2nd International Symposium
Effects of Climate Change on the World's Oceans
May 13 – 20, 2012
Yeosu, Korea

Theme Session S1 Climate variability versus anthropogenic impacts

Shifts between gelatinous and crustacean plankton in a coastal upwelling region

(S1-7963)

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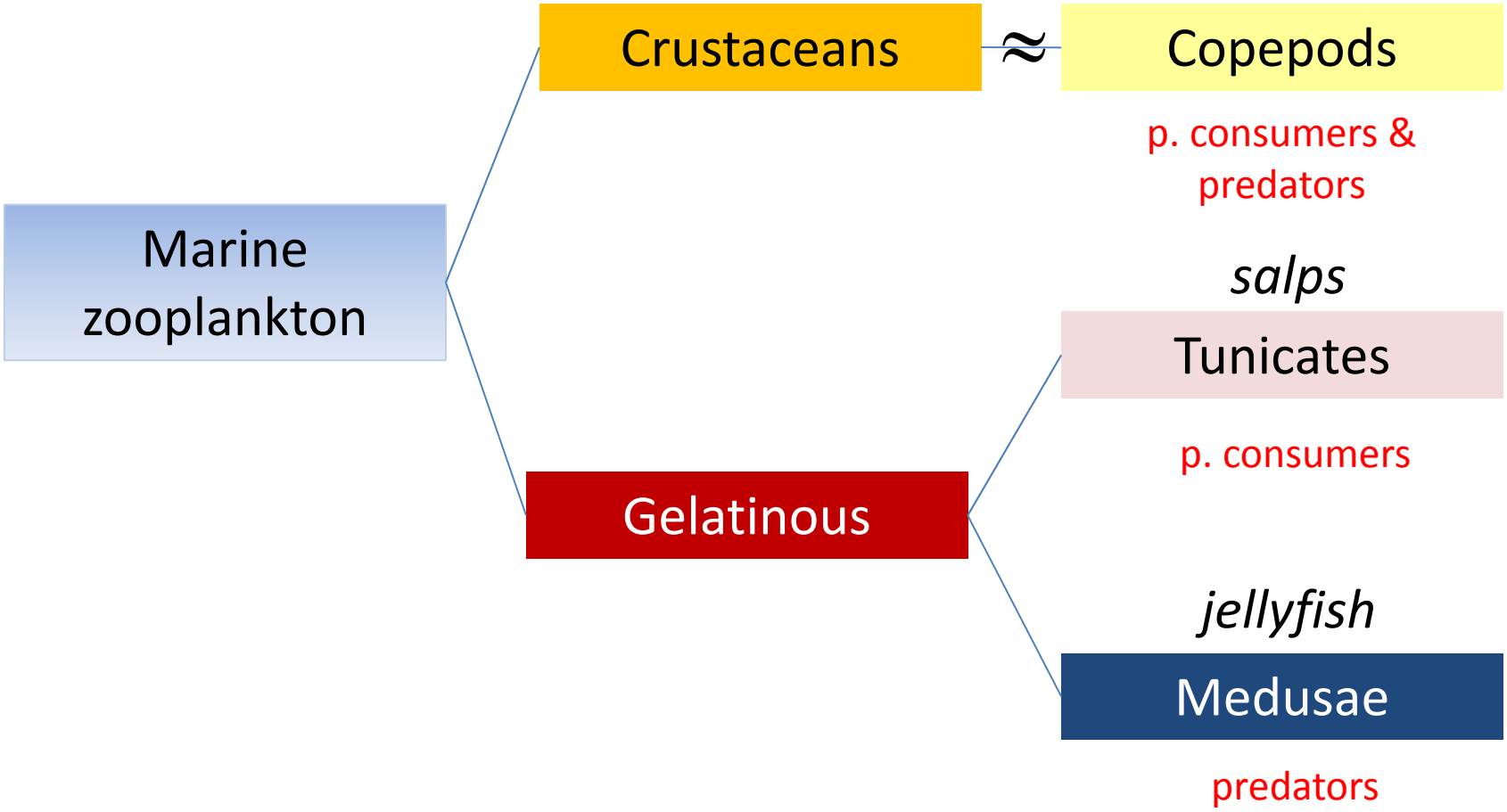
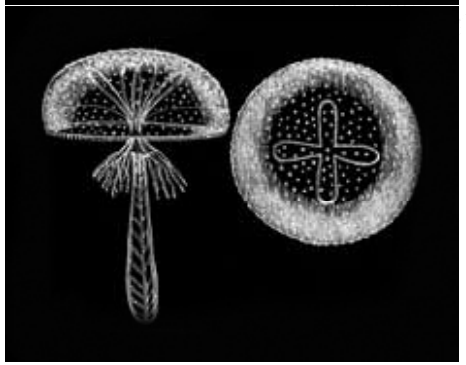
Zooplankton types:

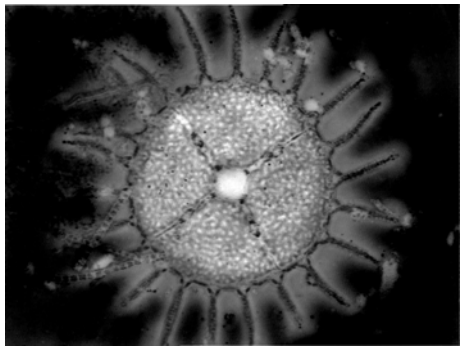


Examples:

