

## Etat d'avancement pour l'activité suivi Plancton + Méduses (WP4)

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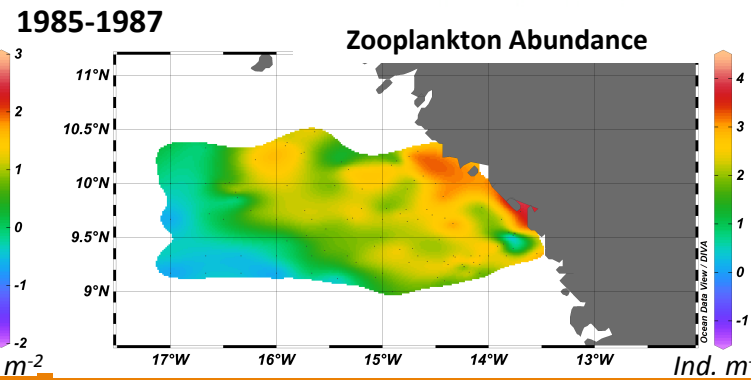
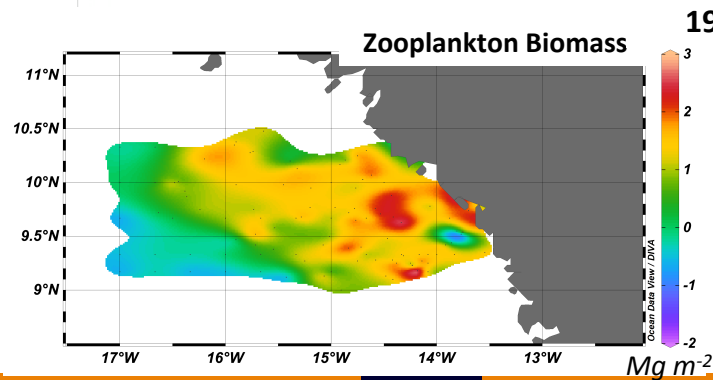
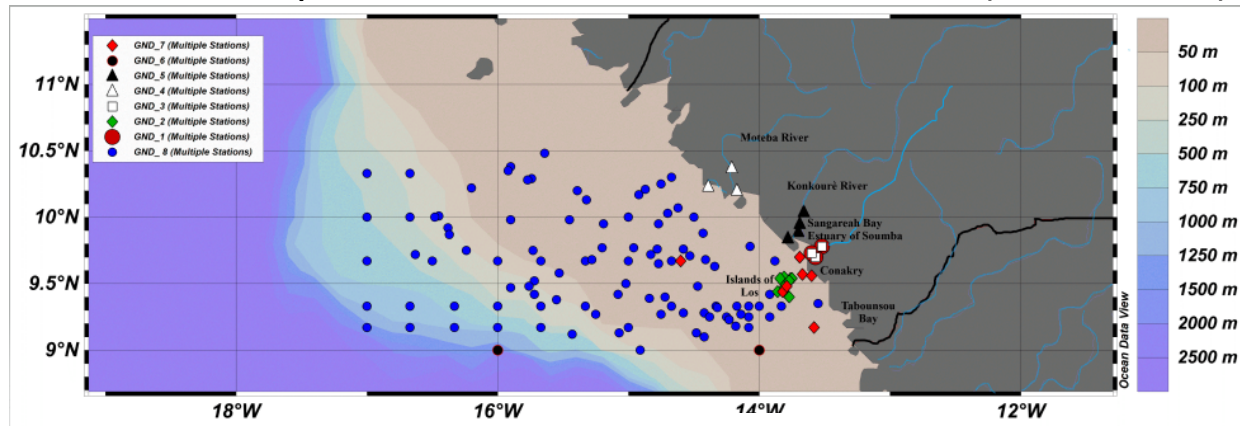
En collaboration avec CERESCOR, CNSHB, IMROP

# Demerstem

➤ Knowledge on plankton standing stocks



Historical plankton data in Guinean waters (1981-2004)

