



UNIVERSIDAD DE LAS PALMAS
DE GRAN CANARIA

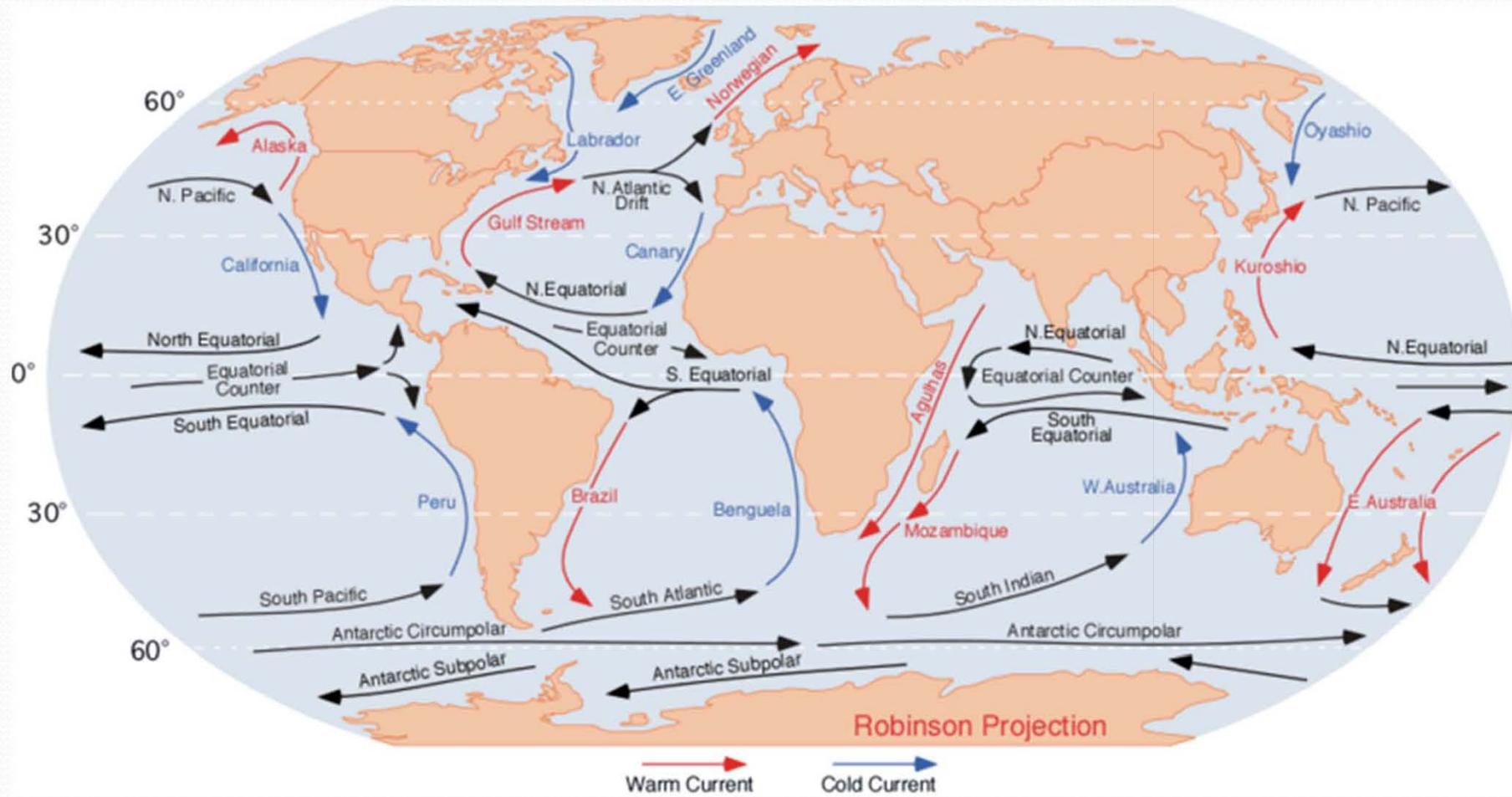
Zooplankton biomass and abundance in the Coastal Transition Zone off Northwest Africa

Juan Carlos Garijo López & Santiago Hernández León

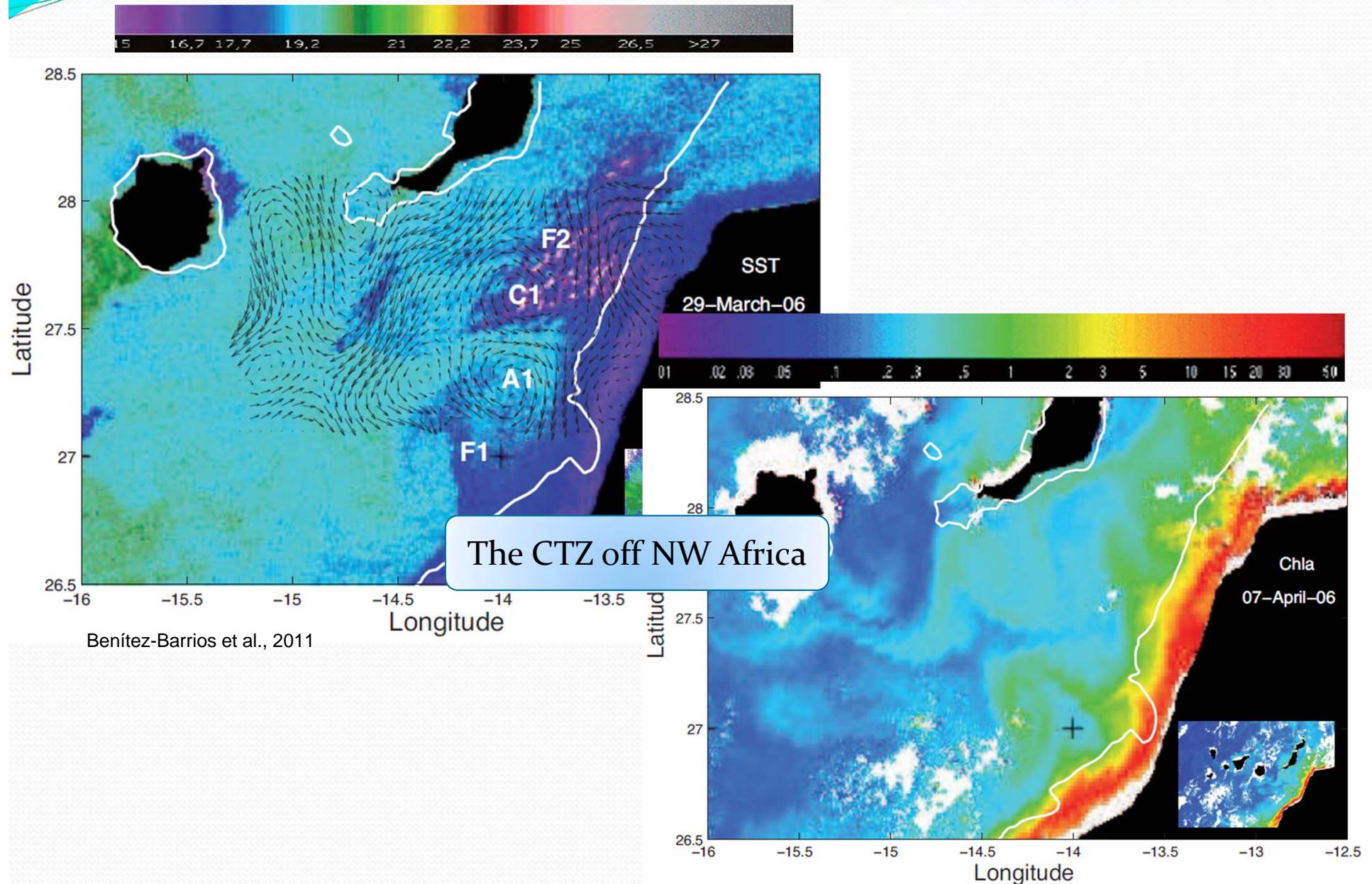
Ciencia Compartida
Universidad de Las Palmas de Gran Canaria