copepods

tunicates



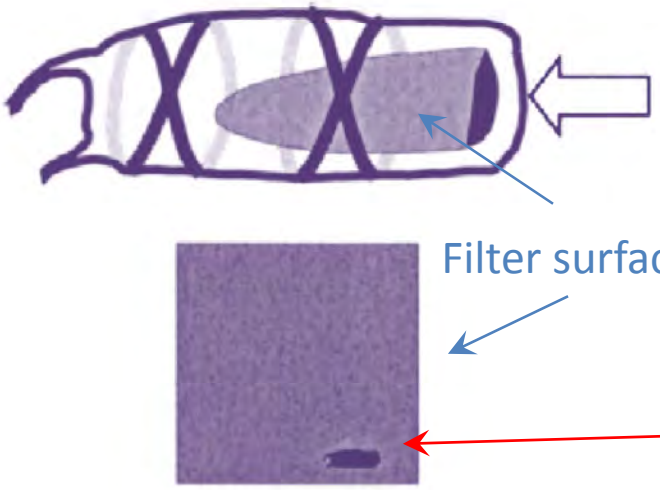


medusae

Gelatinous are efficient feeders

medusae

tunicates



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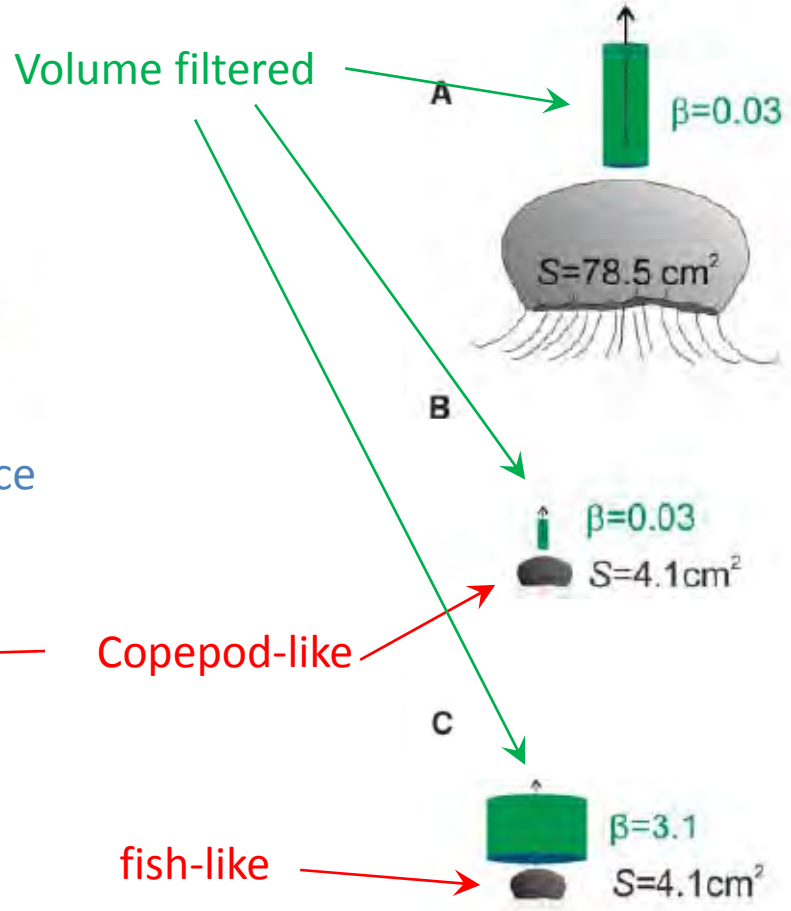

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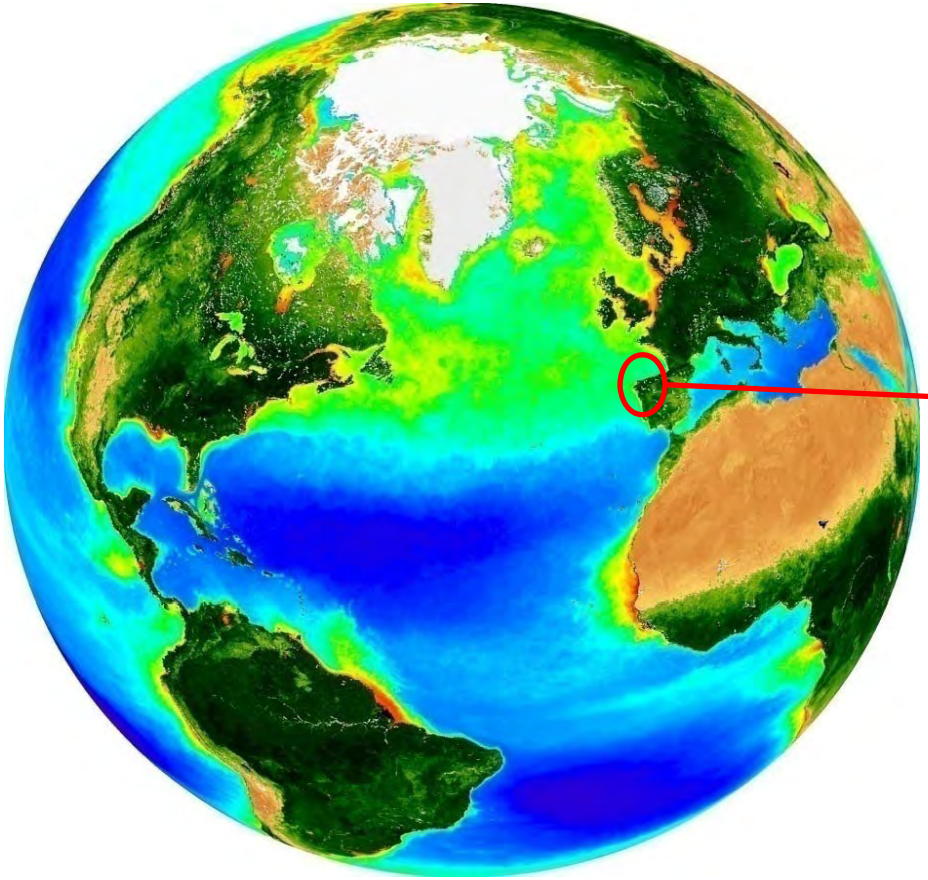
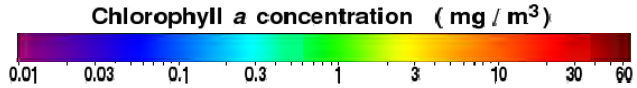
Objective:

To analyse the variability in the dominance of copepods versus gelatinous plankton in a coastal upwelling ecosystem

