The Occurrence of Phycotoxins in Coastal Areas of South America

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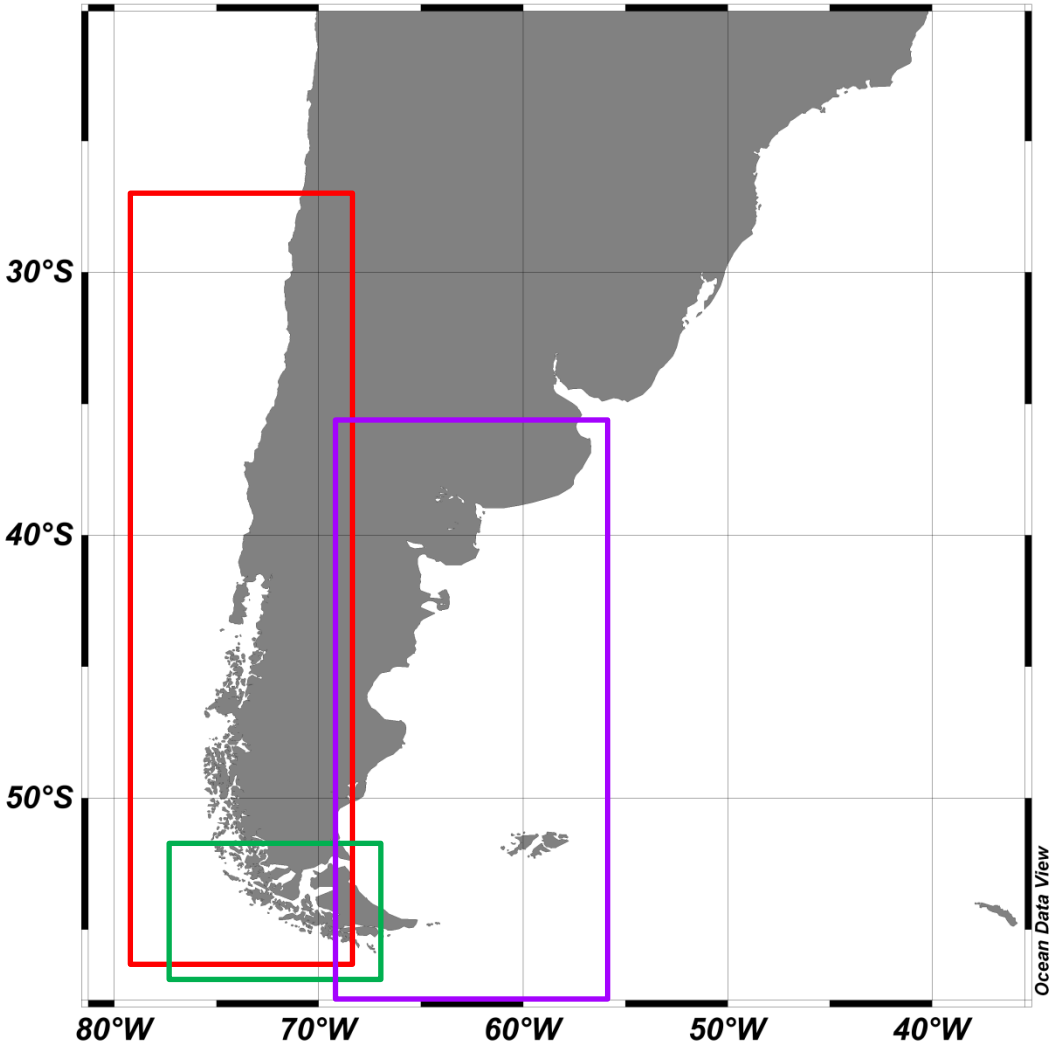
1. Study areas



March 2009
Hespérides

Nov/Dec 2010
Abate Molina

March/April 2012
Puerto Deseado

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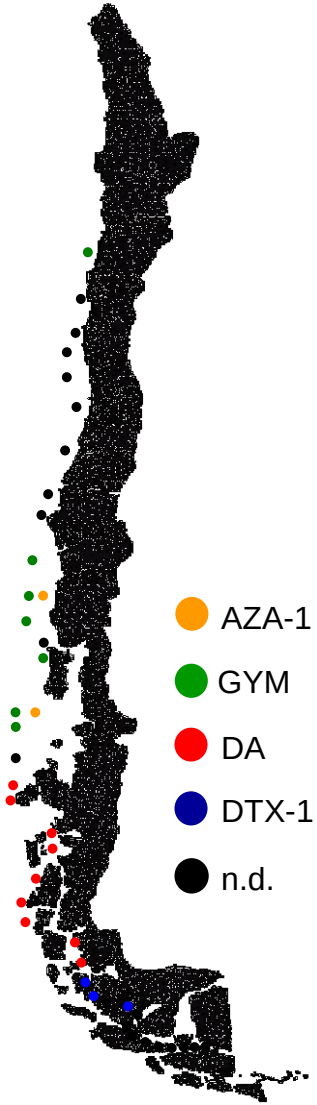
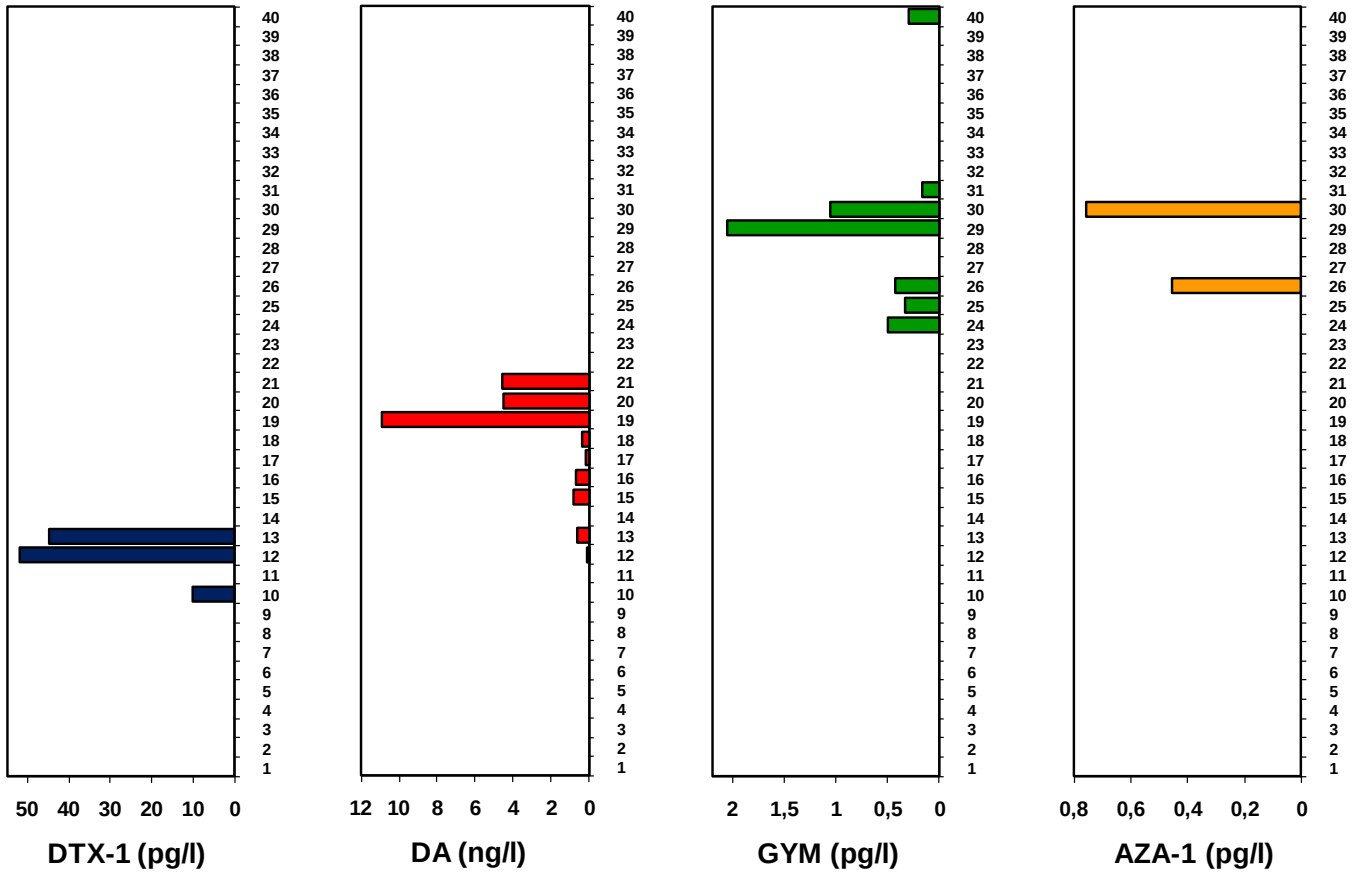
2. The Hespérides Expedition Mar 2009