Mayo 2012

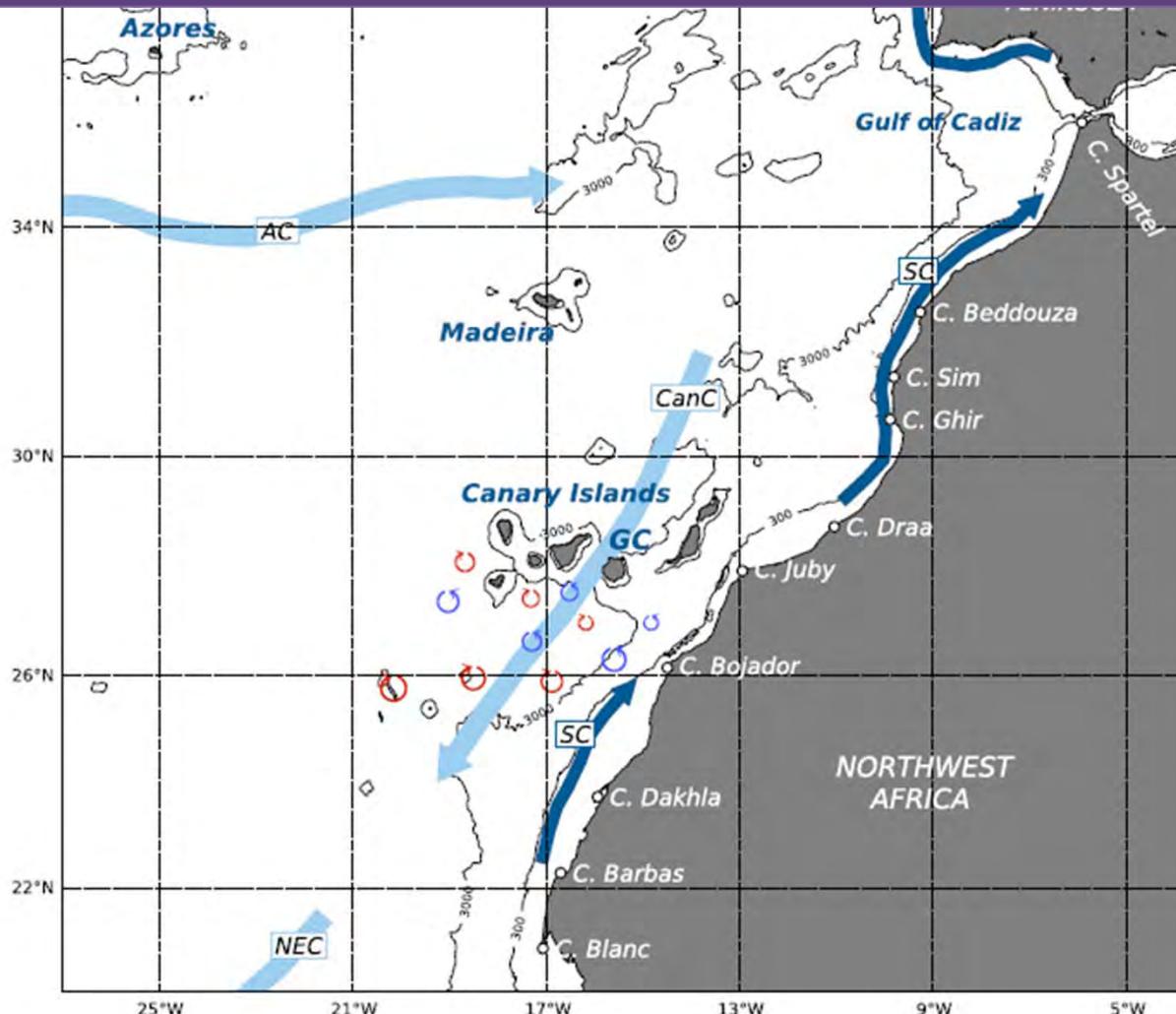
1. Introduction

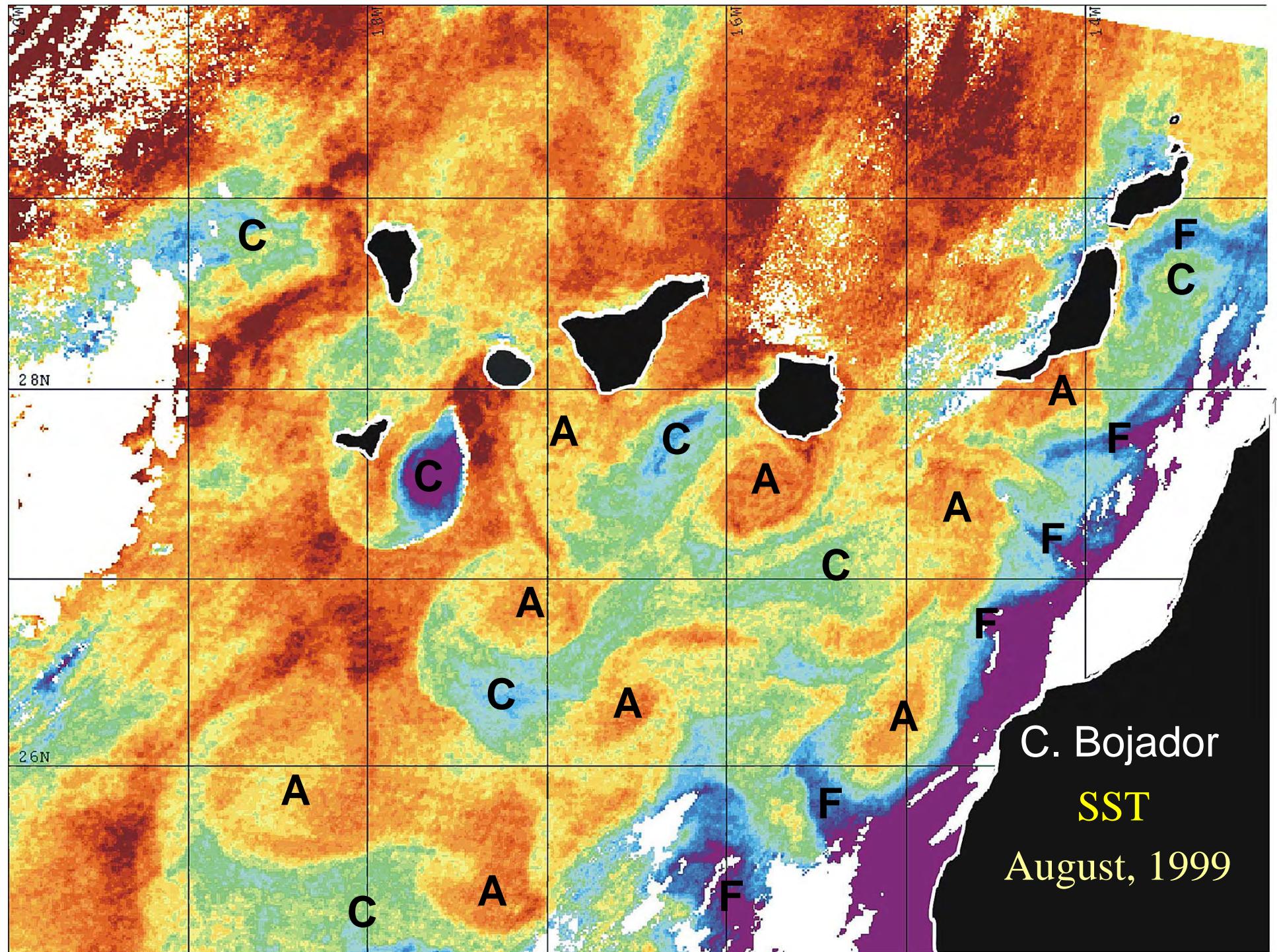


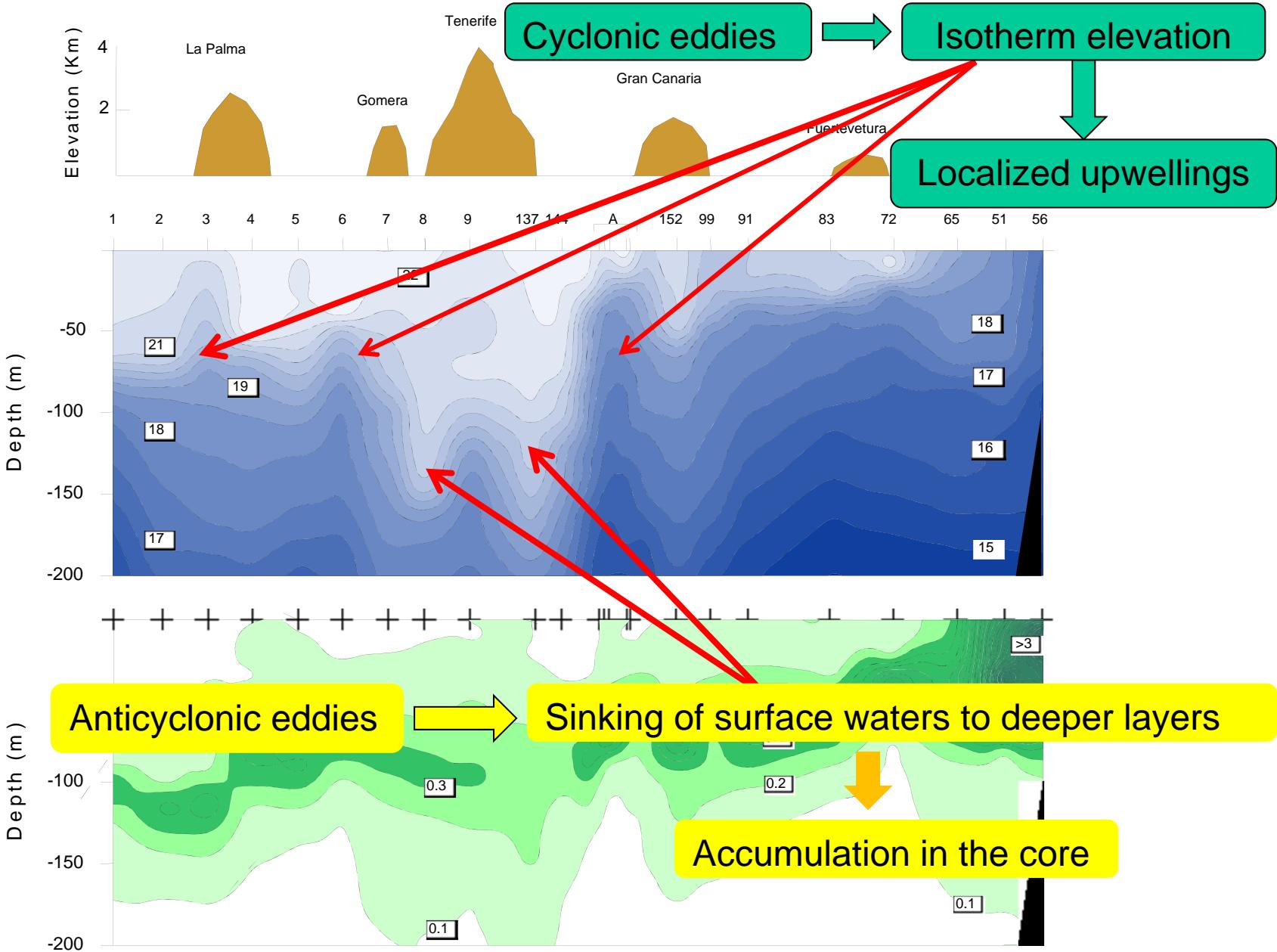
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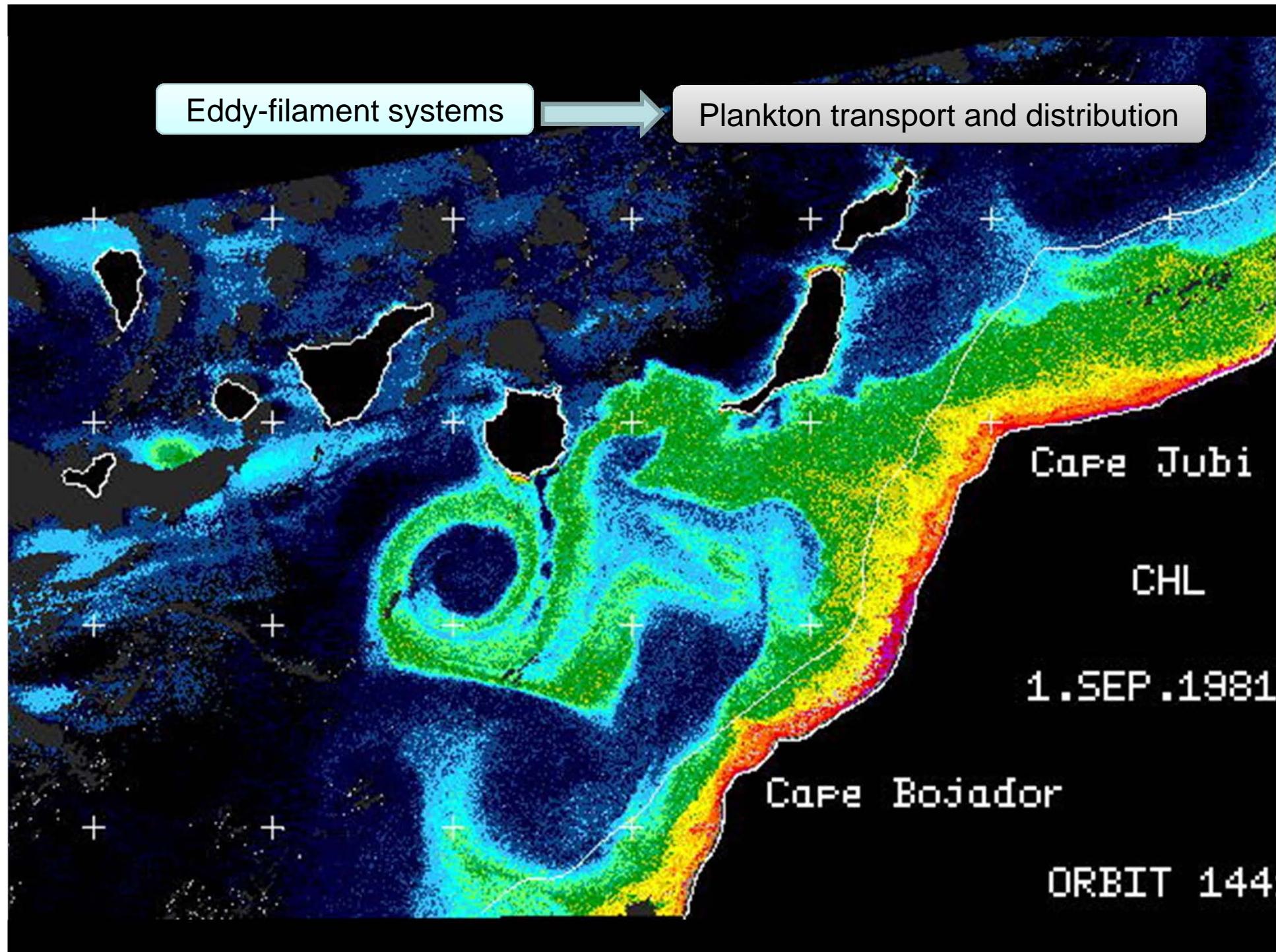


