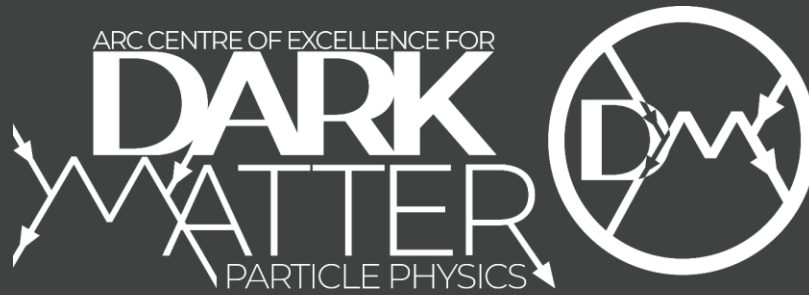


Bridging Scientists and Students with Regional School Partnerships

Jackie Bondell – Senior Education and Outreach Manager
@ARC_DMPP





Acknowledgement of Country

We would like to acknowledge the Traditional Custodians of the various lands on which we work today.

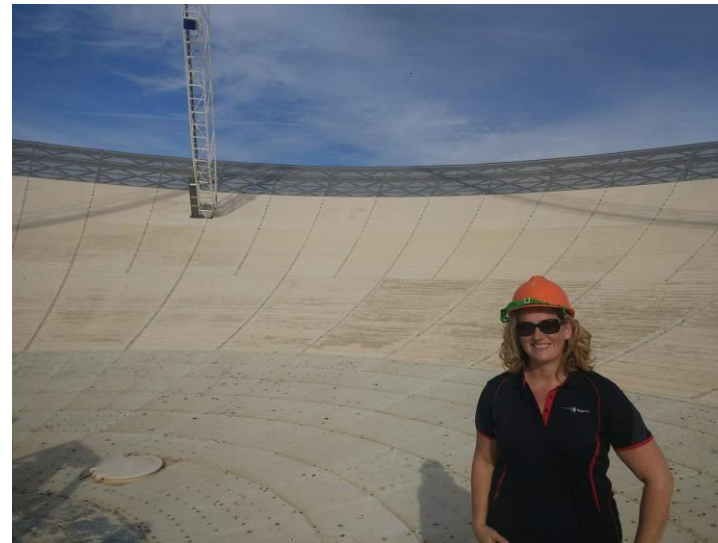
We pay our respects to Elders past, present and emerging, and recognise and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of Australia.



Introductions

Jackie Bondell

- Senior Education and Public Outreach Manager, ARC Centre of Excellence for Dark Matter Particle Physics; ARC Centre for Gravitational Wave Discovery
- Australian Rep to the International Particle Physics Outreach Group
- EPO Committee for the LVK Collaboration
- jackie.bondell@unimelb.edu.au
- Background:
 - Astrophysics Research
 - Physics Teaching
 - Curriculum Design
 - Teacher Mentoring
 - Accessibility in STEM
 - Technology in Education



Physics in Schools

...An important feature of undertaking a ... science study is the opportunity for students to engage in a range of scientific investigation methodologies, to develop key science skills, and to interrogate the links between theory, knowledge and practice...

... As well as increasing their understanding of scientific processes, students develop insights into how knowledge in physics has changed, and continues to change, in response to new evidence, discoveries and thinking...

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1 PHYSICS

PHYSICS

1.1 History

Aristotle said a bunch of stuff that was wrong. Galileo and Newton fixed things up. Then Einstein broke everything again. Now, we've basically got it all worked out, except for small stuff, big stuff, hot stuff, cold stuff, fast stuff, heavy stuff, dark stuff, turbulence, and the concept of time.

Credit: **Science: Abridged Beyond the Point of Usefulness**

Dark Matter Partner Schools



- **Why** do outreach?
- **What** does this Dark Matter program look like?
- **How** is it implemented?
- **Where** are the connections?
- **Who** benefits?

Dark Matter Partner Schools: Why do outreach?

