successful SmartSAT CRC bid to run the third of its main industry focussed research programs on "advanced earth observation analytics."

### 3. EO Coordination:

- Progressed Earth Observation Australia ([www.eoa.org.au](http://www.eoa.org.au)) to a privately incorporated not for profit entity, including development and delivery of a fully operational governance model and longer term sustainability plan;
- Playing a leading role in successful establishment of the Australian Space Agency and it's listing of Earth Observation as one of its eight national civil space priorities, that will direct large scale long term investment in developing Australia's Space Industry;

- Playing a leading role in Queensland Government Parliamentary Inquiry and Industry Development Group in building the investment plans for Queensland’s development of Space Industry.
- Establishing national and international community support and funding for a globally unique new event (Advancing Earth Observation Forum 2020 <https://earthobsforum.org>) to expand Australia’s EO capabilities by more effectively linking research, government, defence and industry communities.

#### 4. Long Term Sustainability

- Completion of preliminary plans and extensive state, industry and national support for an “Earth Observation Analytics” hub to be built in Brisbane as a combined state (from Queensland Space Investment Strategy, UQ) and national (SmartSAT CRC) investment; and
- Lead research organisation and program lead for proposed SmartSAT CRC Earth Observation Analytics program, 2019-2026.

## Strategic Overview of the Centre’s Research Activities

**Table 1: RSRC objectives, timelines and milestones 2015 – 2019**

Centre Objectives from Proposal	Milestones Reached in 2019
<p><b>Centre research coordination and training</b></p> <p>To maintain and develop the RSRC and UQ as a leading international research, research training, and research to operational activities centre for use of remote sensing in earth observation and monitoring.</p>	<ul style="list-style-type: none"> <li>• Group research discussion and review meetings</li> <li>• Monthly instructional activities on all aspects of remote sensing, science and ecosystem science and management</li> <li>• Participation in introductory and advanced remote sensing class instructions by RHD and research staff.</li> </ul>
<p><b>Core projects</b></p> <p>To develop and maintain the centre’s internationally unique critical mass of highly trained staff, specialized equipment, software and databases necessary to undertake and deliver research projects (knowledge, methods, software) that enable mapping, monitoring and modelling of our ecosystems from local to global scales.</p>	<p><b>Projects: -</b></p> <ul style="list-style-type: none"> <li>• Successful establishment of the Allen Coral Atlas global coral reef mapping and monitoring project and project team;</li> <li>• Completion of the highly successful HIA Rural Research and Development Project on Multi-Scale Horticultural Crop Monitoring and Management for Avocado, Mango and Macadamia Industries (which has led to two follow-on national projects 2019-2021),</li> <li>• Joint Remote Sensing Research Program continued to service State and Territory research to operations requirements.</li> </ul> <p><b>Infrastructure funding and operational –</b></p> <ul style="list-style-type: none"> <li>• Infrastructure in an operational and accessible state, along with documentation, trained</li> </ul>

Centre Objectives from Proposal	Milestones Reached in 2019
	<p>personnel and use –data management guidelines.</p> <ul style="list-style-type: none"> <li>• Joint Remote Sensing Research Program – maintained and develop operational plan and budget, annual meeting/report, deliver research goals.</li> </ul>
<p><b><i>Earth Observation Coordination</i></b></p> <p>To act as the national focus that provides the resources and personnel necessary to maintain and develop Australia’s national Earth Observation coordination capacity across all levels of government, private industry, non-government groups and education.</p>	<ul style="list-style-type: none"> <li>• Maintained and developed funding to enable continued coordination and operation of all EOA activities through JRSRP at UQ.</li> <li>• Progression of Earth Observation Australia to a fully operational governance model and longer term sustainability plan;</li> <li>• Playing a leading role in successful establishment of the Australian Space Agency and it’s listing of Earth Observation as one of its eight national civil space priorities, that will direct large scale long term investment in developing Australia’s Space Industry;</li> <li>• Joint Remote Sensing Research Program provided the basis for first successful meetings of Australia’s Earth Observation for Government Network, which is now taking research to operational activities for our national government agencies.;</li> <li>• Membership on several Commonwealth led task forces and steering committees.</li> <li>• Playing a leading role in Queensland Government Parliamentary Inquiry and Industry Development Group in building the investment plans for Queensland’s development of Space Industry.</li> </ul>
<p><b><i>Long term sustainability</i></b></p> <p>To provide the operational, staffing and training environment necessary to develop and maintain the highest level research and research training capacity for remote sensing at UQ while providing industry, government and academia with the next generation of ecosystem scientists and managers who are highly skilled in the practical application of remote sensing.</p>	<ul style="list-style-type: none"> <li>• Developed and maintained core set of research priorities within the centre that relate to its established long term knowledge, data, skills and personnel bases.</li> <li>• Completion of preliminary plans and extensive state, industry and national support for an “Earth Observation Analytics” hub to be built in Brisbane as a combined state and national investment; and</li> <li>• Lead research organisation and program lead for proposed SmartSAT CRC Earth Observation Analytics program, 2019-2026.</li> </ul>