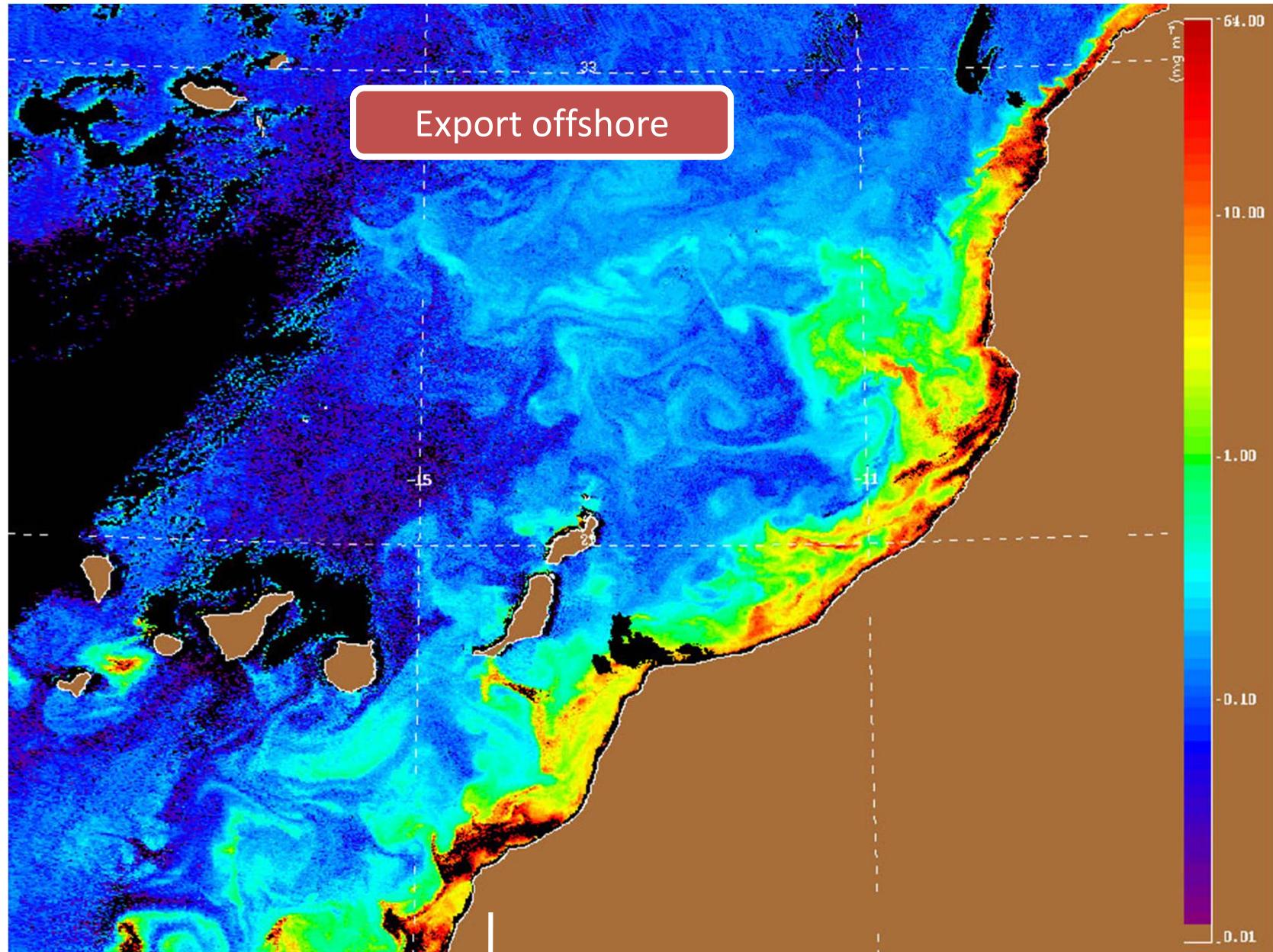
Intense mesoscale oceanographic activity Generation of filaments and island-induced eddies



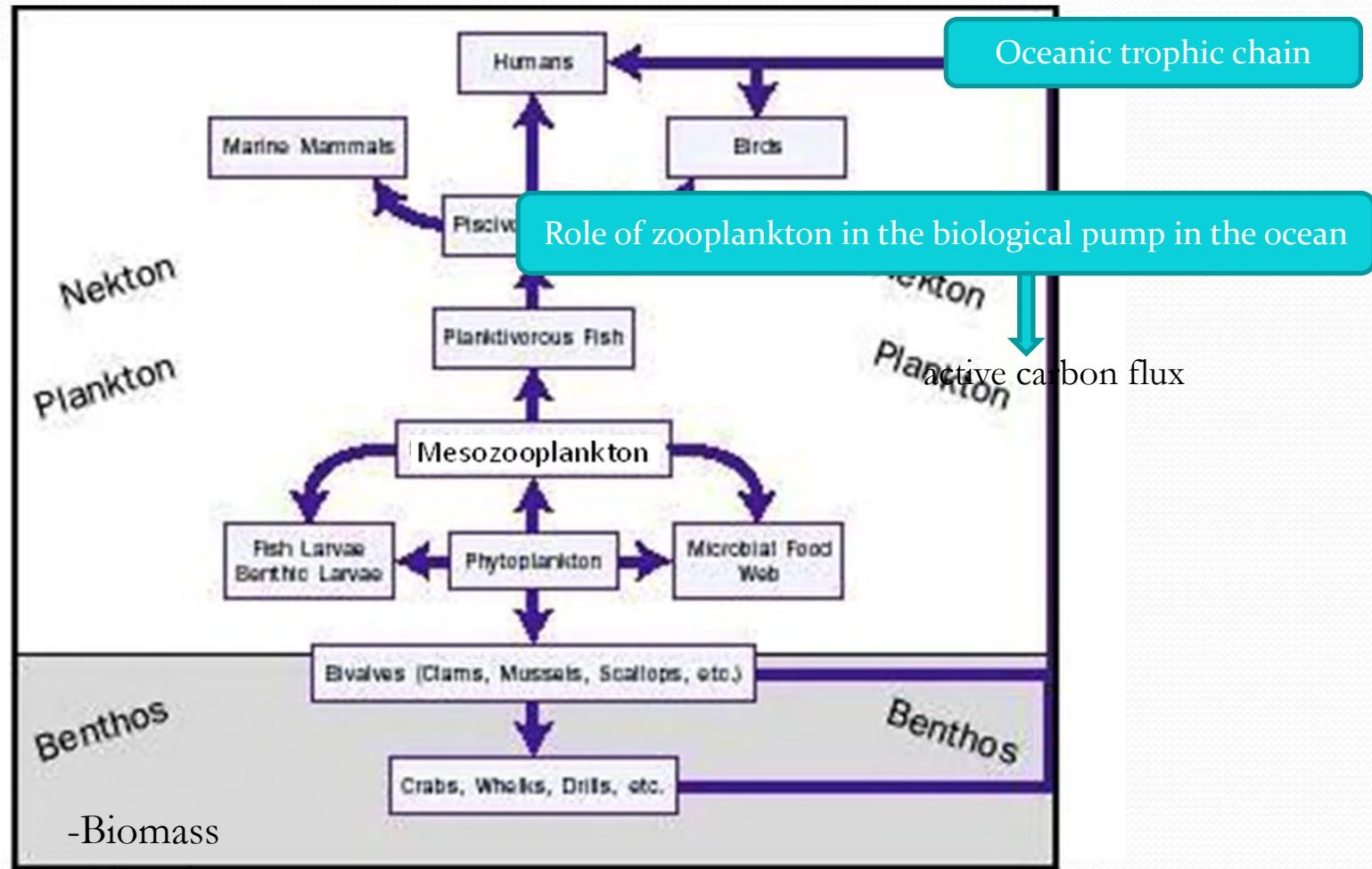








1. Introduction



- It connects the microbial food web with the larger organisms
- Control of communities located in the upper and lower levels
- Distribution
- Recycling, redistribution and export of material and energy

