

Ireland: Current Conditions

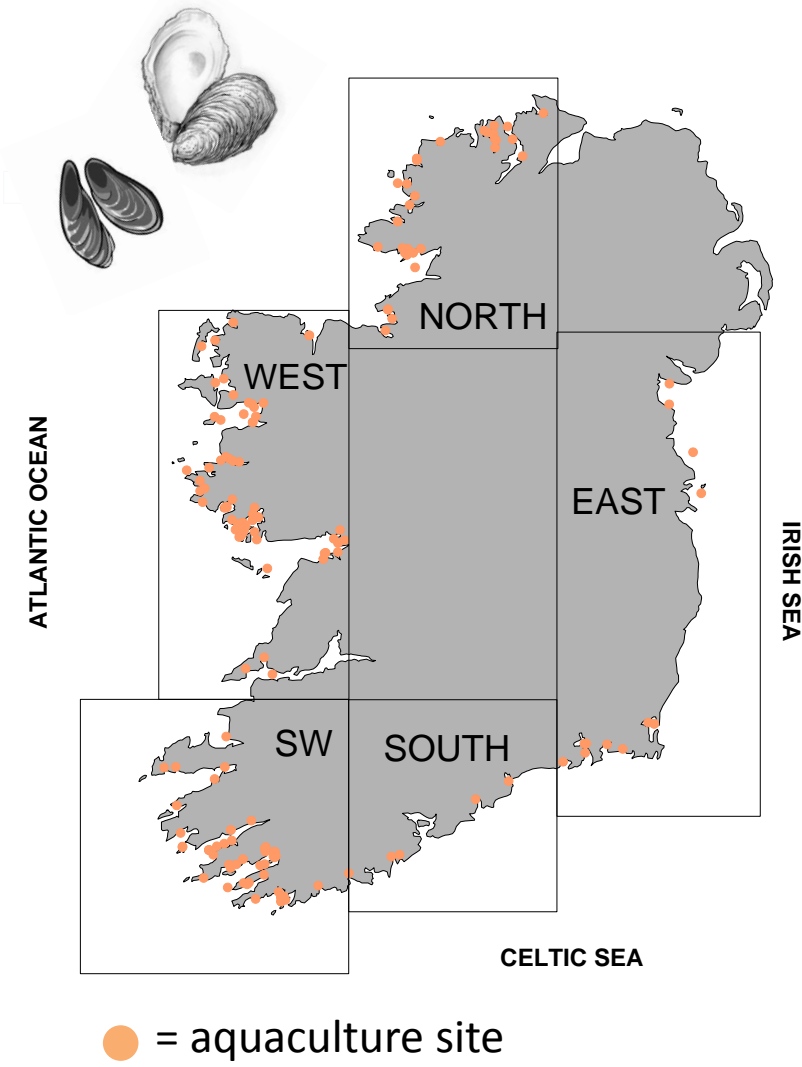
Shellfish biotoxin report (last week)



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 = **A**Zaspiracid **P**oisoning;
DSP = **D**iarrhetic **S**hellfish **P**oisoning; PSP = **P**aralytic **S**hellfish **P**oisoning

National Monitoring Programme Designated Sampling Sites



Ireland: Predictions

Prediction for this week:

- ASP event: Very low risk in all areas
- AZP event: Low risk in most sites
- DSP event: High risk in some areas
- PSP event: Decreasing risk in Cork Harbour

Why do we think this?

ASP: Toxins not detected. Blooms of the “*P. seriata*” group have declined in all sites nationwide. Northerly to northwesterly winds are expected in the next couple of days and so this is likely to promote “upwelling “ in offshore waters along the western seaboard. Upwelling is linked to increases in *Pseudo-nitzschia*. However, historically this is NOT a high risk week for ASP events.

AZP: Very low background levels nationwide. *Azadinium*-like species recorded at relatively low levels with the exception of a site in the SW and a site in the west. Historically, this week presents some risk for AZP, the risk is likely to increase in August.

