

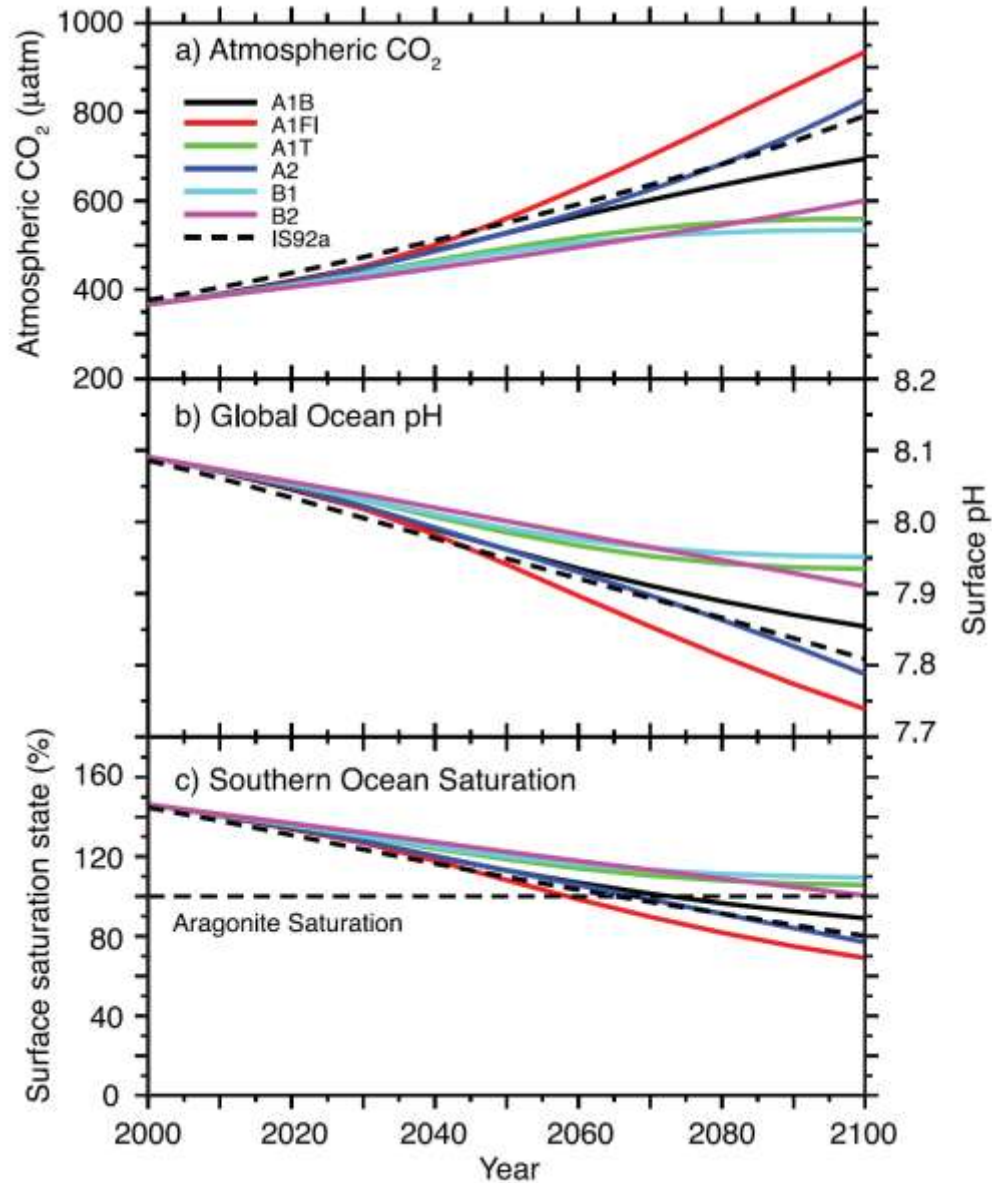
Reducing the effects of climate change through management of local pollution



