

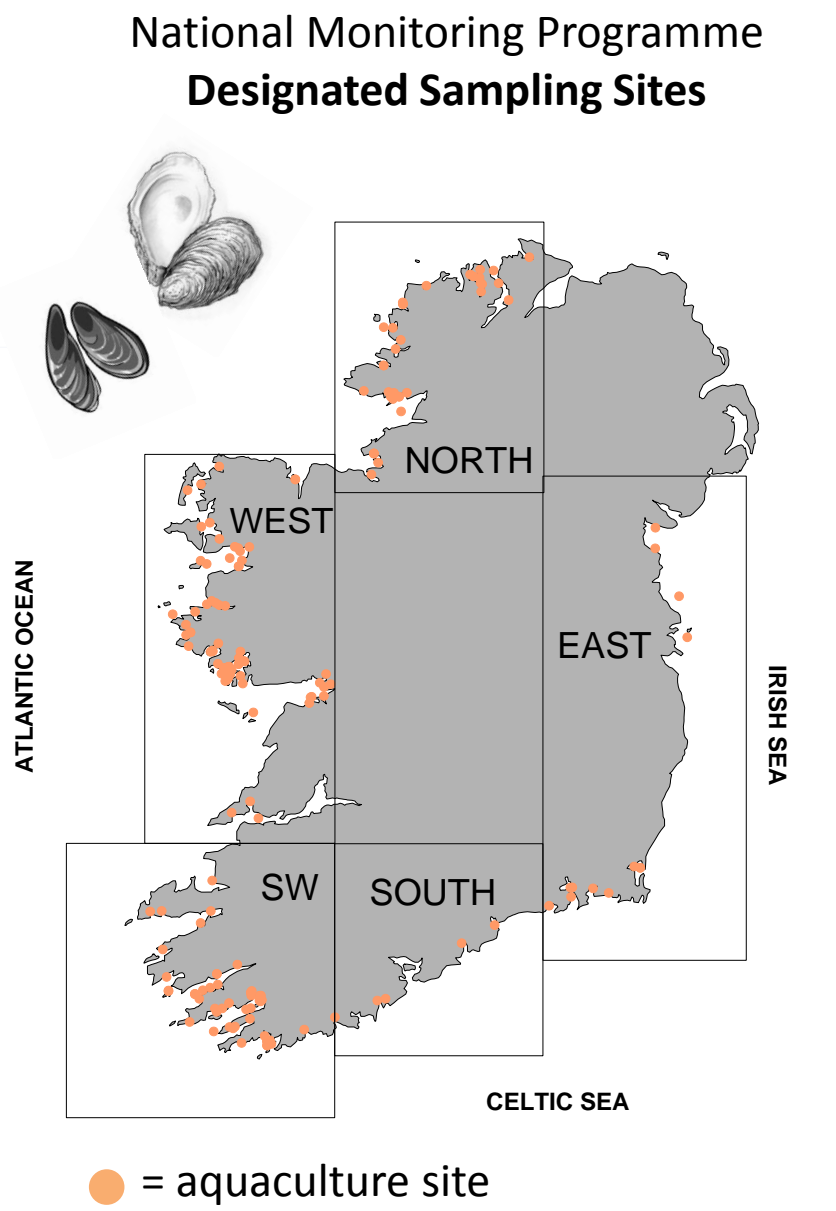
Ireland: Current Conditions

Shellfish biotoxin report (last week)



EU Regulatory Limit:
ASP 20 µg/g; AZP 0.16 µg/g; DSP 0.16 µg/g; PSP 800 µg/kg

Toxin groups
ASP = **A**mnestic **S**hellfish **P**oisoning; AZP = **AZ**aspiracid **P**oisoning;
DSP = **D**iarrhetic **S**hellfish **P**oisoning; PSP = **P**aralytic **S**hellfish **P**oisoning



Prediction for this week:

ASP event: Low Risk

AZP event: Moderate – High Risk in north, west and SW

DSP event: **Moderate – High Risk in north and west, High Risk in SW and south.**

PSP event: Low Risk

Why do we think this?

ASP: This is a low risk time of year. Toxins not detected in recent weeks. “*Psedudo-nitzschia seriata*” cell levels have decreased at many sites countrywide in the last week.

AZP: This is a relatively high risk time of year in the north, west and southwest. Toxins detected at background levels in more sites over the last week on the south, SW, west and north. Toxins levels increased to just below EC regulatory limit in one northern site. An upward weekly trend in AZP levels is now evident. Last week, *Azadinium*-like cells were present in numerous sites countrywide with highest levels recorded in the north and south. Please note, the phytoplankton detection method currently used is unable to separate toxic from non-toxic species.

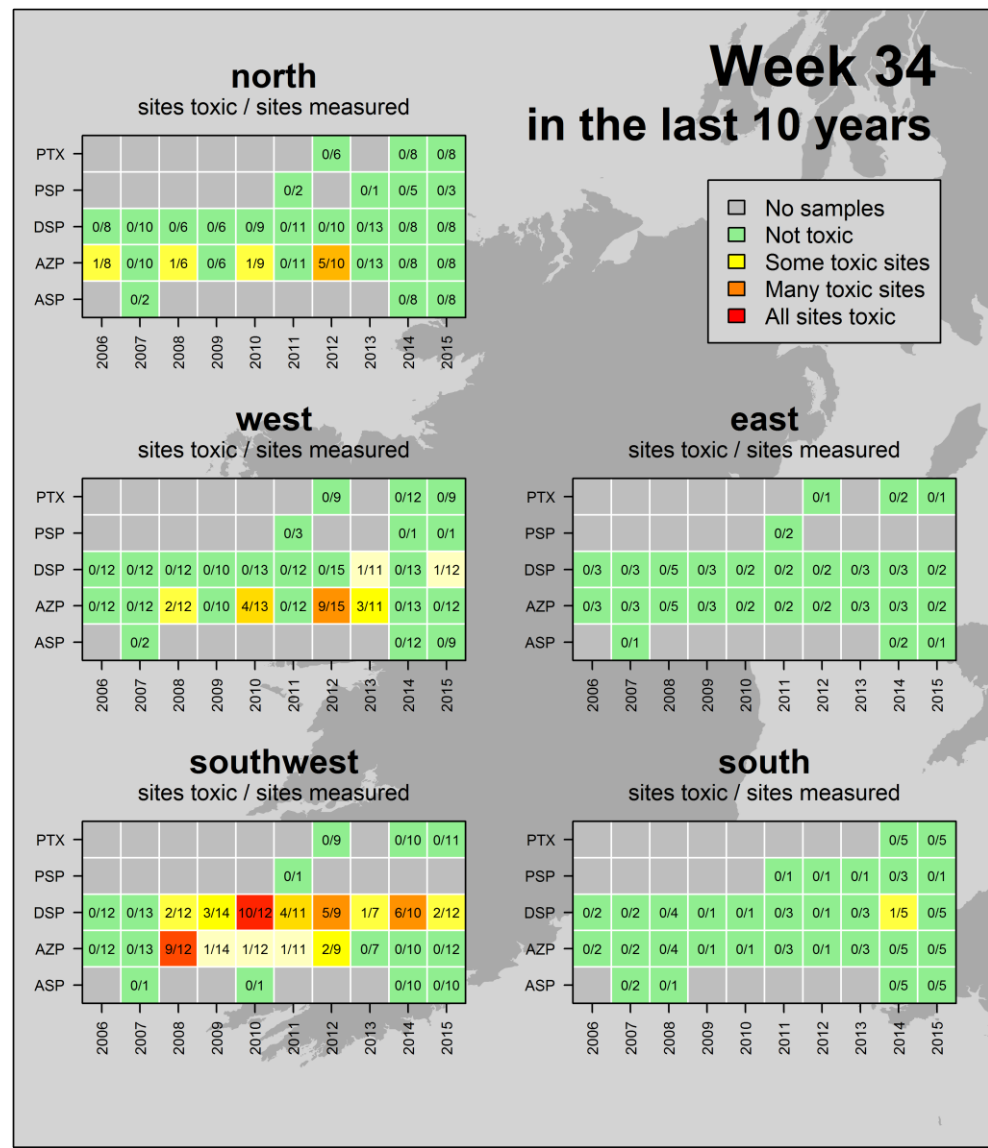
DSP: **This is a high risk time of year in the SW with some past events also evident in the historic record in the west and south. Over the last week, toxin levels have increased along the west, SW and south coasts. *Dinophysis* cell levels have also increased in some sites, most notable along the SW and south coasts. While relatively low levels of *Dinophysis* have been observed in the west and north, the toxins are evident at many sites; caution is advised. An upward weekly trend is also evident in DSP toxin plots.**

PSP: This is not a high risk time of year. The toxin levels continue to drop well below the EC Reg. limit in Cork Harbour – the only area that historically been closed due to PSP. While *Alexandrium* spp. are present at many sites countrywide it is unlikely that toxic species are present.