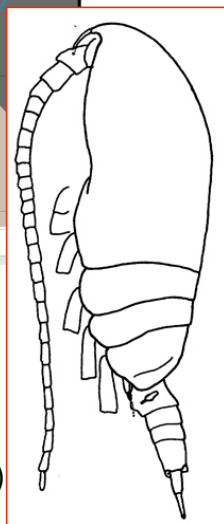
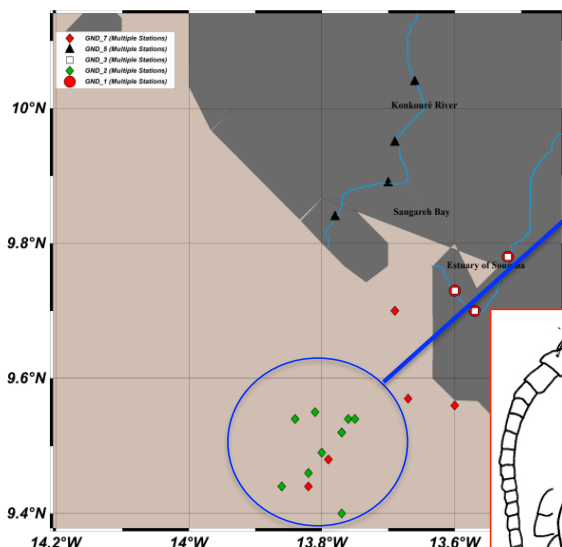


Data paper – in preparation



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# Demerstem ➤ Knowledge on plankton diversity & distribution



✓ Information on key zooplankton species

*Paracalanus quasimodo*  
Copepod filter-feeder (LT 0.86 mm)

Data paper – in preparation

## 1982

	January	February	March	July	September	December	Abundance Mean (N°Ind/m <sup>3</sup> )	Total
<b>Anellida</b>								
<i>Polychaeta</i> larvae	0			15,65			14,085	15,65
<b>Mollusca</b>								
	0	0,05	3,6	4,68	27,25	1,7	4,96	37,28
<b>Arthropoda</b>								
<i>Cirripedia</i> larvae	17,25	0	0	14,57	3,7	0,4	11,52	35,92
<b>Ostracoda</b>								
<i>Conchoecia</i> spp.	0,05	8,65	6,85	0,25	4,6	19,7	6,68	40,10
<b>Cladocera</b>								
<i>Penilia avirostris</i>	19,2	0,8	0	1,88	23,3	7,25	5,53	52,43
<b>Copepoda</b>								
<i>Centropages furcatus</i>	50,73	7,55	5,85	129,74	25,25	8,7	90,39	227,81
<i>Eucalanus</i> spp.	16,7			30,45			29,08	47,15
<i>Paracalanus parvus</i>	33,8	33	76,85	3,1	36,4	19,85	33,83	203,00
<i>Paracalanus quasimodo</i>	239,2	99	131,15	256,72	134,1	355,7	235,34	1215,87
<i>Pseudodiaptomus sericeaudatus</i>	3,075	1,9	1,9	7,50	35,8	3,05	7,74	53,22
<i>Temora stylifera</i>	4,3	4,7	7,85	0,99	2,5	3	2,28	23,34
<i>Temora turbinata</i>	10,23	6,75	8,7	15,93	19,4	26,55	15,07	87,55
<i>Ditrichocorycaeus africanus</i>	79,25	27,4	36,1	51,82	51,75	38,2	51,88	284,52
<i>Cyclopina</i> spp.	1,15	0	1	13,56	1,7	2,5	8,94	19,91
<i>Oithona brevicornis</i>	132,63	11,65	20,65	124,40	106,7	161,1	113,08	557,12
<i>Oithona nana</i>	4,7			48,26			43,90	52,96
<i>Oithona simplex</i>	29,3	0,8	8,7	52,96	19	19,85	39,79	130,61
<i>Oithona</i> spp.	45,5	40,3	17,2	24,5	17,35	34,05	29,82	178,90
<i>Euterpina acutifrons</i>	10,45	2,05	0,95	13,22	2,45	5,3	10,24	34,42
<i>Asteroceridae</i> spp.	33,43	9,95	6,9	41,69	6,35	19,5	19,64	117,82
<b>Decapoda</b> larvae	15,65	16,95	6,4	34,88	24,55	10,45	27,41	108,88
<b>Chaetognatha</b>	25,25	2,05	6,75	22,54	10,2	14,4	19,33	81,19
<b>Chordata</b>								
<i>Appendicularia</i>	0	5,35	0,25	5,9	14,4		4,32	25,90
<i>Oikopleura</i> spp.	15,7			11,17			11,63	26,87
<b>Tunicata</b>								
<i>Salpa</i> spp.	0,05	28,3	4,4	0	4,1	0	6,14	36,85
<b>Total</b>	856,20	315,50	353,20	1027,07	581,95	769,30	916,57	3903,22