Bayden Russell

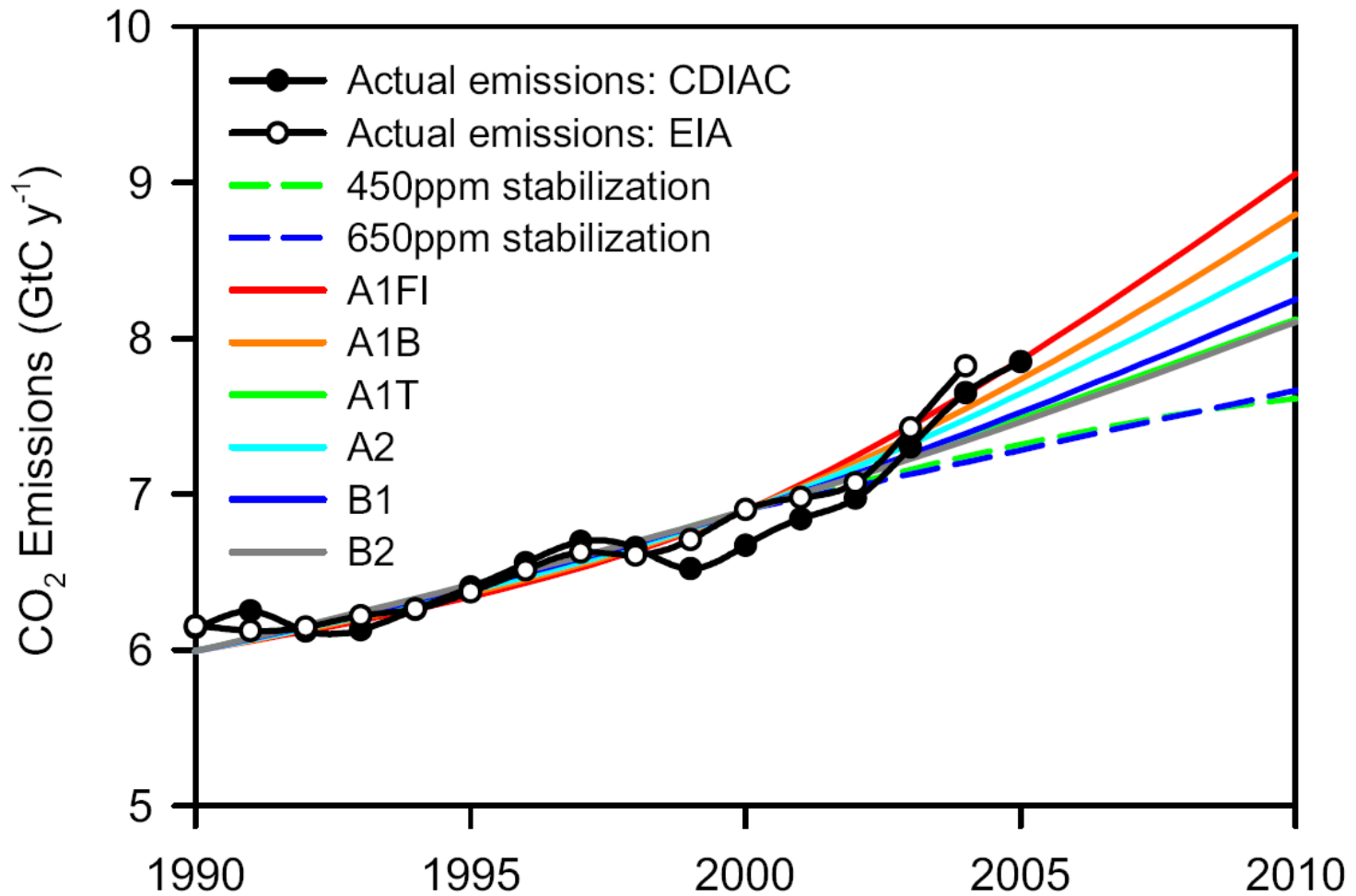
- Climate change forms an increasing part of the international media
- Focus tends to be on:
 1. Predicting the extent of change in physical/chemical systems