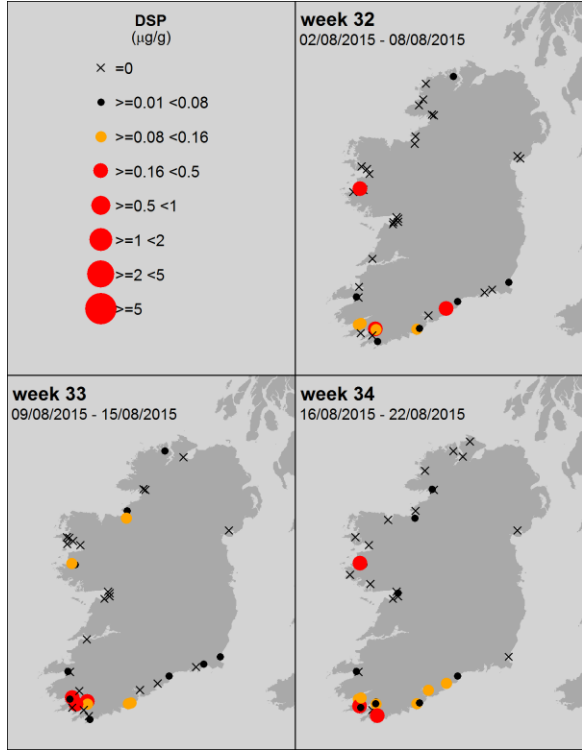
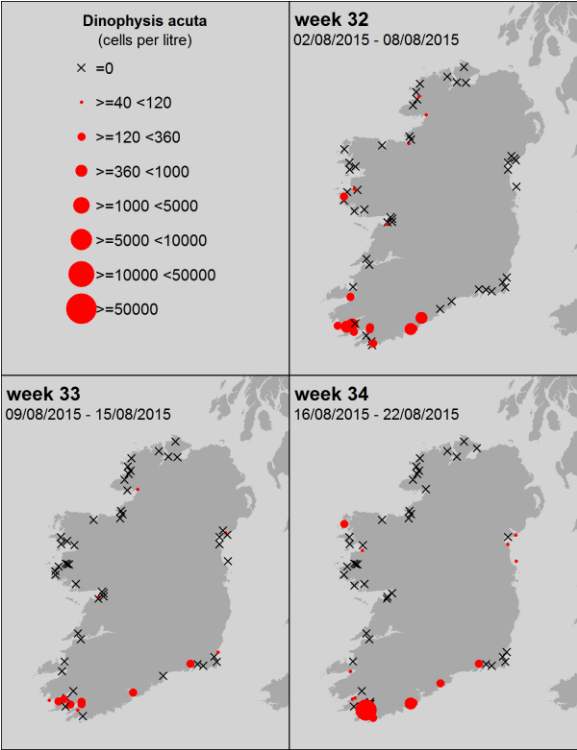
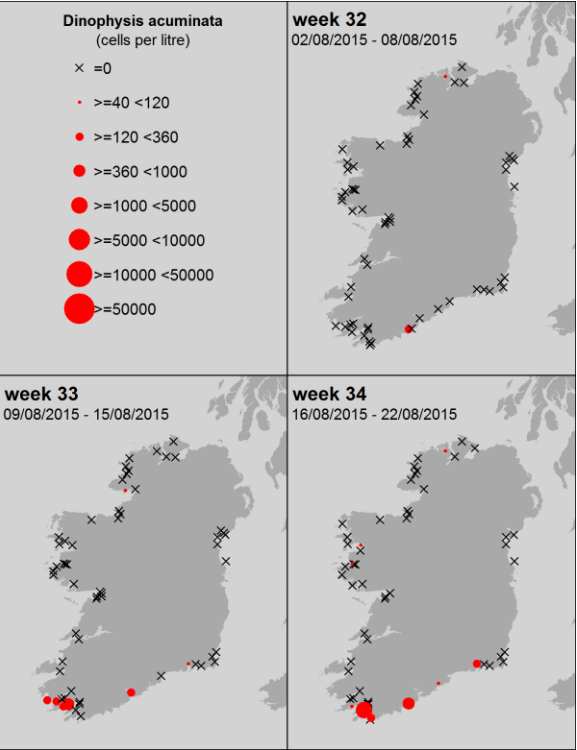
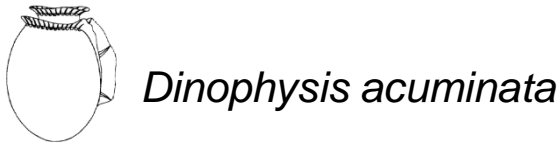
EXCEPTIONAL HIGH BIOMASS BLOOMS: The *Karenia mikimotoi* bloom detected in the SW is expected to continue over the next week. Based on satellite data, there is some risk that a bloom may develop on the west coast.

Ireland: Historic Conditions

A look back at how last weeks biotoxin results compares to other years



Ireland: Last 3 weeks of available National Monitoring Programme data



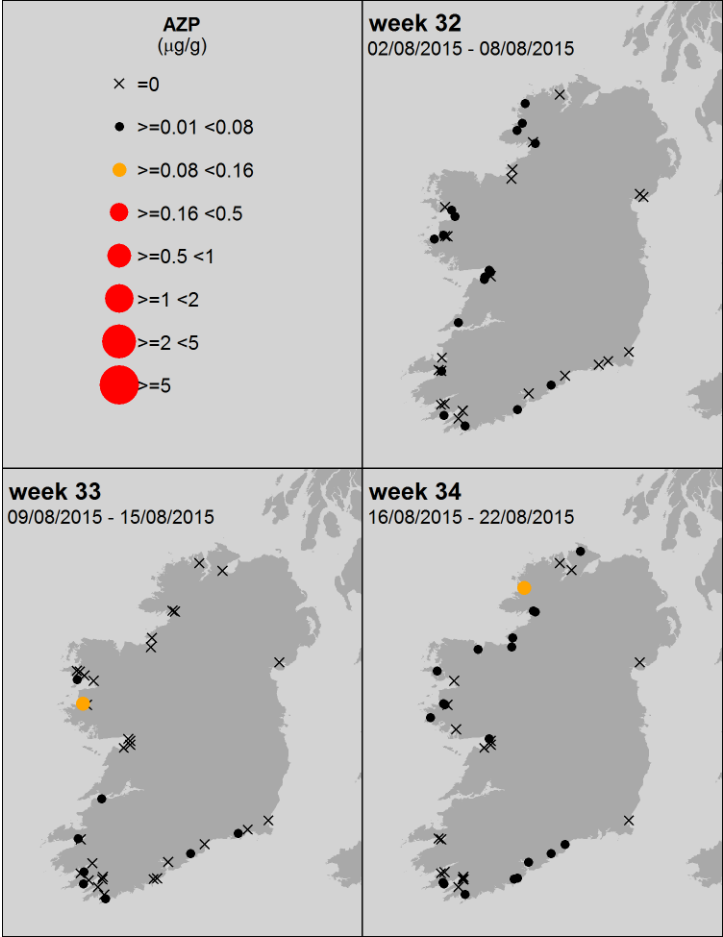
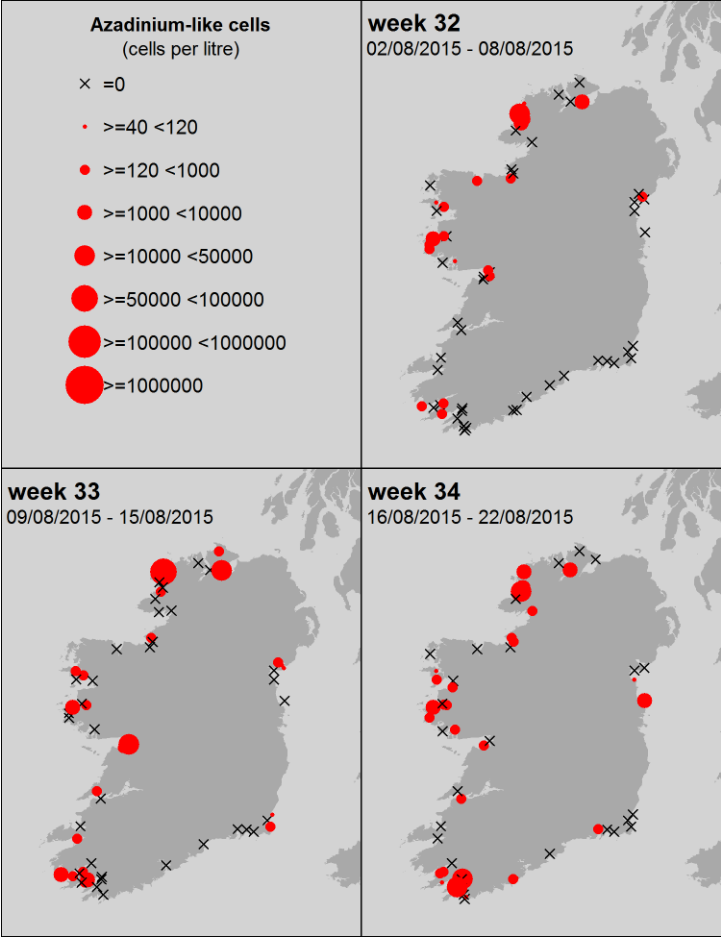
Ireland: Last 3 weeks of available National Monitoring Programme data