Keita and Khlistova, 1985

Zooplankton biodiversity and seasonal variability in the 1980s

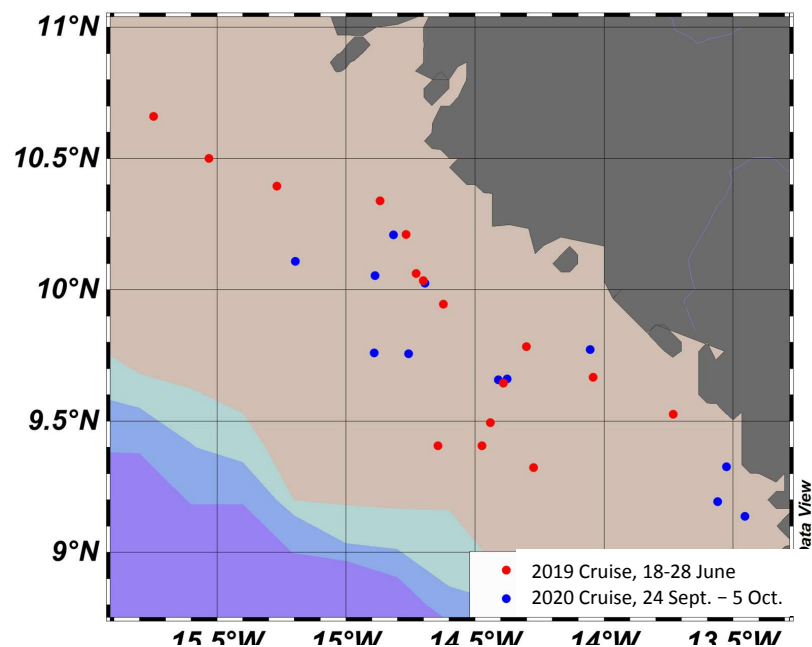


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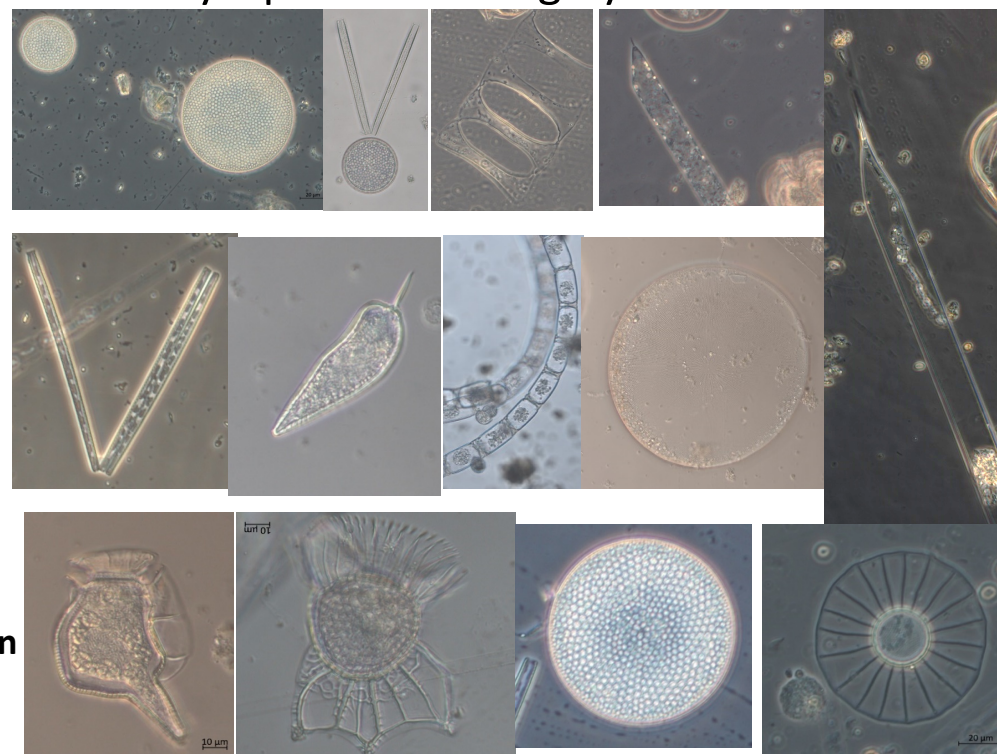
# Demerstem *➤ Knowledge on plankton diversity & distribution*