Predictions



Source: Meehl et al.
(2007) IPCC

CO₂ emissions

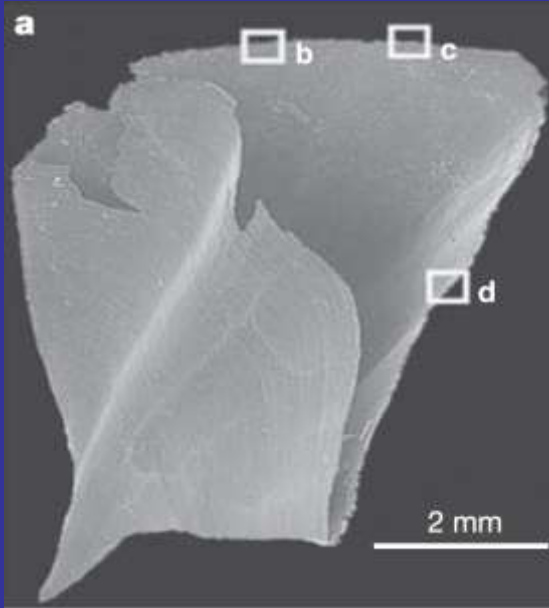


Source: Raupach et al. (2007) PNAS

- Climate change forms a substantial part of the current literature
- Focus tends to be on:
 1. Predicting the extent of change in physical/chemical systems
 2. Predicting the negative effects a **single** climate factor on **single** organisms

- Climate change forms a substantial part of the current literature
- Focus tends to be on:
 1. Predicting the extent of change in physical/chemical systems
 2. Predicting the negative effects a **single** climate factor on **single** organisms
- But, this just highlights the bad.....

CC effects on calcifiers



Source: Orr et al.
(2005) Nature



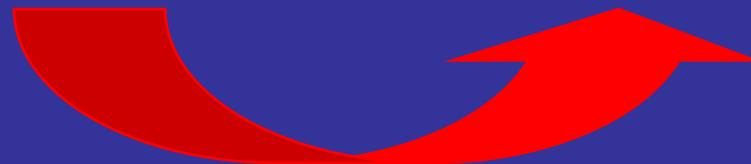
Source: Hall-Spencer
et al. (2008) Nature



Source: Hoegh-
Guldberg et al. (2007)
Science



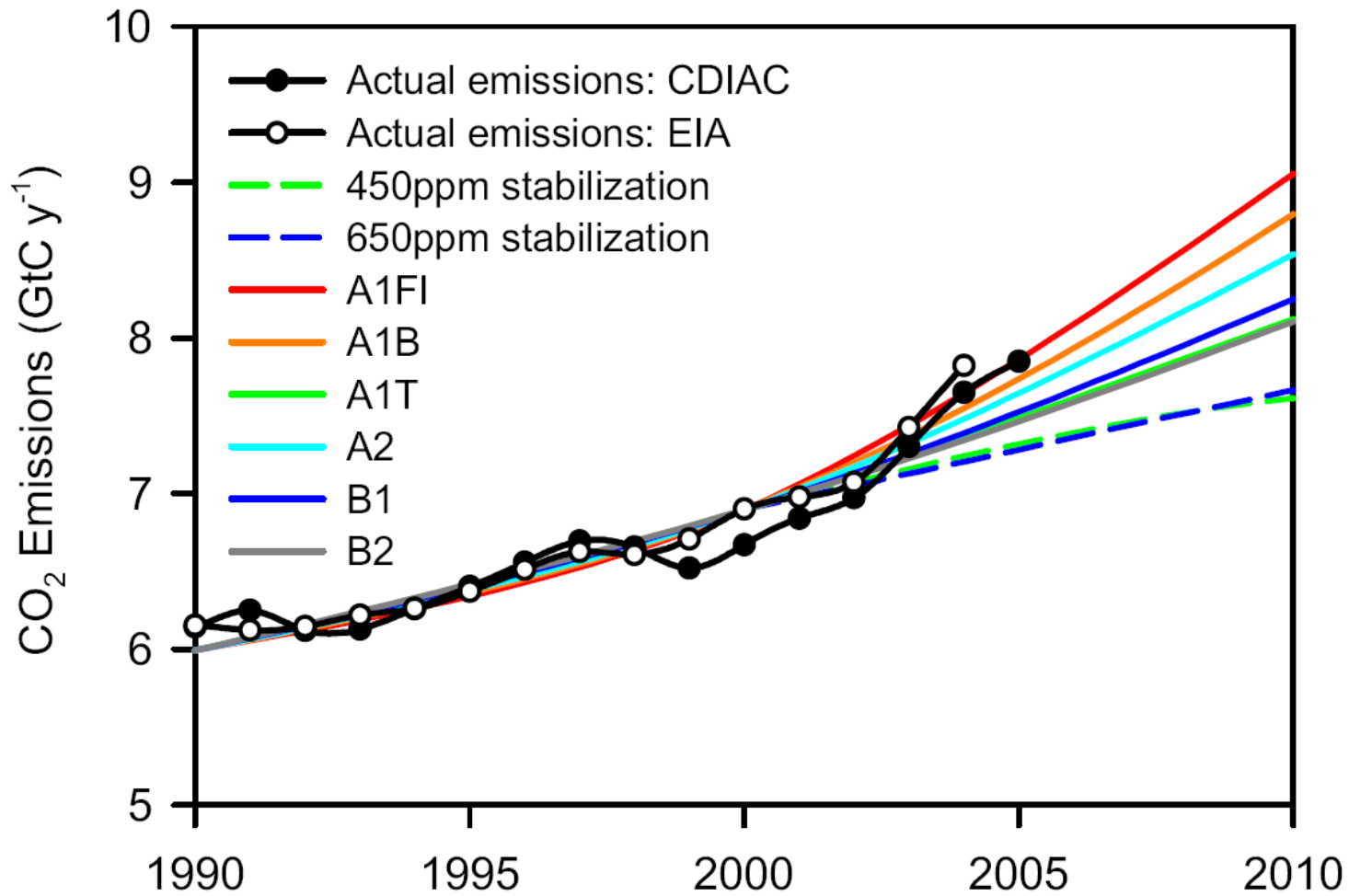
- Acidification of oceans
 - negative effects on calcareous organisms (e.g. coralline algae)
- BUT, may have little negative, or *even positive* effects on some algae
- How will CO_2 interact with local stressors?