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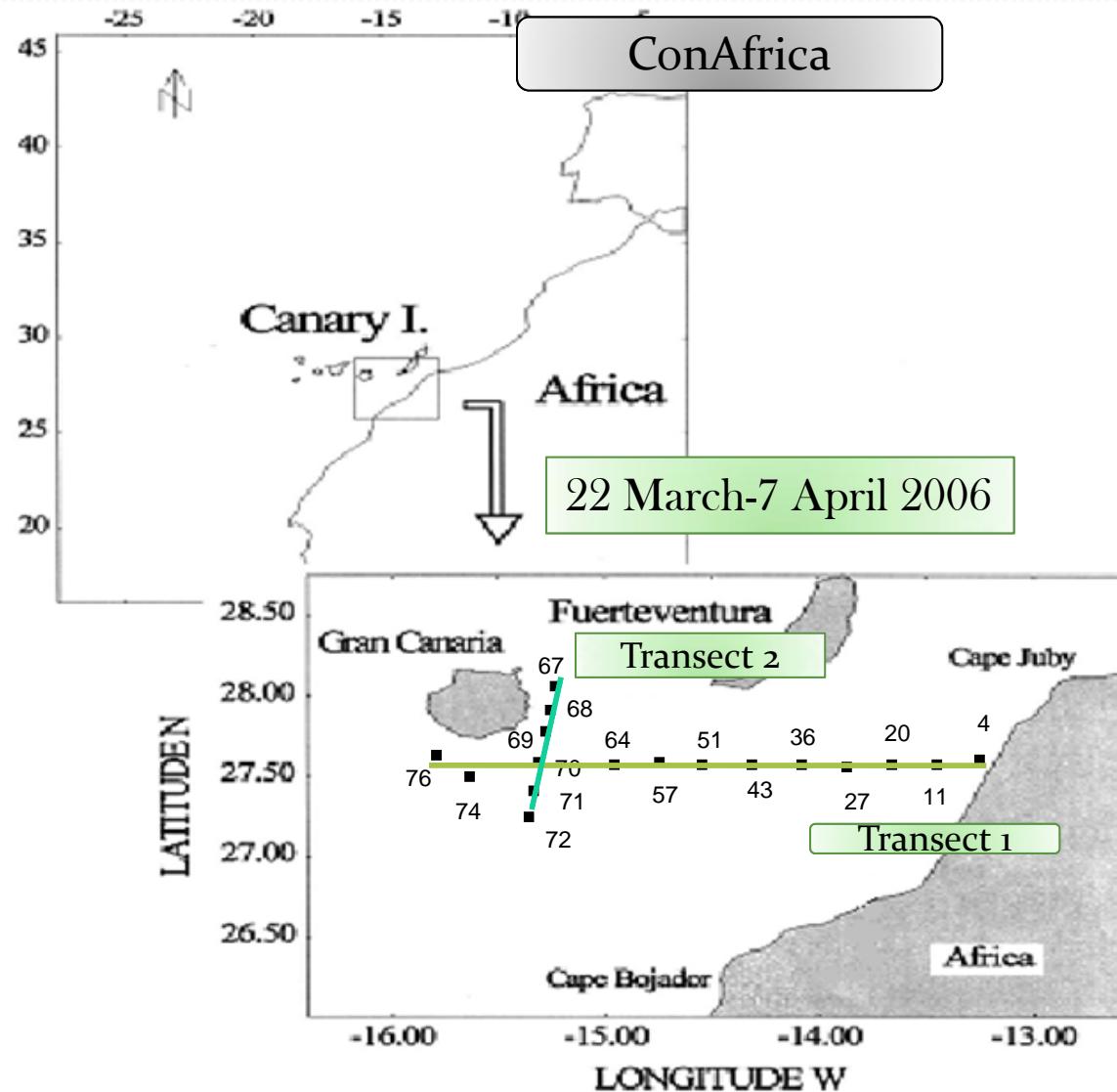
Zooplankton biomass assessment by standard methods implies the destruction of samples

Objectives

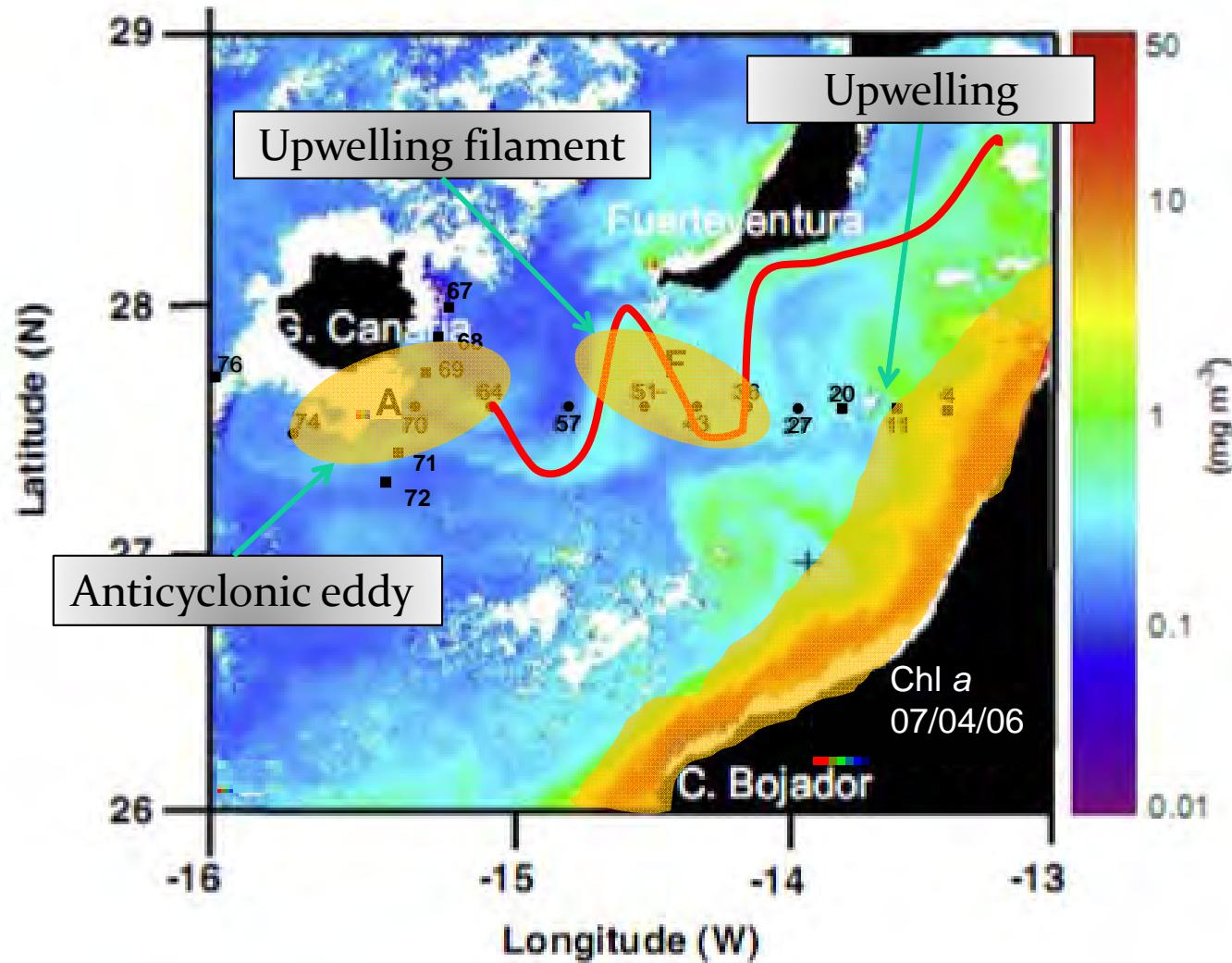
1. Set up the efficiency of *Zoolimage* to classify the organisms and estimate biomass abundance and size-fraction distribution.
time-saving *reuse of samples*
2. Biological effect of filaments and eddies on mesozooplankton communities in the CTZ off NW Africa.
Alternative methods *based on image analysis*

Zooscan/ZooImage

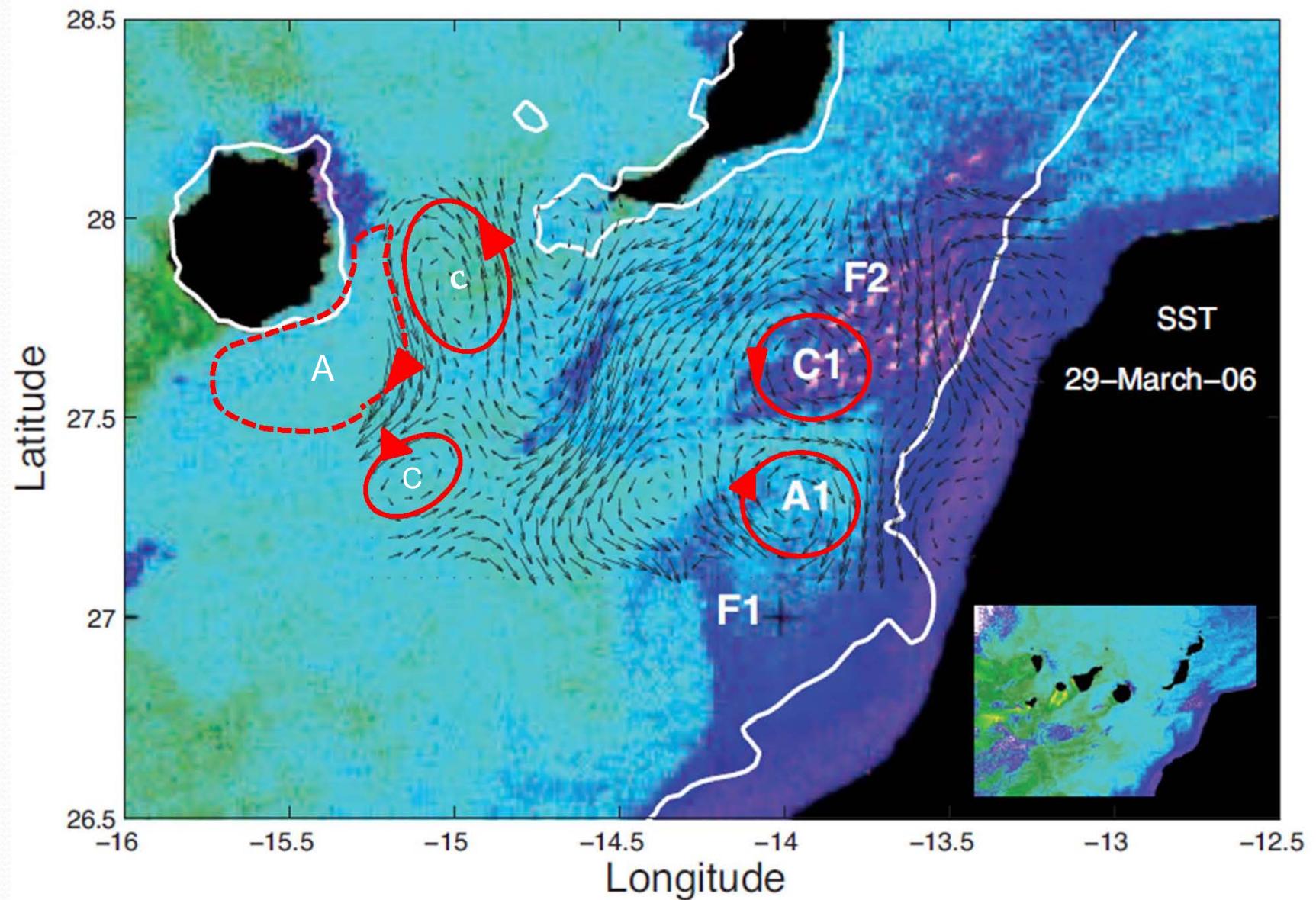
2. Material & Methods



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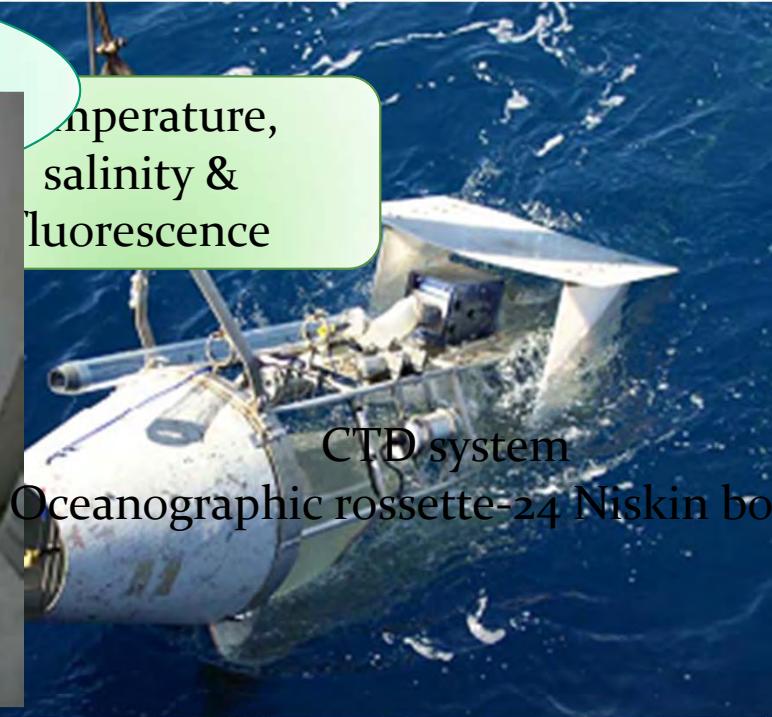


