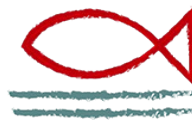


Feeding of Antarctic asteroids

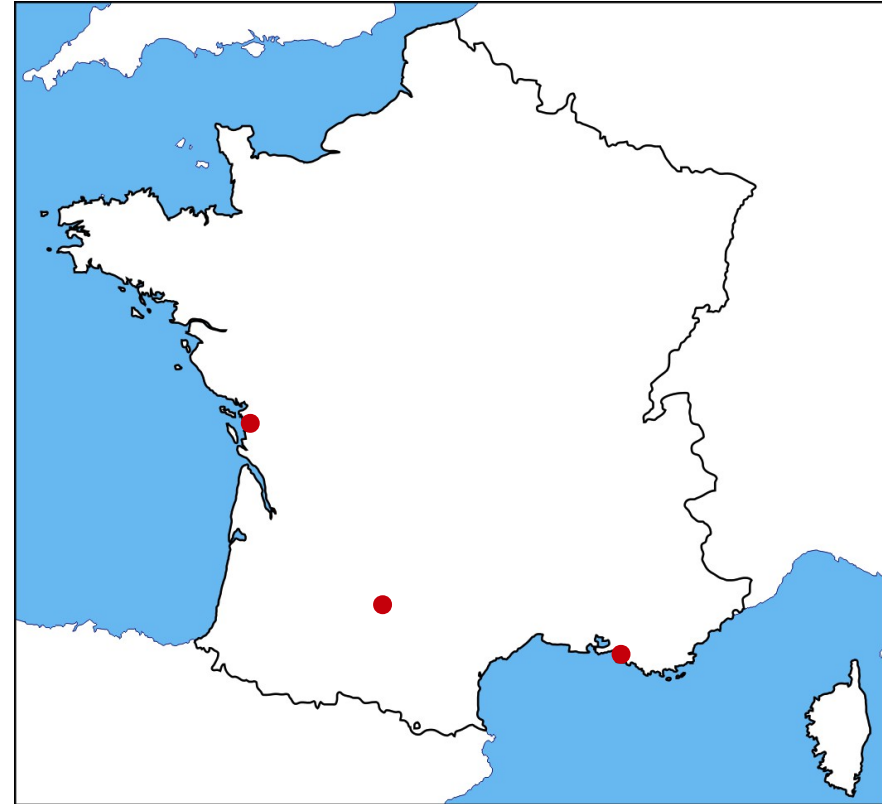
identification of trophic resources and investigation of trophic plasticity and diversity

Baptiste Le Bourg



Background

- 2008-2011 : **Bachelor Biology of Organisms, Populations and Ecosystems**, University Paul Sabatier, Toulouse
- 2011-2012 : **Master 1 Sciences For Environment, Biology**, University of La Rochelle
- 2012-2013 : **Master 2 Oceanography, Marine Biology and Ecology speciality**, Aix-Marseille University
- 2013-2014 : **Master 2 Oceanography, Professional speciality**, Aix-Marseille University



PhD project: objectives

- 12% of known sea star species living in the Southern Ocean
- Important group of Antarctic benthos with known trophic diversity



Predator
(ex: *Lophaster gaini*)



