



# Study of the trophic and functional organization of fish assemblages in submarine shallow CO<sub>2</sub> vents



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## 1. THE PROBLEM

### ➤ Ocean Acidification?

Increasing atmospheric CO<sub>2</sub> acidifies surface seawater and pH is globally decreased by 0.1 units. pH may drop up to 0.5 units by 2100.



Ecological effects and biological responses???

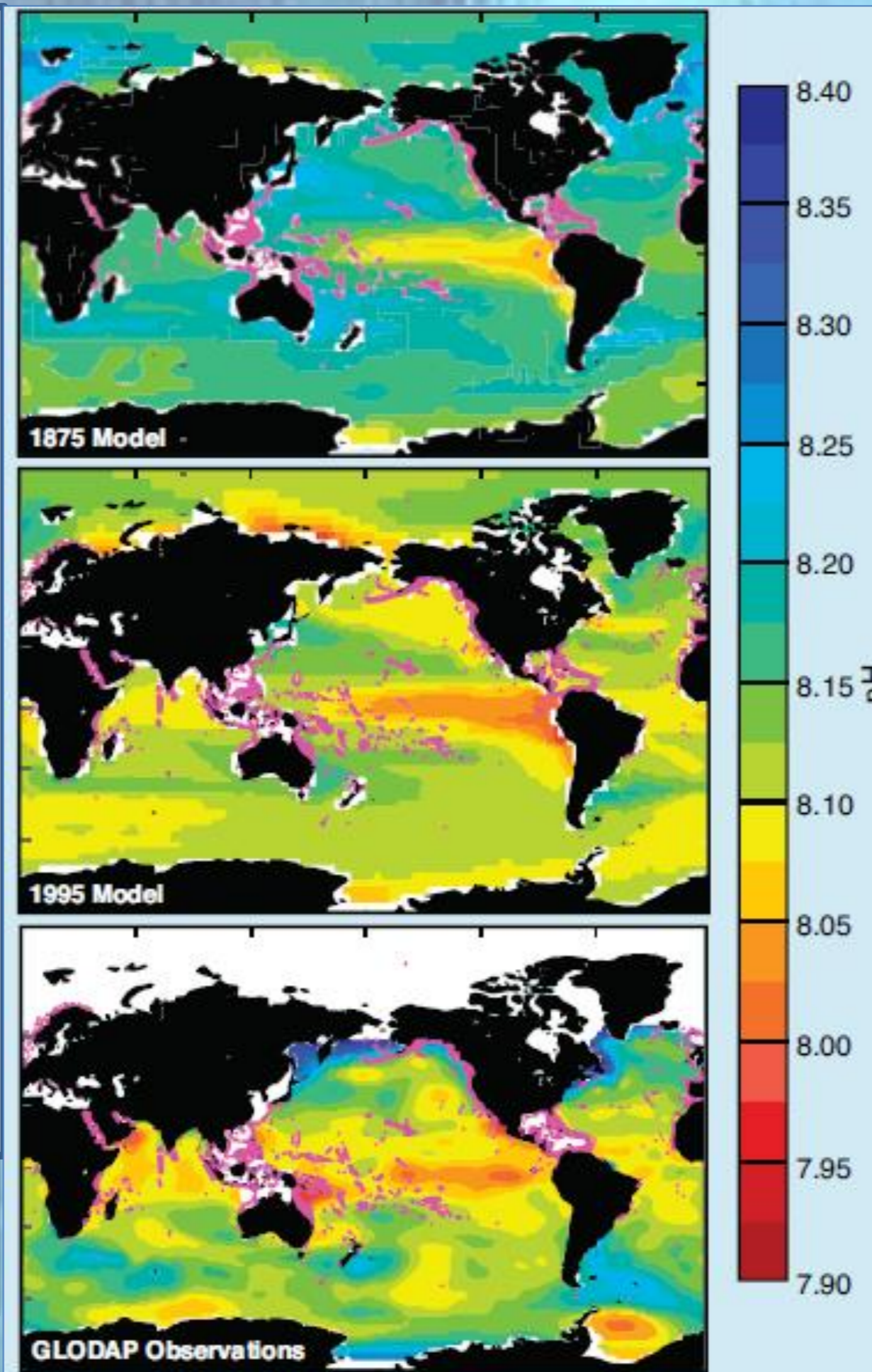


Fig. 1 – Modeled decadal mean pH at the sea surface (IPCC, 2013)

## 2. WHAT ARE CO<sub>2</sub> VENTS?

Natural laboratories with high levels of CO<sub>2</sub> and a pH gradient. Mesocosms to test ecological hypothesis (Hall-Spencer et al. 2008).