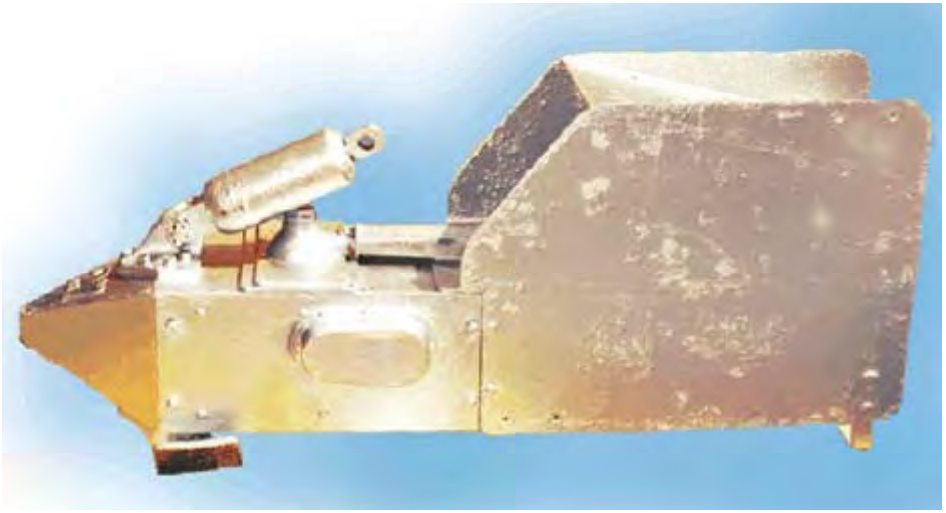
Study area & series: Galicia, NW Spain





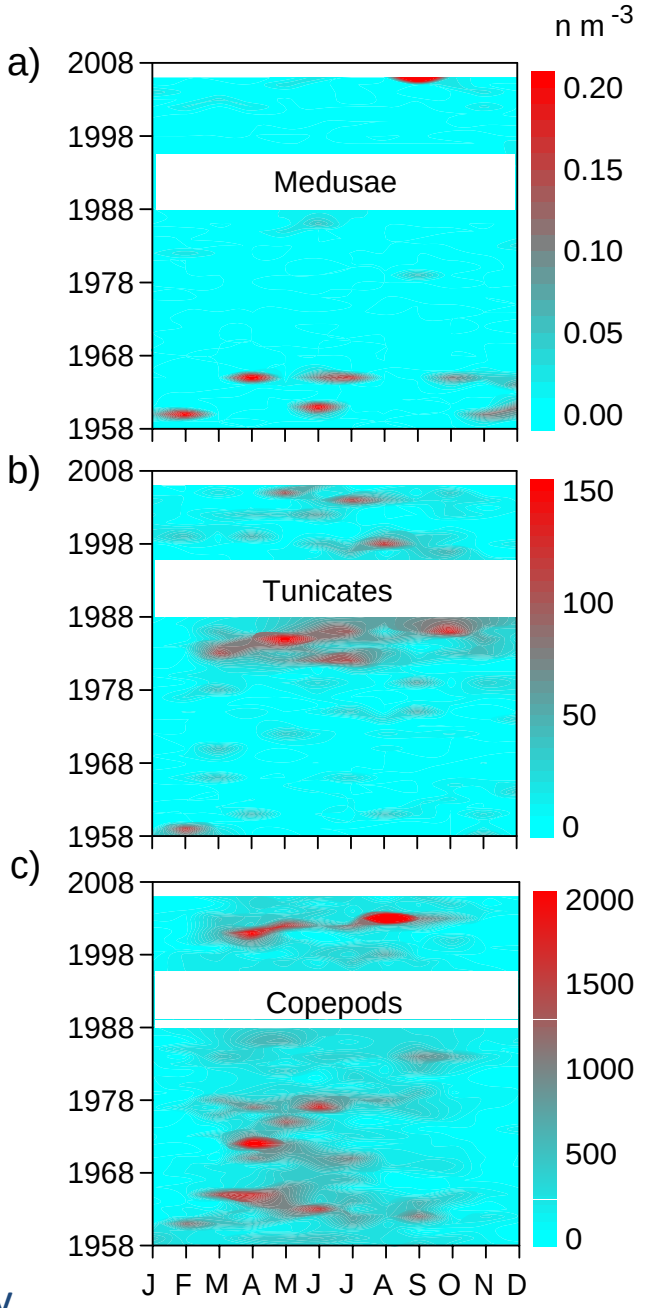
Oceanic series: F4-CPR

surface only



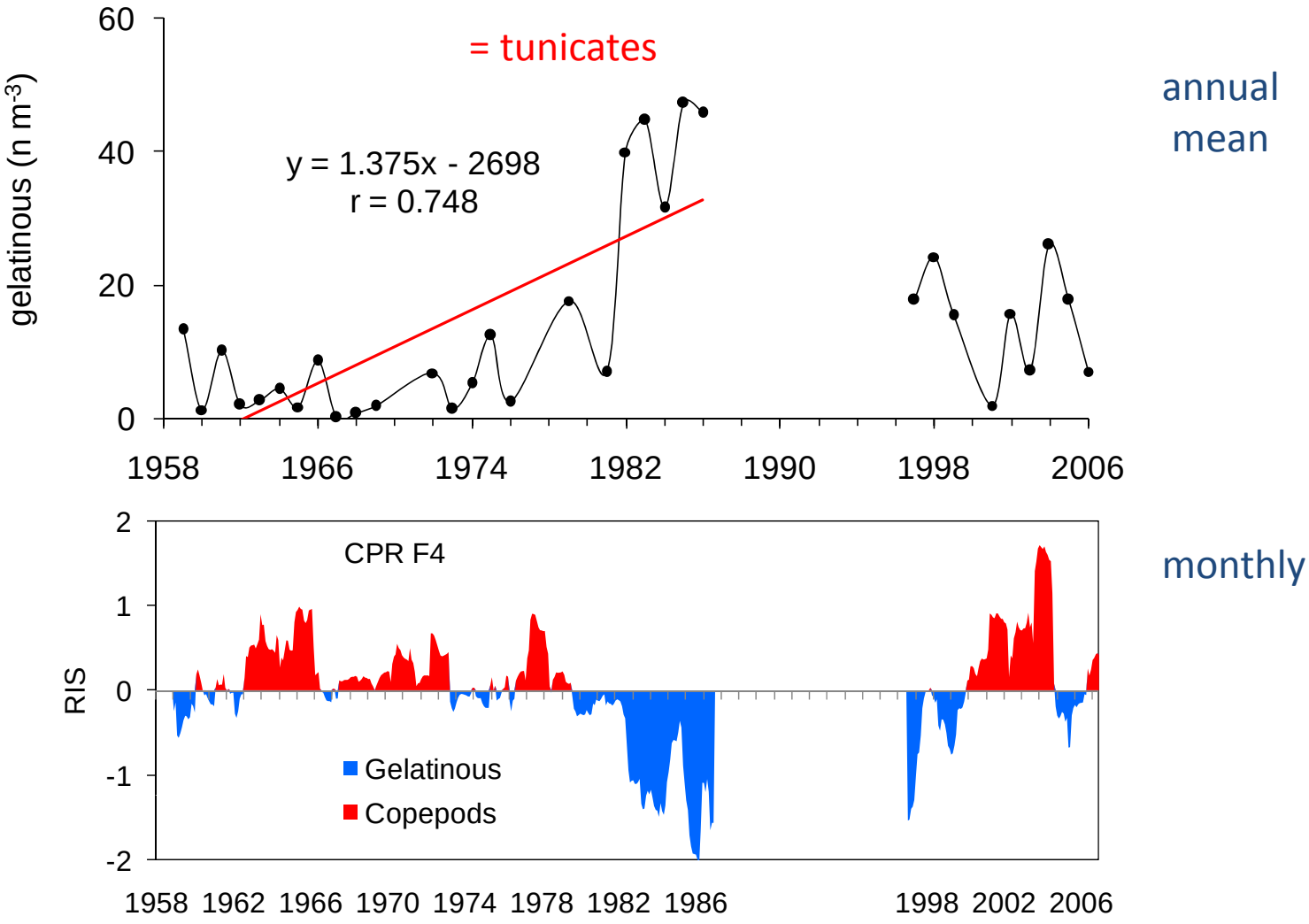