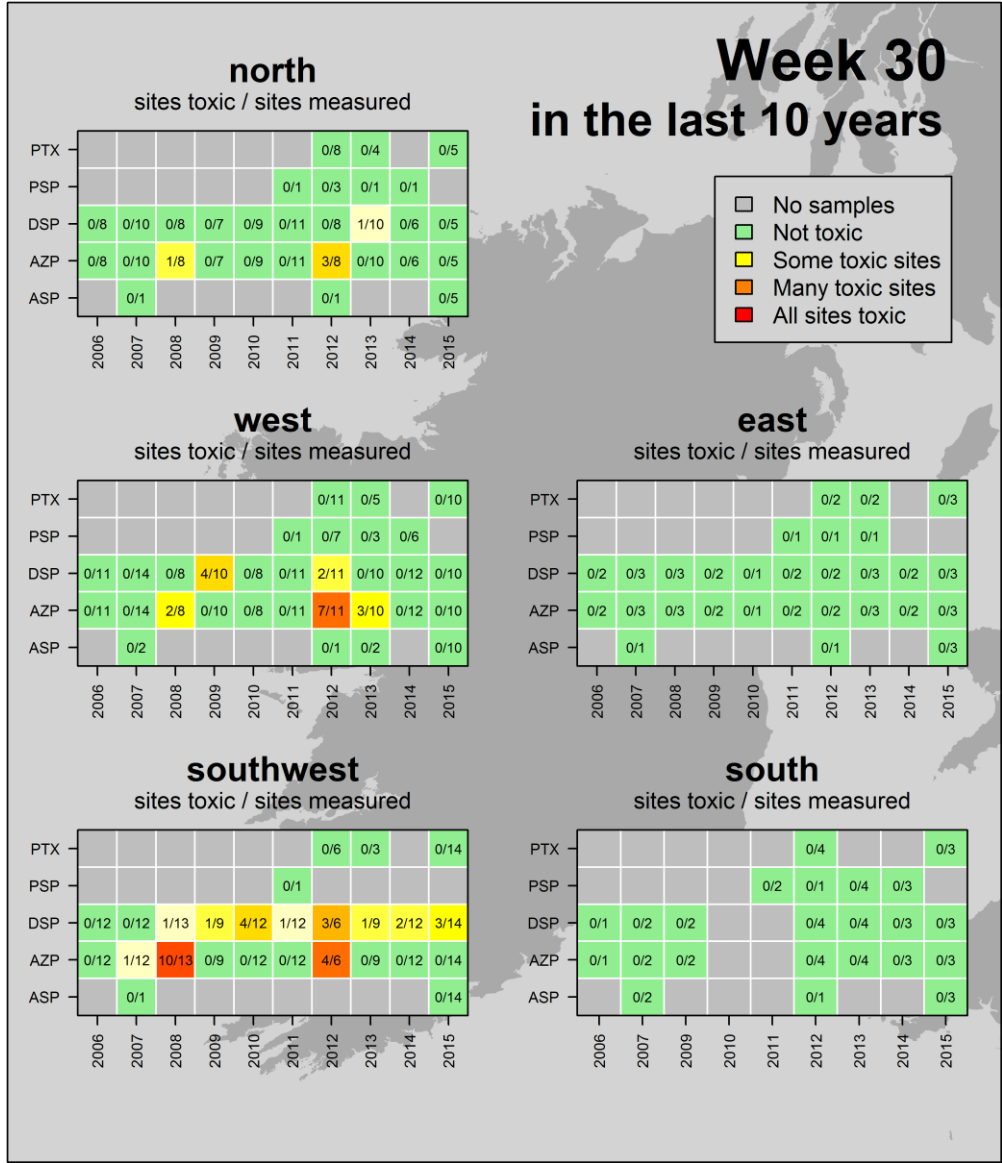
DSP: We are still in the HIGH risk period; the recent geographic expansion in toxin detection reflects this pattern. Toxin detected in flesh samples in the SW and in Killary Harbour. This is the first week in 2015, that Killary Harbour has experienced an increase in DSP levels. Toxin levels in the SW have remained stable in recent weeks. Highest cell levels of *Dinophysis* were recorded in the south and SW regions. This means that there is a continued risk for DSP events in the south and SW. Based on historical weekly trends and presence of *Dinophysis* spp. in northern sites, the risk in the west and north has increased. However, offshore waters are not expected to enter Killary Harbour in the coming days and waters in the bay are expected to be evacuated. It is likely that any *Dinophysis* bloom patch in Killary Harbour, while missed by the sampling programme last week, will exit the fjord and so the risk here is reduced.

PSP: *Alexandrium* species are present in many sites nationwide. This is most notable to the north. It is highly unlikely that these blooms will produce PSP as this is only known to occur in Cork Harbour. The growth and development of *Alexandrium* blooms in Cork Harbour are not favourable at this time of the year and so PSP levels here are expected to continue to fall.

Predicted water flows based on model outputs: No big influx of offshore waters are predicted for Bantry Bay or Killary Harbour. It is likely that existing toxic phytoplankton populations in Bantry will continue to grow if conditions are suitable. In the case of Killary Harbour, model outputs indicate that surface, mid and bottom waters will leave the bay. Offshore water transport pathways predicted for this week are not conducive for the transport of shelf waters into Killary Harbour. It is, therefore, likely that any toxic species currently residing in the bay will be flushed out.

Ireland: Historic Conditions

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



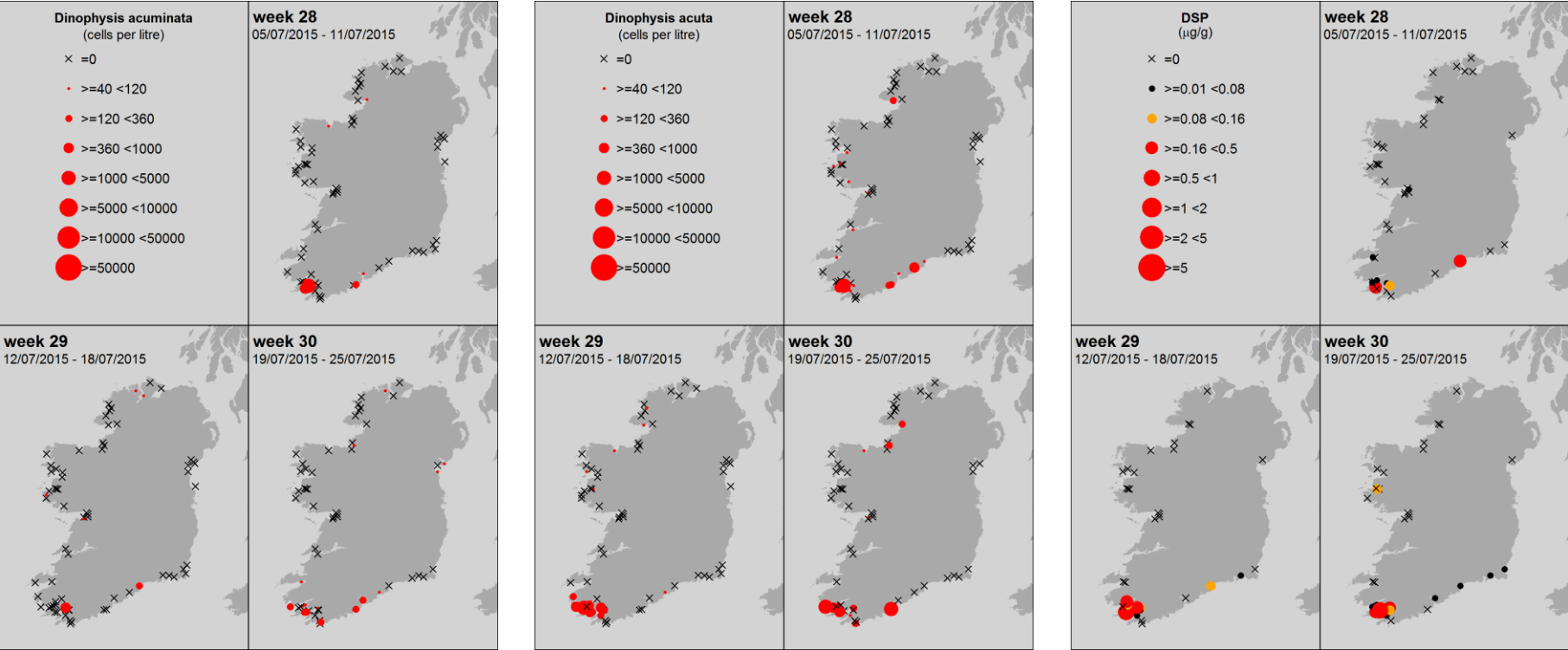
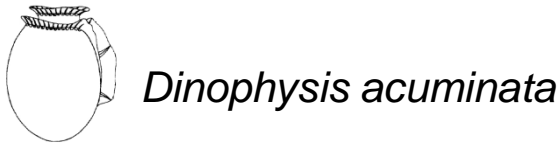
Ireland HISTORIC TRENDS