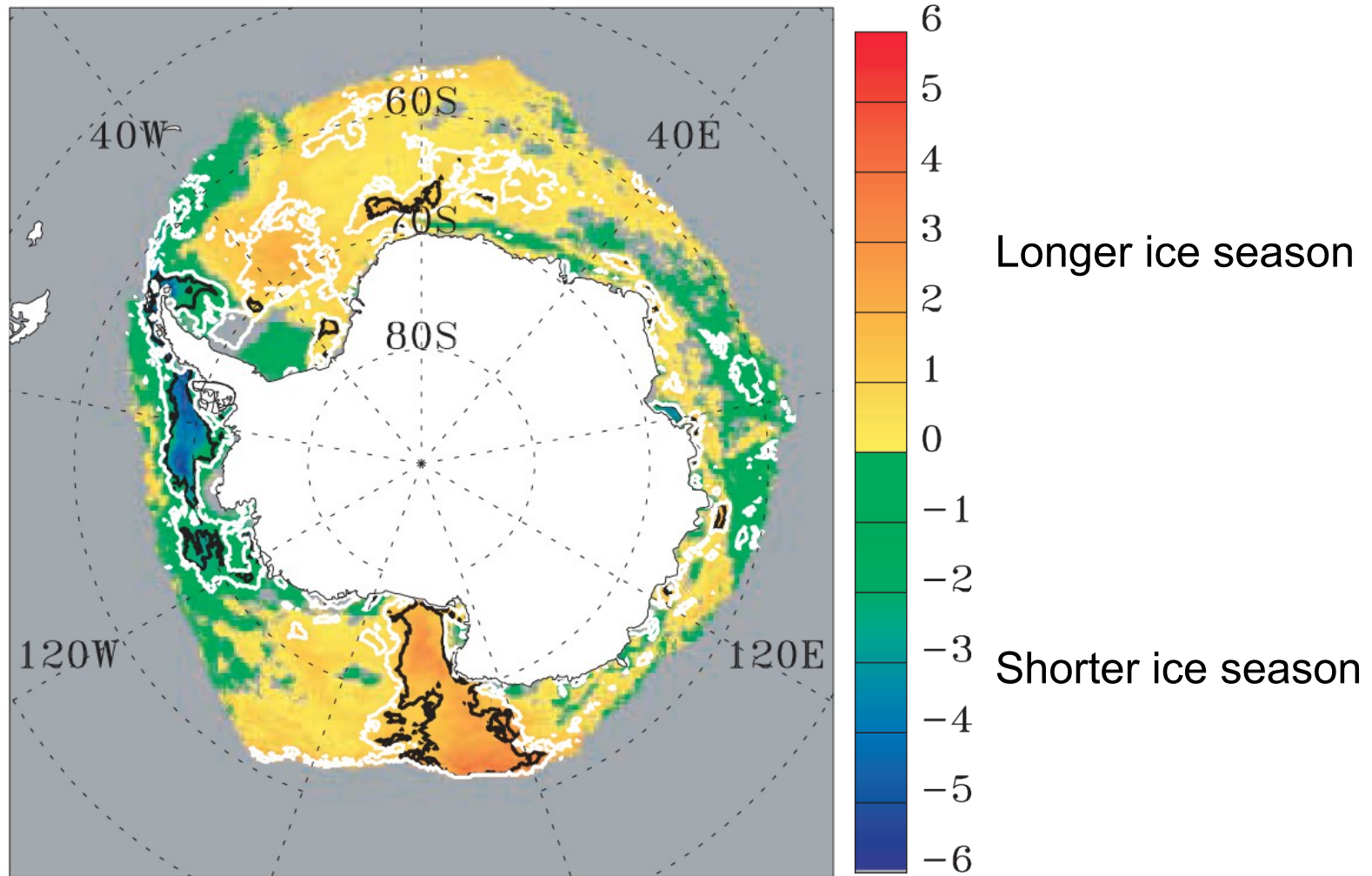
Scavenger
(ex: *Odontaster validus*)



Ciliary mucous-feeder
(ex: *Glabraster antarctica*)

- Sea stars will have to face new kind of stress because of climate change

1979-2004 Ice season duration changes (days/year)