© Richardson et al. Prog. Oceanogr. 2006

1958-2007



monthly

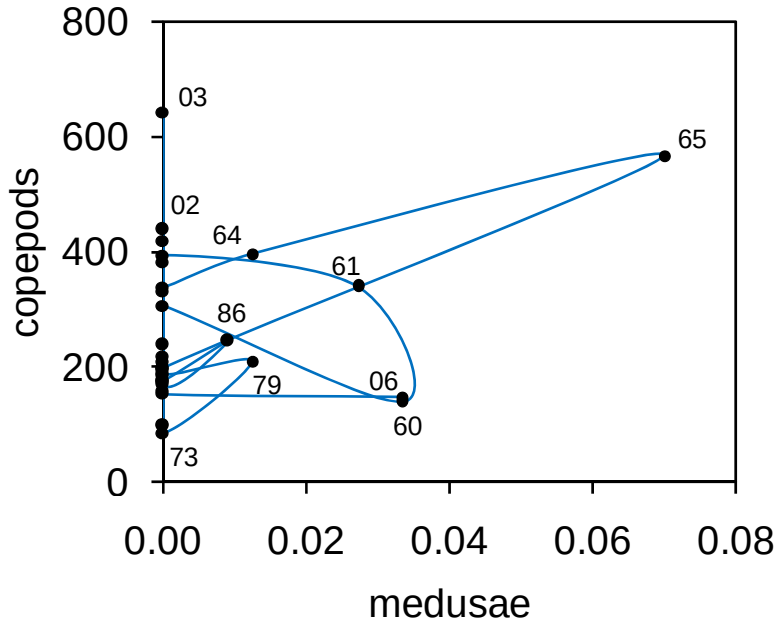
Oceanic series

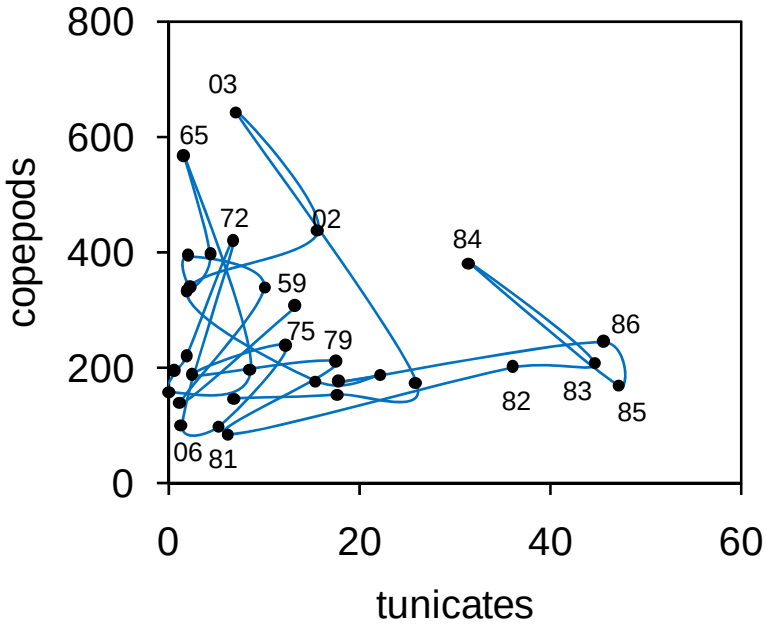


RIS = Copepod – Gelatinous (detrended, normalised, 12 months running mean)