Likely times for Shellfish Toxicity: does not include winter carry over of biotoxins

- ASP events: mid-March to early May
- AZP events: April to December
- DSP events: May to December
- PSP events: June to mid-July and end September; only in Cork Harbour



Ireland: Last 3 weeks of available National Monitoring Programme data



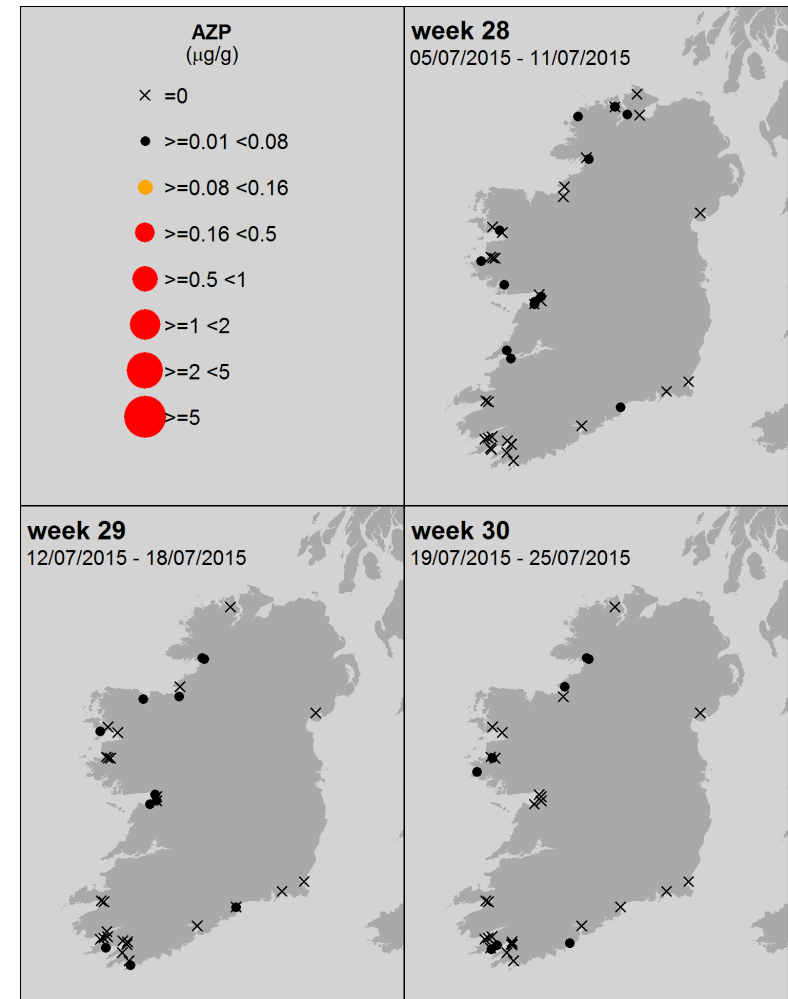
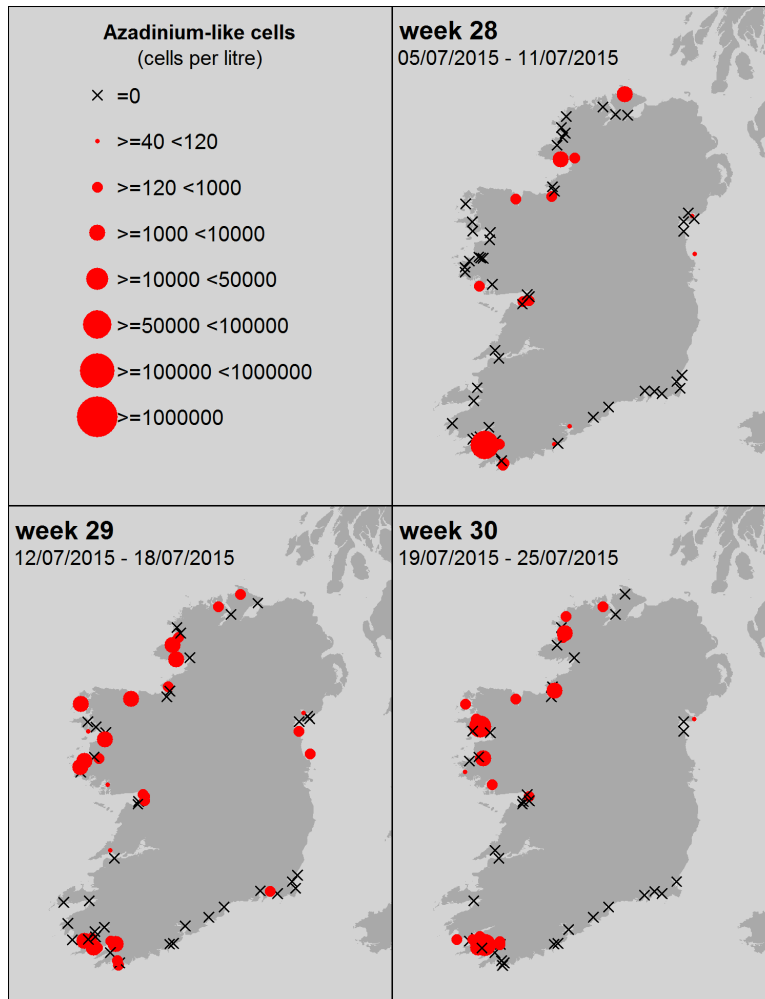
Ireland: Last 3 weeks of available National Monitoring Programme data



Azadinium – like spp.