## DEMERSTEM Cruise in Guinea



## Phytoplankton is highly diversified



Preliminary results from 2019 Campaign show 102 phytoplankton taxa identified in light microscopy.

Many more species will be identified in electron microscopy



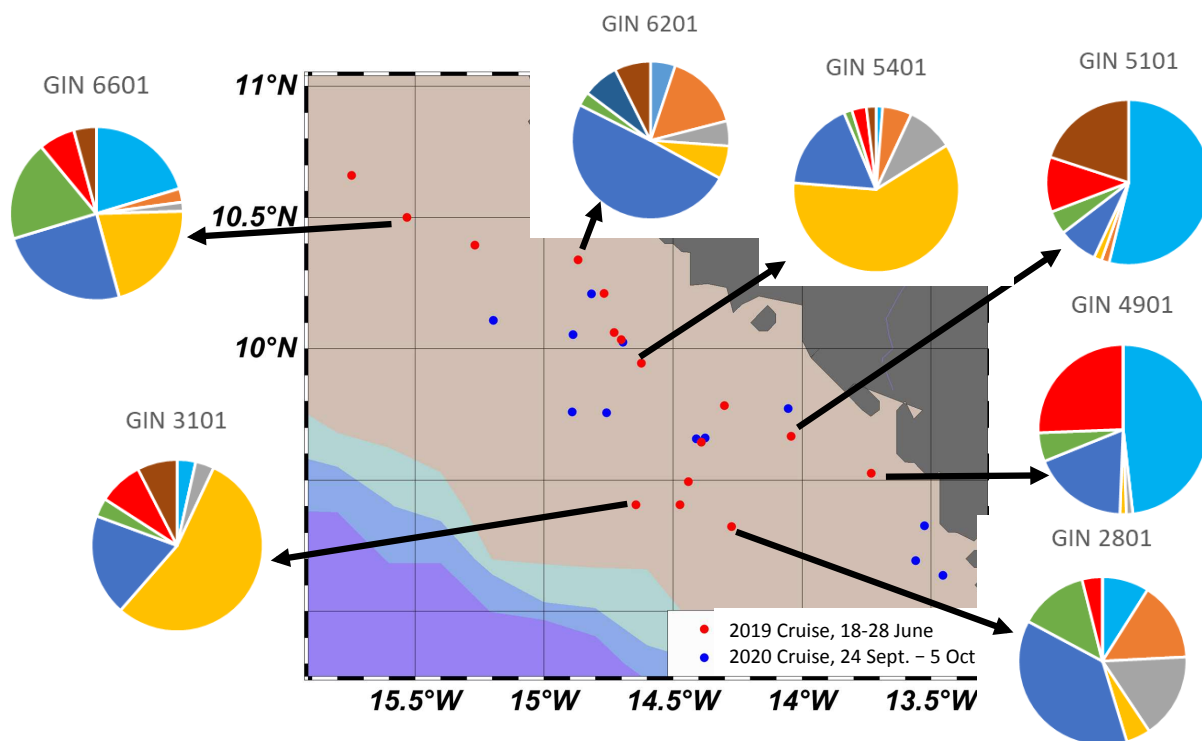
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# Demerstem *➤ Knowledge on plankton diversity & distribution*



## DEMERSTEM Cruises in Guinea



- ✓ Phytoplankton species are spatially heterogeneous
- ✓ Diatoms overall dominates
- ✓ Dinoflagellates are significantly abundant only in a few coastal stations



