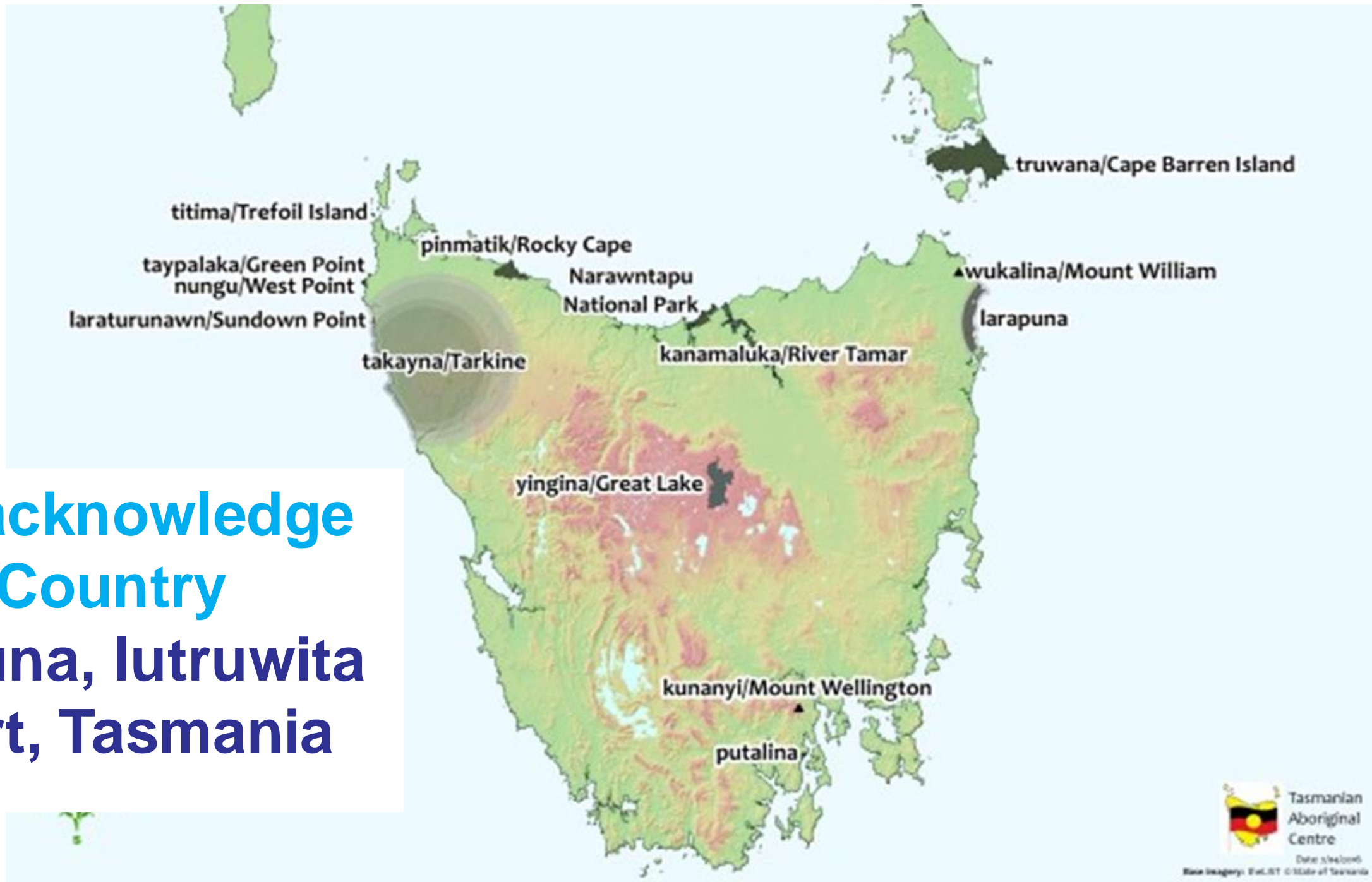


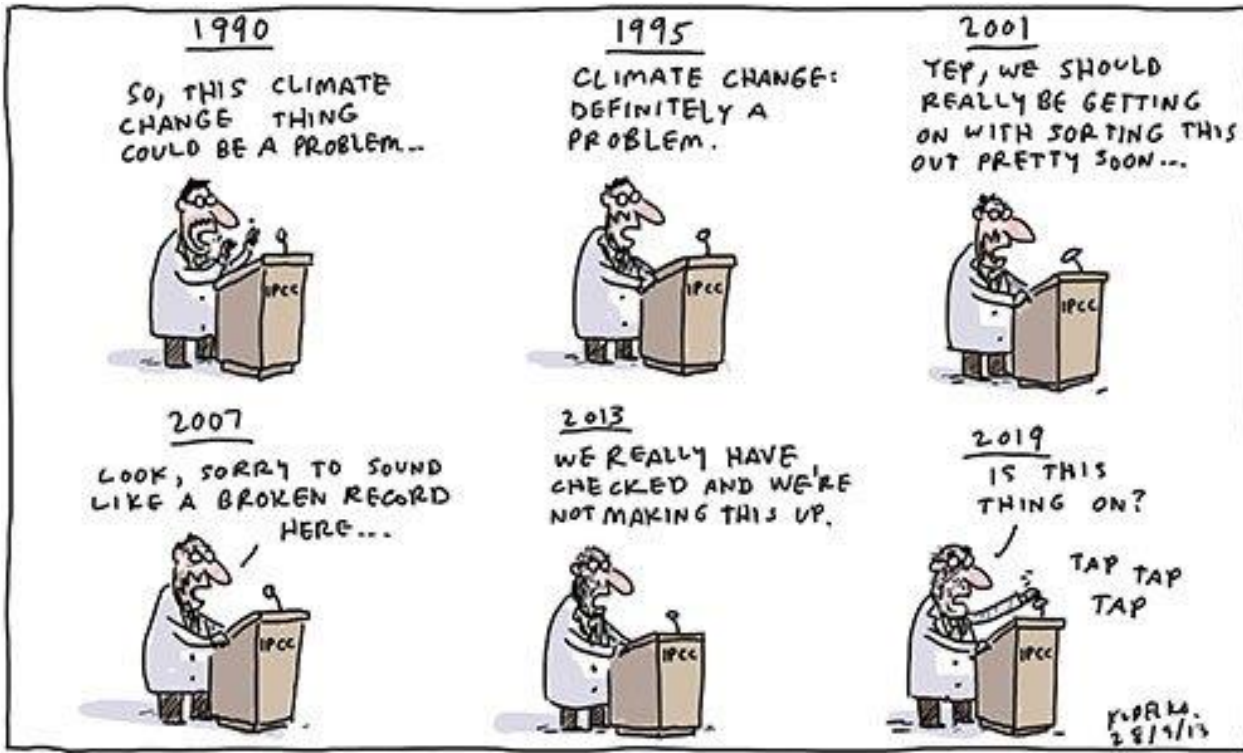


Reflections on a decade of climate change communication and engagement using a wide range of approaches with different marine stakeholder groups

Gretta Pecl^{1,2}, Chris Cvitanovic^{2,3}, Aysha Fleming^{2,4}, Beth Fulton^{2,4}, Alistair Hobday^{2,4}, Rachel Kelly^{2,3,4}, Cayne Layton^{1,2}, Peat Leith⁵, Vicki Martin⁶, Jess Melbourne-Thomas^{2,4}, David Mossop^{1,2}, Ingrid van Putten^{2,4} and Emily M. Ogier^{1,2}

**We acknowledge
Country
nipaluna, lutruwita
Hobart, Tasmania**





Communication mis-matches



Looking for solutions



The CMS aims to address the current and future use of our marine coasts and oceans using a coordinated interdisciplinary and transdisciplinary approach.