Water pumping, 25 – 100 µm size fraction, only lipophilic toxins and domoic acid



Trefault N., Krock B., Delherbe N., Cembella A.D., Vásquez M., 2011. Toxicon 58, 389-397.

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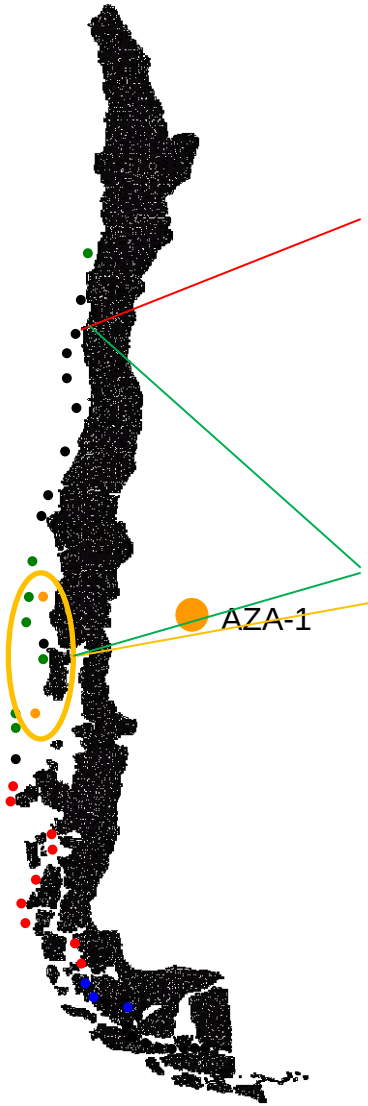
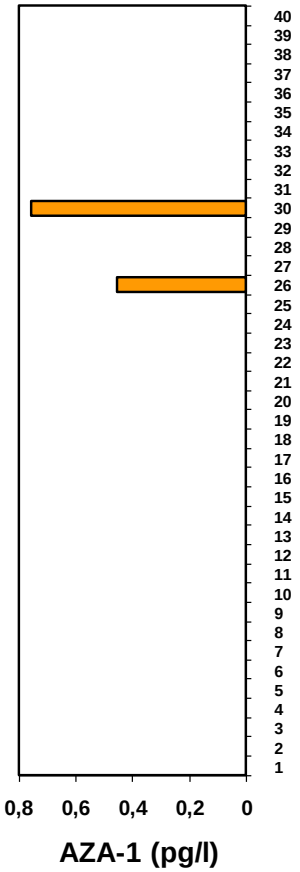


Álvarez G., Uribe E., Ávalos P., Mariño C., Blanco J., 2010. First identification of azaspiracid and spirolides in Mesodesma donacium and Mulinia edulis from Northern Chile. Toxicon 55, 638-641.

López-Rivera A., O'Callaghan K., Moriarty M., O'Driscoll D., Hamilton B., Lehane M., James K.J., Furey A., 2010. First evidence of azaspiracids (AZAs): A family of lipophilic polyether marine toxins in scallops (Argopecten purpuratus) and mussels (Mytilus chilensis) collected in two regions of Chile. Toxicon 55, 692-701.



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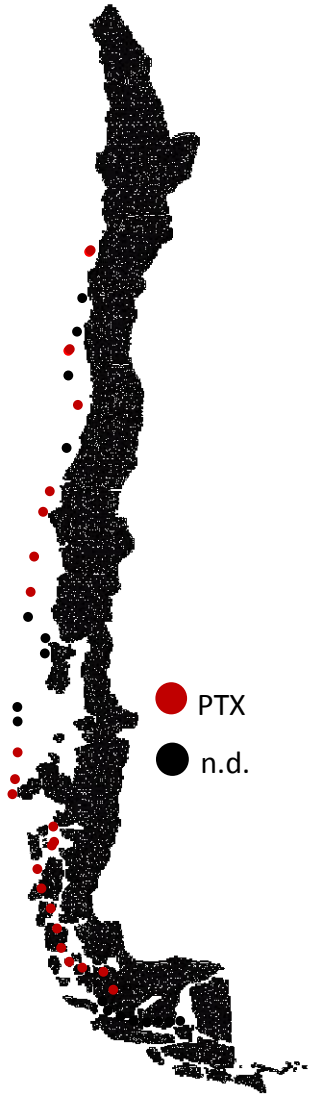