Oceanic series

annual
mean

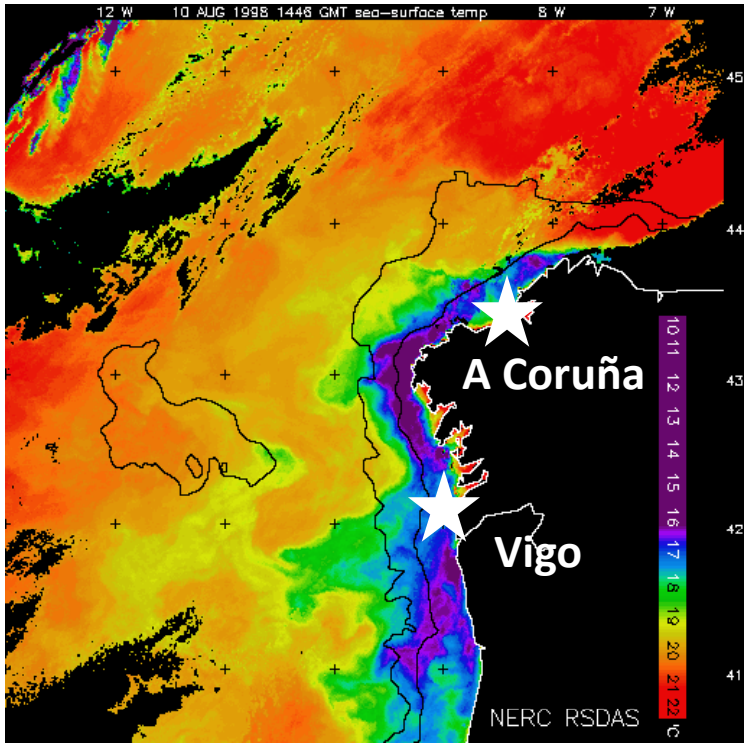




all groups uncorrelated

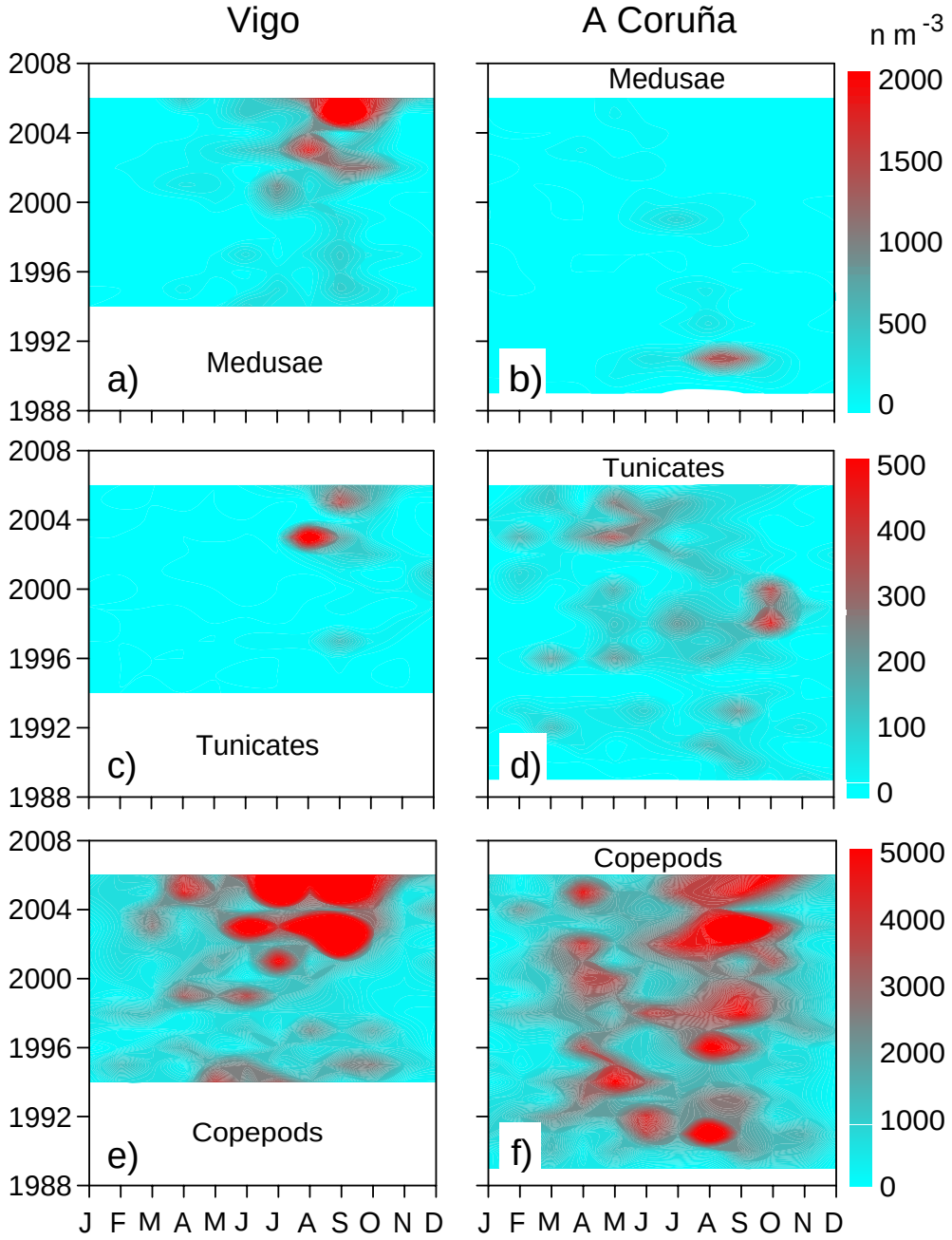
Coastal series

water column