Nutrients v. CO₂

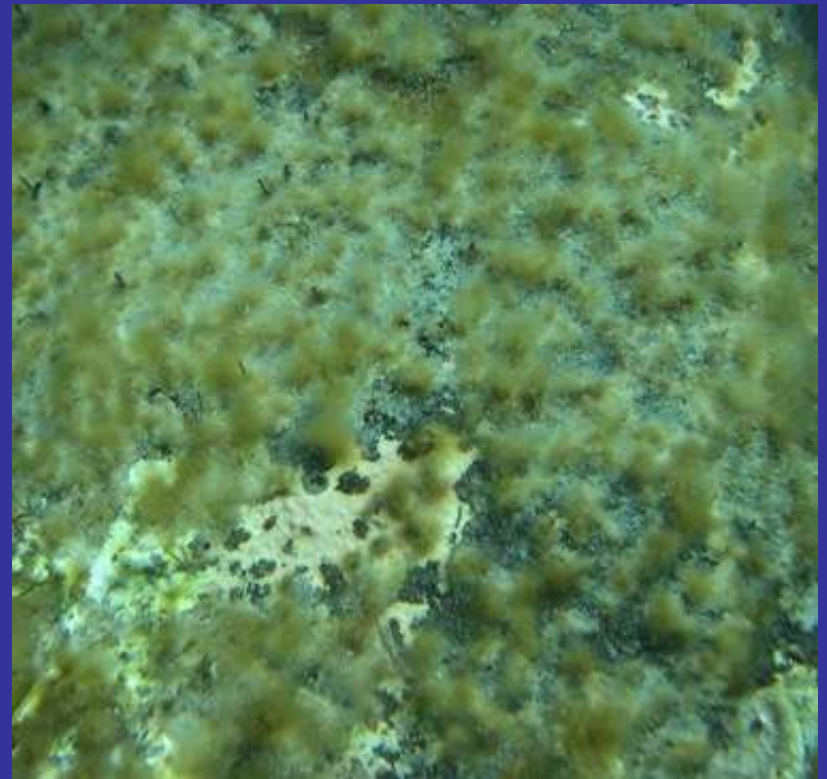
- Will increasing CO₂ affect non-calcareous species?
- Will increasing CO₂ alter the effects of nutrients?

