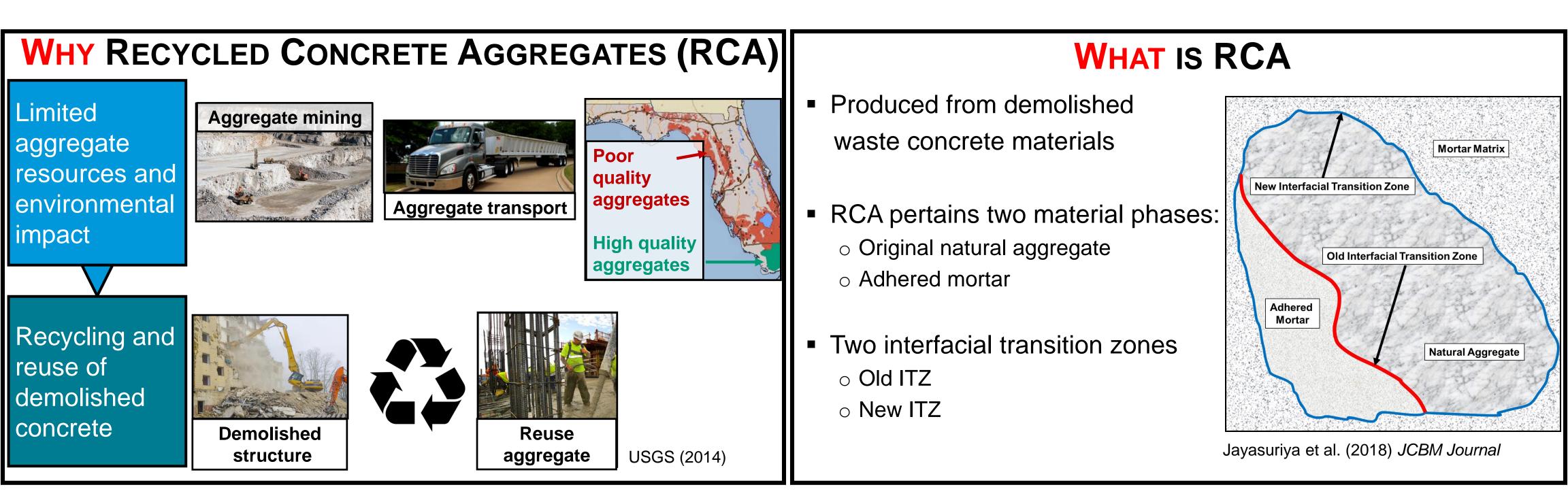
# Simulating Corrosion Induced Damage in Recycled Aggregate Concrete Systems

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## **APPLICATIONS OF RAC IN STRUCTURES**

Industry goal of reducing carbon emissions associated with

## **MECHANICAL PROPERTIES OF RAC**

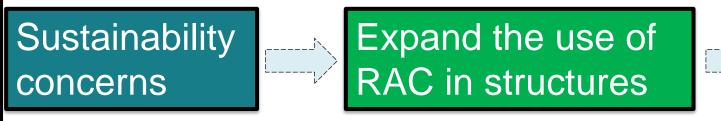
Increasing RCA replacement leve



Peak response

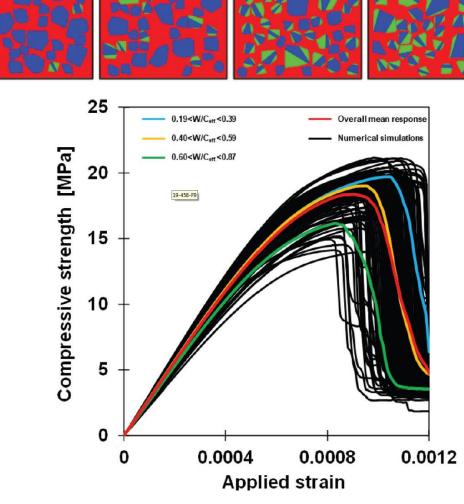
matslab

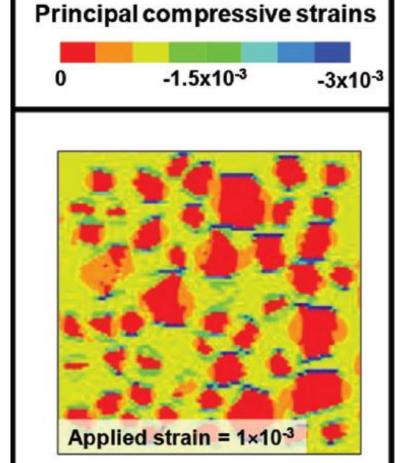
- the production of concrete
- Less than 1% recycle aggregate used in structural components in Europe
- End user concern of mechanical and durability properties



Durability issues in reinforced RAC

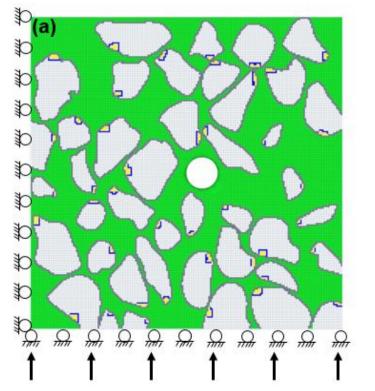
Ignjatović et al. (2017) Engineering Structures