Coastal & Marine Governance

- Indigenous & local knowledge
- Integrated Ecosystem management
- Marine Law & policy
- Human behaviour
- Coastal conflict



Sustainable Futures & Planetary Health

- Food production and food security
- Renewable Energy & the Blue Economy
- Marine systems & the Sustainable Development Goals



Environmental Change & Adaptation

- Climate change adaptation at local, regional & global scales
- Marine plastics & debris
- Cumulative impacts & multiple drivers of change



Knowledge Production

- Interdisciplinary & transdisciplinary research approaches
- Participatory approaches to knowledge production



Science Engagement & Impact

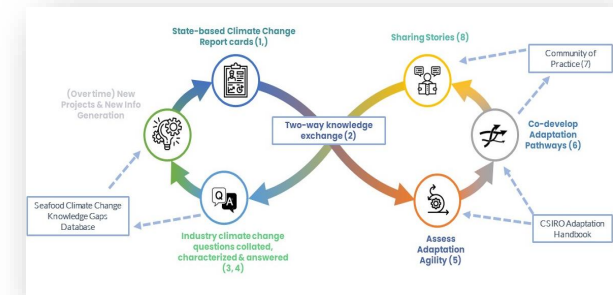
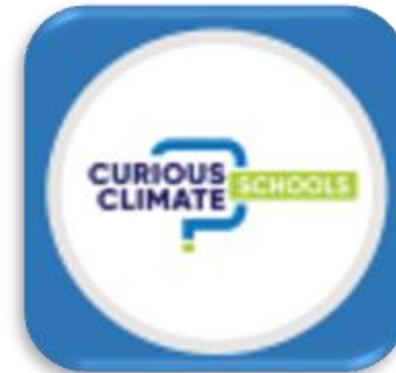
- Science communication & engagement to support ocean literacy
- Knowledge brokering and path to impact



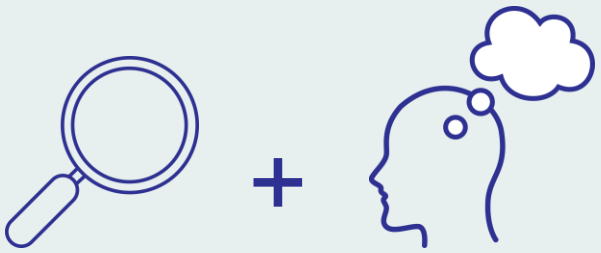





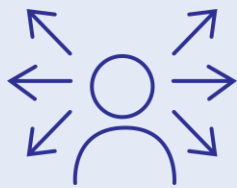

CHALLENGES

RESEARCH APPROACH

Developing initiatives

- 1 Bottom up & partnership-driven
- 2 Place-based
- 3 Opportunistic
- 4 Experimental
- 5 Interdisciplinary



Goals	Modes	Reflections
Inform 	Cognitive 	
Consult 	Normative 	Effectiveness relative to planned goals?
Involve 	Experiential 	Surprises?
Collaborate 	Behavioural 	Cautionary tales?
Empower 		Where next?

Citizen science platform

Spot. Log. Map.

Epinephelus rankini (Rankin Cod)



The sighting



Spotted by	Peter Salamone
Region	Western Australia
Sighted on	14 May 2024

This sighting has been reviewed and verified

Glenn Moore
WA Museum

Why is this sighting important?

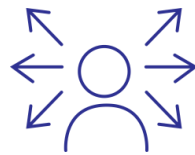
- Potential range-extension



Involve



Inform



Behavioural



Cognitive

redmap
SPOT. LOG. MAP.

LAUNCHED
DECEMBER 2012

WHAT IS REDMAP?

Each year over 3,000,000 Australians go fishing, diving or boating. Imagine...millions of potential 'citizen scientists' collecting valuable data about the marine environment! We did. Welcome to REDMAP.

WHAT?

Range Extension Database and Mapping Project: it captures information that will help assess how our marine ecosystems might be changing. Redmap invites recreational and commercial fishers, SCUBA divers, boaters and scientists to spot, log and map any uncommon marine species not usually seen in particular coastal areas. Some species may be new to your state, some may be shifting or extending their range, and the presence of others may vary seasonally. Over time, the data collected will provide a record of what marine species are on the move.