- Societal Perspective:
 - Creating opportunities to address access/inequity
 - Developing a new generation of critical thinkers
 - Diverse voices → Diverse solutions
- University/Collaboration Perspective:
 - Outreach builds science communication capacity
 - Using science for social good
 - Grants tied to outreach initiatives
- Personal Perspective:
 - Using our privilege... use our connections



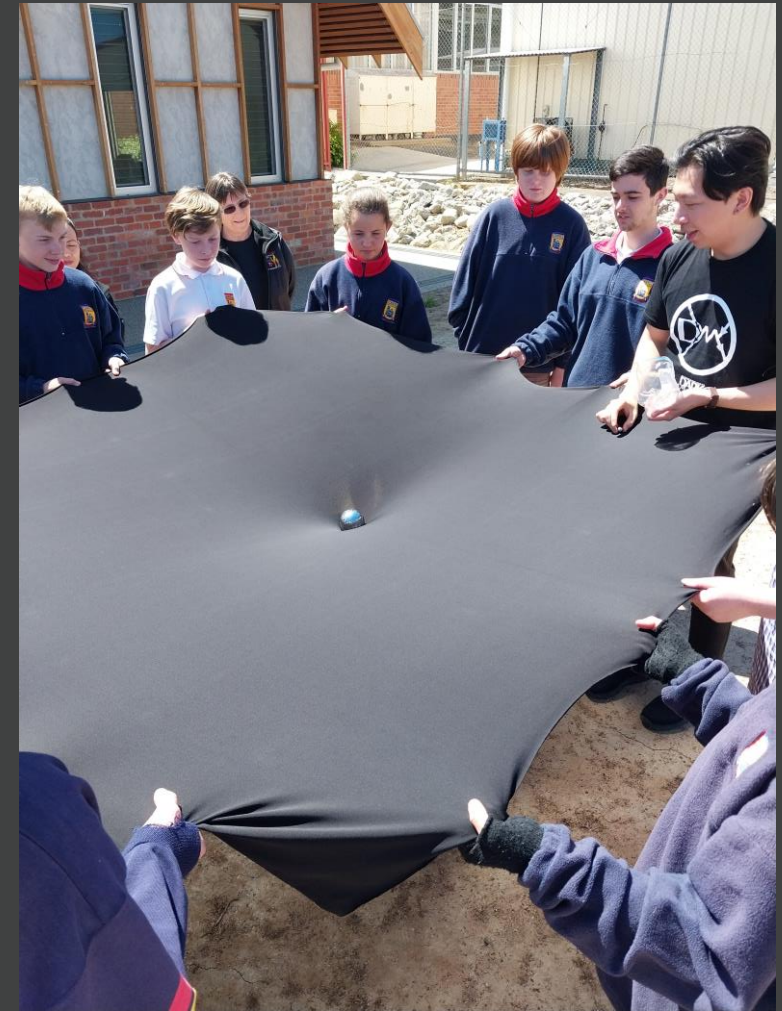
Dark Matter Partner Schools: What is the program?

- High-impact, long-term engagement with partner schools
 - Longitudinal – multiple touchpoints
 - Relevant – aligned with curriculum
 - Measurable Impact – designed to assess
- Leverage partnerships to incorporate unique experiences for students and teachers – PD, research, projects
- Focus on regional students and teachers – SUPL inspiration
- Diverse cohort of centre scientists engaging with students - ECRs