Azadinium – like spp.



AZP



Ireland: Last 3 weeks of available National Monitoring Programme data

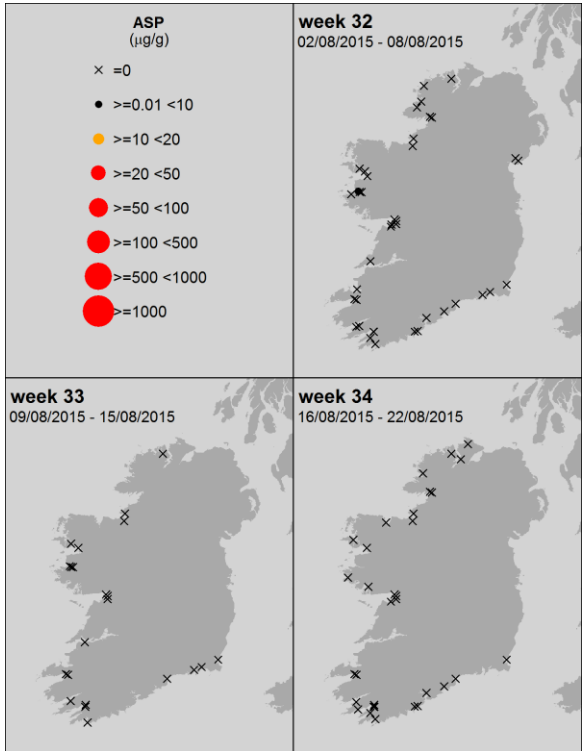
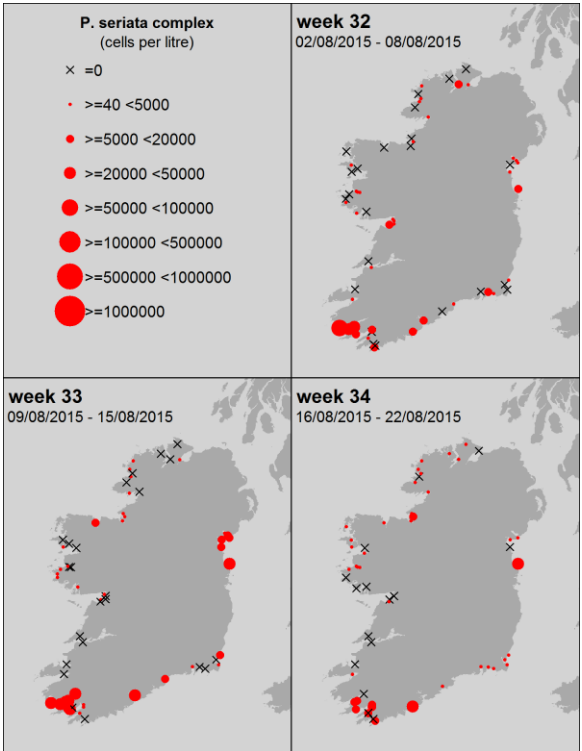
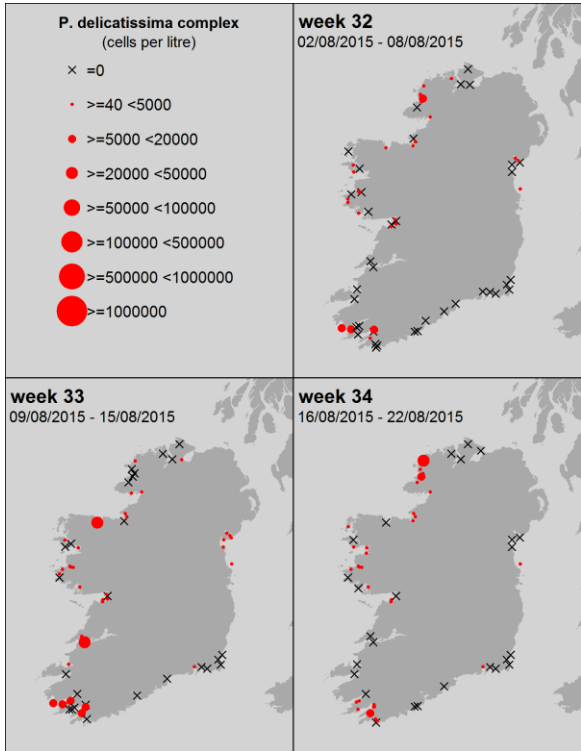
Pseudo-nitzschia spp.



ASP

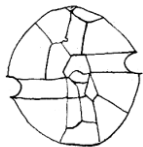
“*P. delicatissima*” complex = small cells
Taken from the literature:
3 species confirmed in Irish waters

“*P. seriata*” complex = large cells
Taken from the literature:
7 species confirmed in Irish waters

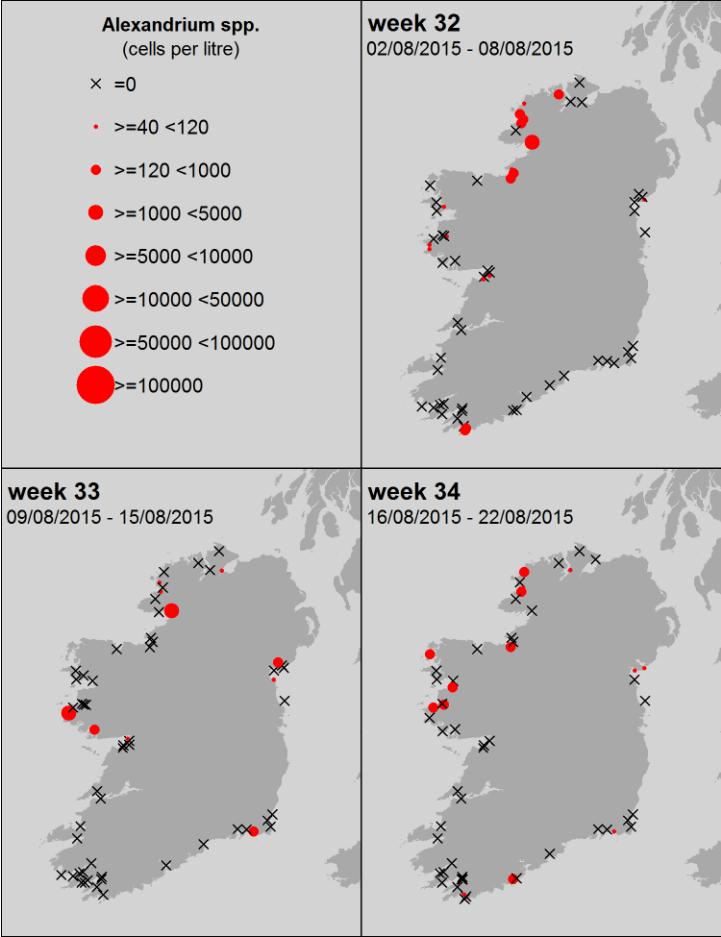


Taken from the literature: Of the 4 species (*P. fraudulenta*, *P. australis*, *P. pungens* and *P. delicatissima*) from Irish waters, tested for ASP toxins in culture work, only one, *P. australis* (from the “*P. seriata*” group) was toxic.