2. Material & Methods

LHPR: Longhurst-Hardy
Plankton Profile



Temperature,
salinity &
luorescence



CTD system
Oceanographic rosette-24 Niskin bottles

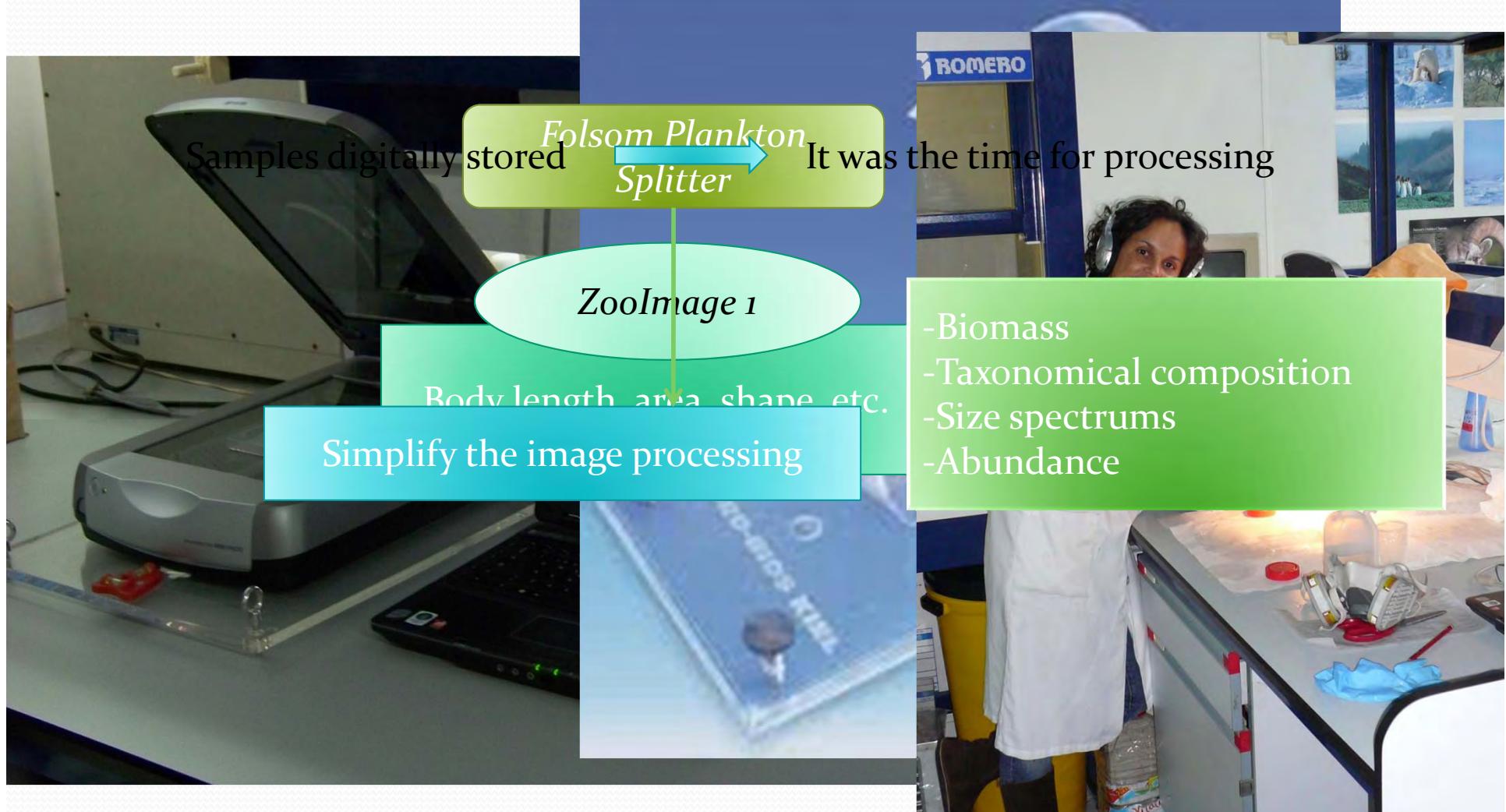
0-200 m

10 different depths 200 µm mesh

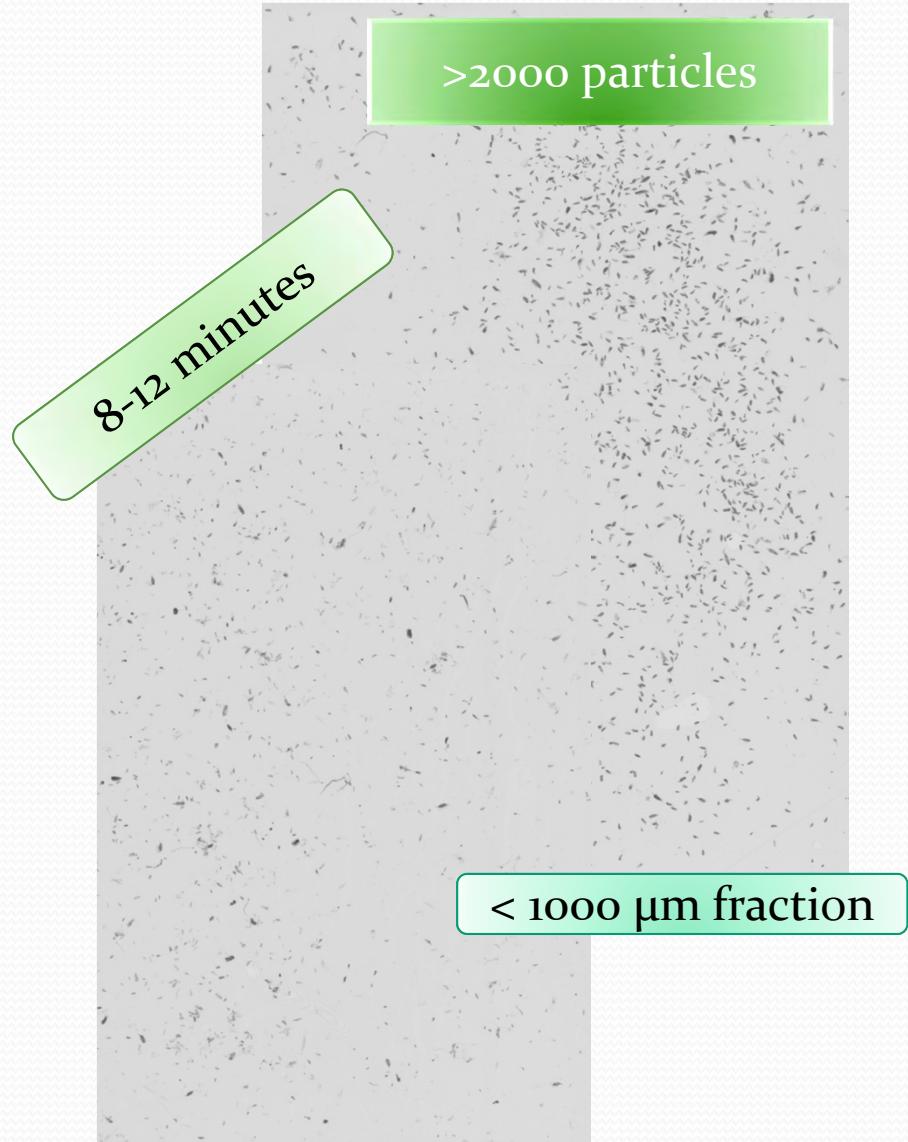
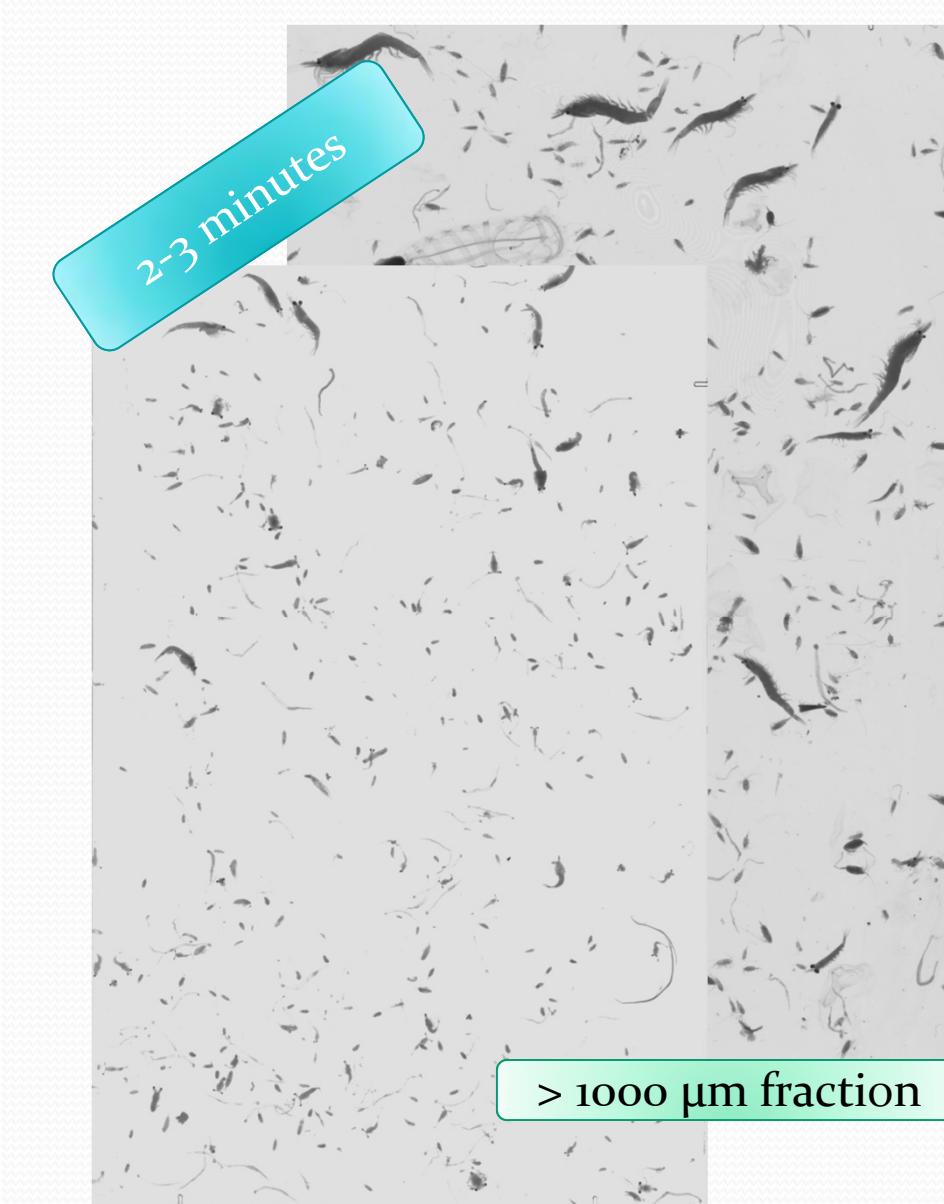


