From Data to Action: Supporting Coral Reef Conservation in the Pacific

Tuesday 14 October 2025 17:06 (11 minutes)

Session description:

The digital revolution is reshaping marine science by enabling unprecedented access to data efficiently and cost-effectively. These advancements are transformative for coral reef conservation, fostering a stronger connection between science and policy to safeguard biodiversity and support the communities that depend on these ecosystems. In this session, we highlight the role of data science in monitoring coral reefs across the Pacific, with the aim of empowering communities through actionable insights for effective management and conservation.

We introduce four digital platforms that leverage data-driven analytical solutions to enhance various forms of image recognition, including underwater imagery, remote sensing, and data fusion. The speakers will explore how these large-scale ocean programs responsibly and ethically manage data while advancing coral reef research, conservation, restoration and collaborations.

This agenda includes a combination of research and practical presentations, complemented by a short panel discussion and audience Q&A. The speakers (and later panellists) are a gender-balanced group of transdisciplinary, eminent and emerging researchers working alongside practitioners across the Pacific region.

Agenda:

Presentations (10min each, 2 min change):

• ReefCloud: Transforming Coral Reef Monitoring –Ashton Gainsford
• Detecting Coral Bleaching with AI –Nader Boutros (confirmed)
• MERMAID: An All-in-One Coral Reef Data Solution - Emily Darling (confirmed)
• Leveraging AI for a Real-Time Deployment of Baby Corals –Scarlett Raine
• The Global Coral Reef Monitoring Network –Jérémy Wicquart

Panel discussion (15min):

The discussion will explore the benefits and challenges of digital advancements in reef conservation.
Panellists: Ashton Gainsford, Nader Boutros, Emily Darling, Scarlett Raine, Jérémy Wicquart
Moderator: Julie Vercelloni

Q&A (15min):

We will address questions from the audience.
Moderator: Julie Vercelloni

Short bio of the speakers:

Dr Ashton Gainsford contributes to the leadership of the ReefCloud project, which is developed by the Australian Institute of Marine Science. Her background in coral reef ecology helps bridge and integrate the various components of ReefCloud, from fieldwork to data workflows, analyses and reporting.

Dr Nader Boutros is a machine learning engineer at the Australian Institute of Marine Science. He brings extensive expertise in automated image processing to develop digital tools that enhance coral reef monitoring and track environmental threats including coral bleaching.

Dr Emily Darling is an internationally recognized scientist and Director of Coral Reef Conservation at the Wildlife Conservation Society. Trained as a field biologist, her work investigates how tropical coral reefs are changing in the face of our climate crisis. She is a co-founder of MERMAID for coral reef monitoring.

Dr Scarlett Raine conducts research at the intersection of robotics, computer vision, artificial intelligence and coral reef conservation. Based at Queensland University of Technology, she develops cutting-edge AI methods for the Reef Restoration and Adaptation Program to support large-scale coral reef recovery.

Dr Jérémy Wicquart is a marine ecologist with extensive expertise in coral reef data analyses. He currently works as the Technical Coordinator of the Global Coral Reef Monitoring Network that provides information on the status and trends of coral reef ecosystems to support their conservation and management.

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Presenters: Dr GAINSFORD, Ashton (Australian Insitute of Marine Science); Dr WICQUART, Jérémy (Pierre and Marie Curie University); Dr RAINE, Scarlett (Queensland University of Technology)

Session Classification: Presentations Session 6: The Transformative Role of Data in SDGs and Disaster Resilience

Track Classification: SciDataCon2025 Specific Themes: The Transformative Role of Data in Sustainable Development Goals and Disaster Resilience