





The Antarctic Science Foundation brings together all people who believe in the value and potential of Antarctica to provide the answers we need to sustain our way of life on this planet.

Our supporters share a vision of a better future for all life through scientific research. We converse with Antarctica in commitment and respect. Together we back dedicated, tenacious people to be curious as they confront uncertainty in extreme conditions. Together, we ask the beautiful and important questions that promise pathways of human flourishing for generations to come.

For more information visit www.asf.aq

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PROGRESS & SUCCESS



Working in partnership with the Australian Antarctic Division

Supporters of the Antarctic Science Foundation leverage the formidable scientific expertise and logistical backing of the Australian Antarctic Division when they make gifts toward projects to deepen our knowledge of Antarctica and its profound influence on global climate and ecosystems. We are proud to work in partnership with the Australian Antarctic Division.

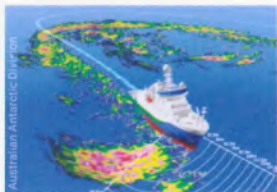


Antarctic krill bacteria as indicators of population connectivity | September 2020

This was the first study of variation in bacteria of Antarctic krill in the key fishery of the Scotia Arc.

Result: Indicates krill hang out in smaller sub-populations around Antarctica rather than as one population.

Impact: These findings have vital implications for fishery management of this cornerstone species.



The TEMPO Voyage | March 2021

With the ASF as a funding partner, an intrepid team of 20 scientists travelled 10,000 nautical miles over eight weeks deploying echo-sounders, trawls and specialised cameras.

Result: The first detailed "census" of krill in East Antarctica for 14 years.

Impact: A rich and unique data set to support conservation efforts in the Southern Ocean for generations to come.



R.J.L. Hawke Fellowship in Antarctic Environmental Science | October 2021

On the 30th anniversary of the Madrid Protocol, which banned mining in Antarctica, the Foundation made a \$1.7-million commitment to fund the prestigious R.J.L. Hawke Fellowship in Antarctic Environmental Science.

Result: A fellowship of \$390,000 will be awarded for research excellence to a doctoral graduate every 2 years.

Impact: The R.J.L. Hawke Fellowship will nurture generations of research scientists to pursue the catalytic outcomes needed for positive impact for the planet and humankind.



Sea ice roughness and breeding success among Emperor Penguins | November 2021

This project aims to determine whether the roughness of sea ice between Emperor penguin colonies and their foraging grounds influence breeding success.

Expected result: Rougher surfaces may prolong the time and energy required to traverse the fast ice, resulting in longer intervals between chick feeding.

Impact: Vital to understanding and conserving productive penguin ecosystems for our shared carbon future.



Traversing the COVID Gap PhD Grants | September 2020 & December 2021

The Foundation has identified PhD scholars as particularly vulnerable to financial hardship during the pandemic.

Result: Concerned that the high percentage of potentially productive careers are at risk, the Antarctic Science Foundation has extended grants to future Antarctic research leaders to assist them in completing their PhD.

Impact: A generation of research scholars have been saved along with their expertise for the benefit of the Australian Antarctic program.



Antarctica: vital moderator of carbon and heat

The ocean and sea ice receive dust, nutrients and carbon dioxide (CO₂) from the atmosphere, which become rich food sources for phytoplankton and other micro-organisms. They bloom in the sea, absorbing CO₂ from the atmosphere as they grow.

These tiny marine organisms are ingested by krill, which are eaten by a range of larger predators. The Antarctic Science Foundation conducts scientific research in Antarctica to understand and protect the fragile systems which support this cycle. This knowledge leads to the effective preservation of one of the most important carbon sinks on the planet, maintaining the efficient sequestration of millions of tonnes of CO₂ each year that would otherwise remain in our atmosphere. Back home, researchers translate these insights into more accurate climate models for our cities and farmers, together with better warnings and mitigation of bushfires, floods and droughts.

Ice shelves provide sanctuary and breeding areas for penguins and seals above the surface and krill and other fish beneath. The whole polar cap acts as a massive reflector, bouncing the sun's radiation and heat back into space, reducing the rate of ice melt.

Antarctic Life



Krill

A keystone species, meaning most Antarctic animals (seals, whales, seabirds, fish and squid) have a diet containing krill.

Antarctic krill is one of the most abundant and successful animal species on the planet. Their biomass in the Southern Ocean is estimated at 400 million tonnes. Krill swarms can be as dense as 30,000 individuals per cubic metre.

Krill usually live for 5-10 years but can transition from adults into juveniles and back. This 'downsizing' allows krill to use their body protein as a fuel source for survival in extreme conditions.