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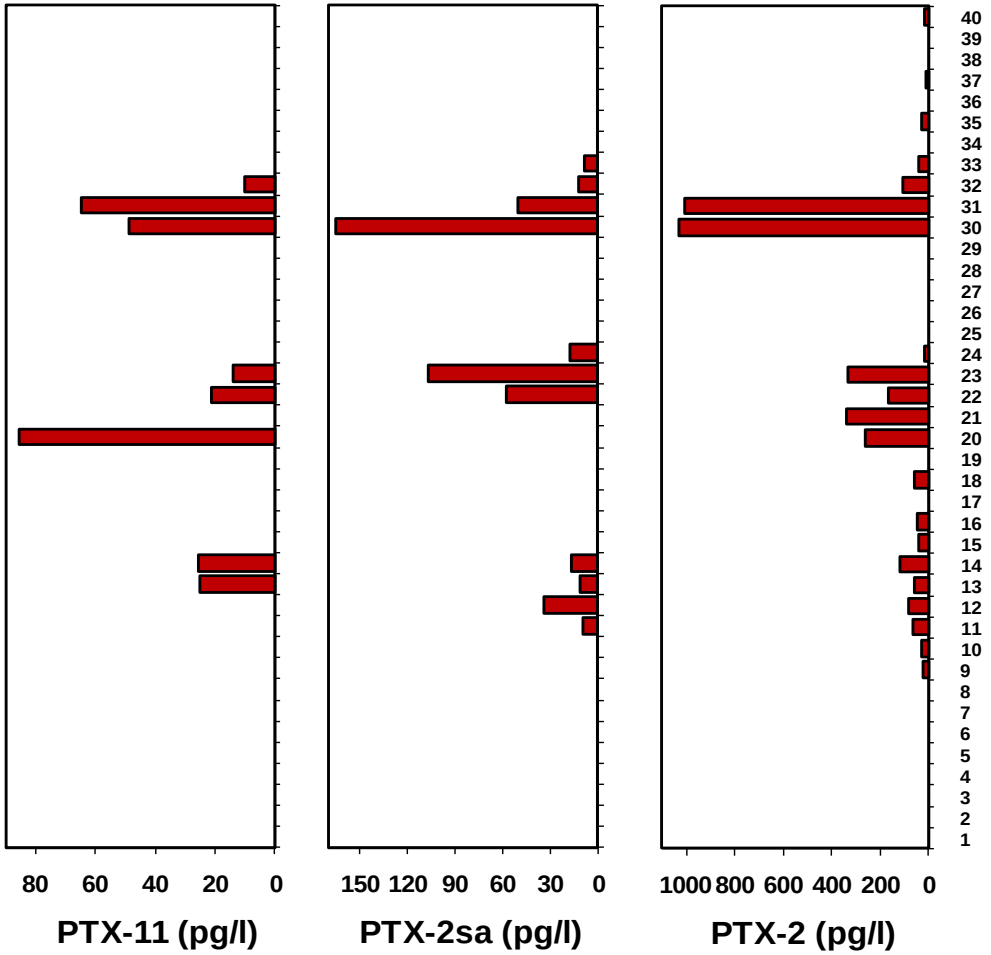

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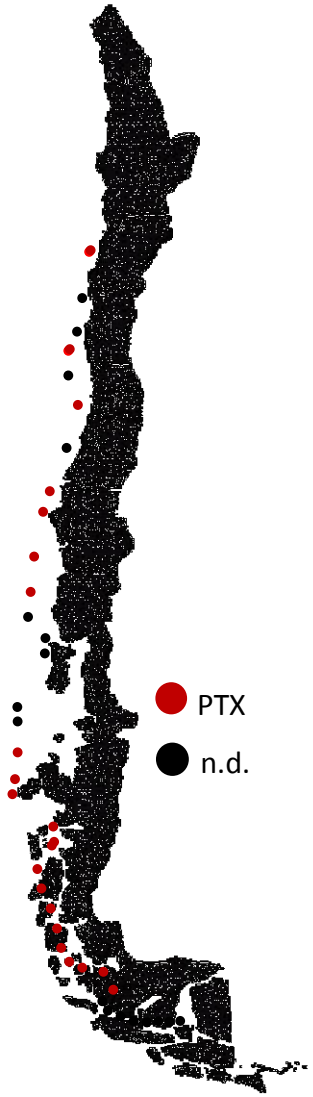
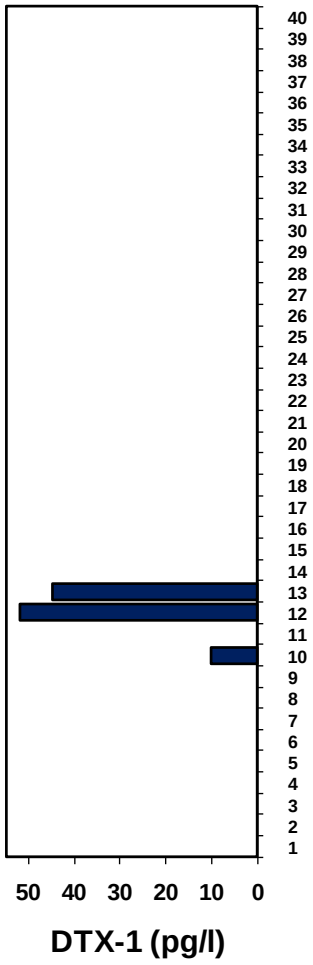
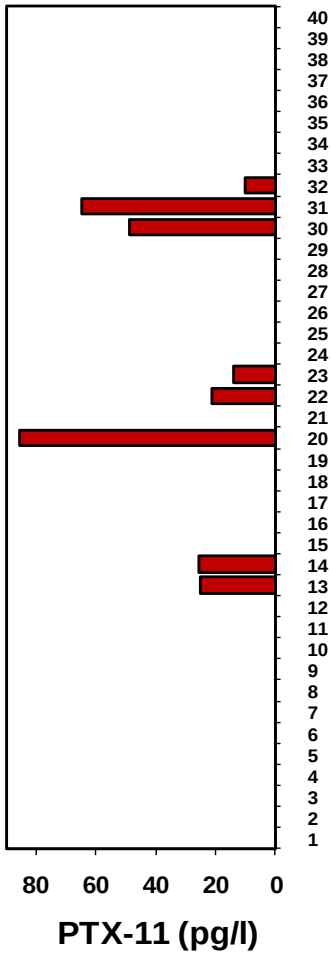
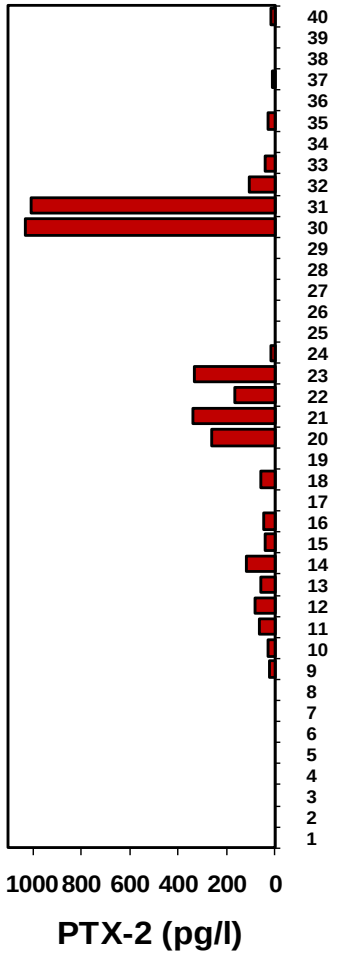