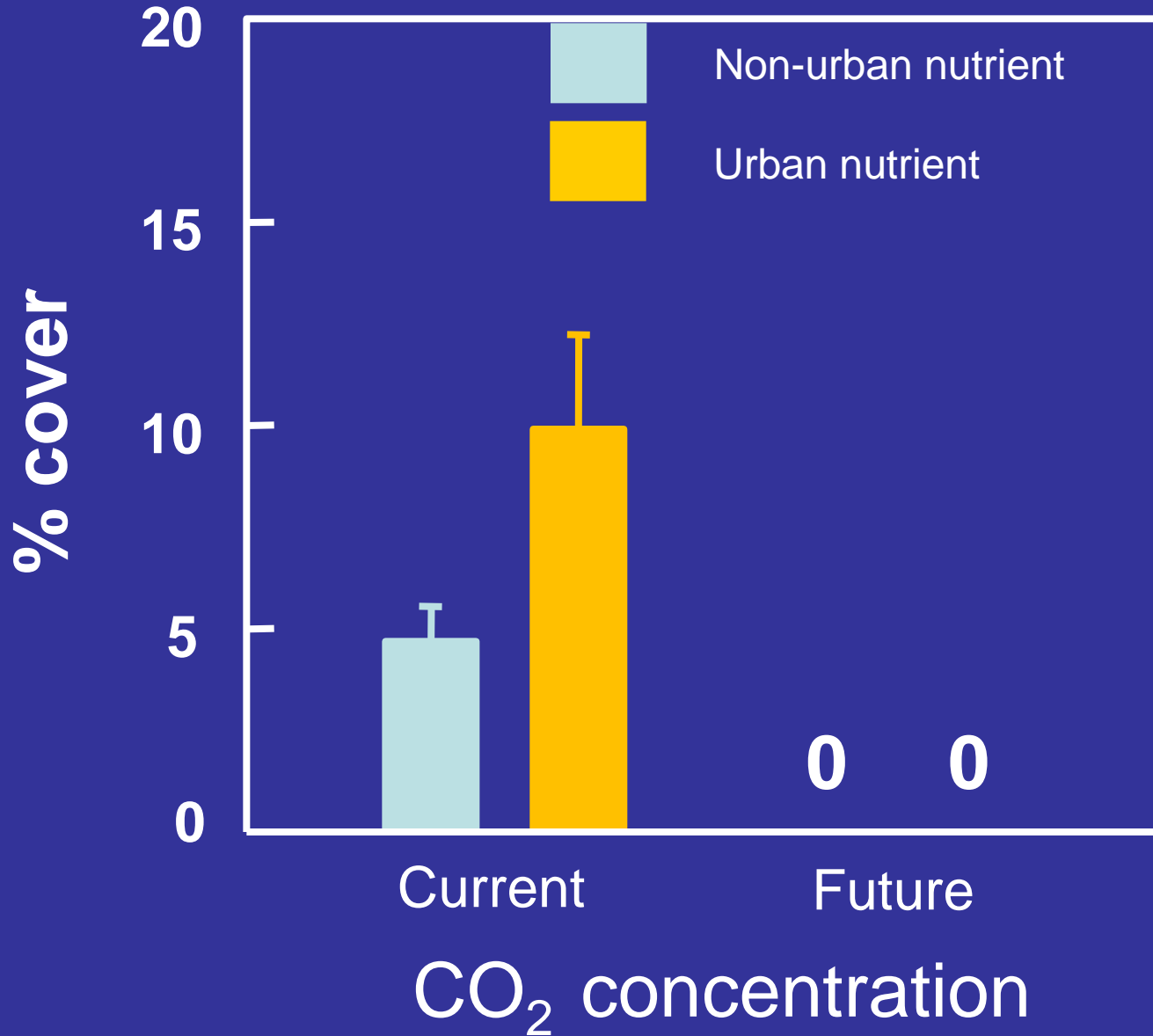
Design



Design

- Two algae, encrusting coralline and turf-forming