AZP



Ireland: Last 3 weeks of available National Monitoring Programme data

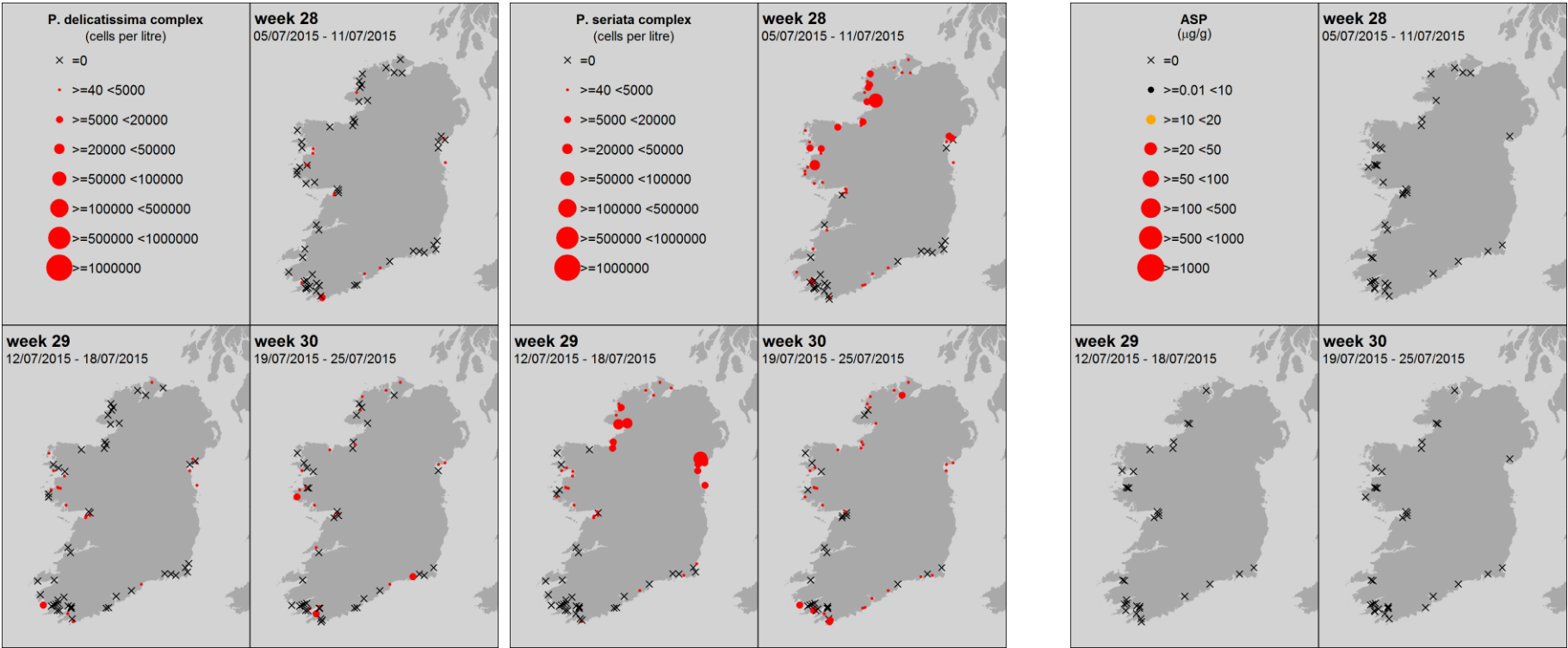
Pseudo-nitzschia spp.



ASP

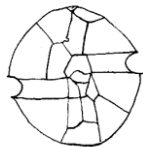
“*P. delicatissima*” complex = small cells
Taken from the literature:
3 species confirmed in Irish waters

“*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.

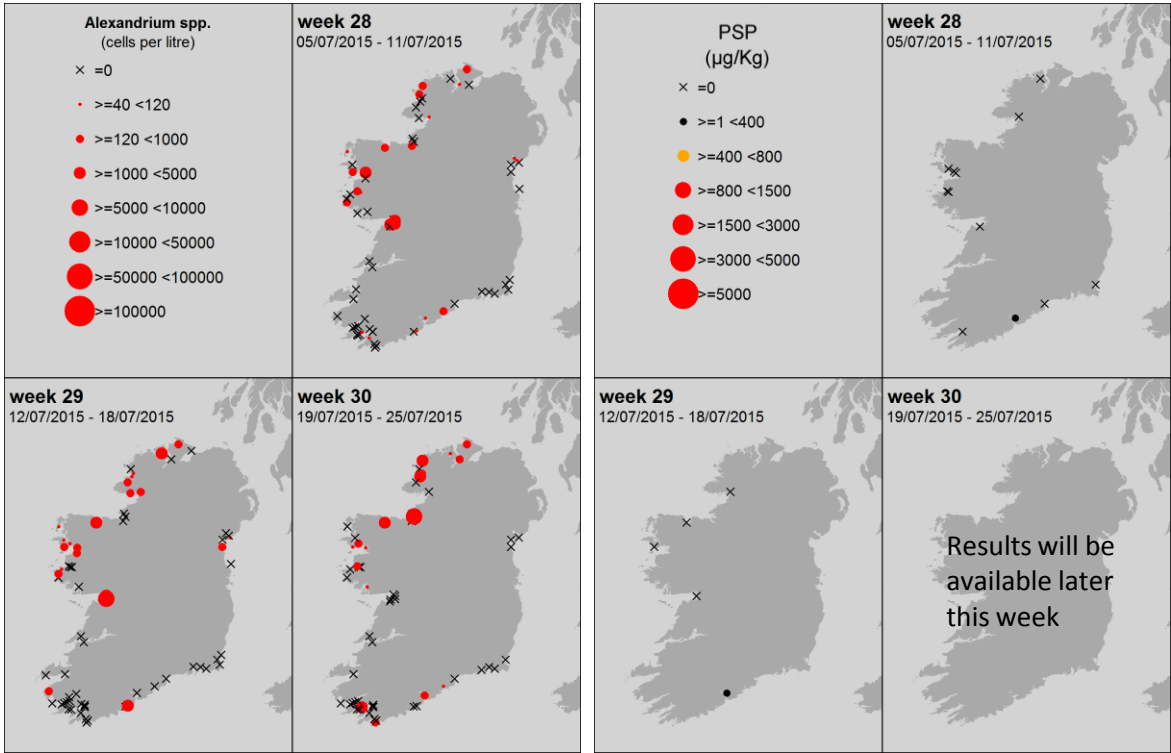
Ireland: Last 3 weeks of available National Monitoring Programme data