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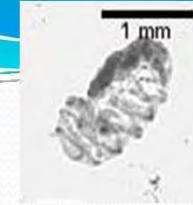
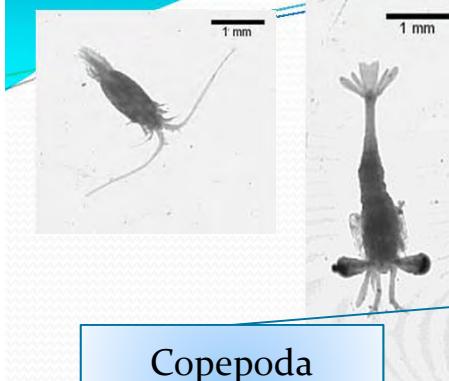
In the lab...



2. Material & Methods



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Training set of approximately 2000 images

Copepoda

Chaetognatha

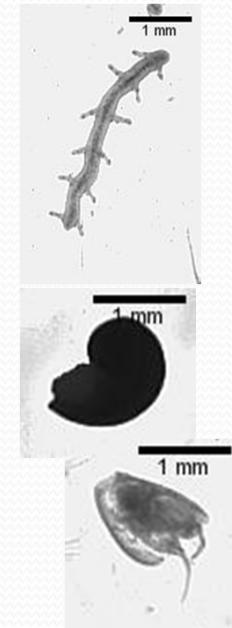
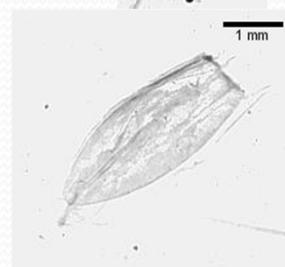
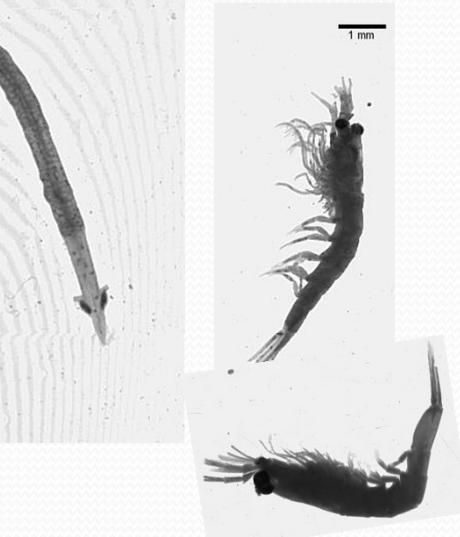
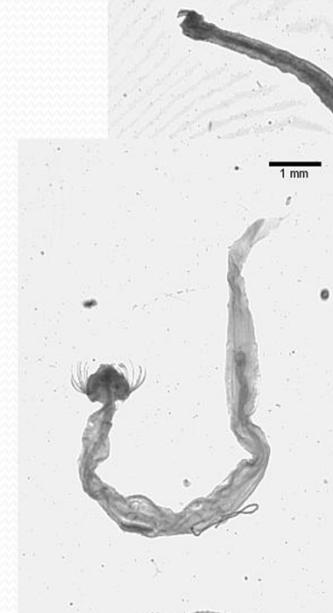
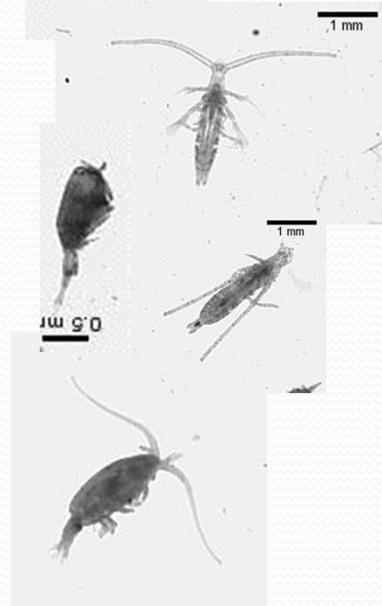
Euphausiid-like

Gelatinous

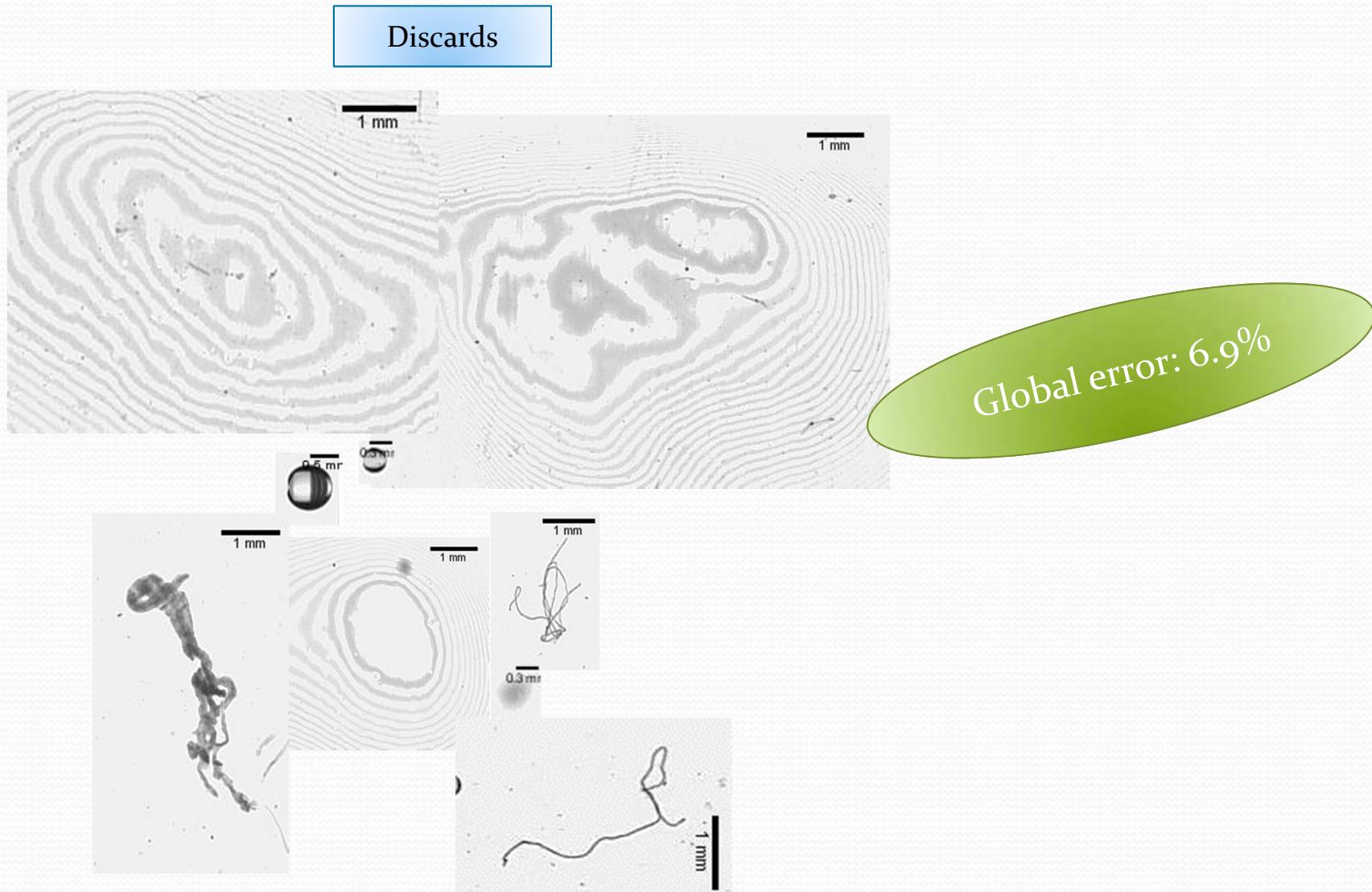
Other
Mesozooplankton

Associated with those parameters, the software proportioned individualized pictures

