

Background

Phytoplankton: An Intro



Phytoplankton are microscopic, aquatic autotrophs from most kingdoms of life.

Crucial for climatic and environmental stability:

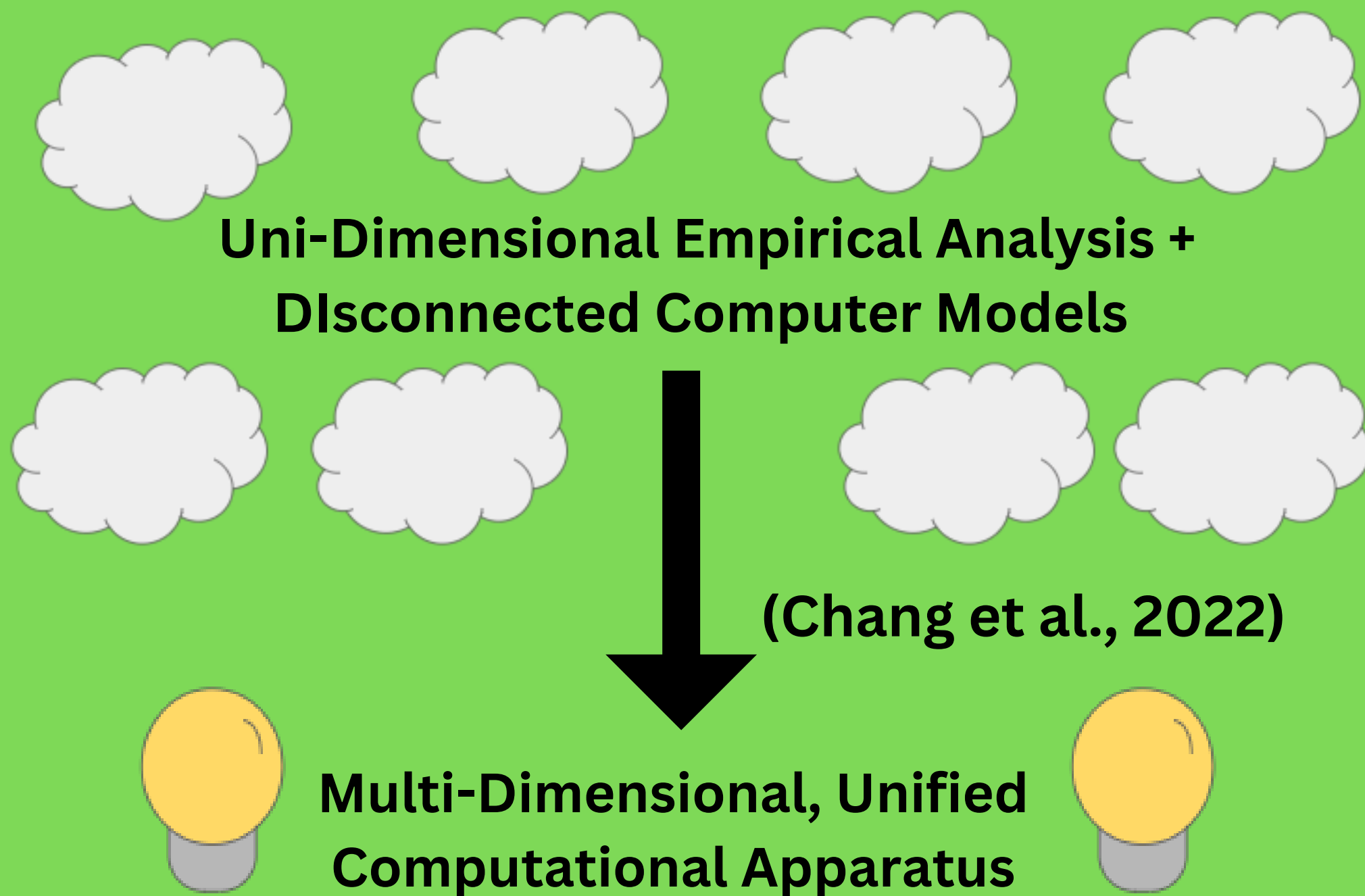
- Sequester 30% of CO2 emissions (Rohr et al., 2023)
- Reflect solar radiation (Deppeler & Davidson, 2017)
- Base of the marine food web (Käse & Geuer, 2018; Loschi et al., 2023)
- Biogeochemical cycling of nutrients (Sarker et al., 2023)

Current Empirical Limitations

(Winder & Sommer, 2012)

Factors Limiting Applicability of Phytoplankton Studies:

- *Non-uniform* changes in oceanic conditions
- *Non-uniform* biological preferences among different phytoplankton groups
- Complexity from *multiple environment parameters*
- Limited Data (Ratnarajah et al., 2022)
- Limited Scope of Individual Computational Models



**A Highly Relevant Issue For
Scientists and Policymakers**

UN Sustainable Development Goals:

-Climate Action, Clean Water, Life Below Water
(United Nations, 2015)