

Alkalinity Research Voyage || ARVO

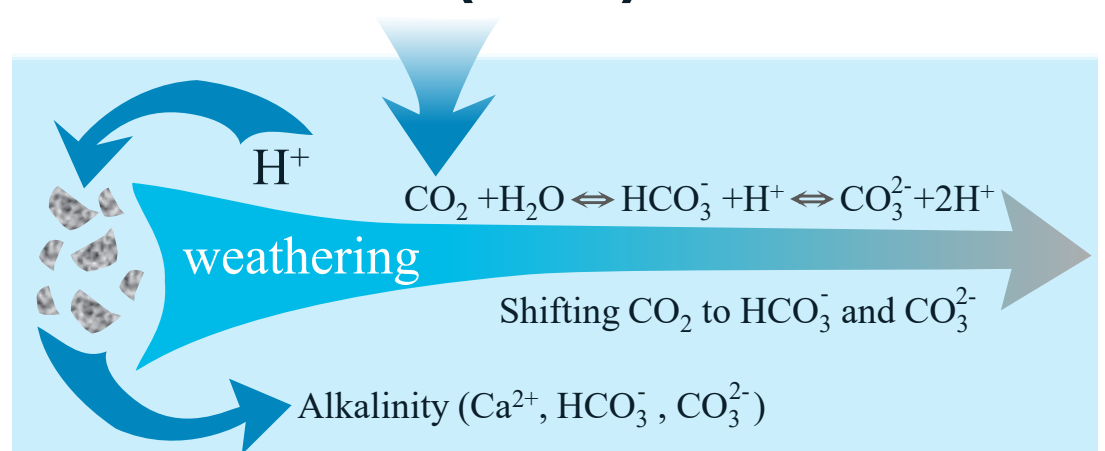
A pan-Australian research effort to assess the efficiency and environmental implications of ocean alkalinity enhancement



Ship time has been secured on CSIRO research vessel (RV) Investigator for two OAE field studies in Bass Strait.

What is Ocean Alkalinity Enhancement (OAE)?

OAE aims to neutralise ocean acidity through accelerating the weathering of alkaline minerals. This turns CO_2 into (bi)carbonate ($\text{HCO}_3^- + \text{CO}_3^{2-}$) so that more CO_2 can be stored in seawater.



What is ARVO about?

ARVO will test how alkaline materials can be distributed at sea, if doing so is safe for marine life, and if their increase in seawater alkalinity can efficiently remove CO_2 from the atmosphere.

Two voyages to Bass Strait, ARVO 1 and ARVO 2

Study goals and milestones

ARVO 1

14 July – 7 August 2027

Tests the distribution of ~50 tonnes of limestone (CaCO_3) powder.

Focus areas include ecosystem effects, plume dispersion, particle sinking, secondary precipitation, on-deck experiments, social implications, and Australian OAE governance and law.

ARVO 2

July – August 2028

Assesses OAE using the most efficient and safest alkaline material identified in ARVO 1.

Candidate materials include $\text{Ca}(\text{OH})_2$, steel slag, or $\text{Mg}(\text{OH})_2$, with attention to alkalinity generation, plankton, benthos, CO_2 uptake, and governance.