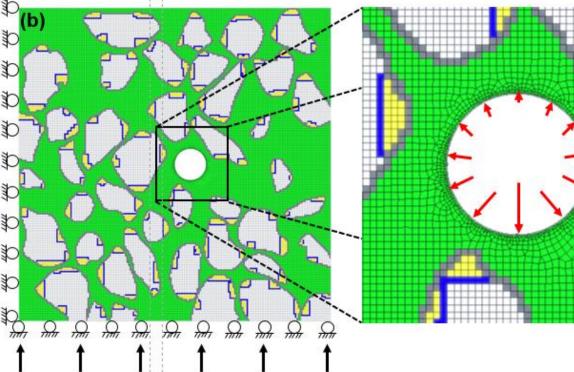




Jayasuriya et al. (2022) ACI Materials Journal

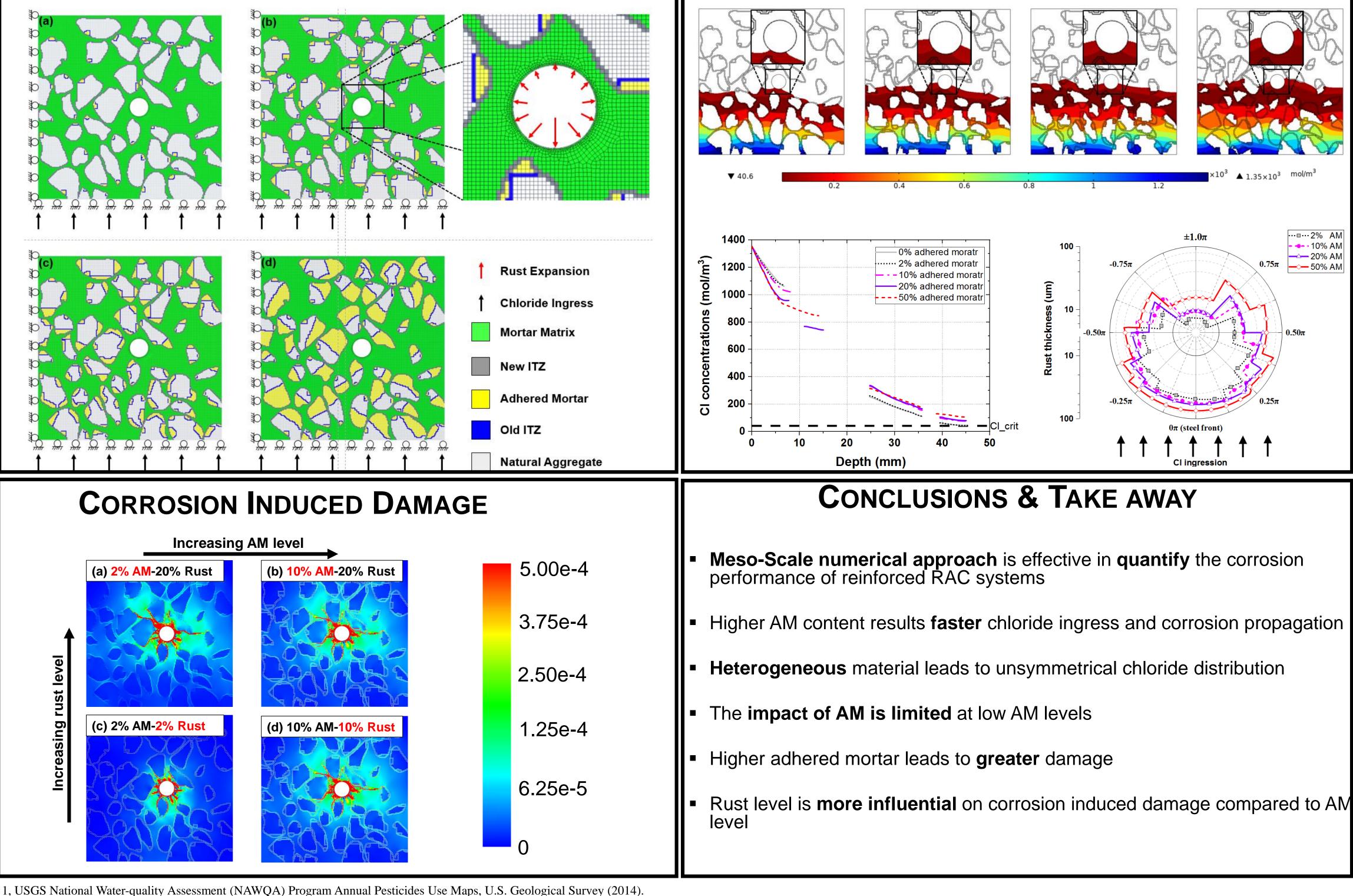
## **Meso-scale Numerical Investigations**







### **CHLORIDE DISTRIBUTION**



2, Jayasuriya, Anuruddha, Matthew P. Adams, and Matthew J. Bandelt. "Understanding variability in recycled aggregate concrete mechanical properties through numerical simulation and statistical evaluation." Construction and Building Materials 178 (2018): 301-312 3, Ignjatović, Ivan S., Snežana B. Marinković, and Nikola Tošić. "Shear behaviour of recycled aggregate concrete beams with and without shear reinforcement." Engineering Structures 141 (2017): 386-401.

4, Jayasuriya, Anuruddha, Matthew J. Bandelt, and Matthew P. Adams. "Stochastic Mesoscopic Modeling of Concrete Systems Containing Recycled Concrete Aggregates Using Monte Carlo Methods." ACI Materials Journal 119, no. 2 (2022): 3-18.