-They were used to manually create a *training set*



2. Material & Methods



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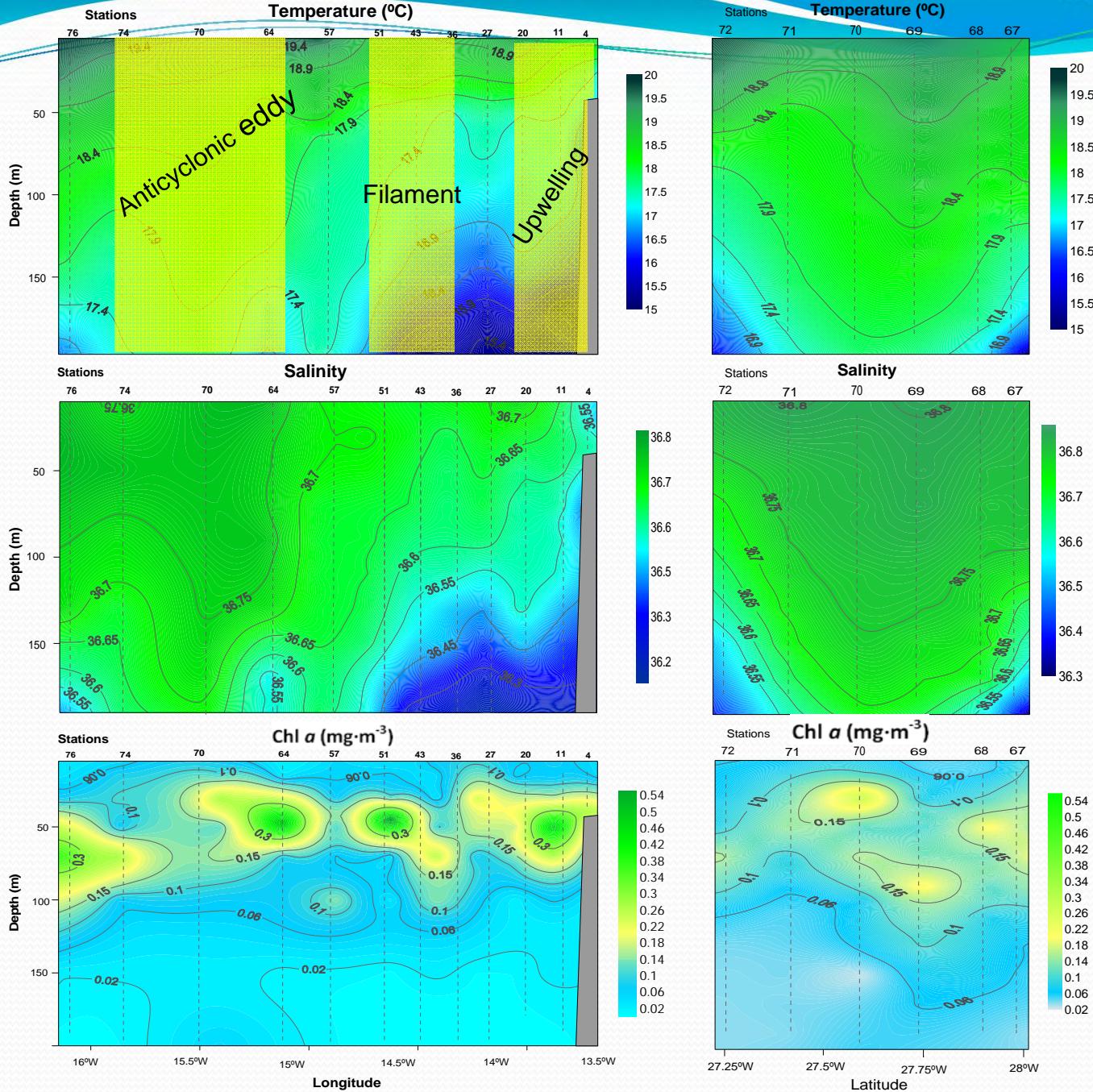
Necessary a relationship between biomass and one of the parameters automatically measured

ZooImage 1

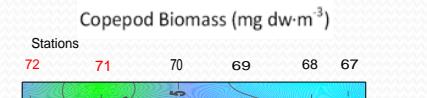
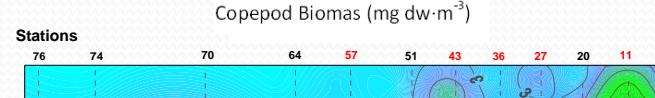
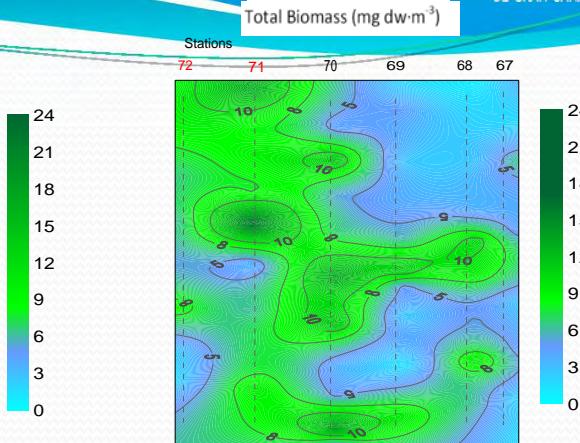
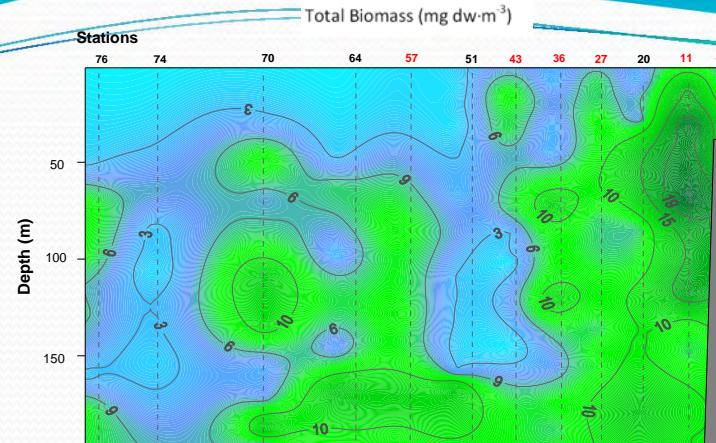
Group	a	b±SE	r
Copepoda	43.97	1.52±0.02	0.972
Chaetognatha	23.45	1.19±0.13	0.840
Euphausiid-like	49.58	1.48±0.05	0.987
Gelatinous	43.17	1.02±0.38	0.916
Other Mesozooplankton	43.38	1.54±0.03	0.947

Lehette and Hernández-León (2009)

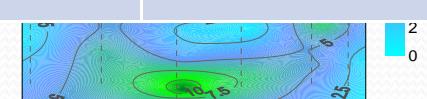
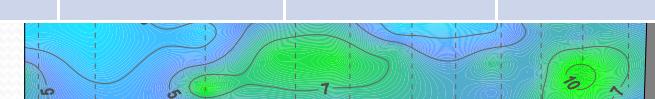
3. Results & Discussion



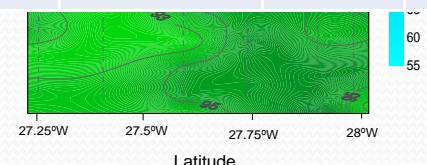
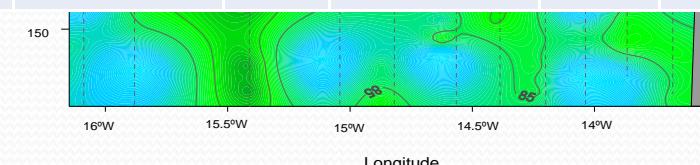
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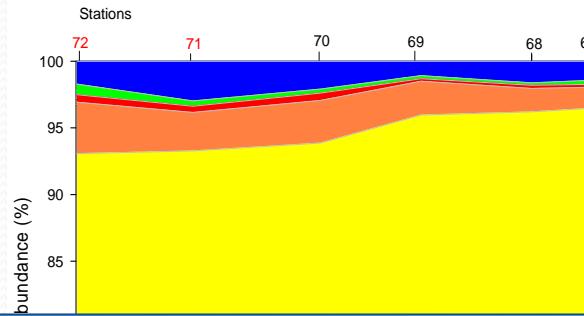
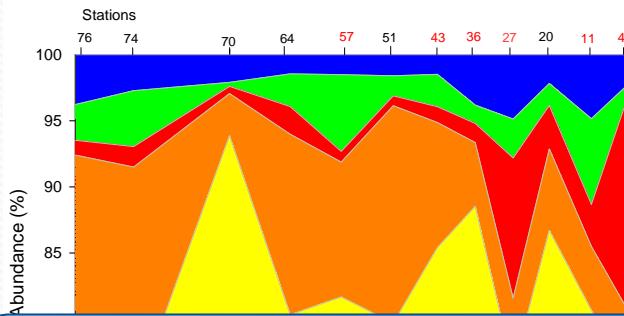
Abundance (%)	Transect 1	Transect 2	Upwelling	Filament	Anticyclonic eddy
Copepod	82.4 ± 9.5	94.8 ± 2.4	83.2 ± 7.3	84.4 ± 7.7	82.9 ± 12.1



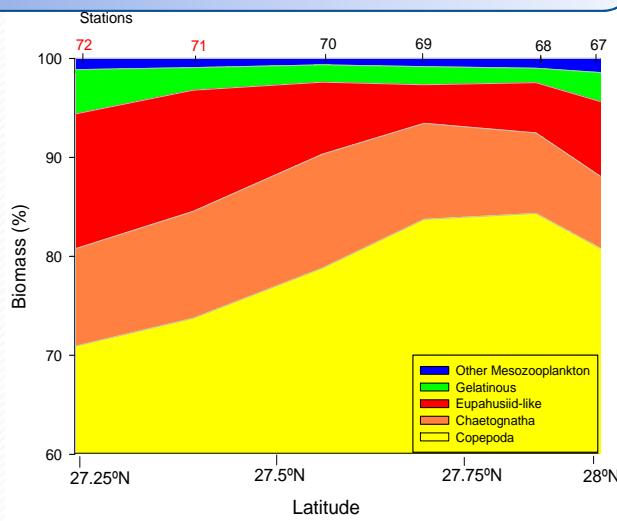
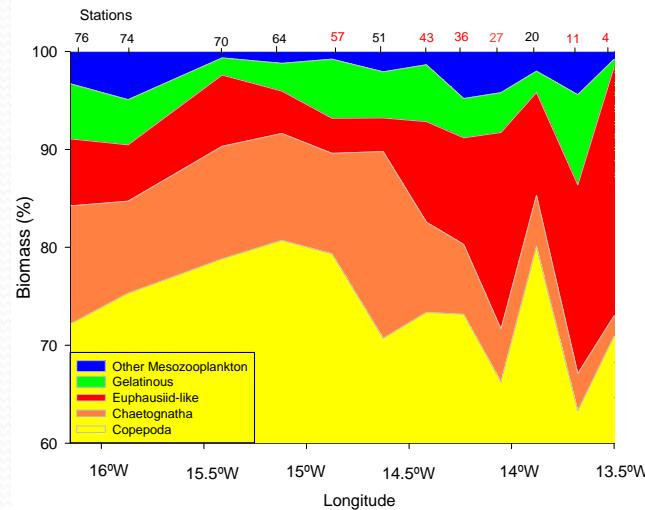
Biomass ($\text{mg dw} \cdot \text{m}^3$)	Transect 1	%	Transect 2	%	Upwelling	%	Filament	%	Eddy	%
Total	6.7 ± 3.8		5.7 ± 3.7		11.7 ± 4.6		5.1 ± 3.7		5.5 ± 3.1	
Copepod	4.9 ± 2.8	73.8	4.5 ± 2.9	78.8	8.4 ± 4.9	71.6	3.3 ± 2.1	76.3	3.9 ± 2.7	78.3