WHY?

Ocean temperatures around most parts of the Australian coast have warmed at over twice the global average, and even faster in the south-western and south-eastern regions. A temperature rise of a few degrees does not really sound like a lot; it actually sounds quite nice, especially if you have ever been swimming down south. However, for our marine ecosystems, small temperature changes are having a significant impact on the distribution of our marine species.

HOW?

Just log on to www.redmap.org.au and tell us what species you have spotted that you think are unusual for any given area. If you've got a photo that's even better! It does not require extra fishing or diving; just remember to log your sightings when you spot something unusual. We have a team of scientists across the country to verify species identity of submitted photos.

WHO?

You! We also have support from a large number of organisations spanning a diversity of community sectors that collectively are 'monitoring' a variety of marine ecosystems and 'reporting' sightings across a diverse range of species groups.

WWW.REDMAP.ORG.AU

LOG YOUR
SIGHTING

What's on the move
around Australia?



LOG IT

Giant Trevally
(*Caranx ignobilis*)

if spotted south
of Solitary
Islands (NSW)

One example of a species
Redmap are mapping - for
a full list see the website.

Log the unusual species you
have spotted on the Redmap Map

To register your sighting, or sign up for our quarterly newsletter (and win great prizes!), please visit the Redmap website at redmap.org.au or contact the Redmap Team on [03] 6227 7277 or email enquiries@redmap.org.au

IMAS IS THE HOST OF
REDMAP AUSTRALIA





Evaluation

Redmap had raised participant awareness of:

- Marine species shifting, related to climate change (80%)
- Importance of understanding marine climate change impacts (53%)
- 78% surveyed discussed/mentioned info learned from Redmap with another person

97%

97% of people surveyed say they trust the information they get from Redmap



Reflections

- ✓ Explicit impact pathway & communication plan
- ✓ Multiple targeted communication tools
- ✓ Trusted community champions
- ✓ Partnerships with community & science orgs
- Embeds climate messaging in tangible experiences and interests
- ✗ Continued funding



Science – Community dialogue

Usually, scientists plan communications about what we want to talk to the public about...



Tasmanian residents were asked to go online to ask scientists and researchers anything they would like to know about climate change.

All questions were welcome, big or small!



HAVE A QUESTION ABOUT CLIMATE CHANGE?

Our scientists are here to help!

Join us at a **FREE Curious Climate TAS forum near you**



Consult



Inform



Experiential



Cognitive



Normative

Queenstown

Sunday 4 August
4:00 – 5:30pm
Empire Hotel
2 Orr St

Launceston

Tuesday 6 August
6:00 – 7:30pm
Rory Spence Lecture
Theatre, University
of Tasmania
2 Invermay Rd

St Helens

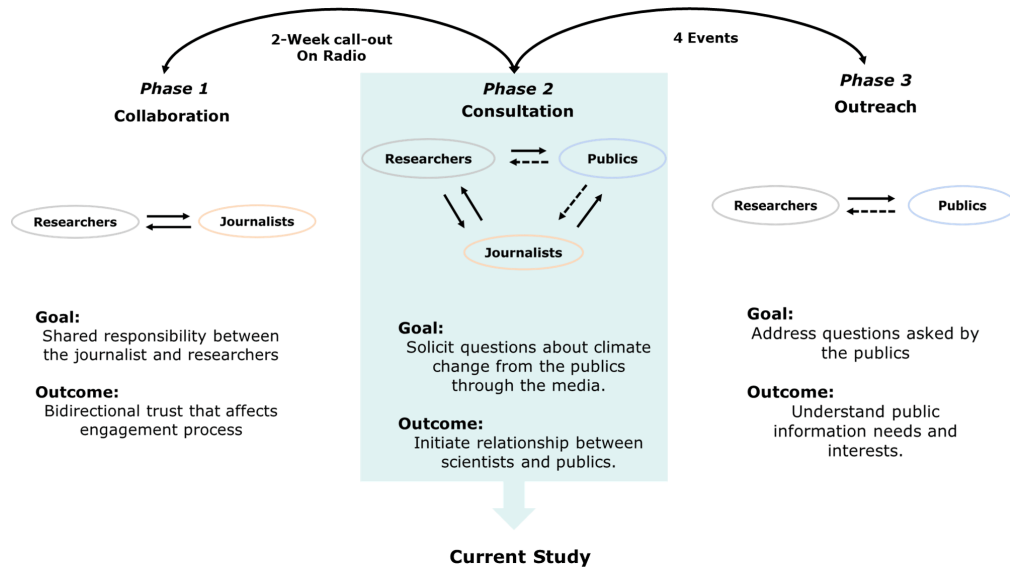
Wednesday 7 August
6:00 – 7:30pm
Bayside Inn
2 Cecilia St