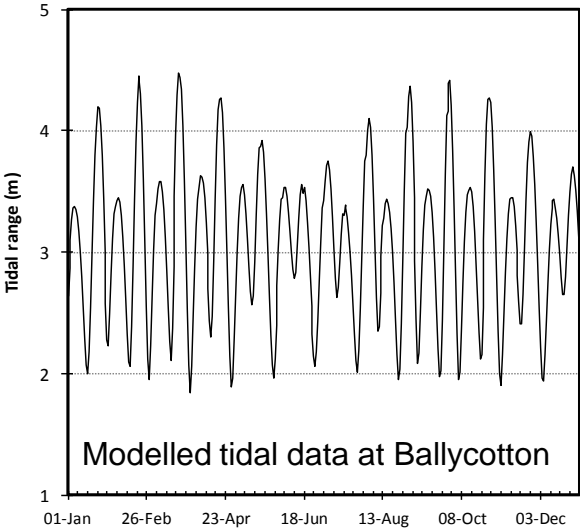
Alexandrium spp.



PSP



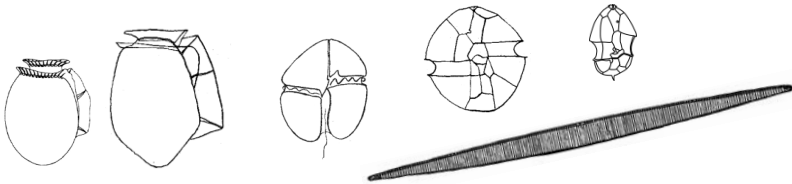
Tidal Range Cork 2015 (Predicted)



Usually the *Alexandrium* bloom in Cork Harbour begins on the first spring tide in June (around the time of the summer solstice) as small tidal range is important in bloom initiation (lower tidal dilution rate). Optimum conditions for *Alexandrium* are a water temperature of 15 °C and an irradiance of > 100 µM/m²/sec. Historically, production areas in Cork Harbour are the only sites that have experienced closures due to Paralytic Shellfish Poisoning toxins (one of the most dangerous shellfish toxins).

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

Ireland: **Biotoxins**



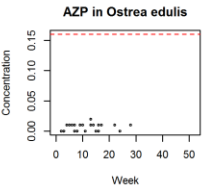
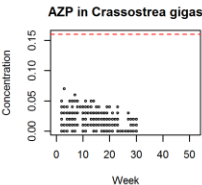
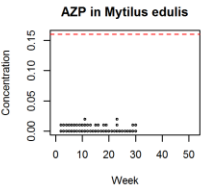
Toxin groups

mussels

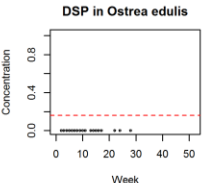
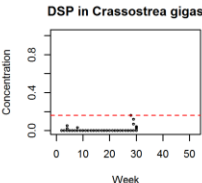
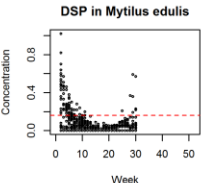
oysters

oysters

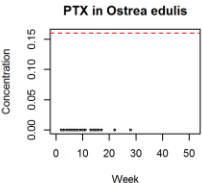
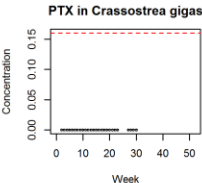
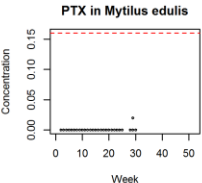
AZP
AZaspiracid
Poisoning



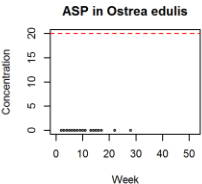
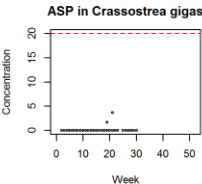
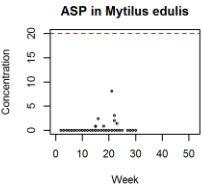
DSP
Diarrhetic
Shellfish
Poisoning



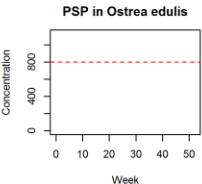
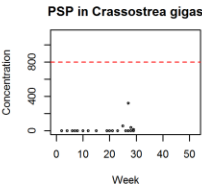
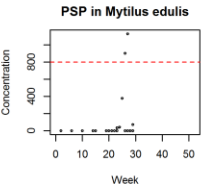
PTX
Pectenotoxin