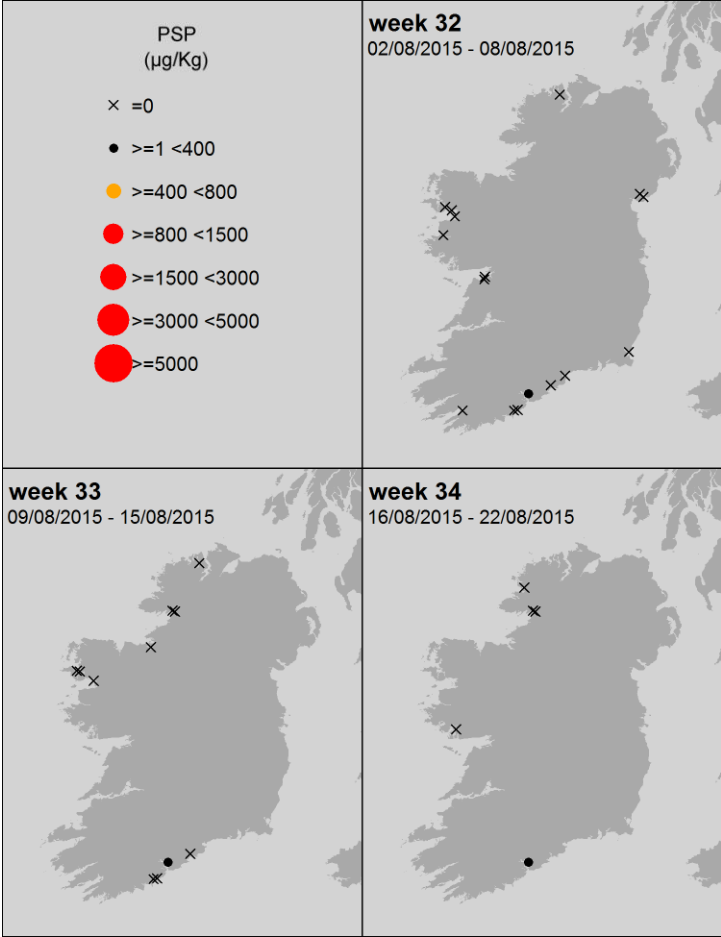
Ireland: Last 3 weeks of available National Monitoring Programme data



Alexandrium spp.



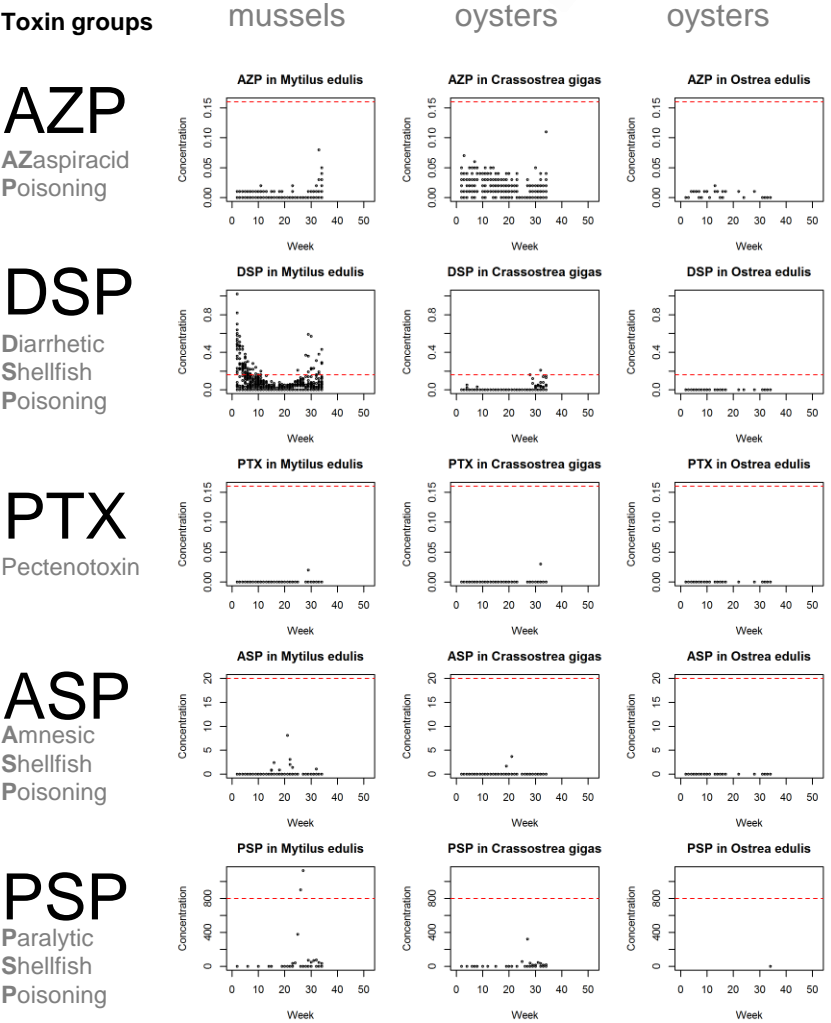
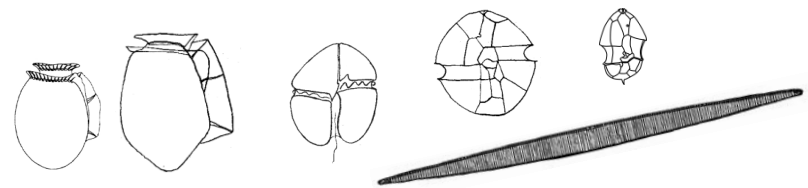
PSP