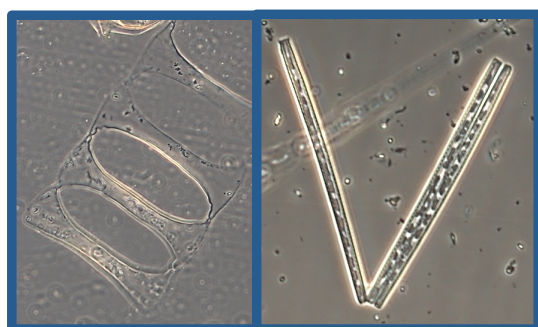
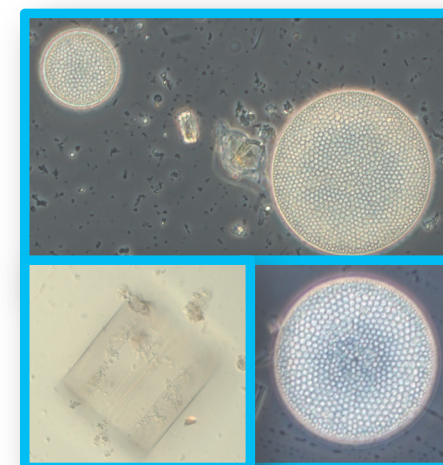
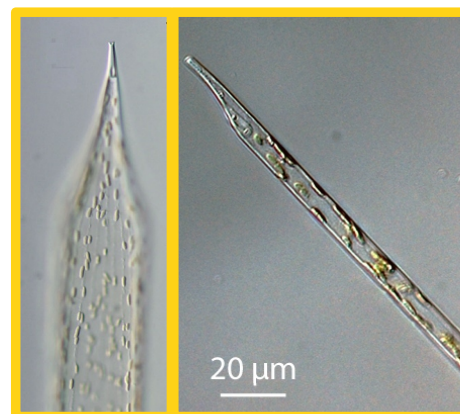
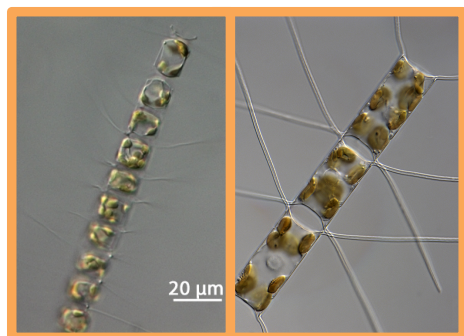
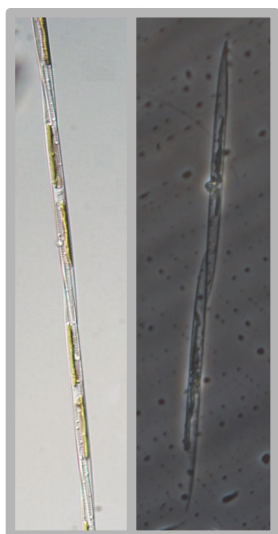
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# Demerstem

➤ Knowledge on plankton functional groups



✓ DEMERSTEM Cruises in Guinea – Phytoplankton pelagic species



- CENTRIC DIATOMS
- PSEUDO-NITZSCHIA SPP.
- OTHER DIATOMS
- DINOFLAGELLATES
- CHAETOCEROS SPP.
- RHIZOSOLENIACEAE
- BENTHIC DIATOMS
- COLONIAL CYANOBACTERIA