Different *Dinophysis* species in Chilean coastal waters







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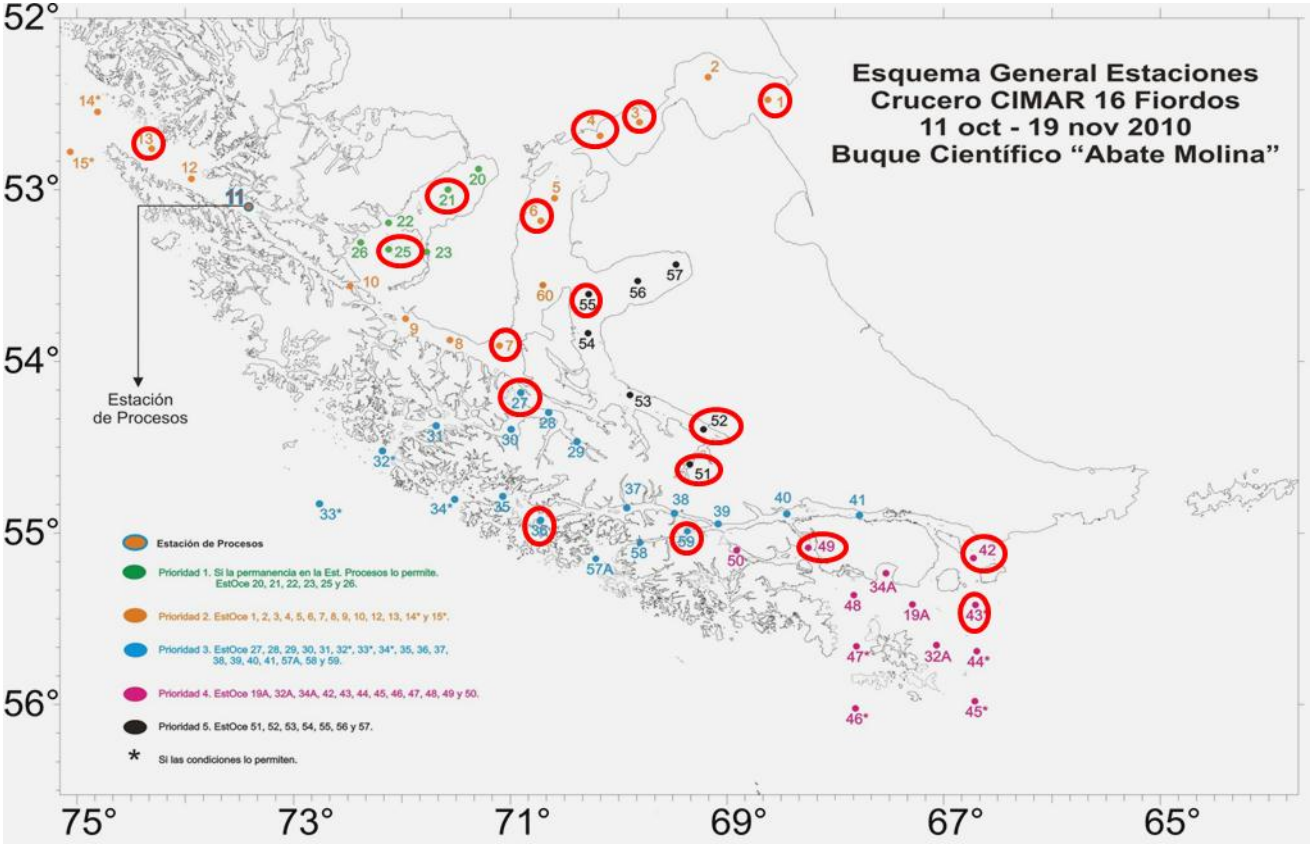
3. The Abate Molina Expedition Nov/Dec 2010



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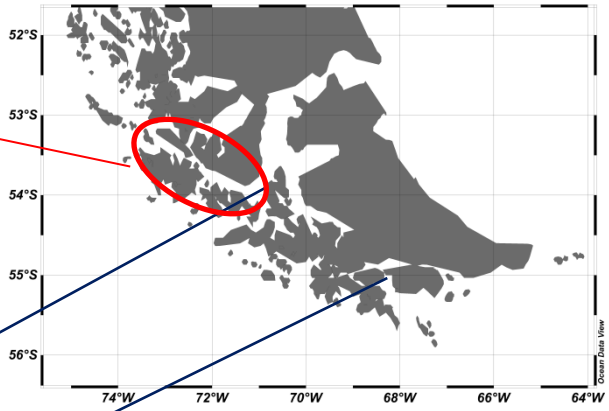
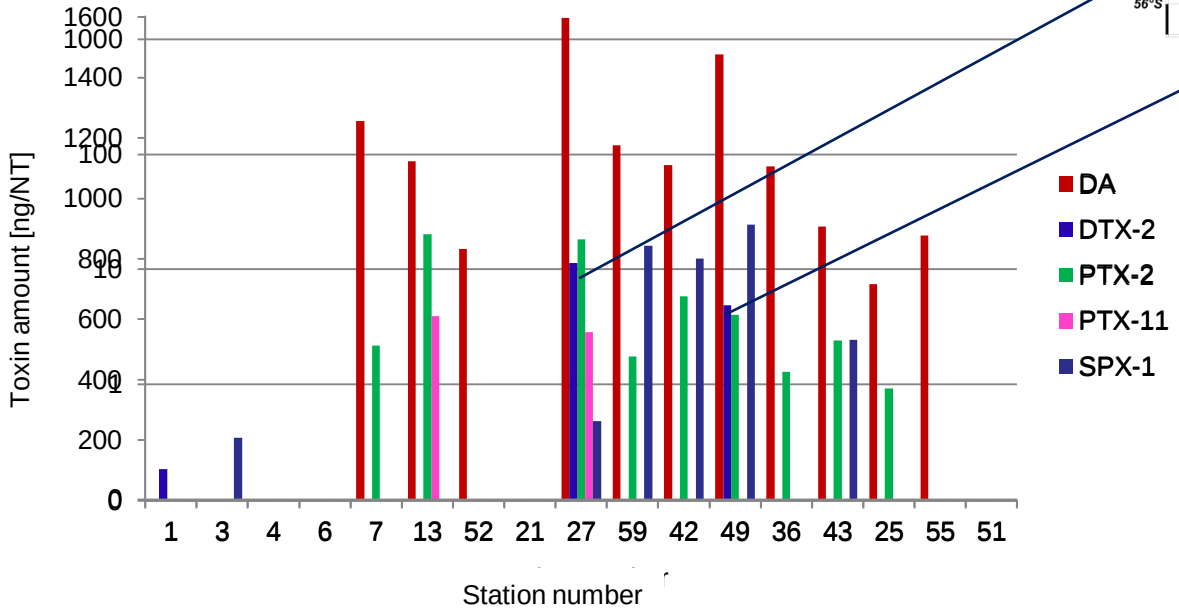
3. The Abate Molina Expedition 2010