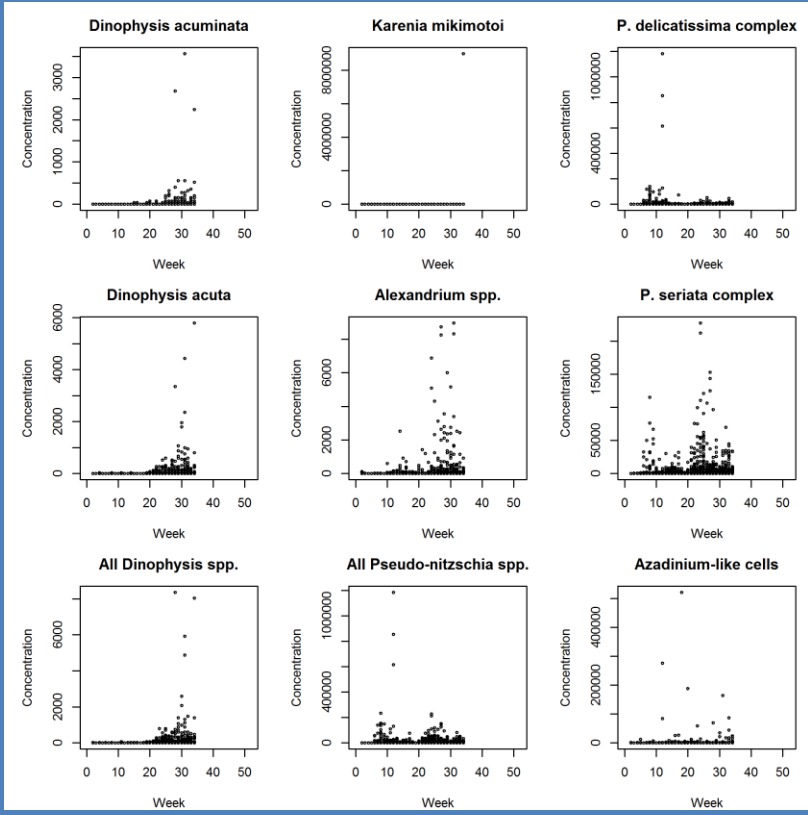
Ireland HAB & Biotoxin temporal trends

Ireland: **HABs and biotoxins** Levels from week 1 to present

Ireland: Biotoxins

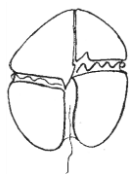


Ireland: HABs

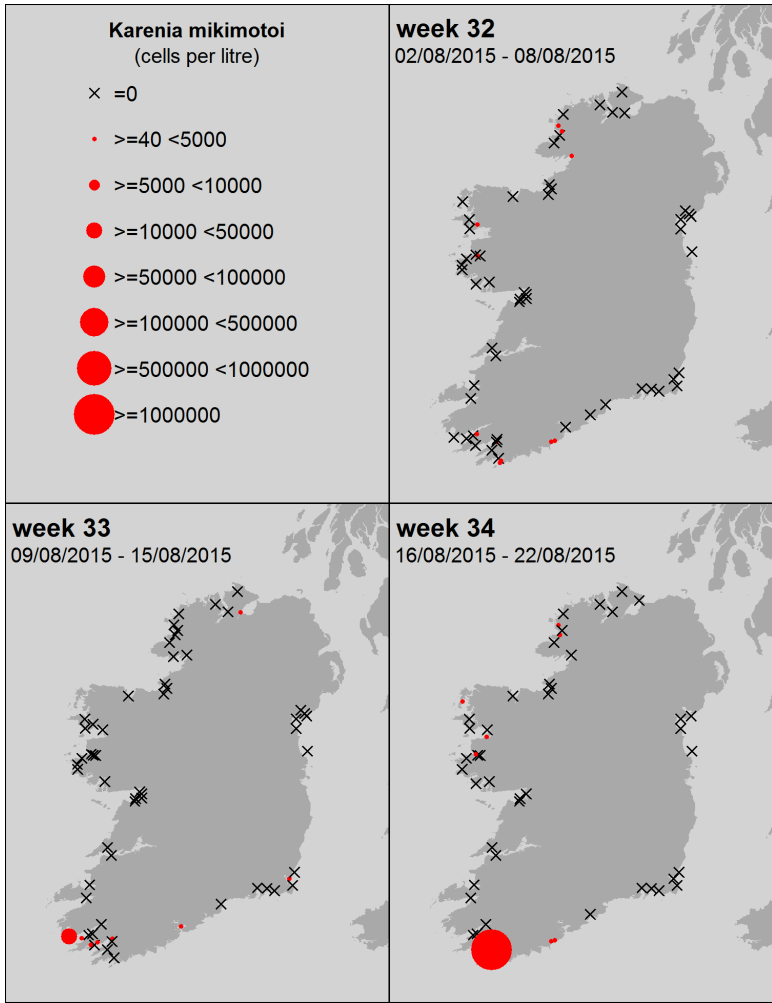


EU Regulatory Limit: ASP 20 µg/g; AZP 0.16 µg/g; DSP 0.16 µg/g; PSP 800 µg/kg

Regulatory limit = ■■■■■

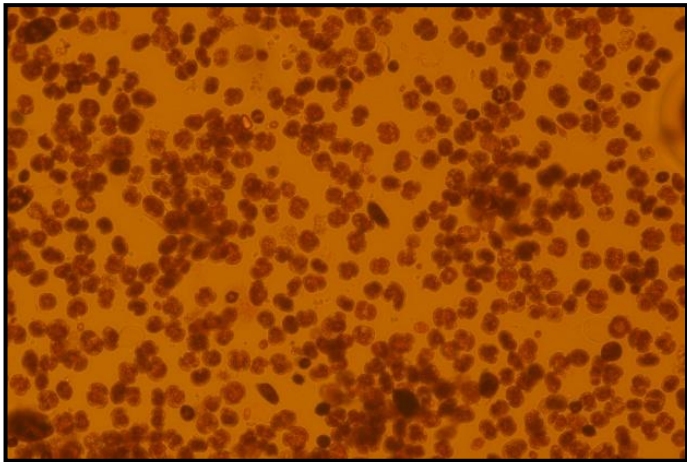


Karenia mikimotoi
(aka: *Gyrodinium aureolum*)



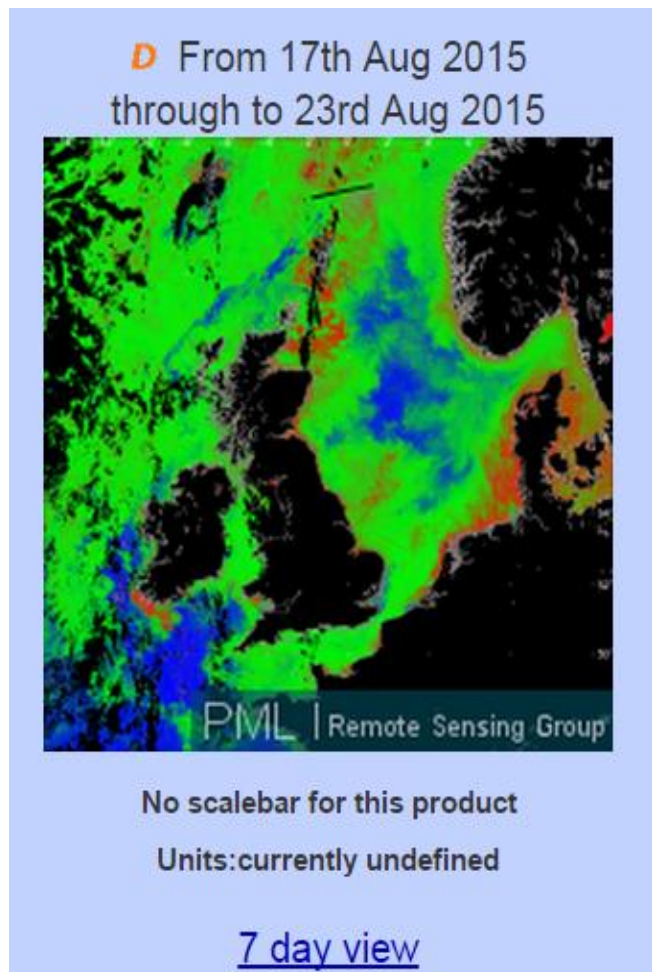
An exceptional bloom of *Karenia mikimotoi* was recorded off the SW coast last Saturday in **Dunmanus Bay** with cell levels up to **9 million cells/L**. The potential oxygen utilisation at these cell levels would be a POU of 10.2 mg/L - this could result in localised anoxic conditions.

Brownish bog coloured water patches were also evident in Roaring Water Bay with some **local beaches affected** (e.g. Toormore – near Goleen and Mizen Head). Brownish water has also been reported by fishermen in **outer Dunmanus Bay**.



Karenia mikimotoi bloom water sample viewed under a light microscope. Dunmanus Bay water sample collected on 22 August 2015.

Satellite tool to detect *Karenia mikimotoi*

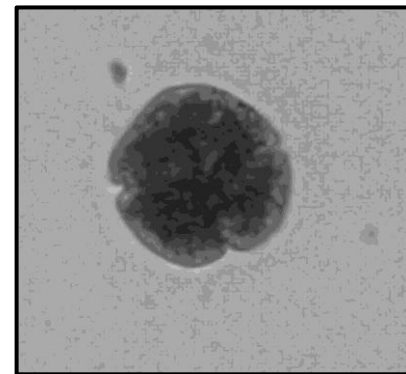


The authors thank Plymouth Marine Laboratory for permission to use and evaluate their satellite products in this bulletin

(http://www.pml-applications.co.uk/Services/Remote_Sensing)



Water discolouration (brownish-bog like colour) associated with *Karenia* blooms



Karenia mikimotoi viewed under a light microscope

If you spot discoloured water take a photo and let us know

Fill a clean bottle with surface water sample

Add a few drops of iodine to give a light orange colour

Take a second sample, do not add the iodine, label: LIVE

Send the samples to the Marine Institute phytoplankton laboratory

Postal address

South and SW coast samples:

Marine Institute Phytoplankton Lab, The Pier, Gearhies, Bantry, Co. Cork.

Rest of the country:

Phytoplankton Unit, Marine Institute, Rinville, Oranmore, Co. Galway.