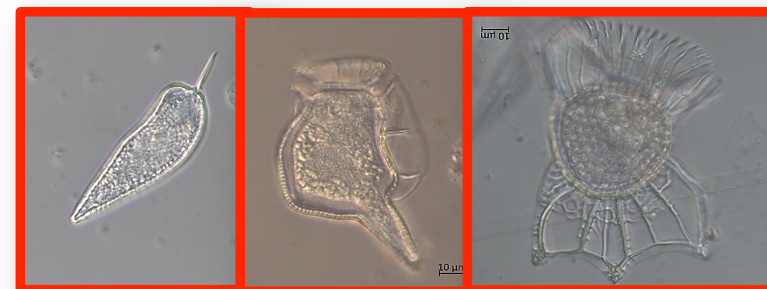
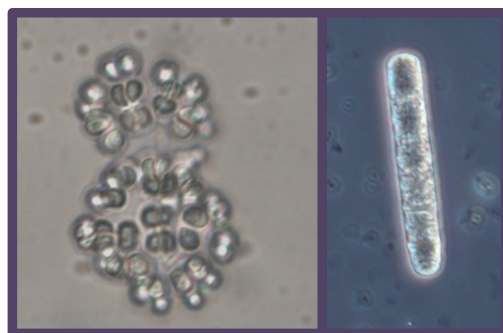
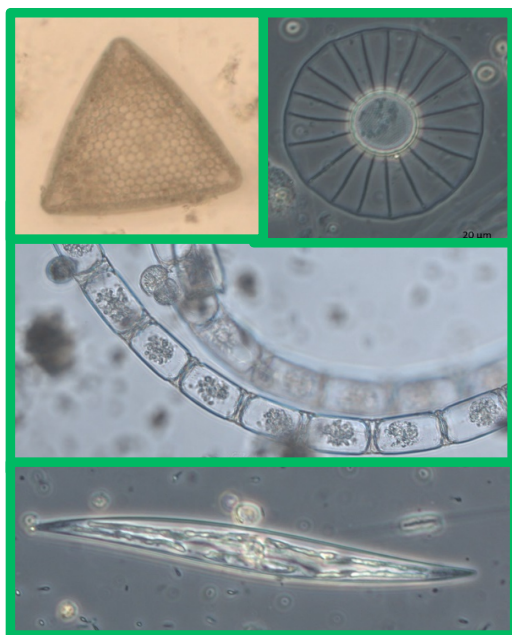
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# Demerstem

➤ *Knowledge on plankton functional groups*



✓ DEMERSTEM Cruises in Guinea – Phytoplankton epibenthic & freshwater species



- CENTRIC DIATOMS
- PSEUDO-NITZSCHIA SPP.
- OTHER DIATOMS
- DINOFLAGELLATES
- CHAETOCEROS SPP.
- RHIZOSOLENIACEAE
- BENTHIC DIATOMS
- COLONIAL CYANOBACTERIA



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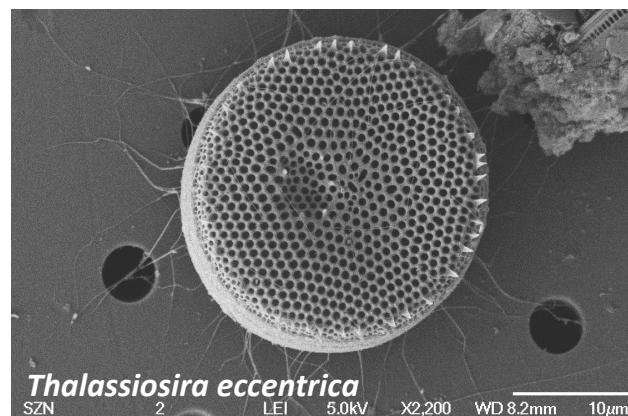
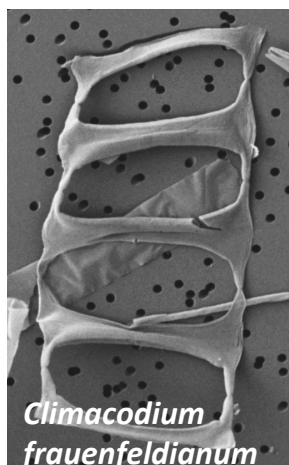
# Demerstem

➤ Knowledge on plankton diversity and key taxa

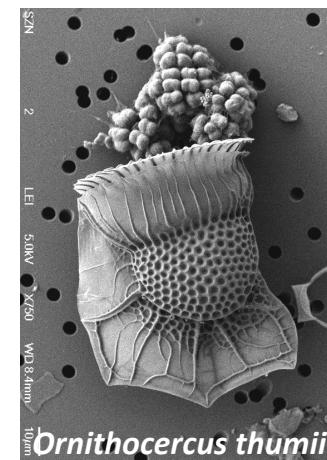


## NEXT STEPS:

- ✓ Complete the analysis of phytoplankton samples (also with electron microscopy for species complex such as *T. eccentrica*).
- ✓ Compare ocean colour maps with phytoplankton data to identify key taxa.