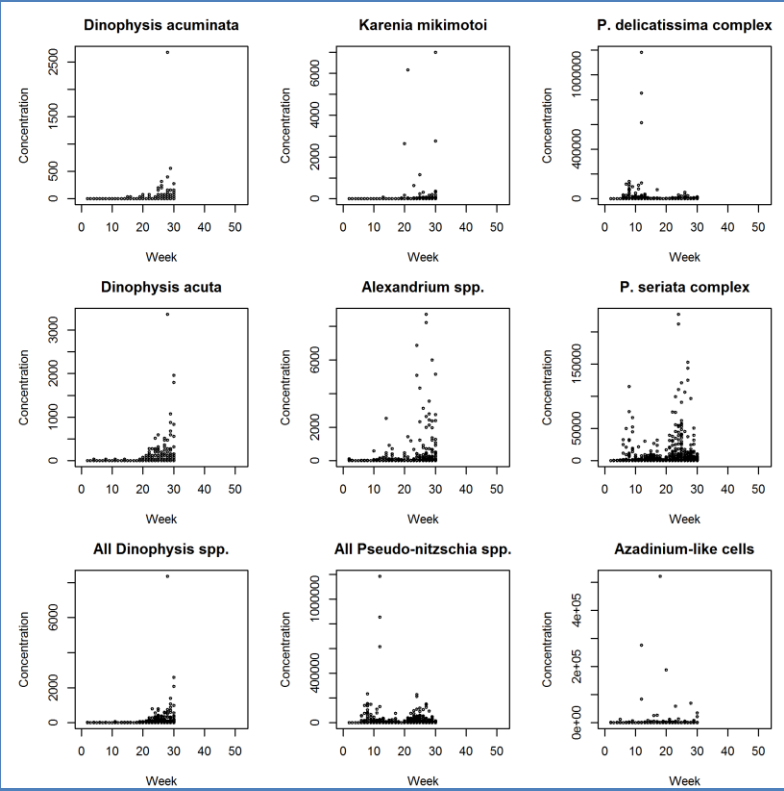
ASP
Amnesic
Shellfish
Poisoning



PSP
Paralytic
Shellfish
Poisoning



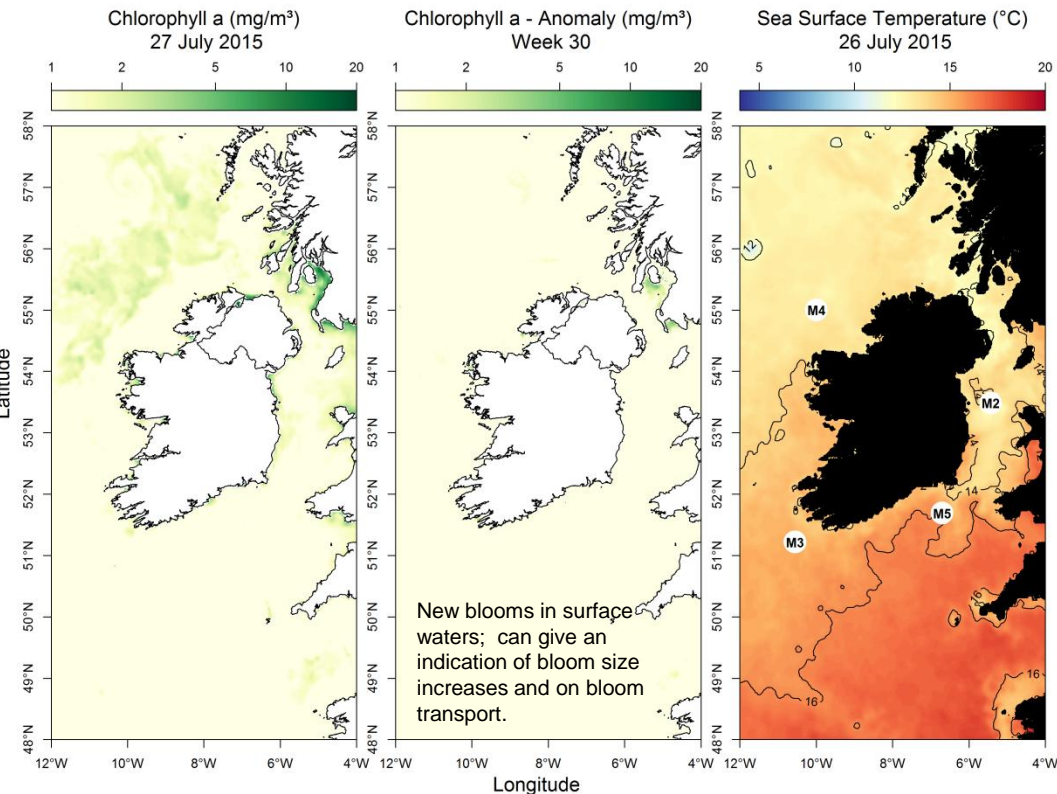
Ireland: **HABs**



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

Regulatory limit = ■■■■■

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 1.97 °C
- SW coast (M3) Offline
- SE coast (M5) below average by 0.04 °C

What phytoplankton were blooming at inshore coastal sites last week?

Region	Predominant Phytoplankton (most abundant taxa)	Cells/L (rounded)
north:	Diatoms: <i>Chaetoceros</i> (Hyalochaete) spp. <i>Guinardia delicatula</i> <i>Skeletonema</i> spp. <i>Leptocylindrus minimus</i> Other: microflagellates	457,000 382,000 94,000 73,000 44,000
west:	Diatoms: <i>Leptocylindrus danicus</i> <i>Chaetoceros</i> (Hyalochaete) spp. <i>Thalassiosira</i> spp. (< 20 µm) <i>Rhizosolenia</i> spp. <i>Lauderia</i> / <i>Detonula</i> spp. Dinoflagellates: <i>Azadinium</i> / <i>Heterocapsa</i> spp. Other: microflagellates	221,000 43,000 26,000 21,000 16,000 22,000 68,000
SW:	Diatoms: <i>Detonula confervacea</i> <i>Leptocylindrus minimus</i> <i>Lauderia</i> / <i>Detonula</i> spp. <i>Thalassiosira</i> spp. (< 20 µm) Dinoflagellates: <i>Ceratium fusus</i>	391,000 339,000 248,000 116,000 162,000
south:	Diatoms: <i>C. Closterium</i> / <i>N. Longissima</i> Centric diatoms (< 20 µm) <i>Bacteriastrum</i> spp. <i>Thalassiosira</i> spp. (< 20 µm) Dinoflagellates: Naked dinoflagellate (< 20 µm) Other: microflagellates <i>Cilliates Mesodinium rubrum</i> <i>Euglena</i> / <i>Eutriptiella</i> spp. Tintinnids	1,739,000 714,000 580,000 569,000 83,000 164,000 89,000 73,000 70,000
east:	Diatoms: <i>Chaetoceros</i> (Hyalochaete) spp. <i>Lauderia</i> / <i>Detonula</i> spp. <i>Asterionellopsis glacialis</i> <i>Guinardia delicatula</i> <i>Bacteriastrum</i> spp. Other: microflagellates <i>Euglena</i> / <i>Eutriptiella</i> spp.	318,000 101,000 99,000 80,000 53,000 164,000 69,000



