

## **Will invasive macroalgae benefit from climate change?**

**Arenas F.** ; Hyam O.

Laboratory of Coastal Biodiversity, CIIMAR-Centro Interdisciplinar de Investigação Marinha e Ambiental, Rua dos Bragas 289, Porto, Portugal.

### **Objectives**

The risk of biological invasions on marine coastal habitats is rapidly increasing in concomitance to the changes in the climate. Average atmospheric and sea surface temperatures are increasing and excessive CO<sub>2</sub> continues to dissolve in the oceans, causing acidification. We examined the effects of these two climate-driven stressors both in natives and invasive macroalgae; aiming to analyze if invasive species will perform better in the predicted future environmental conditions.

### **Material & methods**

We used outdoor mesocosms where we increased temperature and CO<sub>2</sub> partial pressure in a fully orthogonal experimental setup. As species performance proxies we used fitness related responses like growth and photosynthetic performance (PAM).

### **Results**

Initially, future high concentrations of CO<sub>2</sub> generated a highly productive response, and this was enforced when combined with future high temperatures. However this response was not kept during the three weeks of duration of the experiment. During last two weeks a synergistic interaction between the two environmental factors was the most frequent response. In general, invasive seaweeds performed better than natives.

### **Conclusions**

Species responses to future global changes are unpredictable from single stressors experiments. Invasive species seem to show better chances under the future environmental scenarios.

Research funded by FCT funded project PHYSIOGRAPHY (PTDC/MAR/105147/2008)