DTX-1 found in Nov/Dec 2009





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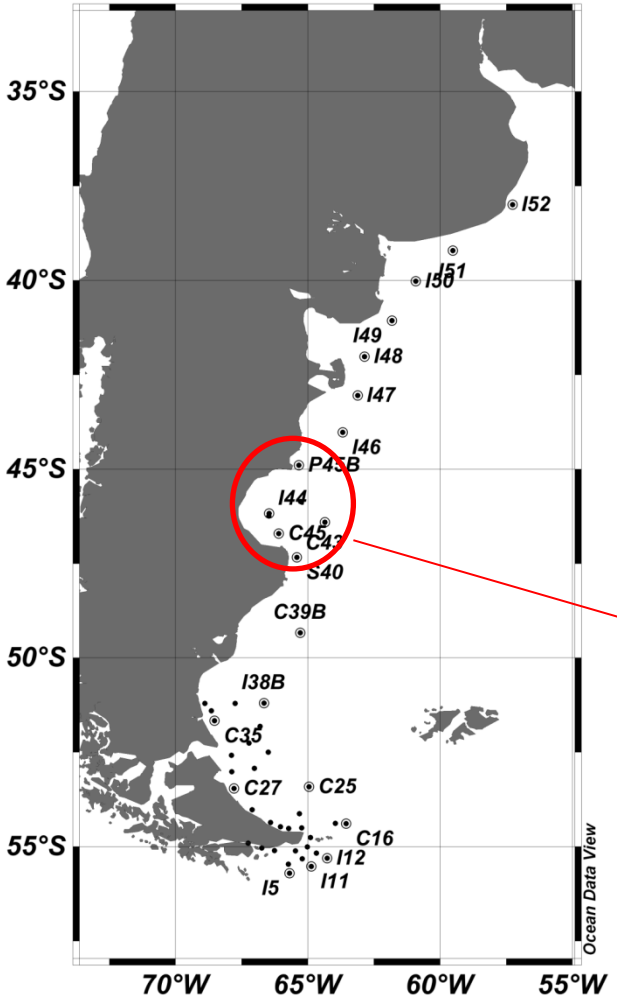
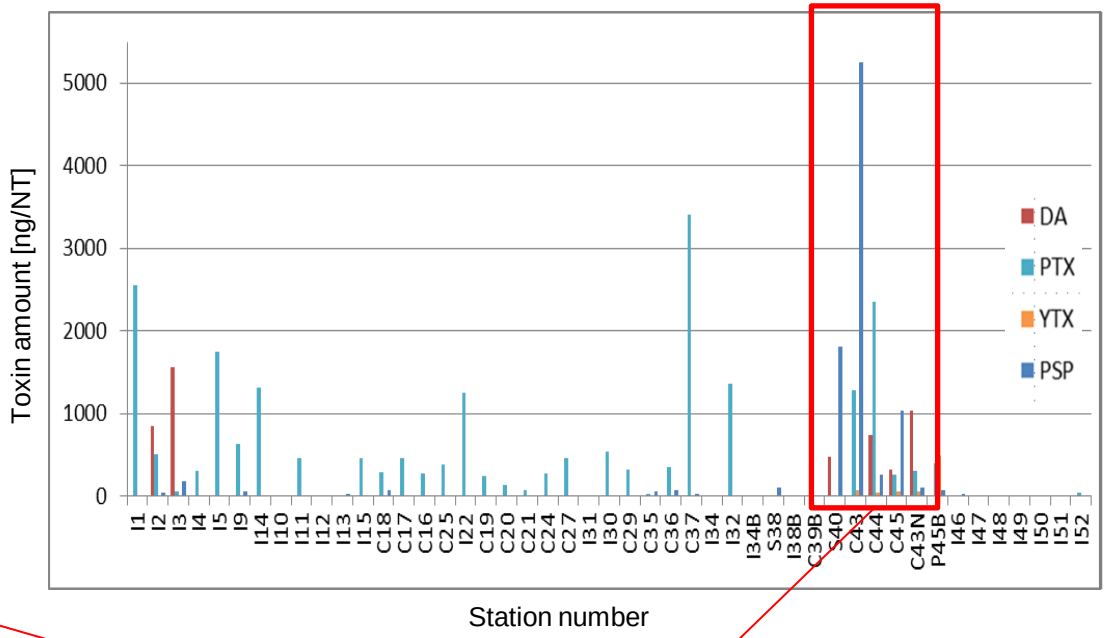
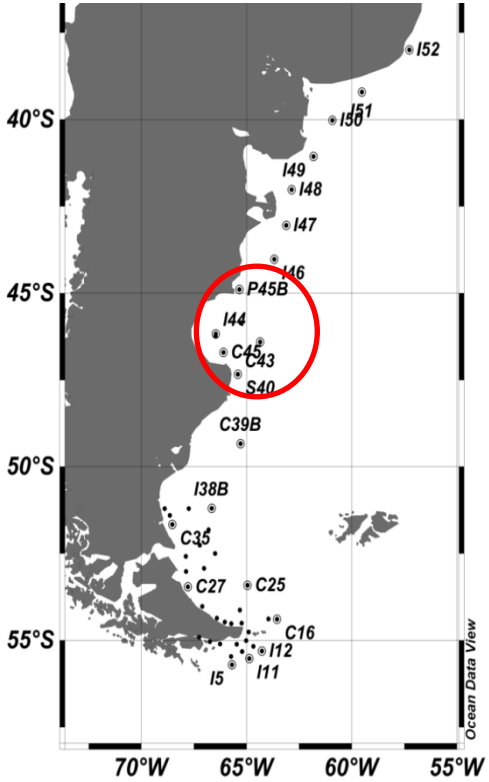
4. The Puerto Deseado Expedition Mar/Apr 2012