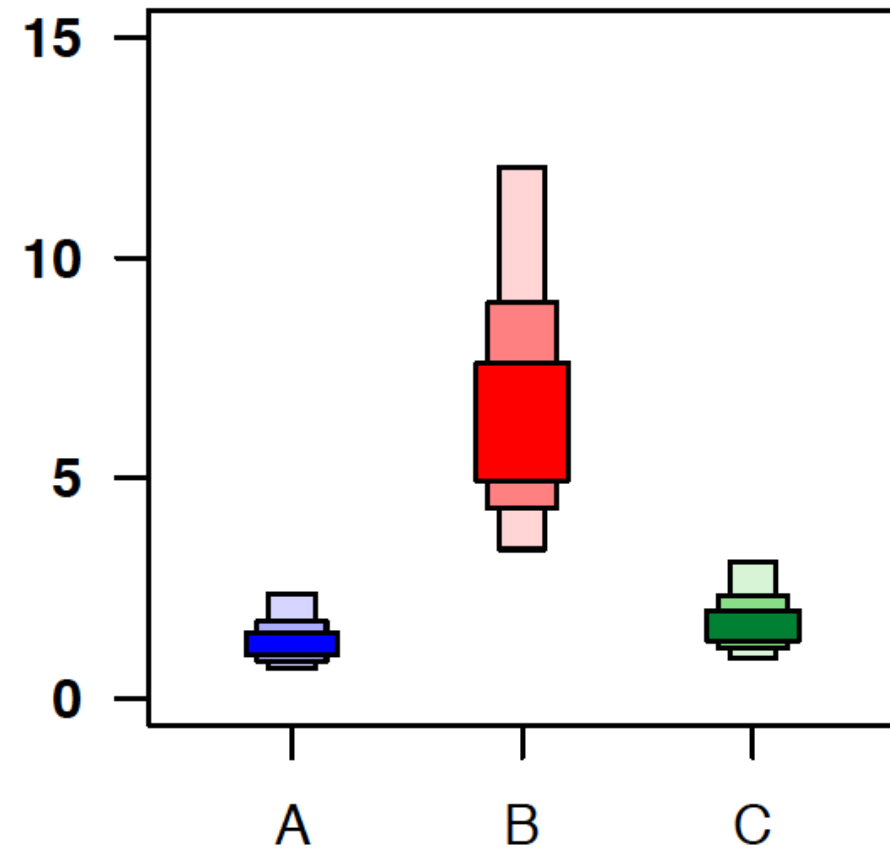
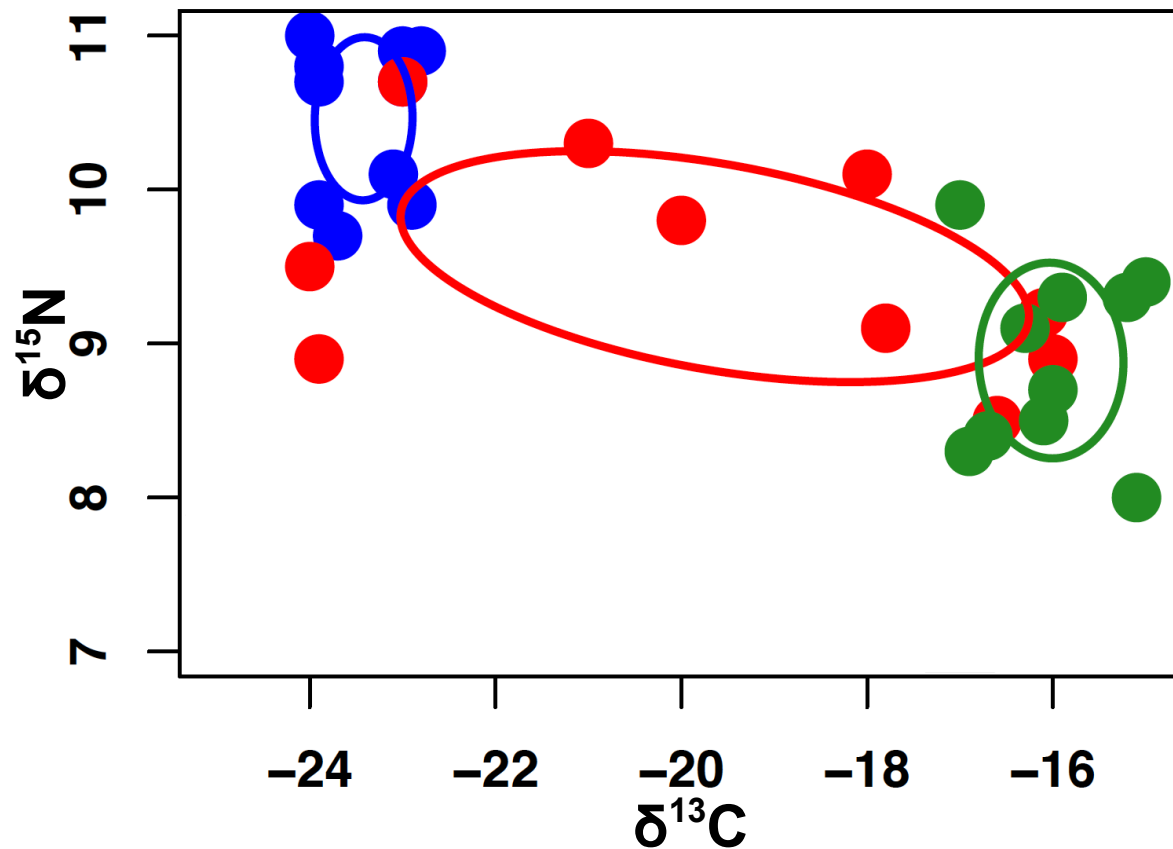
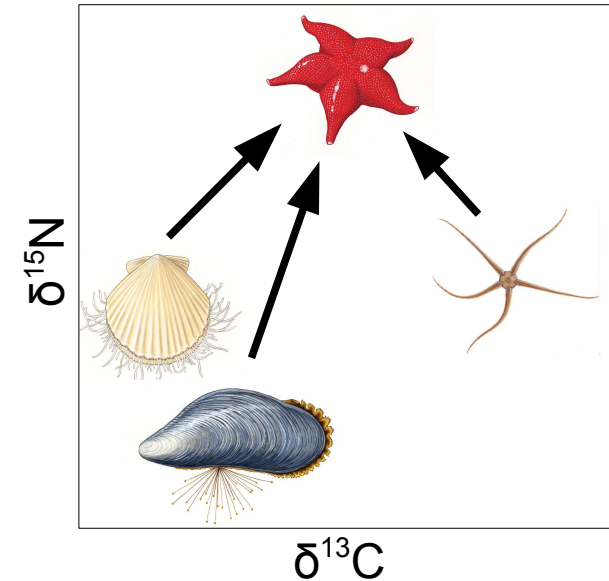


