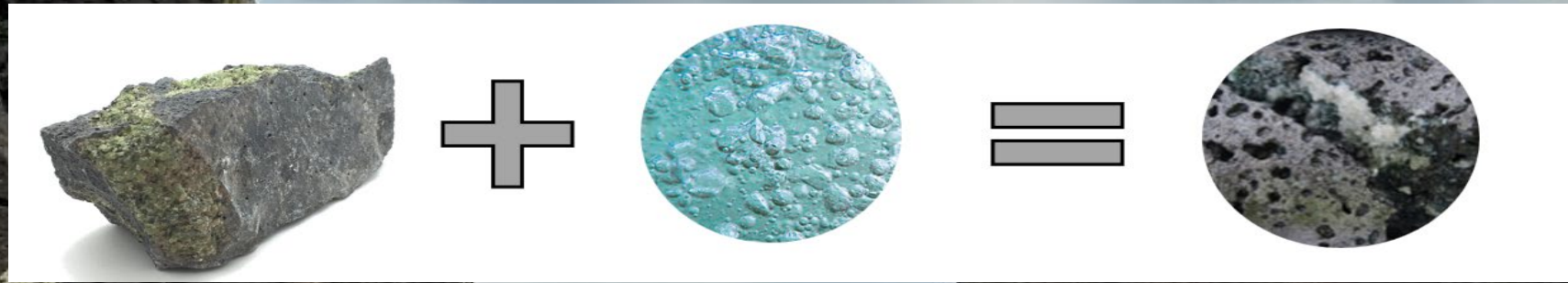


Basalt is the most common rock type on Earth comprising 50-60% of Earth's surface



Alkaline rock
basalt or cinder

CO₂ saturated sodium
bicarbonate solution
(saline)

Carbonates with
silica/clay biproducts

Columbia River Basalt Group (1 Fm) – 40 Gtons CO₂ (Cao et al., 2024)

Juan de Fuca plate (offshore) - 926 Gtons CO₂ (Goldberg et al., 2008)

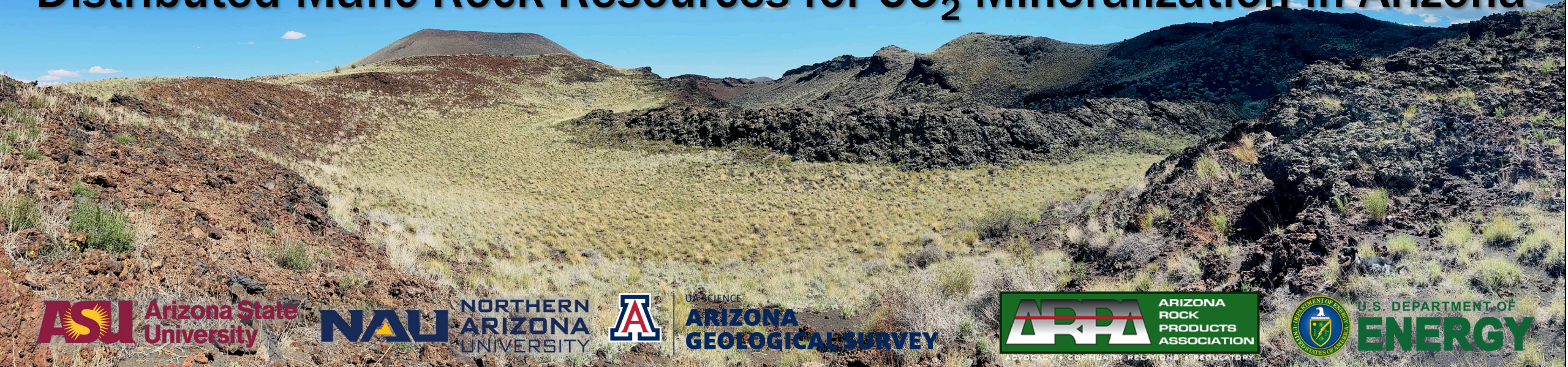
Icelandic basalts – 953-2470 Gtons CO₂ (Snæbjörnsdóttir et al., 2014)

Cinder cone theoretical capture capacity

A 0.5 km³ cinder cone with a bulk rock density of 2.8 g/cm³ and an MgO average of 10 wt% would trap 11 wt% of CO₂ as MgCO₃. This is equivalent to 30 million metric tons of CO₂ per cone if only 20% of the Mg is reacted.

(Fe/Ca trapped in carbonate is not accounted for)

Distributed Mafic Rock Resources for CO₂ Mineralization in Arizona



Powdered unreacted basalt

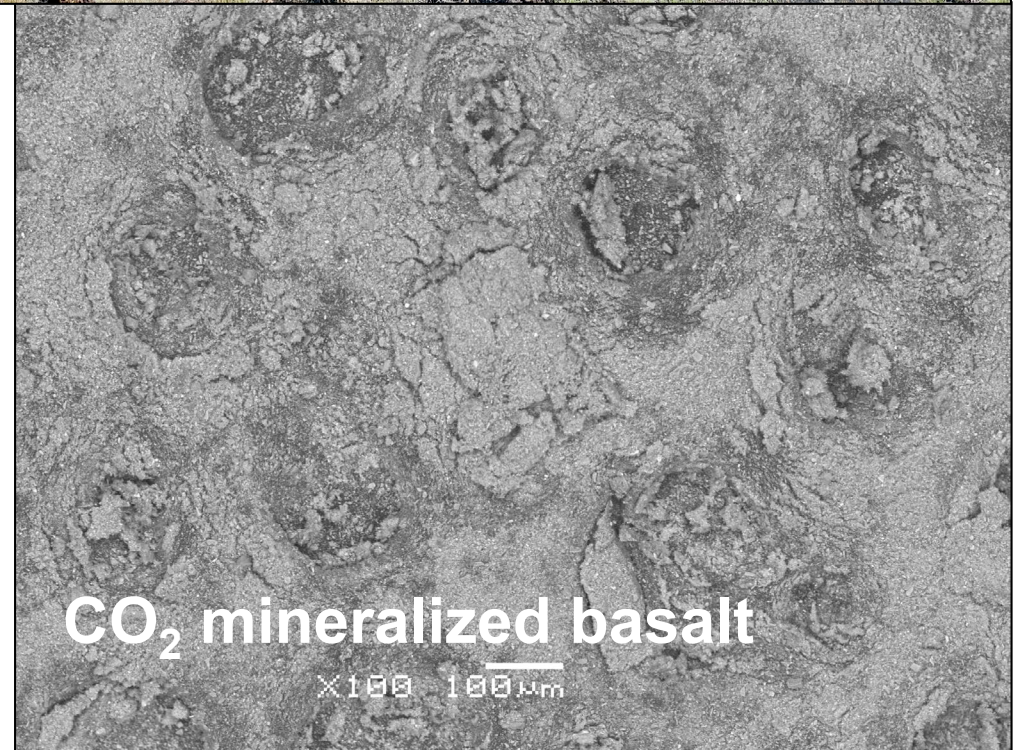
X750 20µm

17% of Arizona is
basalt

1200 cinder cones

Ex-situ
mineralization
parameterized to
maximize reaction
extent

DAC to
mineralization



CO₂ mineralized basalt

X100 100µm