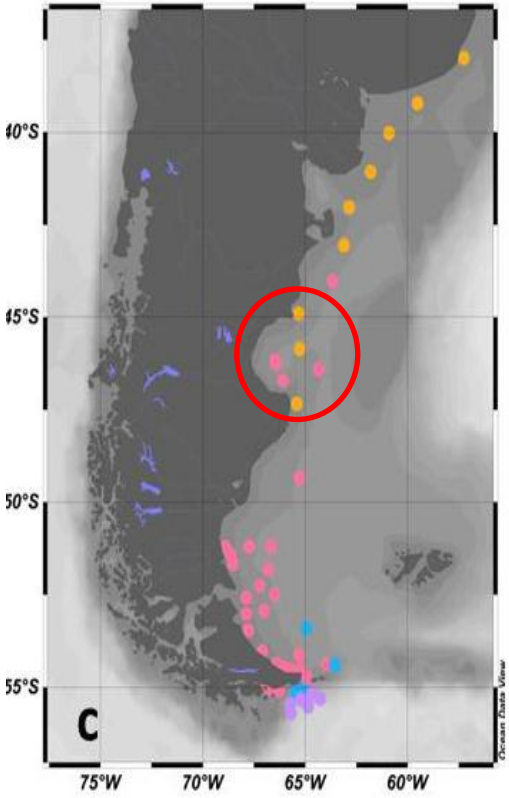


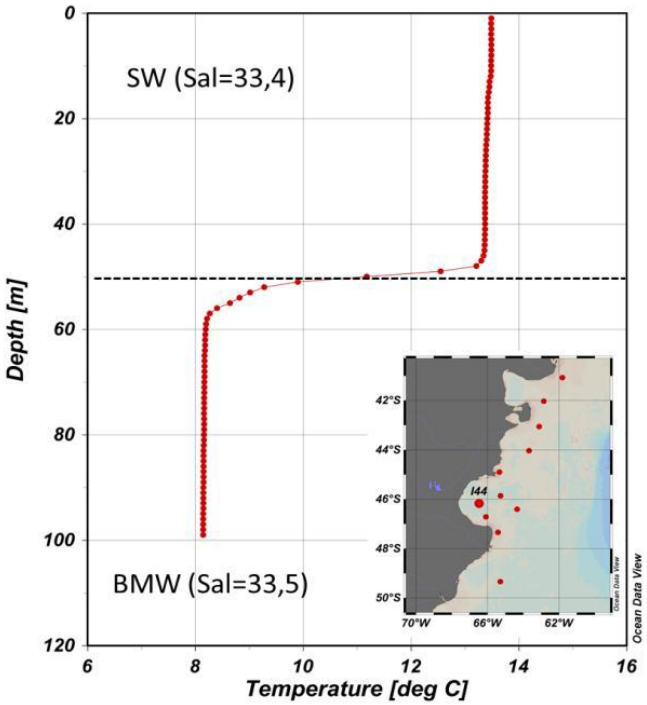


San Jorge Gulf

4. The Puerto Deseado Expedition Mar/Apr 2012







The overlay of nutrient-rich, cold Beagle-Magellan water with warm, nutrient-depleted shelf water results in a high primary production

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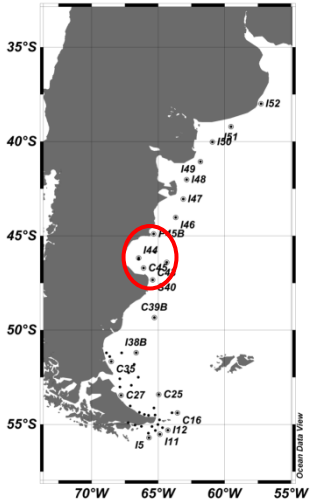
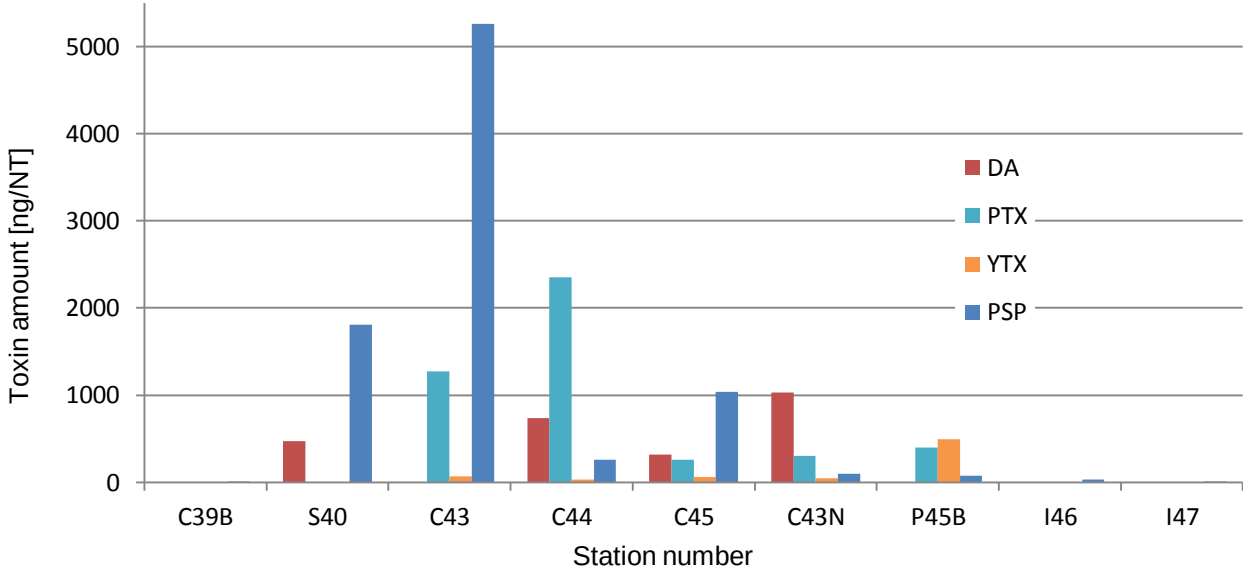
4. The Puerto Deseado Expedition Mar/Apr 2012

Enormous dinoflagellate bloom dominated by non-toxic *Ceratium* spp.