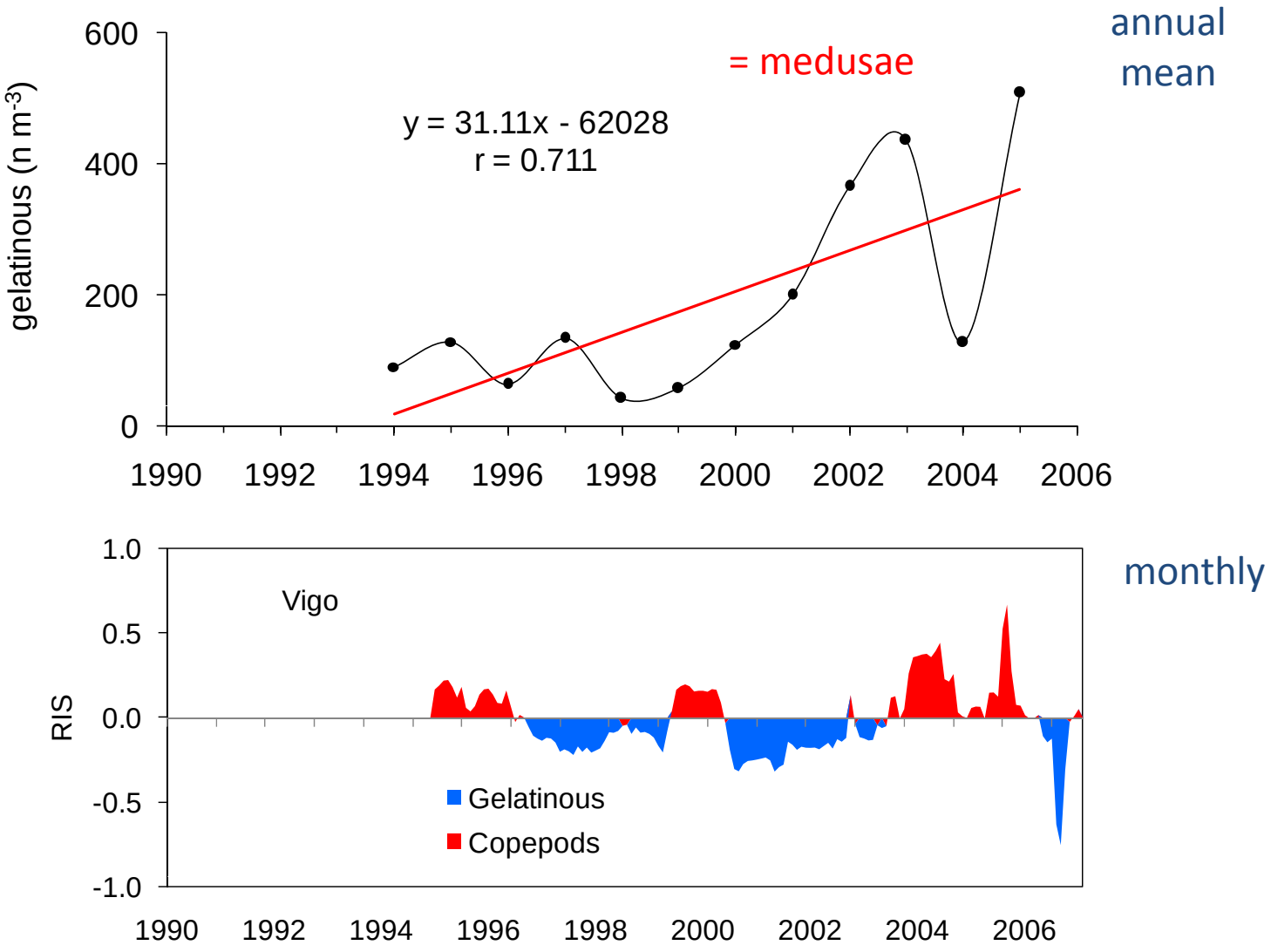


1990-2007

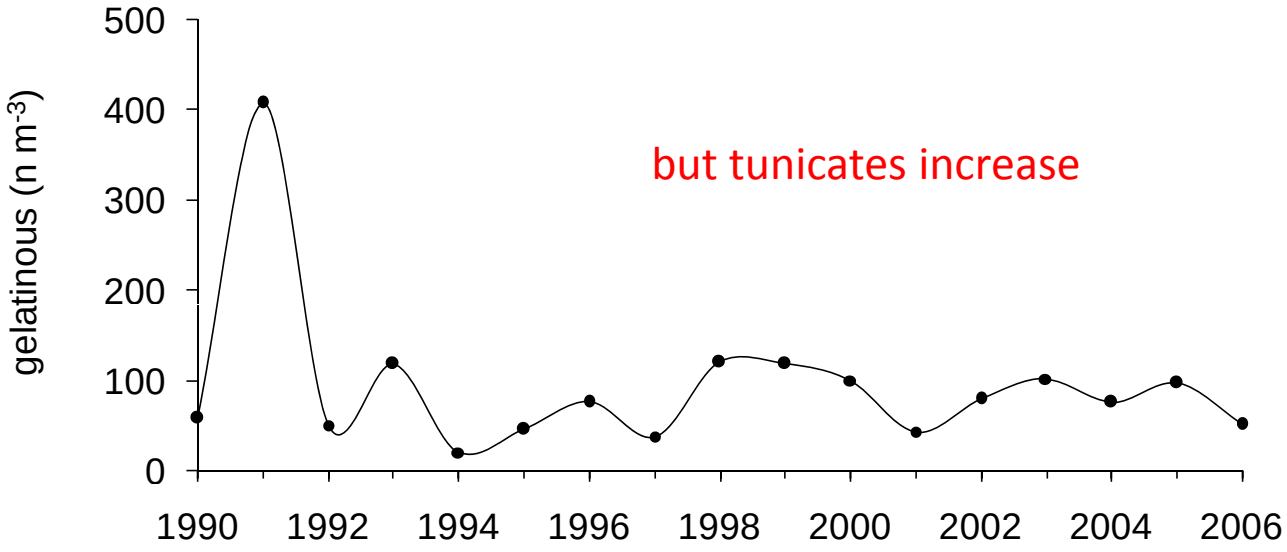
monthly



Coastal series: Vigo

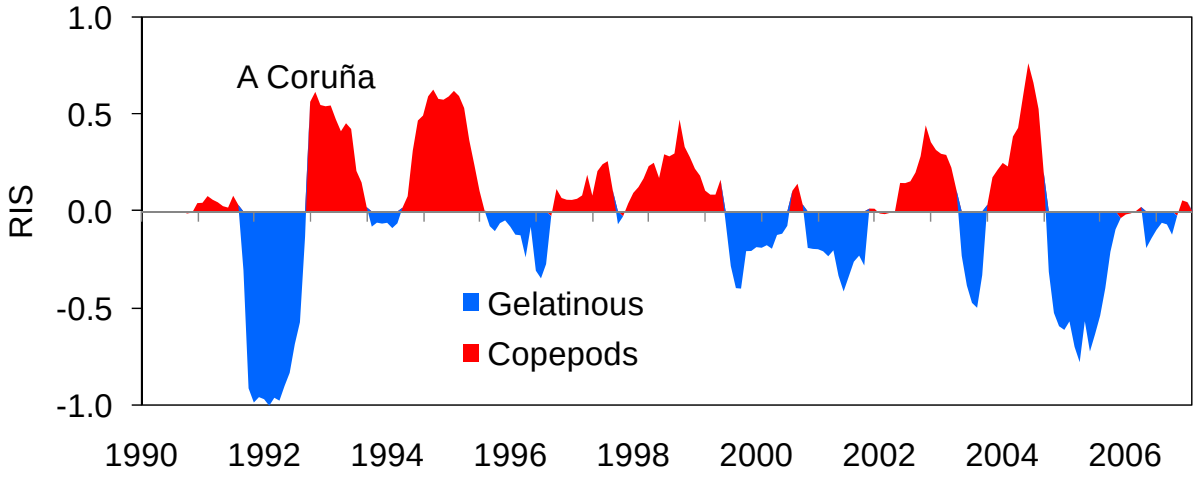