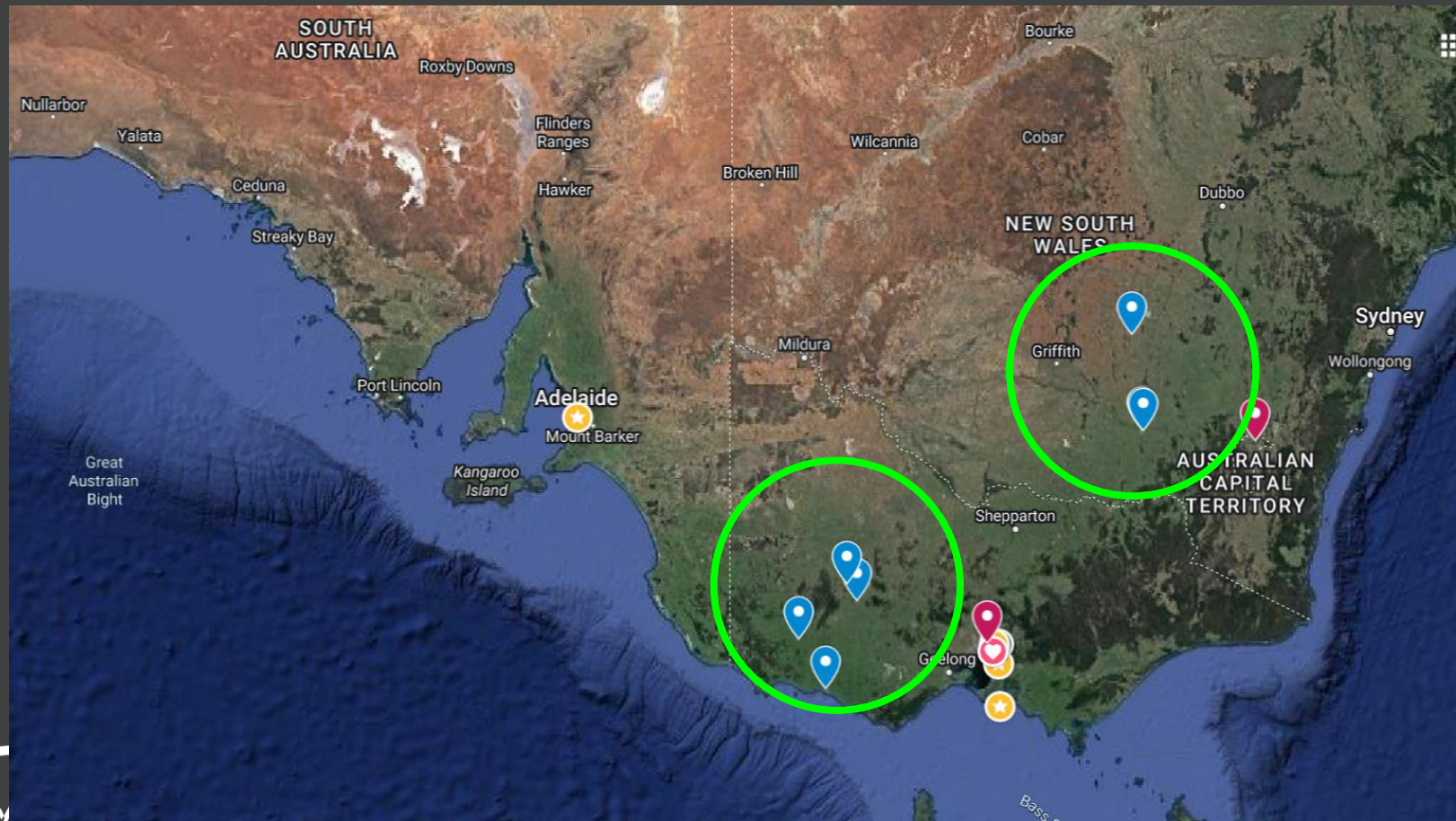


Dark Matter Partner Schools: How we implement it?