Other Diatoms



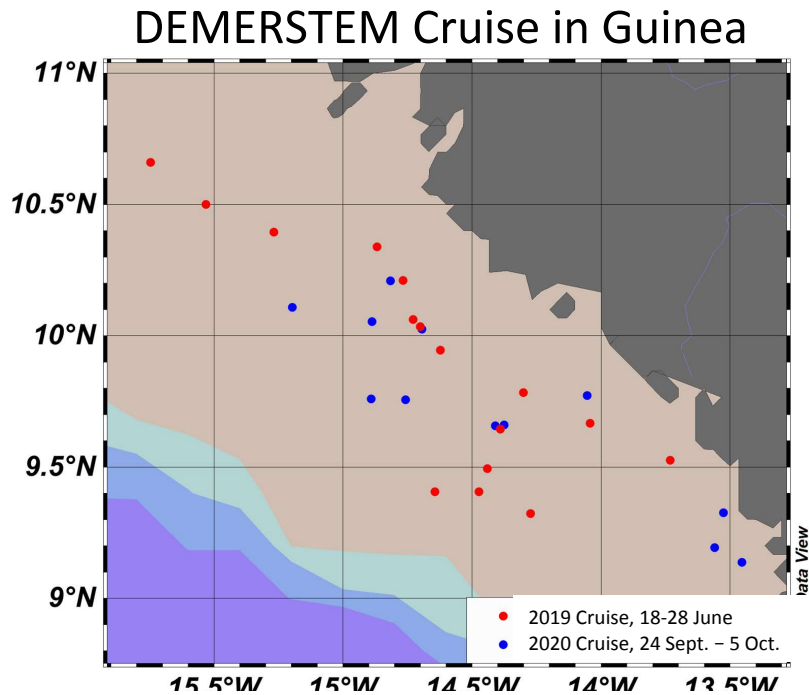
Dinoflagellate with symbiotic bacteria

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# Demerstem ➤ Knowledge on plankton diversity & distribution



Preliminary results from 2019 Campaign shows 50 zooplankton taxa identified, confirming some key species & finding new ones

Taxon	Diet	Life cycle
<b>Cnidaria</b> Hydrozoa		
<i>Anthomedusa</i>	Carnivorous	Meroplankton
<i>Leptomedusa</i>	" "	" "
<i>Obelia</i> spp.	" "	" "
<i>Siphonophora</i>	Carnivorous	Holoplankton
<i>Muggiaea kochi</i>	" "	" "
Physonectae spp.	" "	" "
<b>Mollusca</b> Gastropoda	Herbivorous	Holoplankton
<b>Arthropoda</b>		
<i>Cirripedia</i> larvae	Herbivorous	Meroplankton
<i>Ostracoda</i>	Carnivorous	Holoplankton
<i>Cladocera</i>		
<i>Evadne tergestina</i>	Herbivorous	Holoplankton
<i>Penilia avirostris</i>	" "	" "
<i>Pleopis polyphemoides</i>	" "	" "
<b>Copepoda</b>		
<i>Centropages furcatus</i>	Omnivorous	Holoplankton
<i>Centropages chierchiae</i>	" "	" "
<i>Eucalanus</i> spp.	Herbivorous	Holoplankton
<i>Paracalanus indicus</i>	" "	" "
<i>Paracalanus quasimodo</i>	" "	" "
<i>Pseudodiaptomus serricaudatus</i>	" "	" "
<i>Temora stylifera</i>	Omnivorous	Holoplankton
<i>Temora turbinata</i>	" "	" "
<i>Acartia plumosa</i>	" "	" "
<i>Oithona plumifera</i>	" "	" "
<i>Euterpina acutifrons</i>	Herbivorous	Holoplankton
<i>Ditrichocorycaeus africanus</i>	Carnivorous	Holoplankton
<i>Onychocorycaeus aiesbrechti</i>	" "	" "
<b>Decapoda</b> larvae	Carnivorous	Meroplankton
<b>Chaetognatha</b>		
<i>Sagitta enflata</i>	Carnivorous	Holoplankton
<b>Chordata</b>		
<i>Appendicularia</i>		
<i>Oikopleura</i> spp.	Omnivorous	Holoplankton
<i>Fritillaria</i> spp.	" "	" "
<b>Thaliacea</b>		
<i>Doliolum nationalis</i>	Herbivorous	Holoplankton