Stammerjohn et al., 2008

- Regional variations in changes of sea ice extent and ice season duration
- Impact on pelagic food webs and potential prey of sea stars

Stable isotope analysis

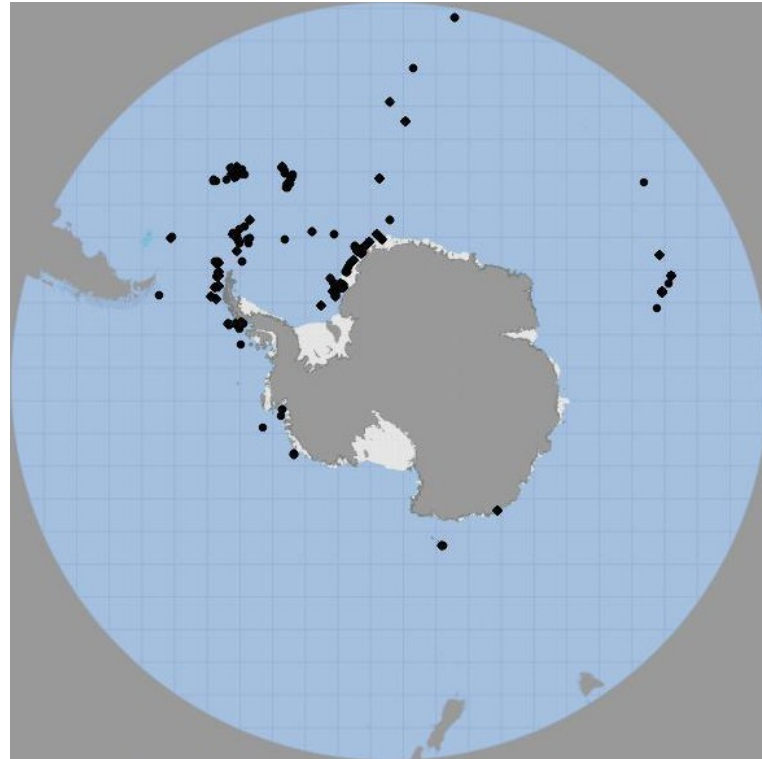
- **Mixing models** : reconstitution of the diet.
- **Isotopic niches** \leftrightarrow trophic niches : size and overlap