Coastal series: A Coruña



annual mean

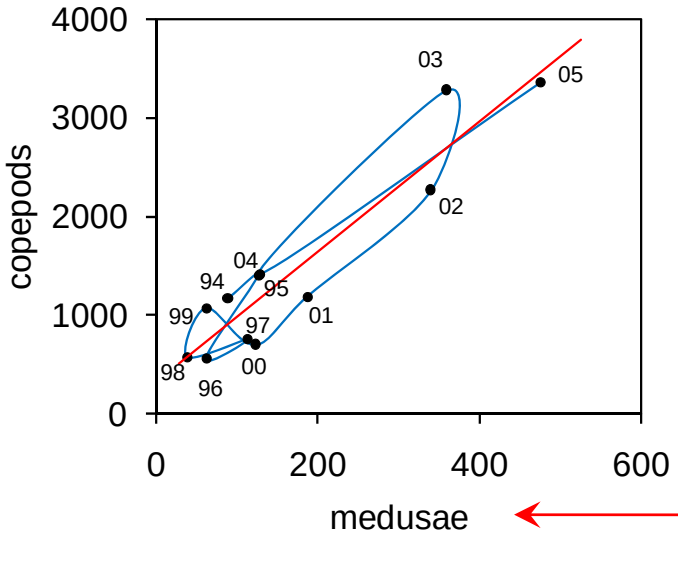
but tunicates increase

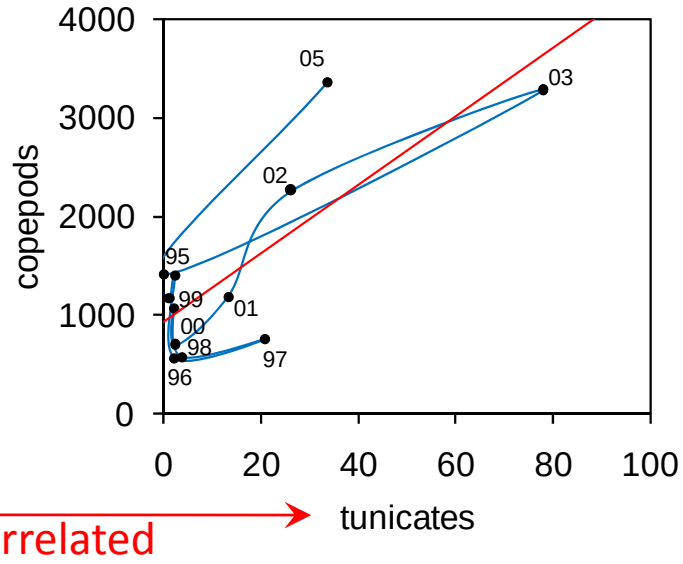


monthly

Coastal series:

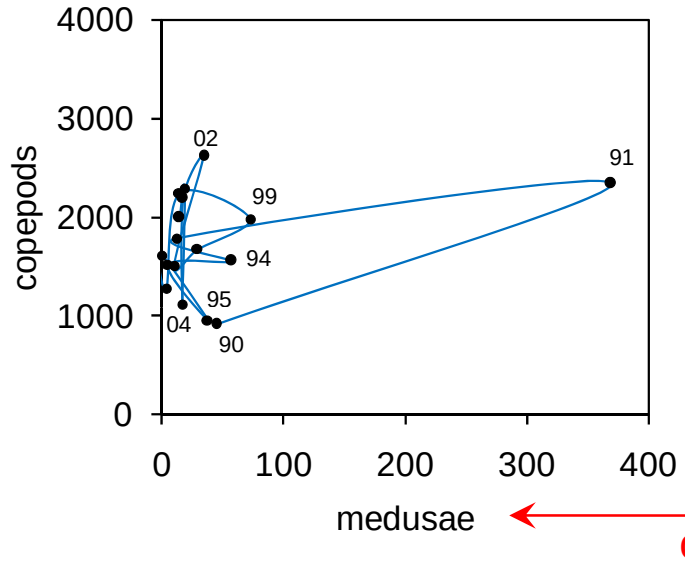
annual mean

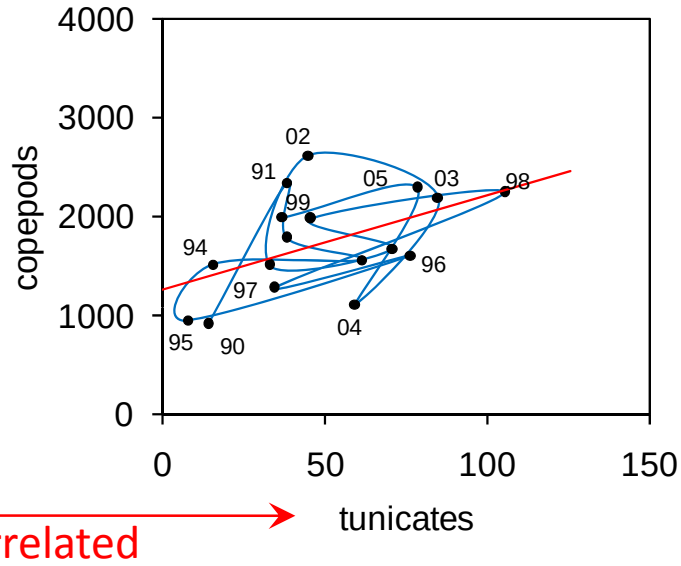




Vigo

correlated





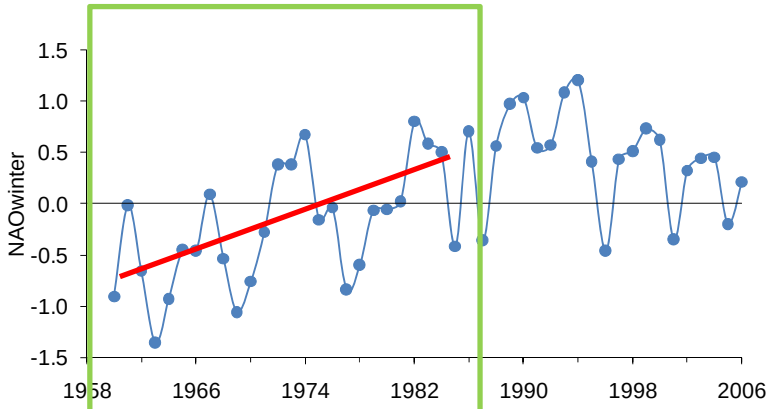
A Coruña

correlated

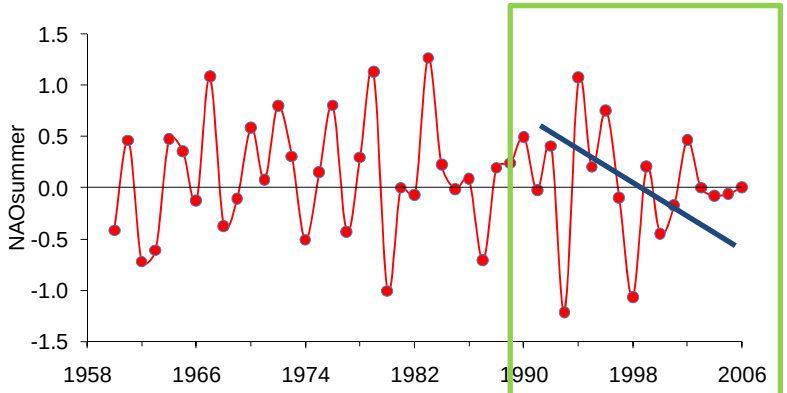
Relationships with climate:

annual series

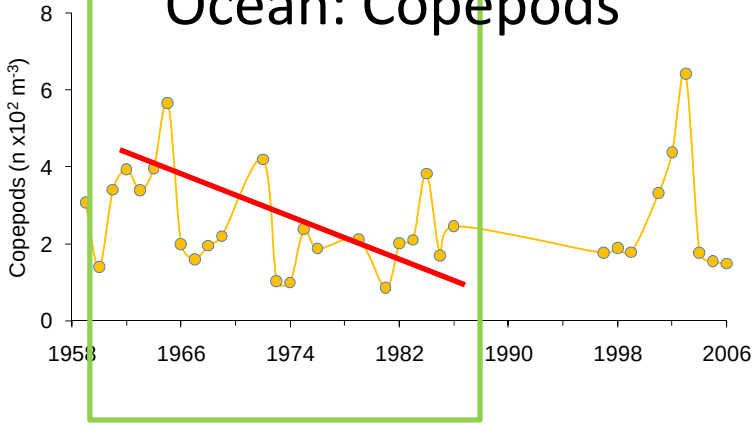
NAO_{winter}



NAO_{summer}

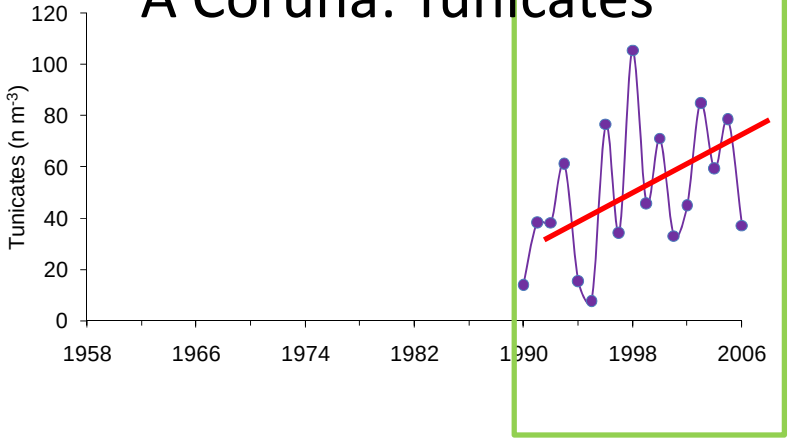


Ocean: Copepods



negative correlation (lag = 1)

A Coruña: Tunicates



negative correlation (lag = 0)

Conclusions:

- Evidence of **multiannual periods** of relative dominance of gelatinous plankton
- **No regional trend**: local (and temporal) differences in the relative dominance of gelatinous groups
- **Increase in tunicates** may be related with climatic conditions reducing upwelling
- **Increase in medusae**: unexplained by climate (fisheries?)
- **Trophic implications**: lower transfer of energy to fish