Centre Objectives from Proposal	Milestones Reached in 2019
	<ul style="list-style-type: none"> <li>Developed and maintained a set of regular centre activities that enables term provision of highly skilled and experienced EO scientists and a commitment to an open EO community that shares and builds their knowledge base.</li> </ul>

## Centre Membership in 2019

Title	First name	Last name	School	FTE	For academic staff, nominate level A/B/C/D/E. For professional/technical staff, nominate HEW level.
Professor	Stuart	Phinn	SEES		E
Dr	Peter	Scarth	SEES	0.60	ARC106
Dr	Robert	Denham	SEES	1.00	ARC106
Dr	Chris	Roelfsema	SEES	1.00	ARC103
Dr	Daniel	Harris	SEES	1.00	B
Mr	Neil	Flood	SEES	1.00	ARB106
Dr	Adrian	Fisher	SEES	0.80	ARB102
Dr	Anthea	Mitchell	SEES	1.00	ARB102
Dr	James	Watson	SEES	1.00	ARB101
Dr	Leo	Hardtke	SEES	1.00	ARB101
Dr	Jordan	Graesser	SEES	1.00	ARA106
Dr	William	Woodgate	SEES	1.00	ARB101
Dr	Zunyi	Xie	SEES	1.00	
Dr	Lucia	Morales Barquero	SEES	0.55	ARA107
Dr	Rodney	Borrego-Acevedo	SEES	1.00	ARB103
Dr	Eva	Kovacs	SEES	1.00	ARA106
Dr	Emma	Kennedy	SEES	1.00	ARB103
Ms	Kat	Markey	SEES	1.00	ARA104
Dr	Meredith	Roe	SEES	1.00	ARA104
Dr	Paul	Trudman	SEES	1.00	ARB103
Dr	Mitchell	Lyons	SEES	0.60	ARB104
Dr	Nick	Murray	SEES	0.20	ARB104
Ms	Joanne	Edkins	SEES	1.00	HEW704
Ms	Larissa	Mar Fan	SEES	0.50	HEW501
Ms	Kerryn	Molloy	SEES	1.00	HEW603

In the table below, list the numbers of **virtual** members of the Centre.

Faculty of Science	Elsewhere in UQ	Outside of UQ
		7

As **Appendix 1**, please provide a list of virtual members by name and affiliation, including School if at UQ.

## Research Grants in 2019

**Total Research Income for the Centre in 2019 was \$ 2,815,735**

<b>Grants Awarded in 2019</b>				
<b>Lead CI</b>	<b>Funding Body</b>	<b>Dates of Grant</b>	<b>Total Amount Awarded</b>	<b>Amount in 2019</b>
Chris Roelfsema	Great Barrier Reef Foundation – Habitat Mapping	2019-2020	\$130,500	\$97,875
Chris Roelfsema	Great Barrier Reef Marine Park Authority – 3D live habitat map for full extend of the GBR	2019-2021	\$951,818	\$780,000

<b>Grants Active in 2019</b>				
<b>Lead CI</b>	<b>Funding Body</b>	<b>Dates of Grant</b>	<b>Total Amount Awarded</b>	<b>Amount in 2019</b>
Stuart Phinn	Queensland Government for Joint Remote Sensing Research Program	2007-2023	\$5,627,487	\$1,214,661
Stuart Phinn	NSW Government for Joint Remote Sensing Research Program	2007-2023	\$3,103,000	\$610,000
Stuart Phinn	Victoria Government for Joint Remote Sensing Research Program	2007-2023	\$234,610	-
Stuart Phinn	ARC Discovery/UTAS	2018-2020	\$51,450	\$17,150
Stuart Phinn	ARC Linkage UNSW	2015-2019	\$101,037	Completed in 2019
Stuart Phinn	HIA – Australian Tree Crops	2015-2019	\$1,087,650	Completed in 2019
Stuart Phinn	Geoscience Australia – EOGN 613377	2017-2020	\$122,886	-
Stuart Phinn	Geoscience Australia – EOA	2018-2019	\$20,962	-
Chris Roelfsema	Vulcan - Global Dynamic Coral Reef Map	2018-2019	\$445,401	\$96,049

## Appendix One: List of Centre members by name and affiliation

### Outside of UQ:

- Dr John Armston (adjunct), University of Maryland
- Mr Tim Danaher (adjunct), New South Wales Government
- Professor Arnold Dekker (adjunct), SatDek Pty Ltd
- Dr Melissa Fredrigo (adjunct), Queensland Government
- Dr Nick Goodwin (adjunct), Queensland Government
- Dr Tony Gill (adjunct), New South Wales Government
- Ms Sylvia Michael (adjunct)

## Appendix Two: Copy of VC Strategic Funding Annual Report (if applicable)





## Faculty of Science

### Research Management Team

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