Hobart

Thursday 8 August
6:00 – 7:30pm
Sir Stanley Burbury
Theatre, University
of Tasmania
Churchill Ave



Evaluation



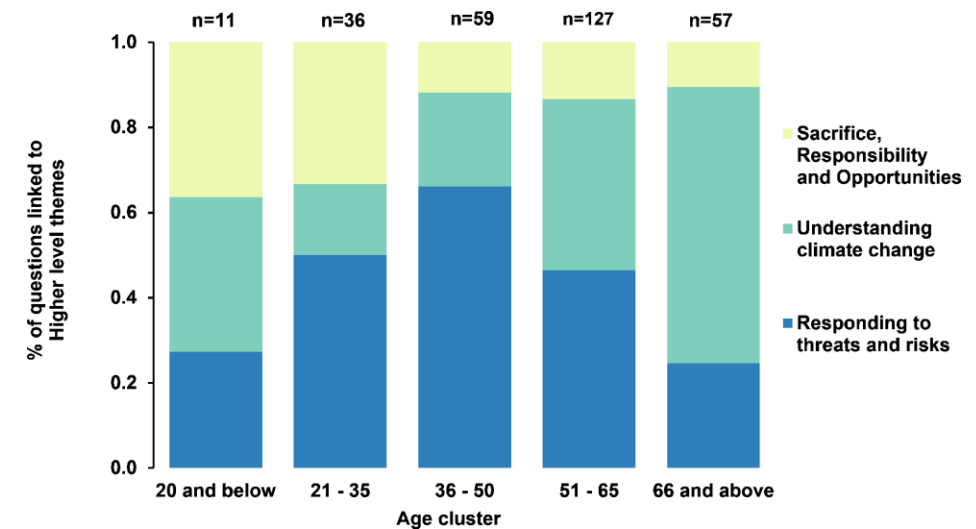
Ex poste surveys:

- 82% attendees said they retained knowledge – almost two years after the events!
- 70% felt empowered to take action on climate change
- 82% said they shared information with other people afterwards



Reflections

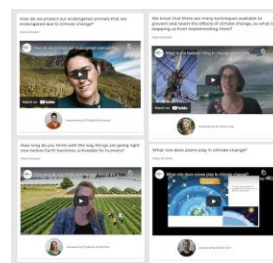
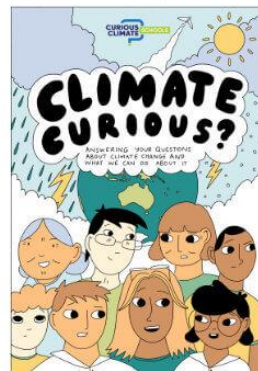
- ✓ Flip the sci-comm model with a dialogic model
- ✓ Collaborations between media, scientists & publics
- Climate communication becomes responsive and interactive
- Publics not only looking for climate information but dialogue on science-informed climate action (normative)



Science – Schools dialogue



- Over the last four years, children from schools from across Tasmania have been sending us their questions about climate change.
- There are resources for students and teachers about the [science of climate change](#), [impacts of the climate crisis](#), how to navigate [feelings about climate change](#) and ways to [take individual and collective action](#).
- Resources:
 - Expert Q&A - key questions in an online searchable database with supporting videos
 - Expert visits to classes
 - [Cartoon guide](#) to climate change and what we can do about it,
 - Climate adaptation game workshops