## 3. WHERE: Study Area?



Fig. 3 - Tyrrhenian Sea (Ischia Island and Aeolian Arc) and Aegean Sea (Hellenic Volcanic Arc) – Dando et al. 1999

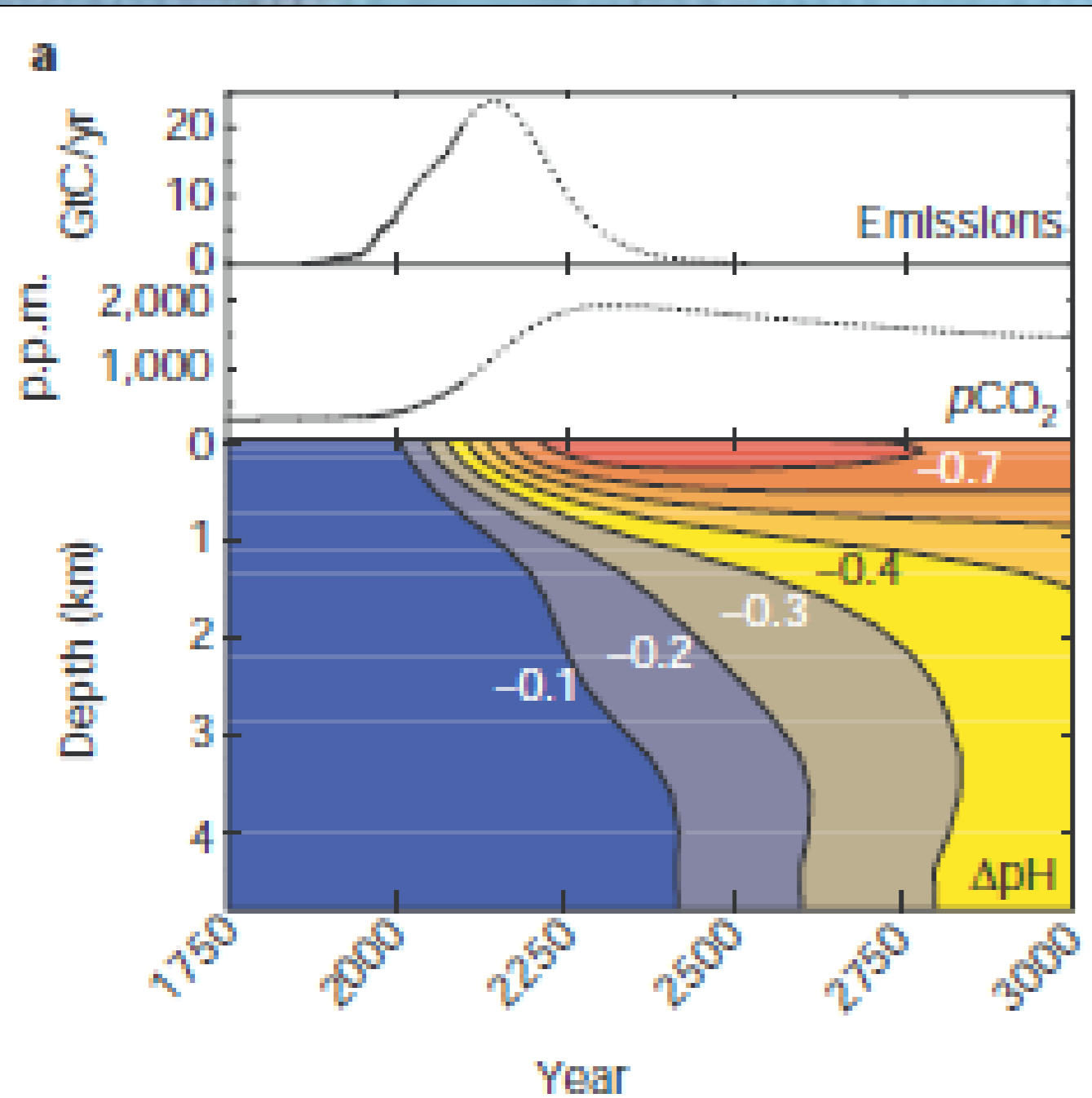


Fig. 2 – Global Ocean Acidification (pCO<sub>2</sub>/pH) – Caldeira & Wickett, 2003

## 4. WHO?

Fish assemblages

- community structure
- trophic organization
- composition of carbonic structures
- bioaccumulation and biomagnification



## 5. HOW: Methods?

- Preliminary survey
- Visual census and sampling
- Stable isotope and stomach content analysis
- Morphologic analysis (skeleton and gonads)
- Chemical analysis

## 6. OUTLOOKS

This research will contribute to bridge the gap to predict the ecological effects of ocean acidification on fishes, a key biological component whose monitoring is relevant not only from the ecological standpoint but also for the economic one and for the implications on human health.

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