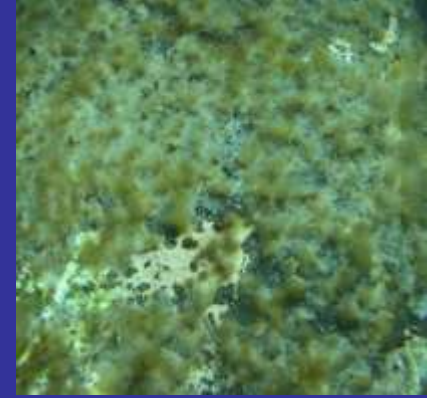
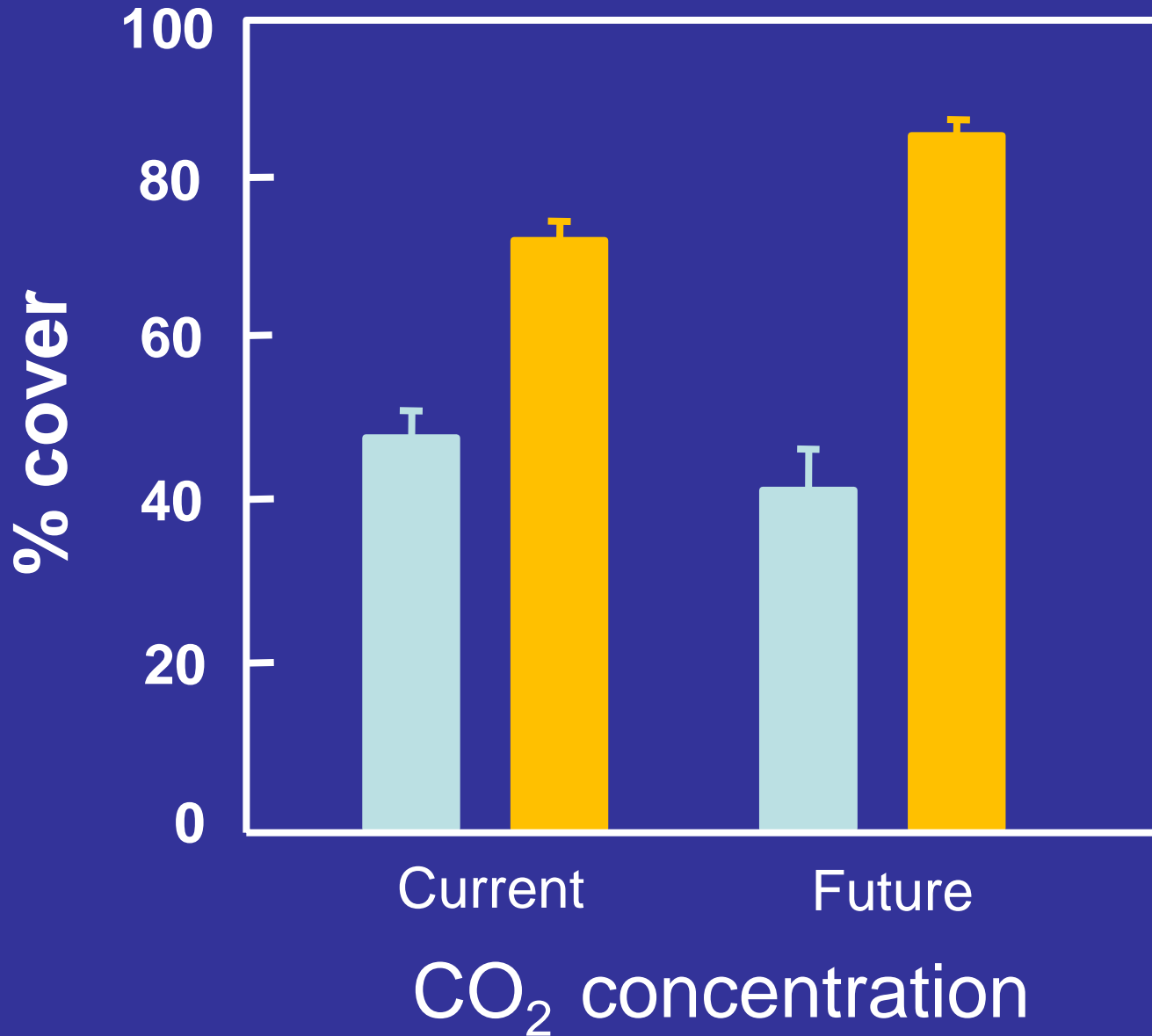