Consult



Inform



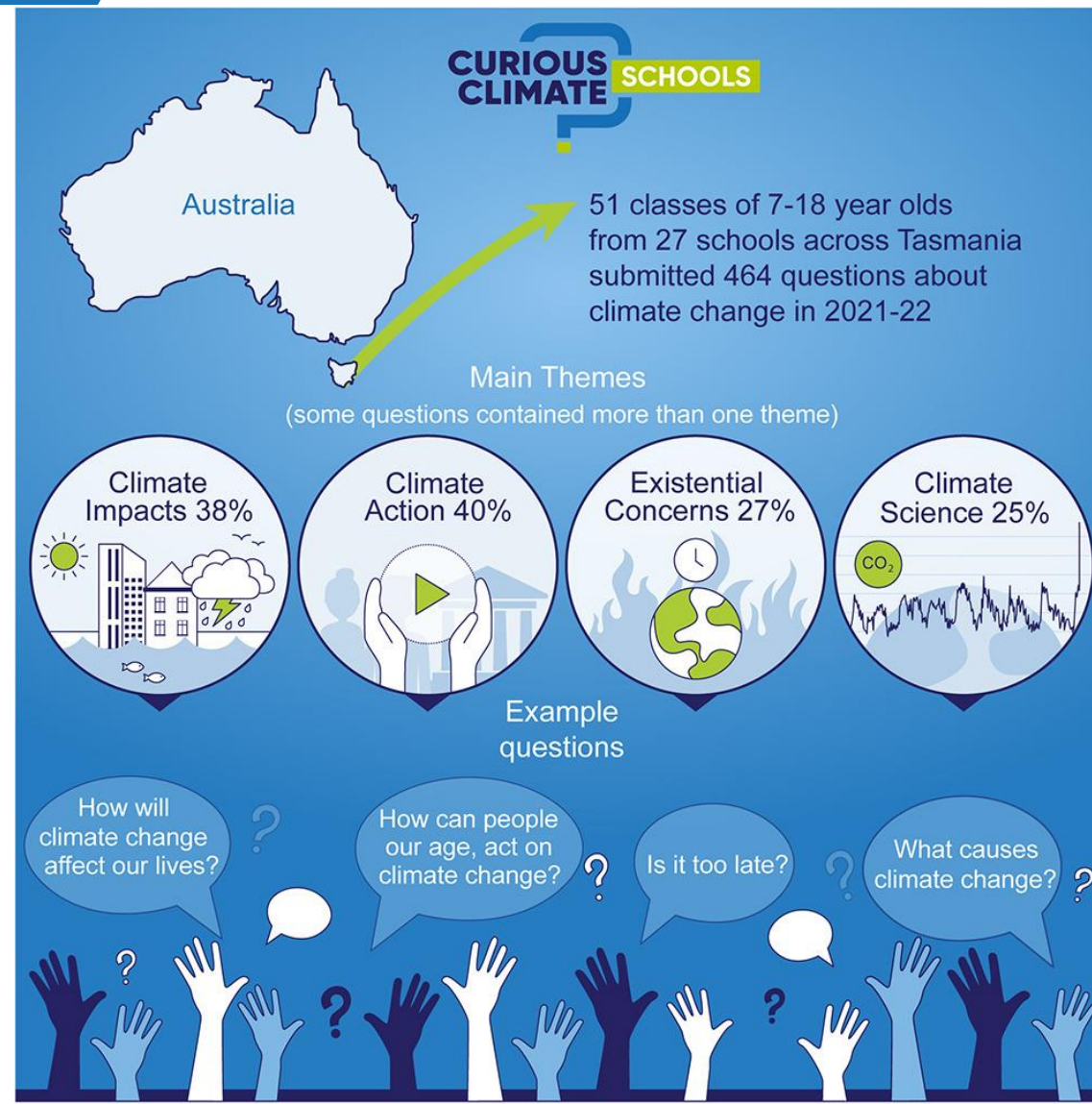
Experiential



Cognitive



Normative





Evaluation

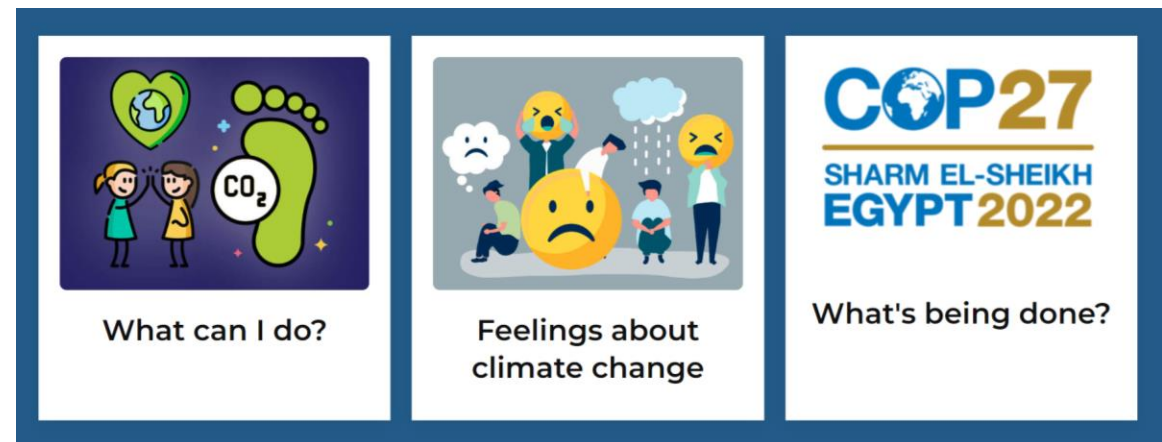
- No formal evaluation to date
- Research has explored patterns in student's curiosity and a **pedagogical model for climate literacy**:
 - Student-led inquiry
 - Holistic approach to climate literacy
 - Acknowledging feelings
 - Empowering individual and system-change
 - Being part of a global conversation

(Kelly *et al.* 2023 10.1007/978-981-99-3802-5_24)



Reflections

- Strong and sustainable model to support formal learning through climate literacy tools for STEM, HAS etc
- Students are very curious about both knowledge and meaning
- They are seeking existential engagement, along with knowledge exchange
- Programs need to recognise and offer dialogue about both



(Lucas *et al.* 2024 10.1016/j.oneear.2024.02.017)

Goals

Inform



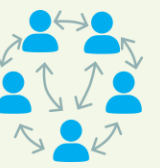
Consult