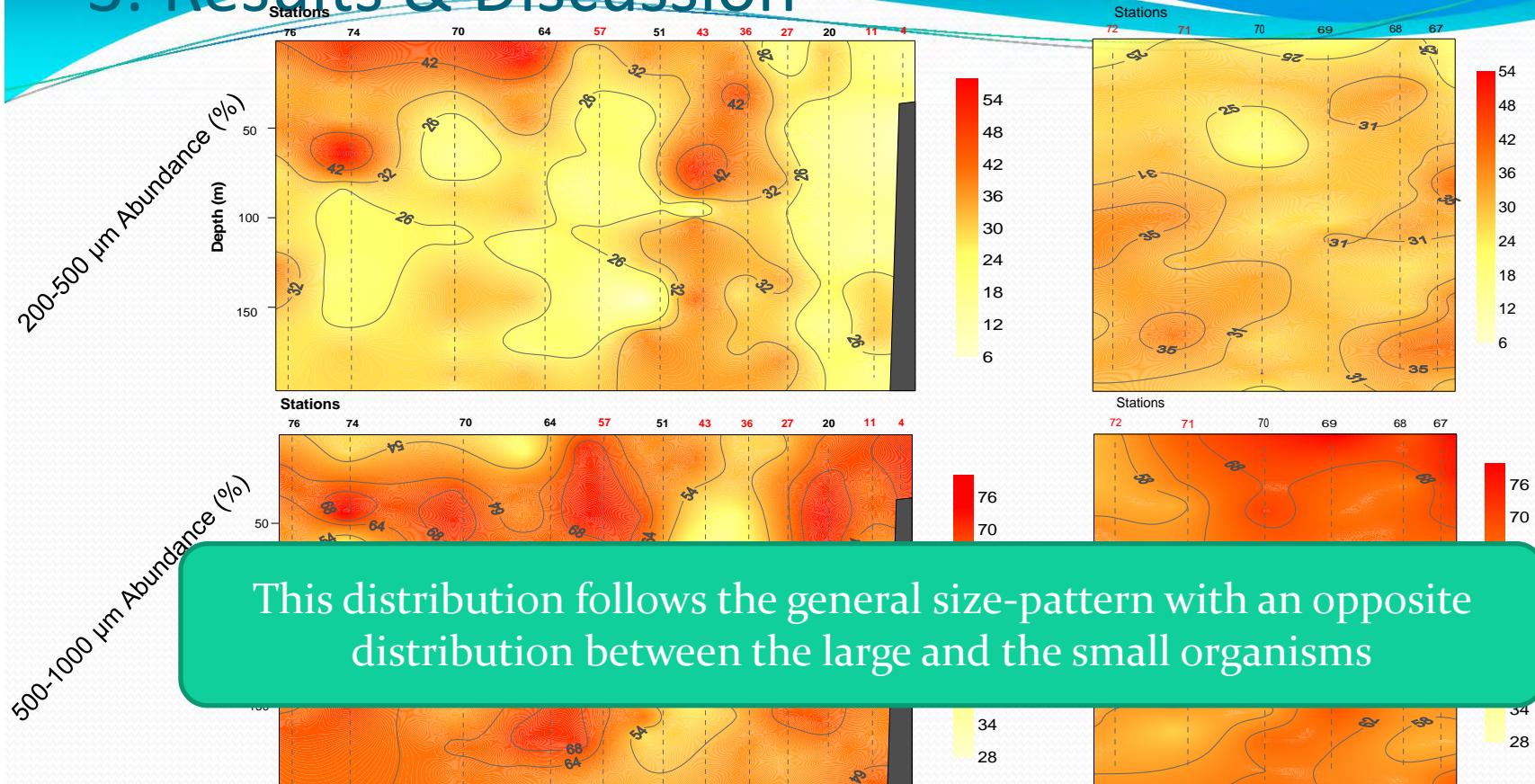
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- Euphausiids did not follow a clear coast-open ocean pattern
- They were affected by the nictemeral cycle
- It coincides with the migratory nature of this species

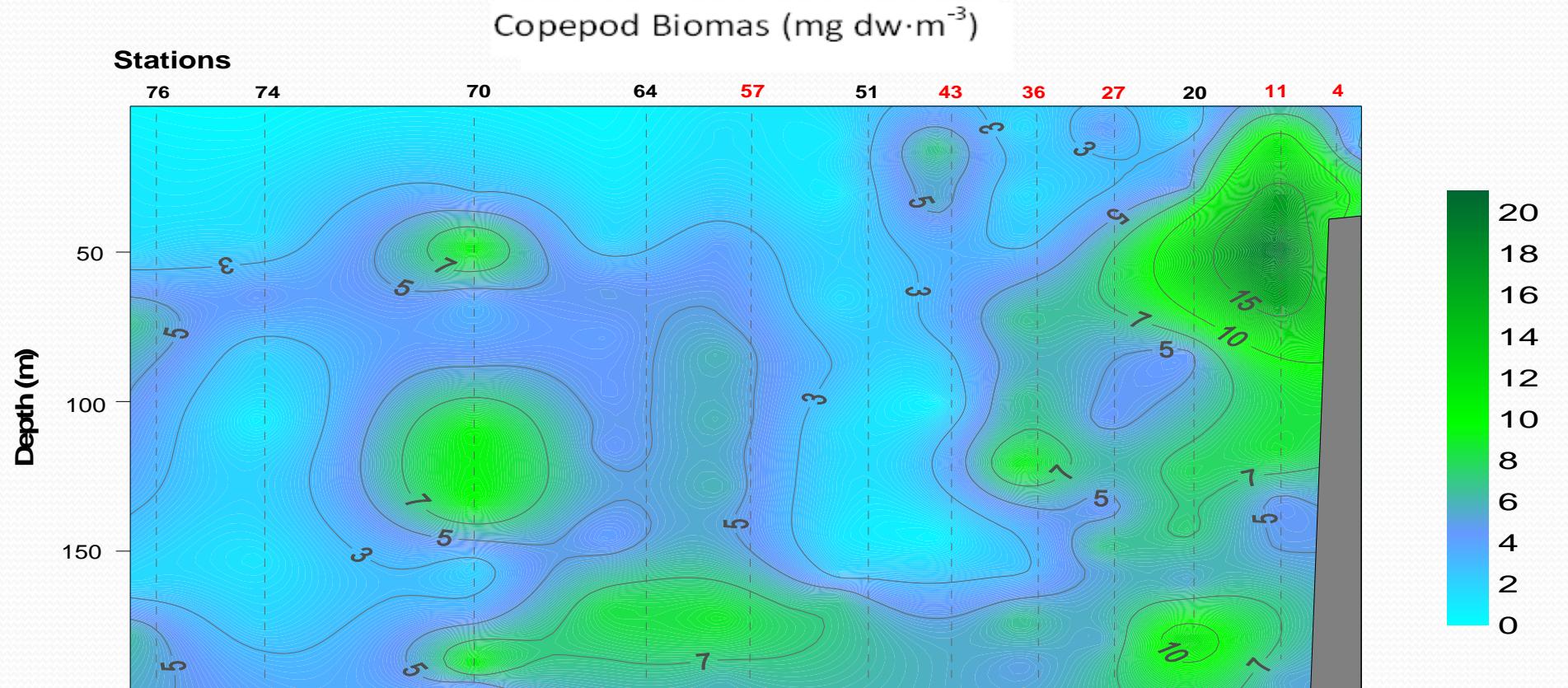


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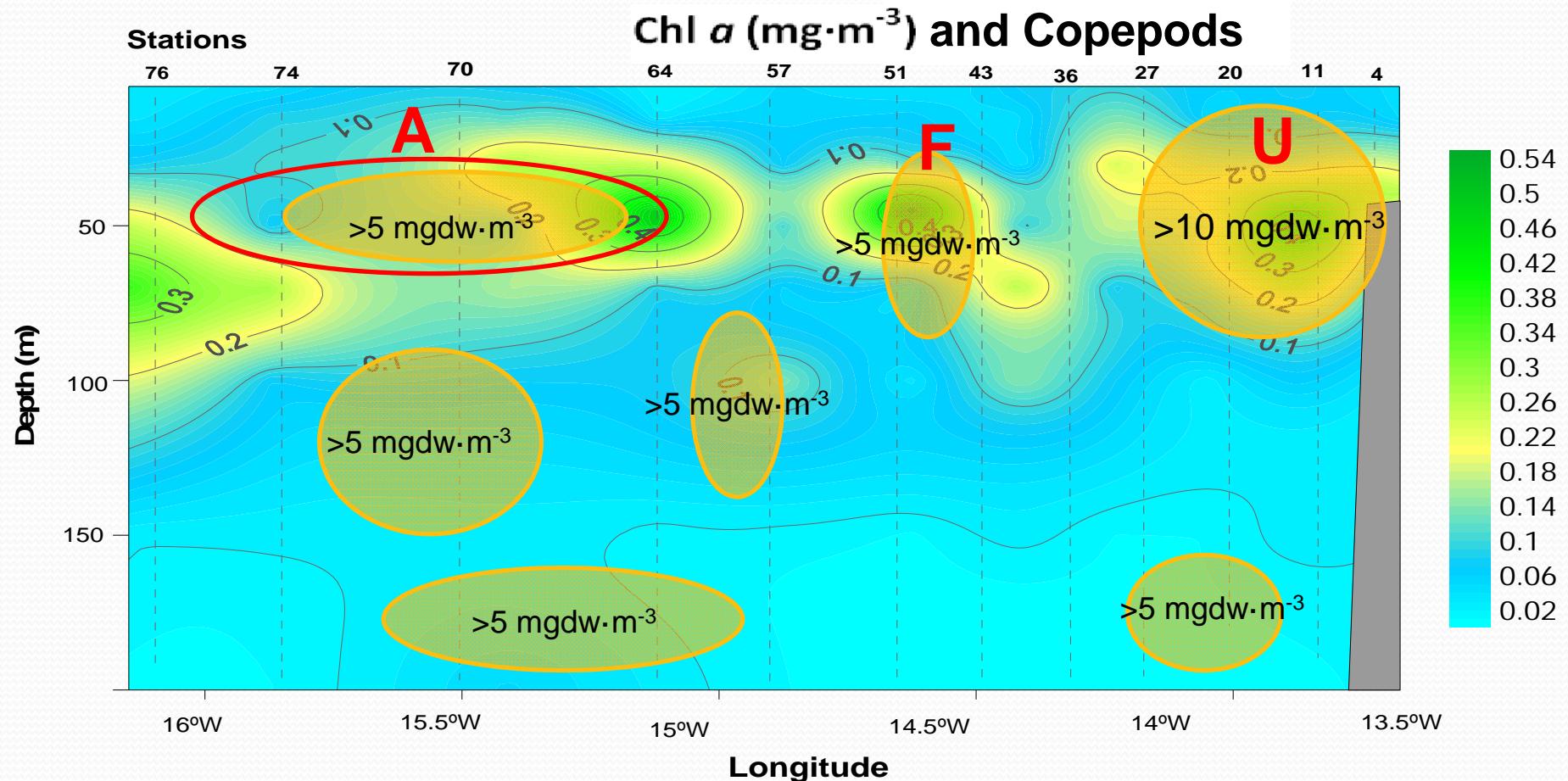


Abundance (%)	Total	Upwelling	Filament	Anticyclonic eddy
200-500 µm	28.2±9.1	21.1±6.3	31.7±10.5	30.9±9.5
500-1000 µm	61.1±9.1	65.7±5.6	52.4±10.3	63.2±7.9
>1000 µm	10.1±7.5	13.1±8.1	13.9±8.4	6.3±3.4

3. Results & Discussion



3. Results & Discussion



Acknowledgements

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- People from the Lab-B201, University of Las Palmas de Gran Canaria for their time and help, specially Loreto Torreblanca for her help with the *training*.



Thanks for your attention