Phone:

Bantry 027 – 51079

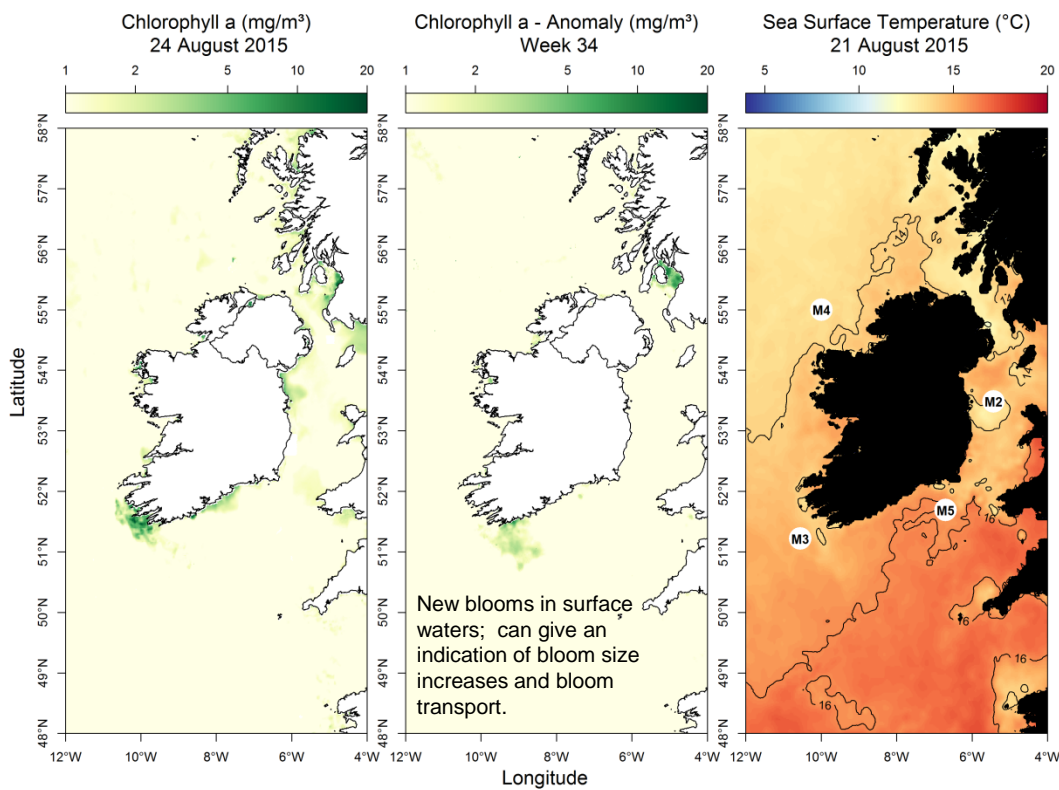
Galway 091 – 387200

Email: Phyto@marine.ie

Include this information with the sample

- **Date and time:**
- **Depth (metres): Surface**
- **Location name and position (lat & long in decimal degrees):**
- **Sampler's name:**

Most up to date available satellite data



SST (°C) anomaly for last week:

Data taken from the Irish data buoy network where the anomaly is the weekly difference in SST compared to the long term mean (~ 10 yrs)

- NW coast (M4) below average by 1.02 °C
- SW coast (M3) Offline
- SE coast (M5) above average by 0.43 °C


What phytoplankton were blooming at inshore coastal sites last week?

Week 34	
Region	Predominant Phytoplankton (most abundant taxa)
	Cells/L (rounded)
north:	Diatoms:
	<i>Leptocylindrus minimus</i> 7,368,000
	<i>Chaetoceros</i> (Hyalochaete) spp. 566,000
	<i>Dactyliosolen fragilissimus</i> 162,000
west:	Diatoms:
	<i>Scrippsiella</i> spp. 130,000
	<i>Chaetoceros</i> (Hyalochaete) spp. 60,000
	<i>Cylindrotheca closterium</i> / <i>Nitzschia longissima</i> 32,000
	Dinoflagellates:
	<i>Heterocapsa</i> spp. (20-50 µm) 13,000
	Others:
	Prymnesiophytes 85,000
	Microflagellates 38,000
	Cryptophytes 18,000
SW:	Dinoflagellates:
	<i>Karenia mikimotoi</i> 8,995,000
	Diatoms:
	<i>Asterionellopsis glacialis</i> 2,393,000
	<i>Skeletonema</i> spp. 335,000
	<i>Cylindrotheca closterium</i> / <i>Nitzschia longissima</i> 280,000
south:	Diatoms:
	" <i>Pseudo-nitzschia seriata</i> " complex 34,000
	<i>Skeletonema</i> spp. 5,000
	Pennate diatom 1,000
	<i>Guinardia delicatula</i> 1,000
	Dinoflagellates: 0
	<i>Karenia mikimotoi</i> 2,000
east:	Diatoms:
	<i>Chaetoceros</i> (Hyalochaete) spp. 505,000
	<i>Odontella</i> spp. 98,000
	Pennate diatom 58,000
	Others:
	Microflagellates 143,000

SOUTHWEST: Bantry Bay

The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** (black lines off Mizen Head and the Mouth of Bantry Bay) and **water depths** (bottom, 20 metres and surface)

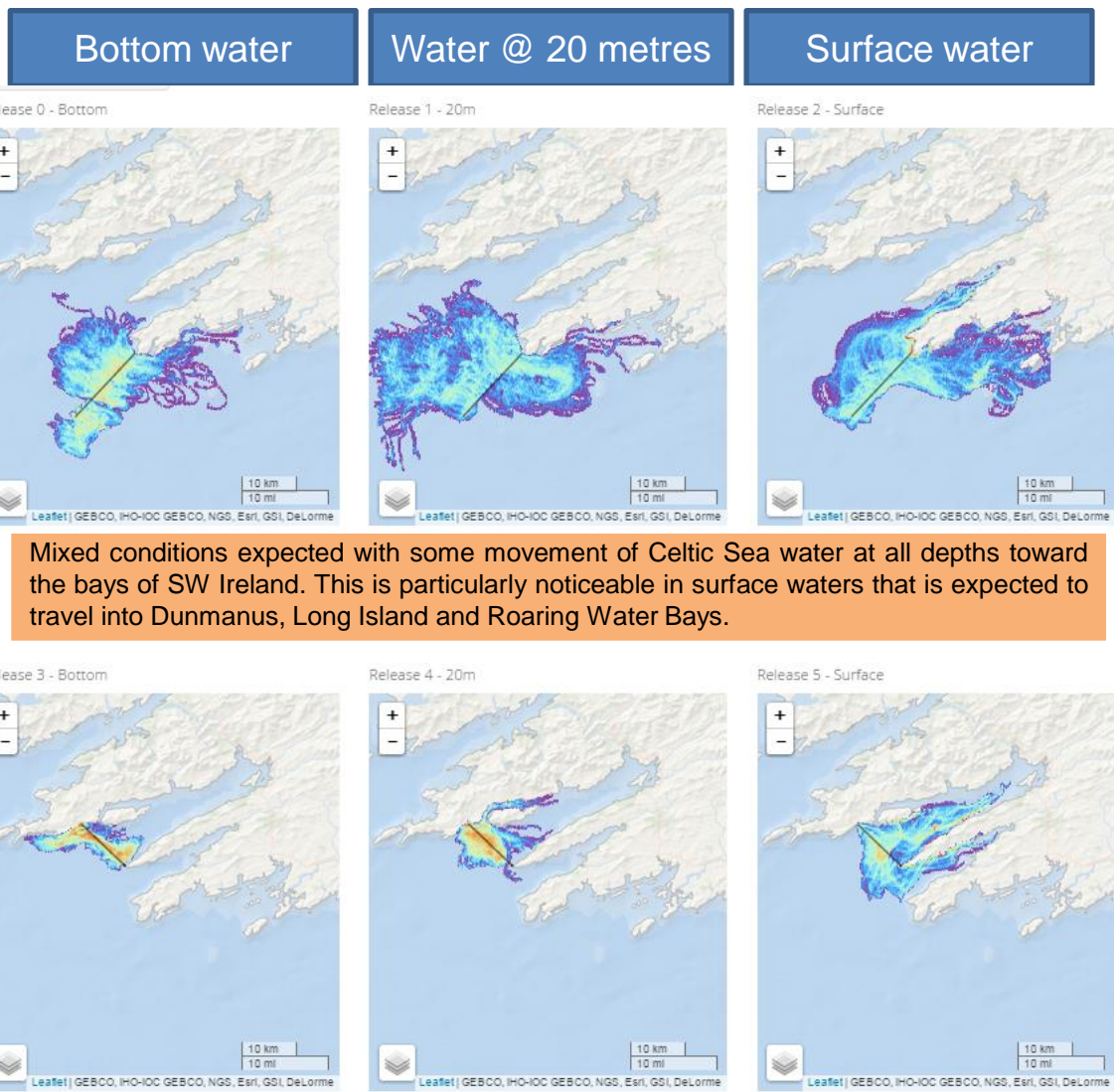
Reddish colours represent areas where phytoplankton remain longest
Cooler colours represent areas where phytoplankton remain for shorter periods



particle transport probability (hours)
Bantry Bay model particle track analysis
(2015-03-10T00:00:00Z, release_location=0.0 count)
Data courtesy of Irish Marine Institute