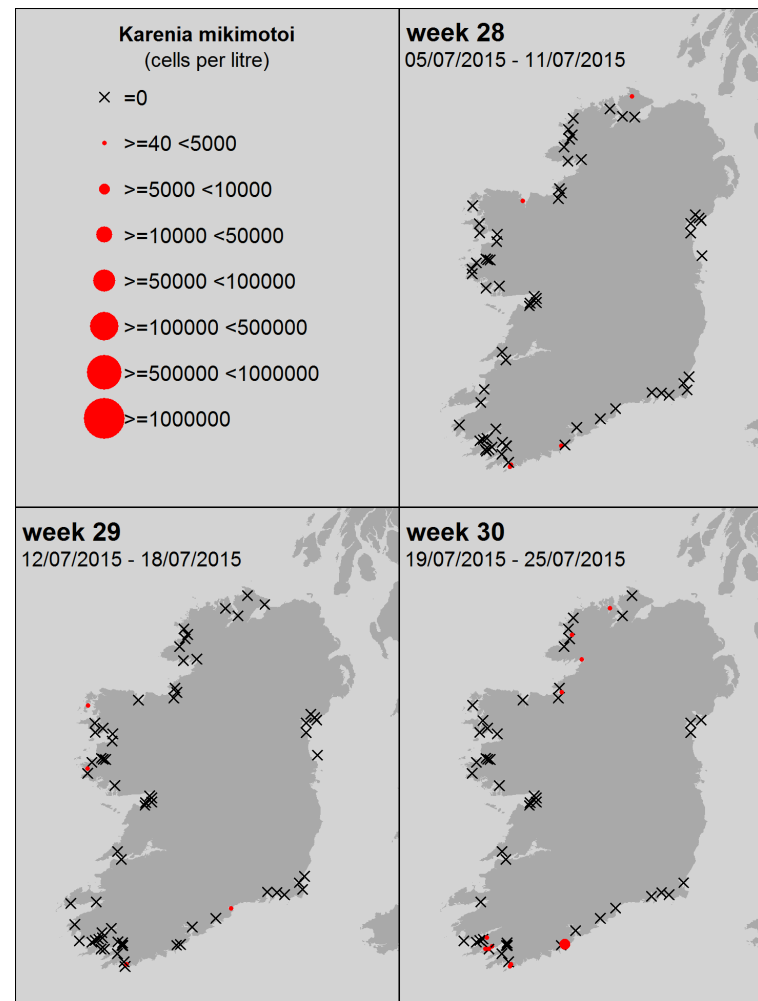
Karenia mikimotoi (old name: *Gyrodinium aureolum*)