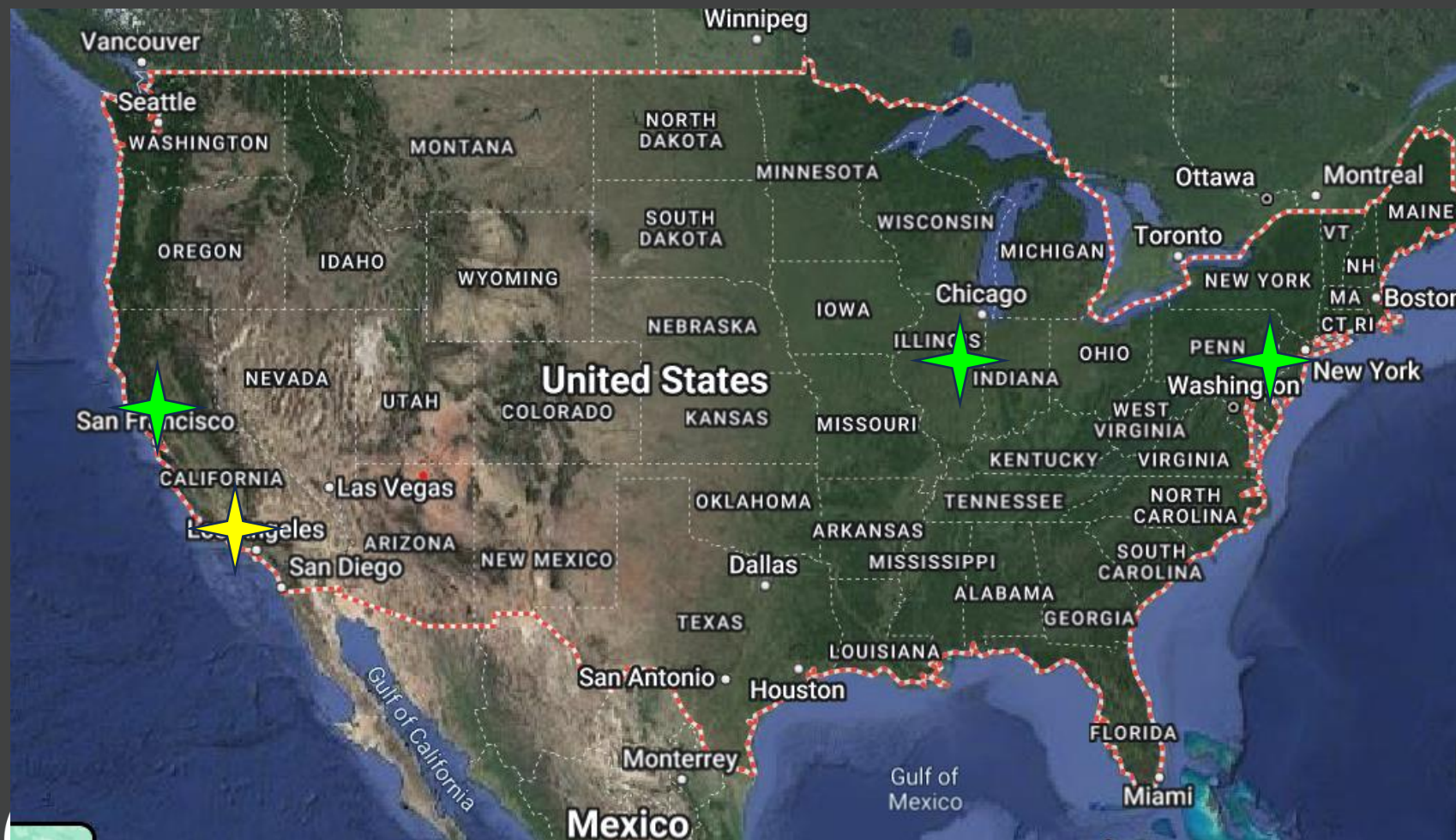
- Lessons Developed to align with **curriculum** goals and nature of science prioritised
- **Scaffolded** approach over subsequent years
- Create content to be used by **teachers**, including resources and PD
- Engage and train **ECRs** to support delivery in schools
- Provide **Research Opportunities** with universities for Extended Investigation projects
- Measuring impact with **education research** collaboration



Dark Matter Partner Schools: Where are our connections?



Dark Matter Partner Schools: Where are our connections?



Dark Matter Partner Schools: Who Benefits?

- **Teachers** – creating ready-to-implement, curriculum aligned resources including PD
- **ECRs** – learning science communication
- **Universities** – expanding engagement portfolio
- **Students**
 - Connecting with scientists
 - Learning about STEM pathways
 - **Building a sense of Science Belonging → Research project with Uni Melbourne Faculty of Education**

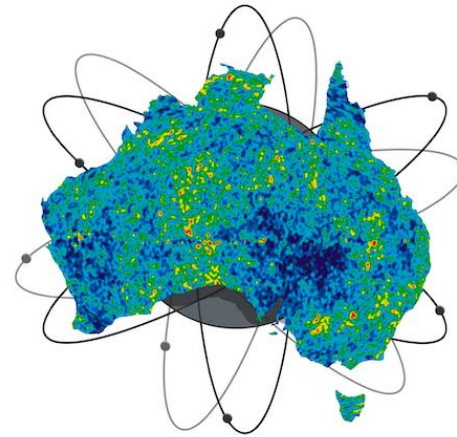


Dark Matter Partner Schools - Summary



- Outreach to use our privilege to address accessibility and diversity in science
- Build collaborations with regional schools for longitudinal engagement
- Connect scientists with schools to benefit students and teachers
- Build networks across geography to scale up
- Mutual benefits

National Science Week



NATIONAL
Quantum & Dark Matter
ROAD TRIP

National Science Week



Outback and beyond: the Road Trip electrifying the next generation of STEM stars



By Grant Quarry

Published August 14, 2024

A team of enthusiastic young scientists is busy traversing outback Queensland, the Northern Territory and Western Australia spreading the wonders of physics to teacher and students, and in the process not just teaching, but inspiring.



Additional Resources



Instruction for setting up the EduMOD

- To start, place the two scintillators on top of each other, just as illustrated in the image.
- Position the electronic box flat on top of the scintillators to measure the scintillators' angle accurately.



Thanks for listening!

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Dark Matter Centre on Social Media
[@ARC_DMPP](#)