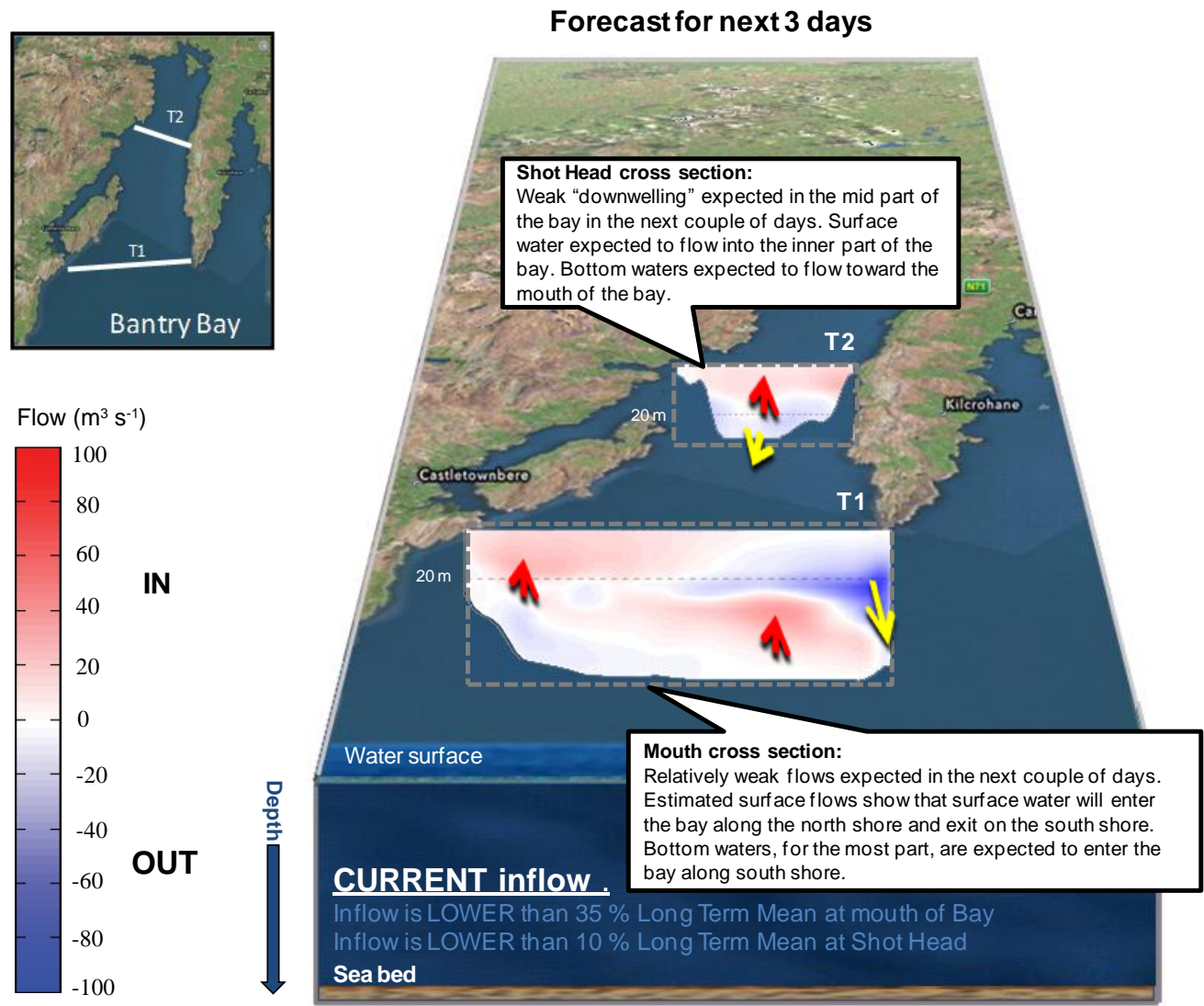
Go to <http://vis.marine.ie/particles/> to view daily forecasts

Forecast for the next 3 days



Bantry Bay

3 day estimated water flows at the mouth and mid-bay sections of Bantry Bay



Start date: 24 August

WEST: Killary Harbour

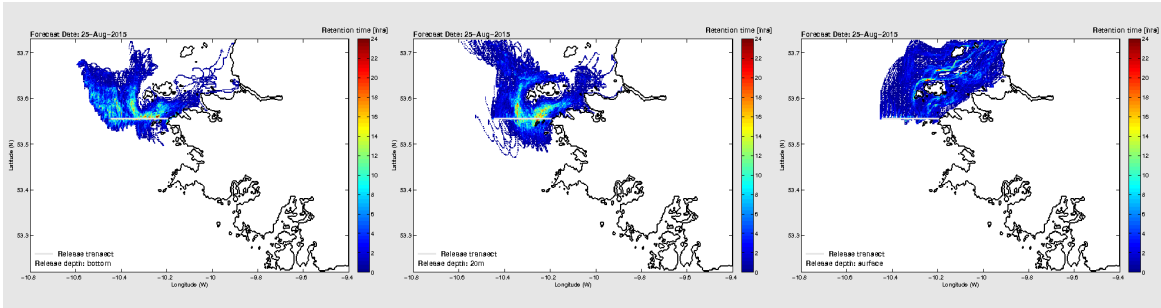
The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** i.e. white lines off Aughrus Point and the Mouth of Killary Harbour, and **water depths** (bottom, 20 metres and surface)

Reddish colours represent areas where phytoplankton remain longest
Cooler colours represent areas where phytoplankton remain for shorter periods

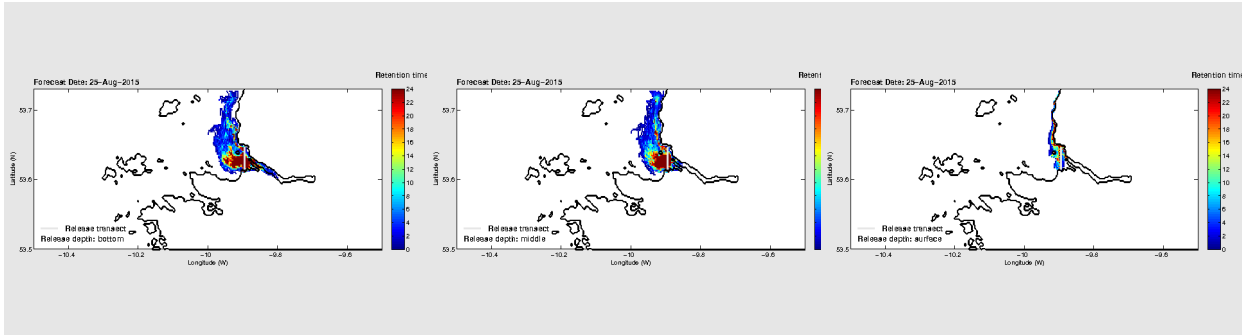
0.2 0.4 1 2 4 10 20 40 100 200
particle transport probability (hours)
Bantry Bay model particle track analysis
(2015-03-10T00:00:00Z, release_location=0.0 count)
Data courtesy of Irish Marine Institute