Research axes

Axis 1: Spatio-temporal variations of trophic diversity, variability and plasticity of Antarctic and Subantarctic sea stars

- Stable isotope composition of sea stars from various regions, habitats and years
- Isotopic niche size and overlap of the various species



Research axes

Axis 2: Trophic resources in Subantarctic habitats

- Stable isotope composition of sea stars, prey and trophic resources from the Kerguelen islands
- Estimation of prey contribution to the diet of sea stars (simmr package of R)

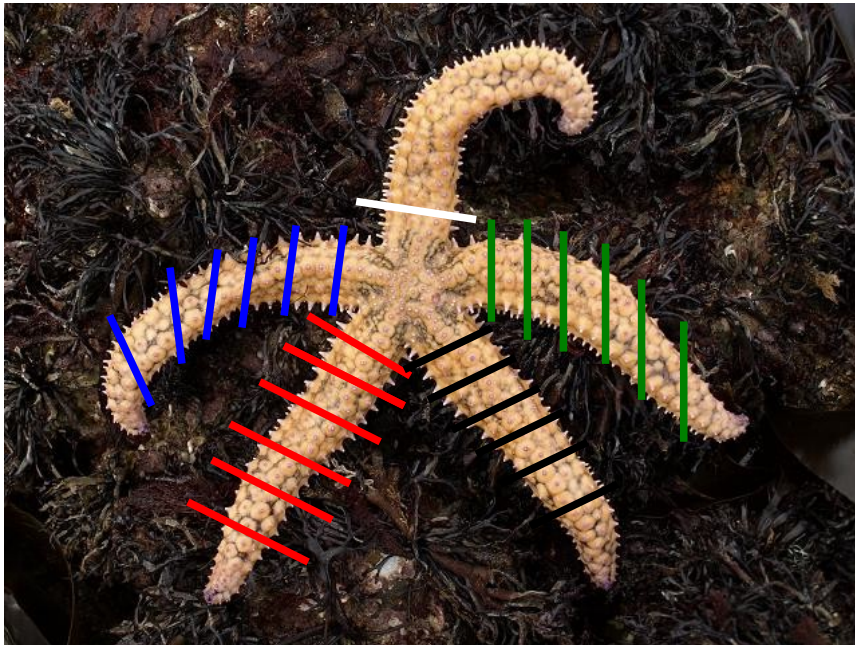


Research axes

Axis 3: Influence of preservation treatment on stable isotope ratios

- Some samples stored in preservative fluids

À alteration of stable isotope ratios? No studies on sea star



- Freezing
- Formaldehyde
- Ethanol
- Drying (control)

Axis 3: current results

- Axis 1: Sea ice increases trophic diversity and variability of sea stars
- Axis 3: Samples stored **frozen**, in ethanol or **dried** may be used to study trophic ecology of sea stars.

Samples stored in **formaldehyde** may be used after using a correction factor.

Thank you for your attention