Krill are vital for human flourishing because they (and their predators) absorb, process and deposit carbon on the seafloor through their feeding cycle. Then, when they die, their carcass carries a lifetime of carbon to the seabed for reabsorption back into the Earth.

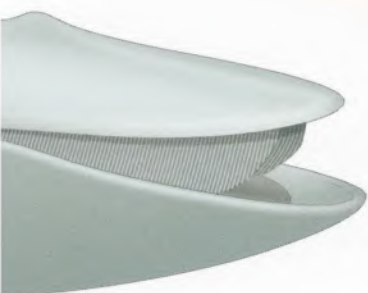
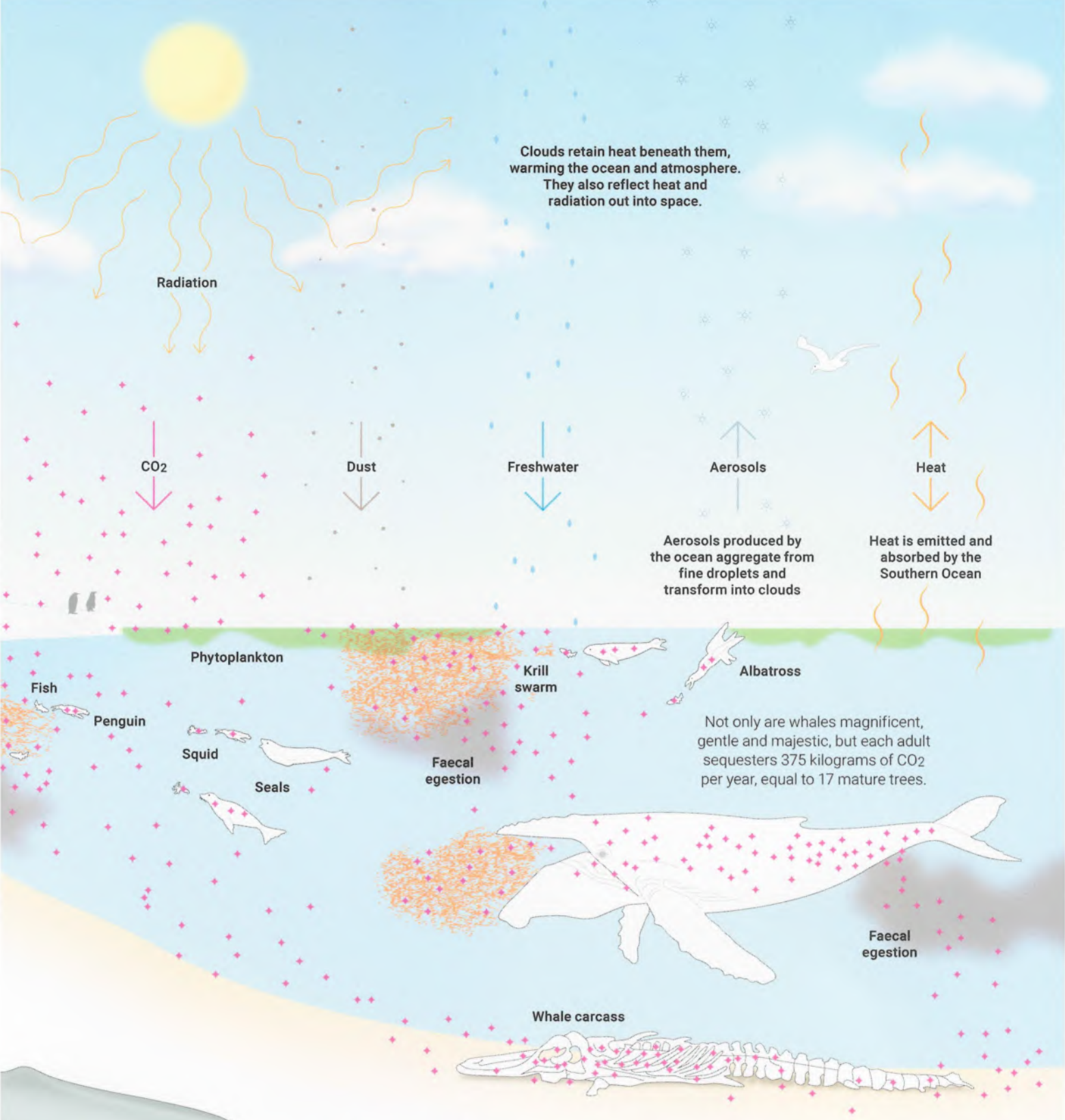
Krill swarm