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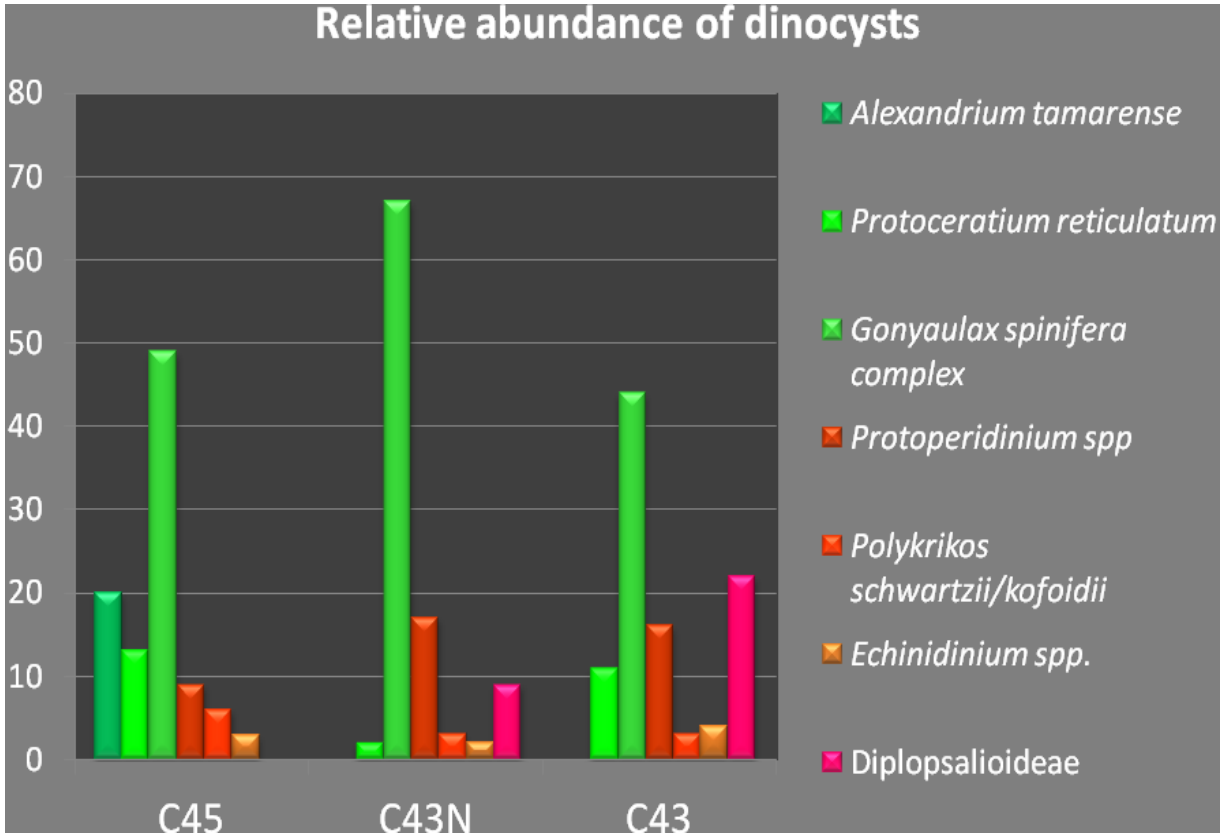

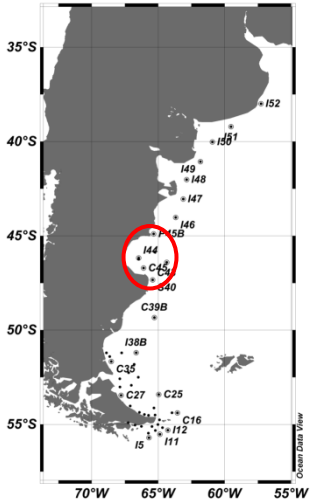

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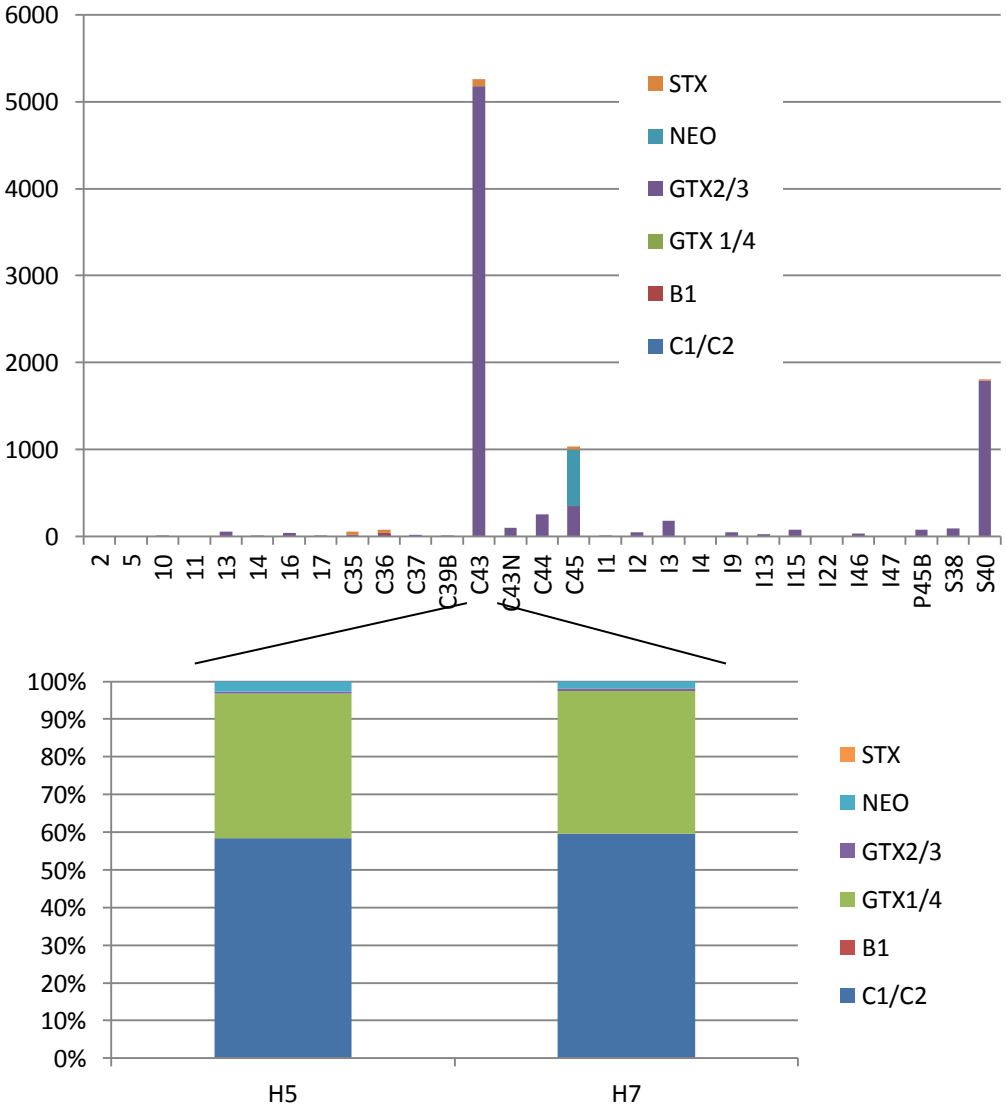