Forecast for the next 3 days

Bottom water Water @ 20 metres Surface water



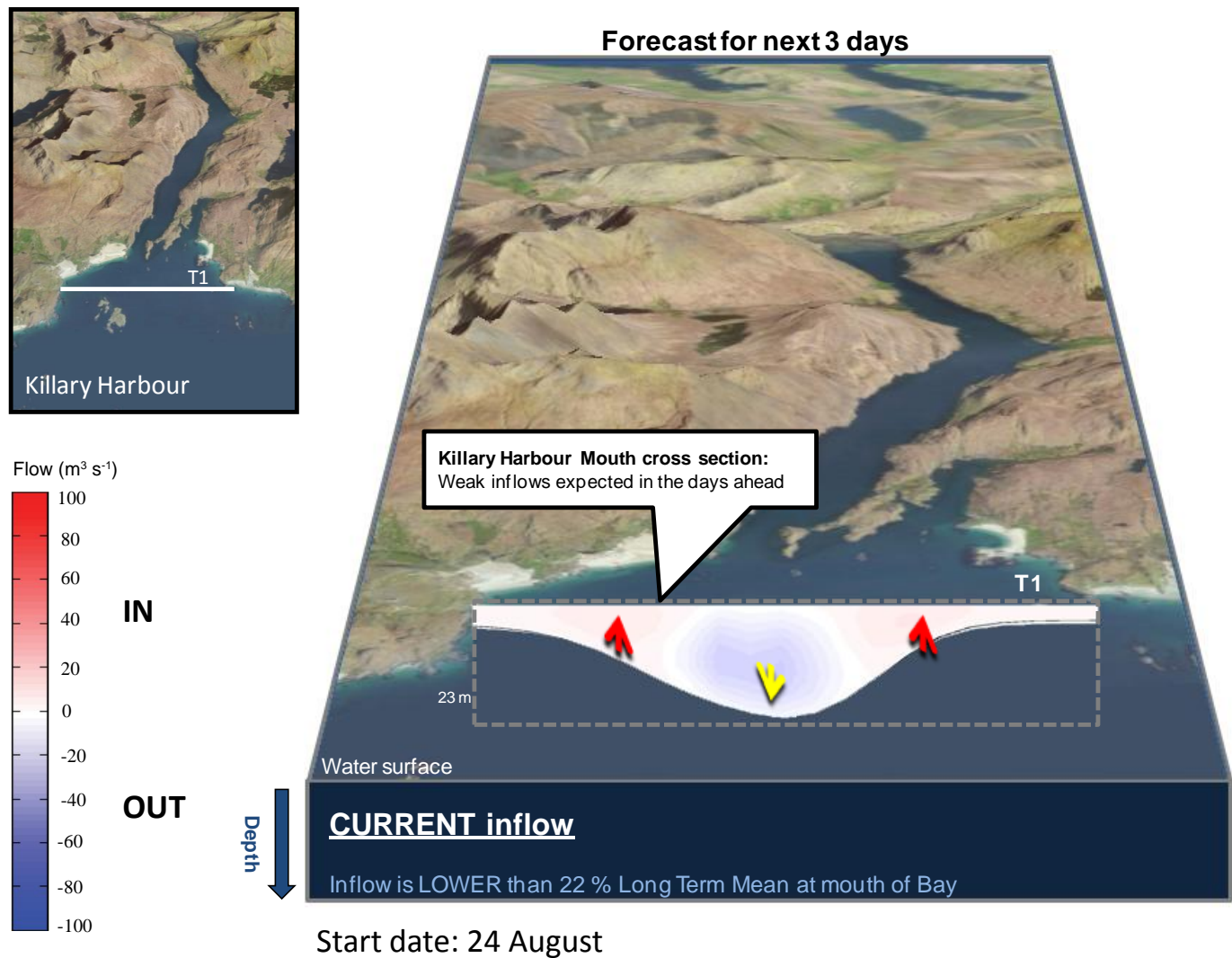
Estimated water circulation patterns off the west coast indicates that offshore waters will be able to reach Killary Harbour. This is most evident in surface waters.



Predicted water circulation patterns at the mouth of Killary Harbour shows that the bulk of the water flows will exit Killary and head northward, some bottom water will flow into the fjord and travel toward Killary middle in the next couple of days.

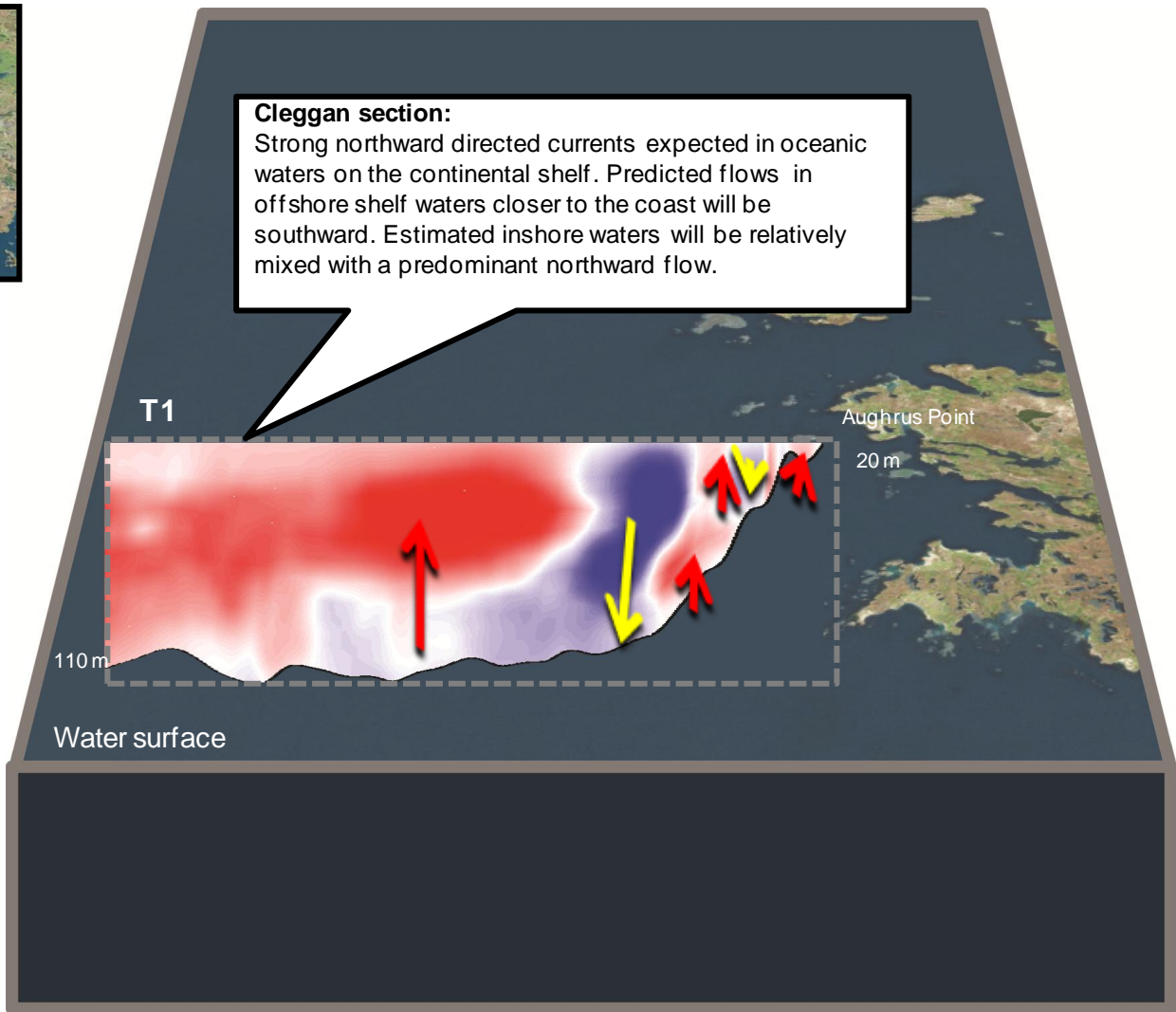
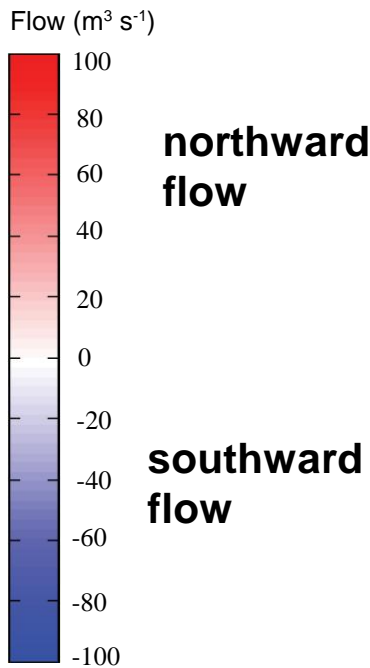
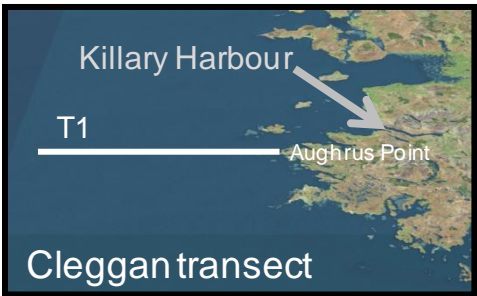
Killary Harbour

3 day estimated water flows at the mouth of Killary Harbour



West Coast - 3 day estimated water flows along a transect off Aughrus Point

Forecast for next 3 days



Cleggan section:
Strong northward directed currents expected in oceanic waters on the continental shelf. Predicted flows in offshore shelf waters closer to the coast will be southward. Estimated inshore waters will be relatively mixed with a predominant northward flow.