Faecal egestion

Blue whale

Sperm whale

Orca



Human for scale



Emperor



King



Gentoo



Chinstrap



Adélie



Macaroni



Rockhopper

Penguins



Elephant



Leopard



Weddell



Ross



Crabeater



Fur

Seals

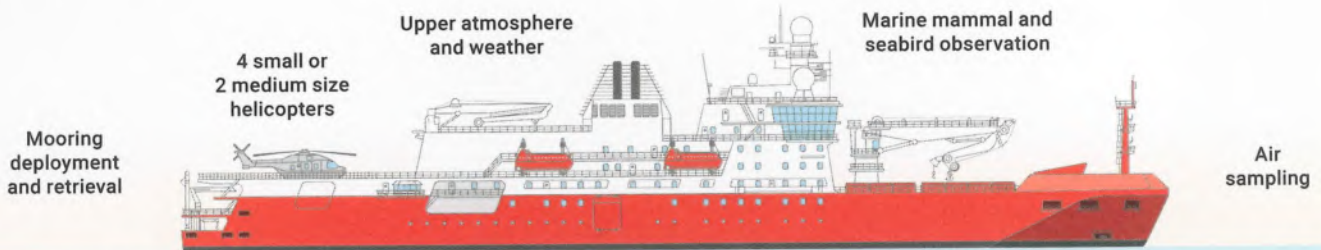
AN EXCITING 2022 AHEAD

Nuyina

In December 2021, Australia's new icebreaker, RSV Nuyina embarked upon her maiden voyage, marking the beginning of a new era in our nation's Antarctic history.

The word *nuyina* (pronounced "noy-yee-nah") means 'southern lights' in palawa kani and recognises the long connection of Tasmanian indigenous people with the Aurora Australis.

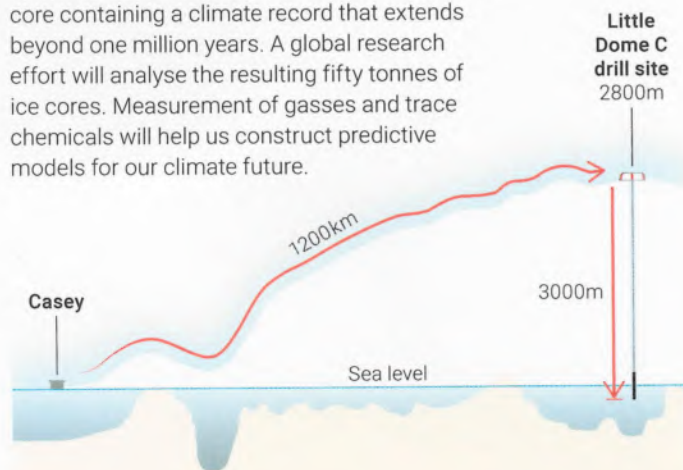
Nuyina is the most advanced research vessel on the seas and represents a step-change opportunity for The Antarctic Science Foundation. Nuyina is consistent with our vision: to support the careers and projects of Antarctic researchers so they can take their vital questions South and return with the secrets Antarctica holds.



- 160 metres
- Break ice 1.6 metres thick at 3 knots
- Handle waves > 14 metres and Beaufort 12 winds (yep, that would be a hurricane)
- 25,000 tonnes
- Cruise at 12 knots with a max of 16
- Handle air temperatures as low as -30°C
- 117 expeditioners, 32 crew
- Range of ~30,000 km
- Remain at sea for up to 90 days

The Million Year Ice Core

This season Australian and European teams will commence a world-first drill operation 2.8km above sea level at Little Dome C to obtain an ice core containing a climate record that extends beyond one million years. A global research effort will analyse the resulting fifty tonnes of ice cores. Measurement of gasses and trace chemicals will help us construct predictive models for our climate future.



The Last Great First - Science Partner

In November 2022, Gareth Andrews and Richard Stephenson (both are doctors, polar explorers and climate advocates) will attempt the first unsupported ski traverse of Antarctica, covering 2,600km in 110 days. Transforming their sledges into mobile weather stations, the team will use innovative technology to record atmospheric and meteorological data along with their own physiological performance and response under extreme conditions. Both data sets will inform research projects on climate and extreme medicine.



OneTomorrow | Charitable Fund of Antarctica Flights

At OneTomorrow, we recognise the power of travel to shape how we perceive and care for our world. Our partnership with **The Antarctic Science Foundation** accelerates Antarctic research for the sustainability of everyone's favourite destination: Earth. When you support tenacious and curious scientists at work on Nuyina, analysing ice cores, mapping ice-shelves or tagging penguins, you help us understand the last pristine wilderness today and protect it for tomorrow.

Each tax-deductible donation through onetomorrow.com.au for **The Antarctic Science Foundation** will be matched dollar-for-dollar by our OneTomorrow Charitable Fund. Double your impact. Donate today.