PSP toxin profiles of two *Alexandrium tamarense* isolates from Station C43

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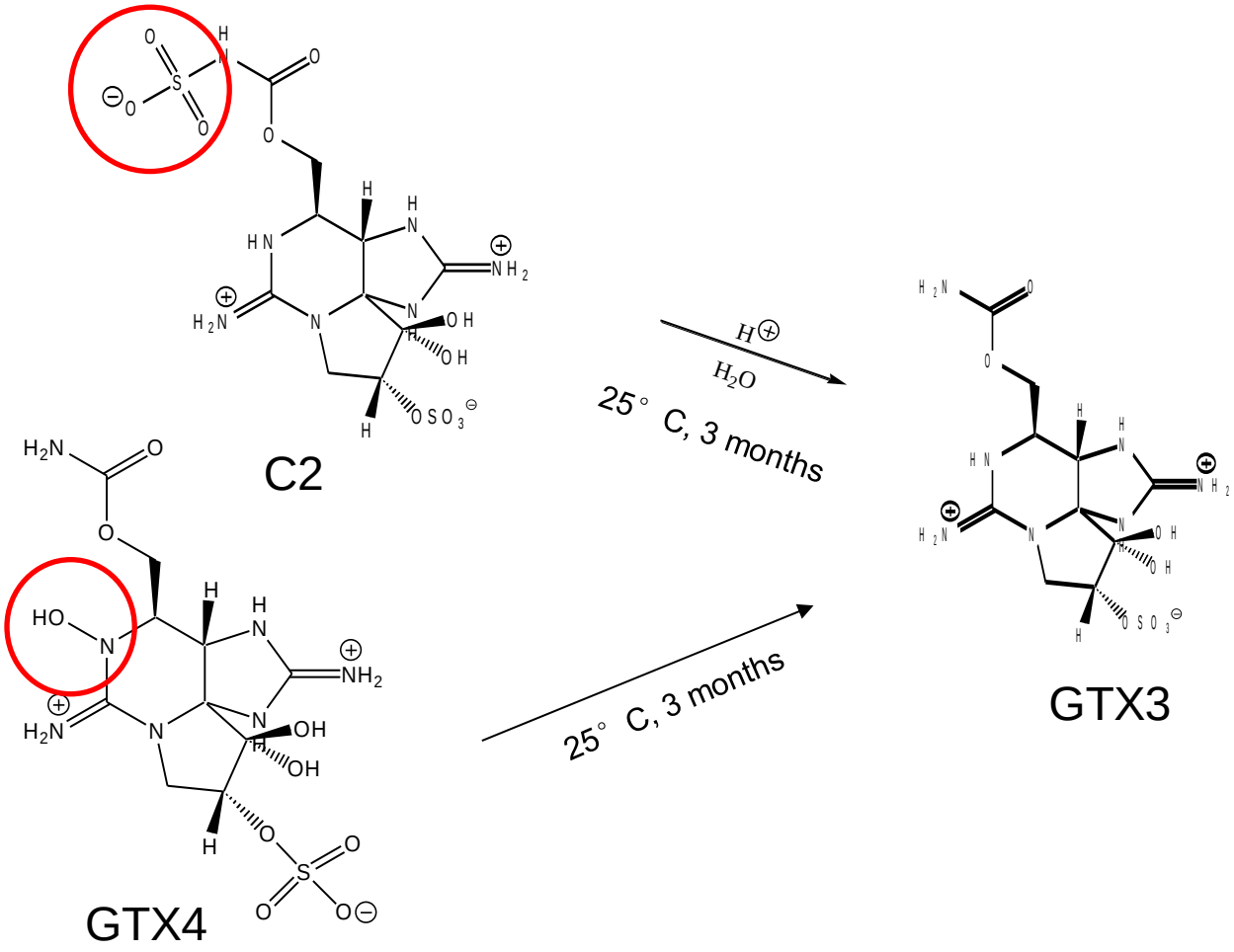

5. Conclusions

AZAs are present in Chilean coastal waters, but have not been detected in Argentinean Shelf waters

PTXs occur throughout South American waters with a relatively regular distribution; PTX-11 could only be detected in Pacific but not in Atlantic waters

In the Chilean southern Patagonian Fjords DTX-1 and DTX-2 were detetced, but no OA; in the years 2009/2010 DTX-1 and -2 were separated geographically and temporally

The San Jorge Gulf is characterized by cold, nutrient rich Beagle-Magellan water overlayed by warmer nutrient depleted shelf water; this situation causes high density dinoflagellate blooms including toxic species.

C1/C2 and GTX1/4 are converted to GTX2/3 abiotically within 3 months under elevated ambient temperatures

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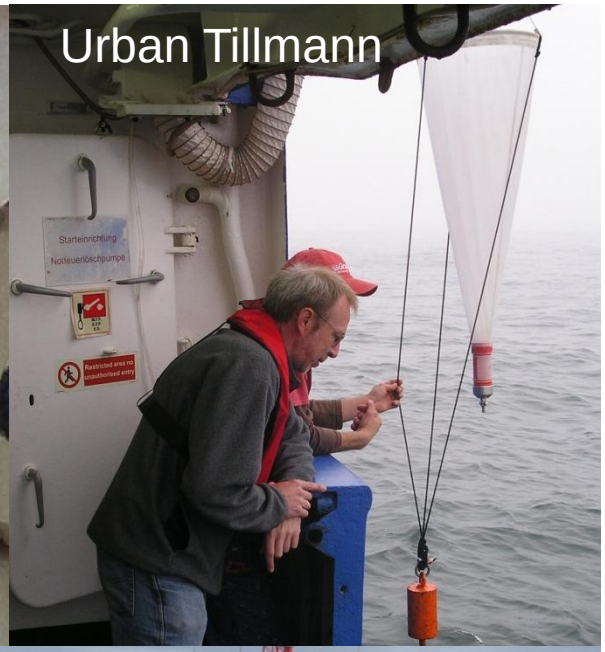

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Funding:

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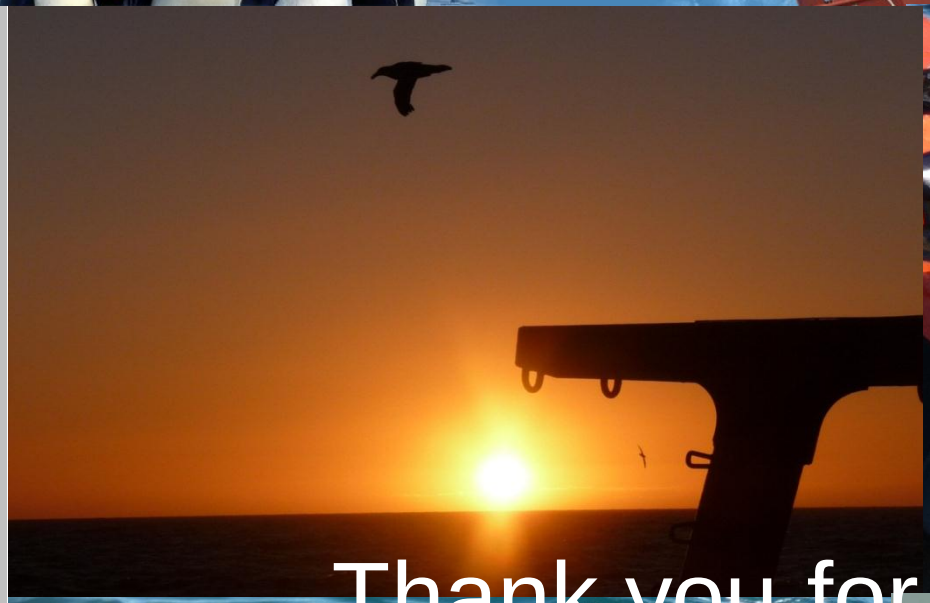
2010: Proyecto CONA C16F 10-13 (Chile)

2012: MINCyT-BMBF (AL/11/03-ARG 11/021)
(Argentina & Germany)



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