Non-urban nutrient



Urban nutrient

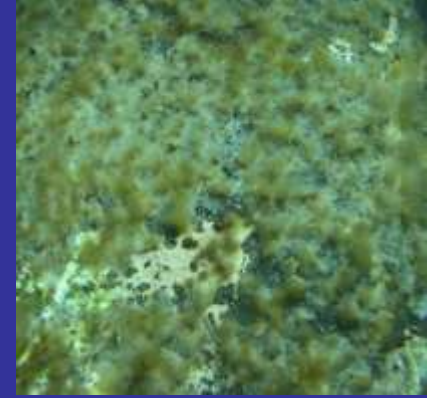
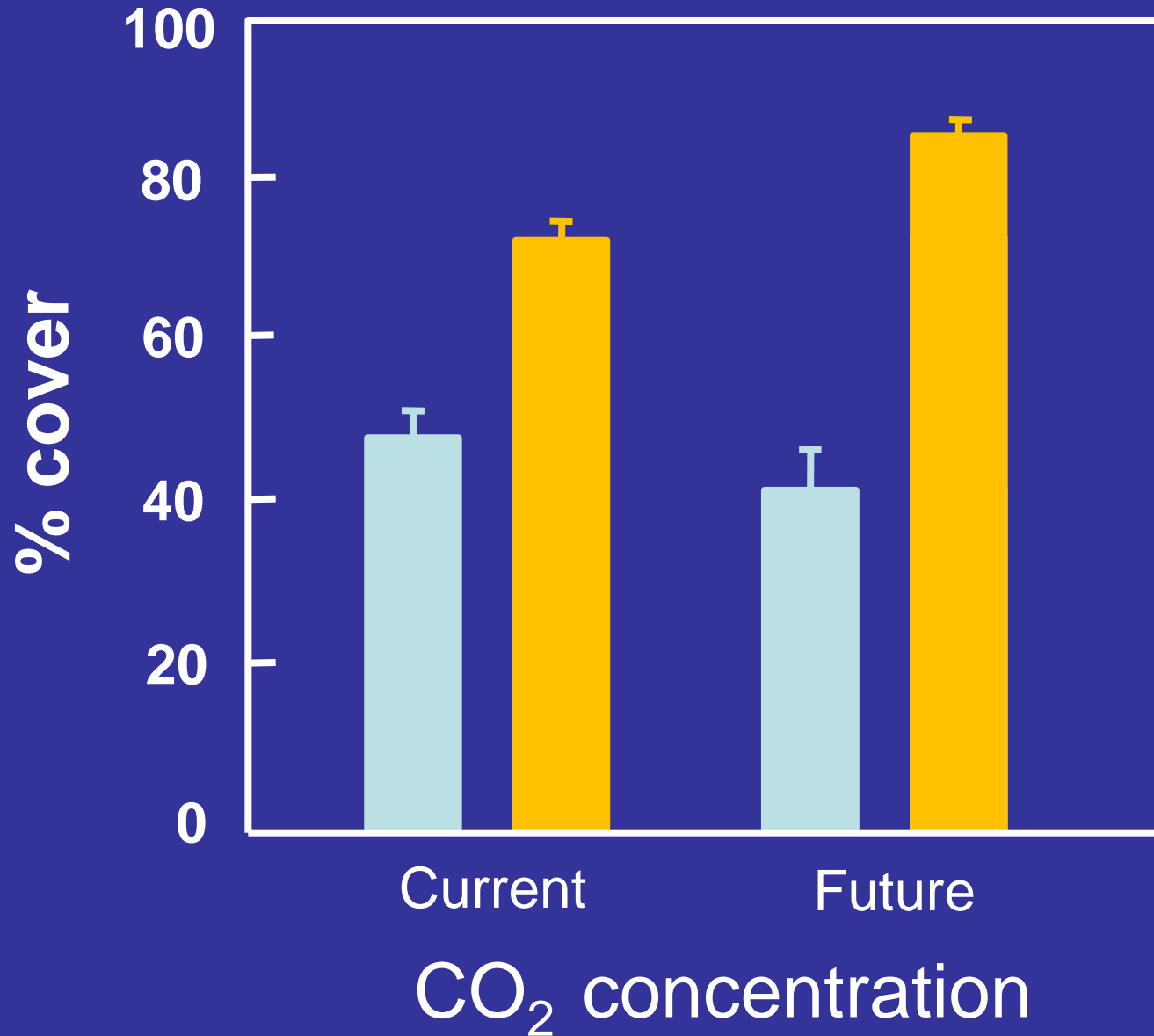


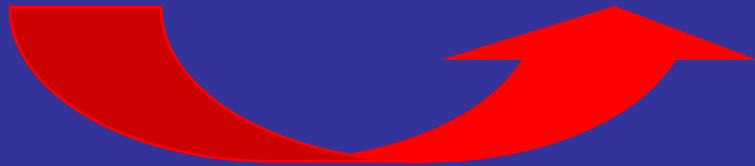


Non-urban nutrient



Urban nutrient





Conclusions

- Don't despair, all is not lost!
- We can help our ecosystems to survive
 - BUT, early action is required