Zooplankton is highly diversified





# Demerstem

➤ Knowledge on plankton diversity and key taxa



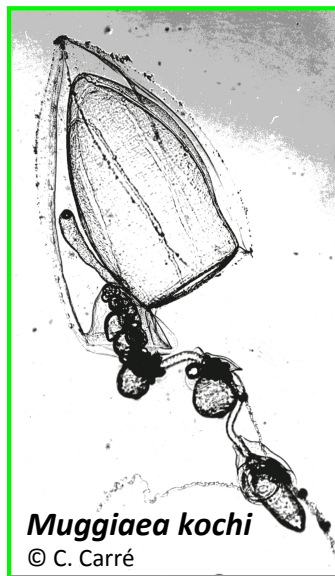
## NEXT STEPS:

- ✓ Complete the analysis of zooplankton samples (who is counting 2020 samples?)
- ✓ Integrate phyto- & zooplankton data to identify main plankton assemblages (present vs past)



*Turritopsis sp.*

(carnivorous H ≈ 4-11mm)

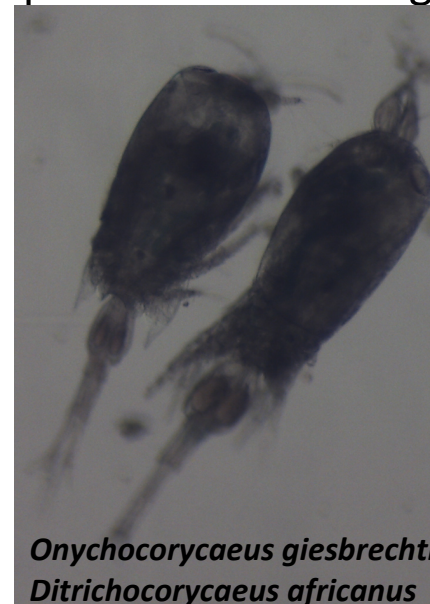


*Muggiaea kochi*

© C. Carré

(carnivorous H ≈ 4mm)

## Hydromedusa



*Onychocorycaeus giesbrechti*  
*Ditrichocorycaeus africanus*

(carnivorous LT < 1.5mm)



*Paracalanus indicus*  
(filter-feeder LT < 2mm)

## Copepoda



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# Demerstem

➤ Knowledge on jellyfish diversity & distribution

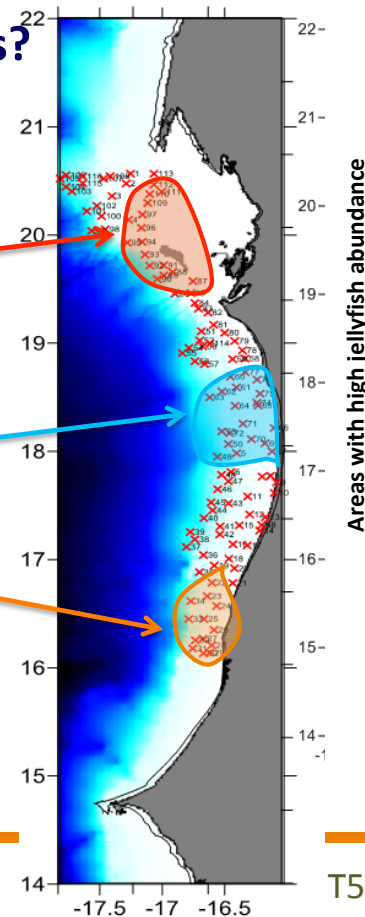


Are jellyfish outcompeting demersal fishes?

Case study  
in  
Mauritania  
(2019)  
and in  
Guinea  
(2020)



Preliminary results from 2019 Campaign shows that different zone are characterised by different jellyfish species



## NEXT STEPS:

- Genetic analysis of jellyfish populations (not started yet)
- Study environmental preferences of key jellyfish species

Is acidification favouring  
Jellyfish vs fish?  
(PhD project SZN-Uni. Paris, PML  
(UK) & NANSEN project)



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# Demerstem



Thanks for your attention!



M. Grazia Mazzocchi



Diana Sarno



Isabella Percopo



Serena Zampardi



DEMERSAL ecosystem



European Union



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