Involve



Collaborate



Empower



Flip the climate science comm model by starting with more participatory programs

Informing can be a co-benefit or a by-product of more engaged climate science-based work

Modes

Cognitive



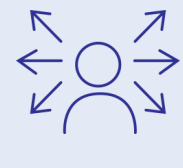
Normative



Experiential



Behavioural

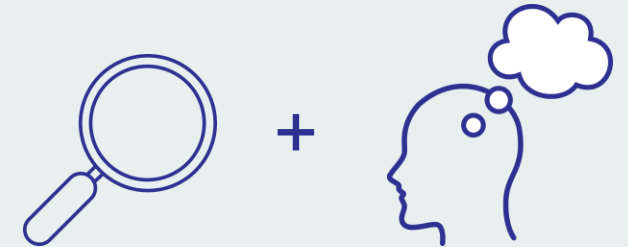


Climate science communication can be directly linked to the experiences and behaviours of marine communities

Stakeholders want to engage in normative modes

Just like the communication goal, Cognitive modes can be embedded in more Experiential and Behavioural modes of communication

Reflections



No regrets

Coupling climate dialogue with existing marine and/or pedagogical activities

Surprised by depth of existential and normative concerns

Climate change 'deniers' target

Need to address the knowledge gaps about solutions

What's next?

Sea Change project: Australia's fisheries & aquaculture

Thank you!