A *Karenia mikimotoi* bloom is NOT expected this week

Cell concentrations remain at background levels at 11 sites nationwide

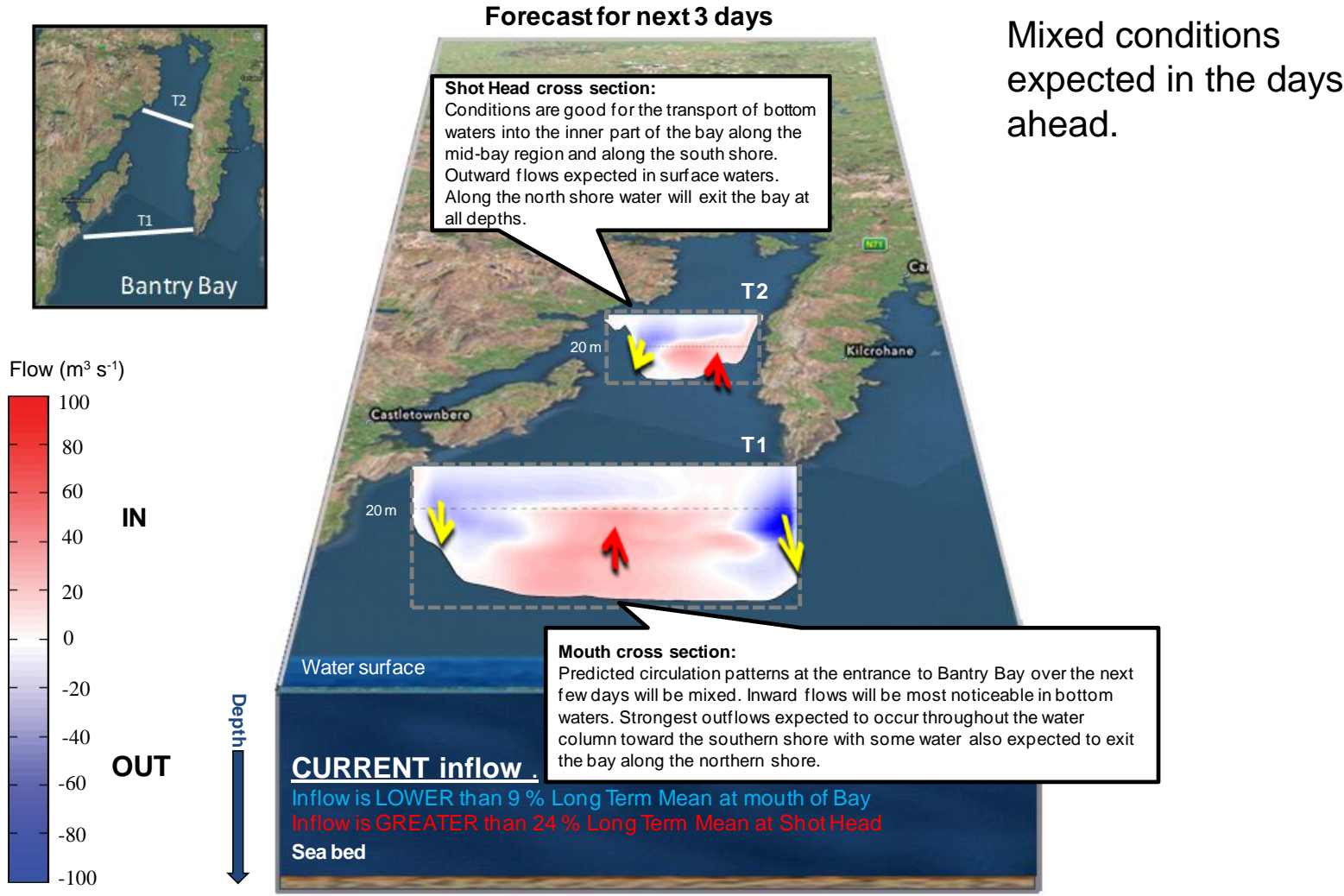
max = 17,000 cells/L in the south

If environmental conditions are suitable then it is possible that a bloom ($\geq 500,000$ cells/L) may develop - we will continue to monitor the situation



Bantry Bay

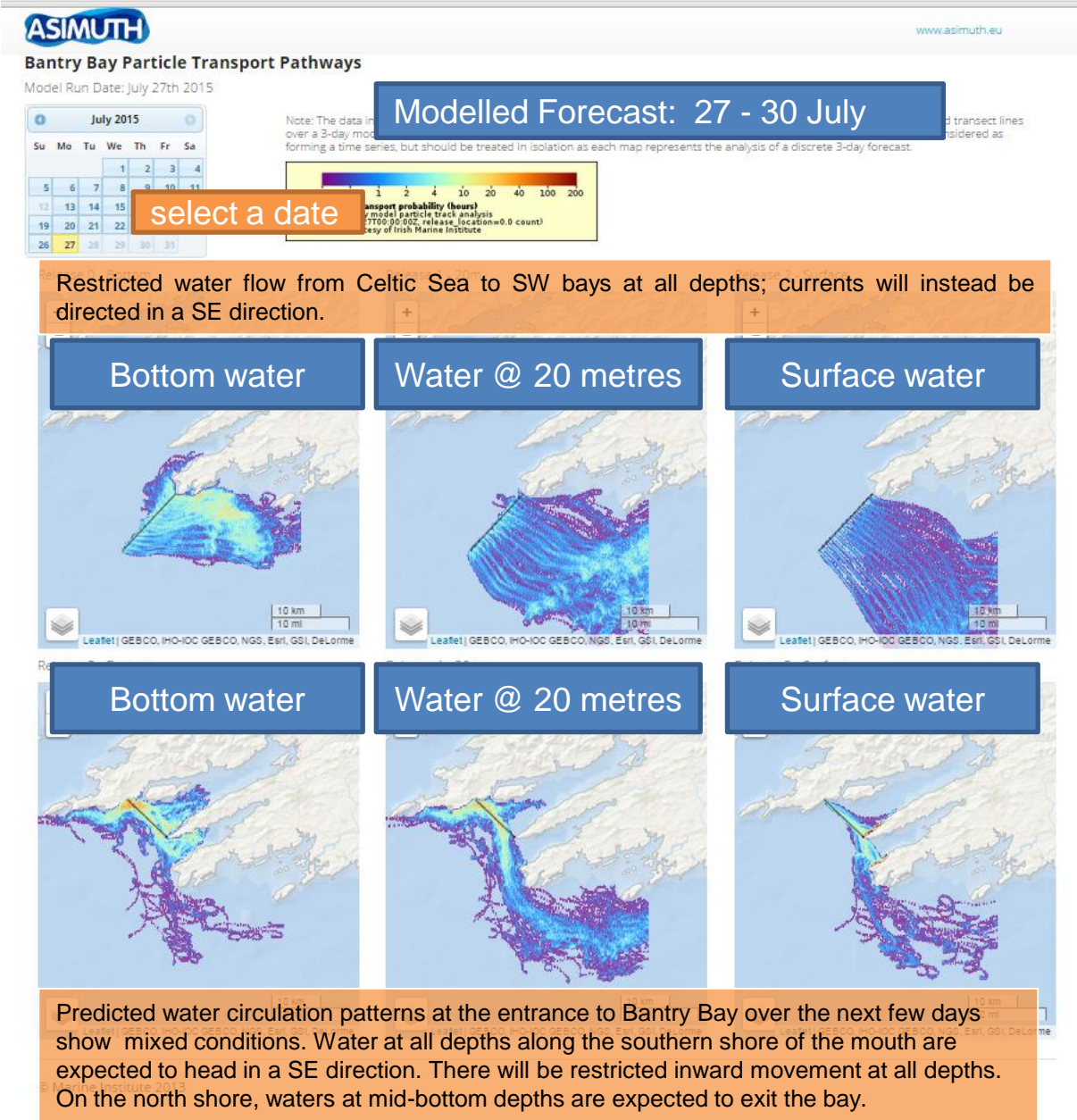
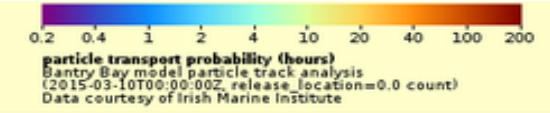
3 day estimated water flows at the mouth and mid-bay sections of Bantry Bay



SOUTHWEST: Bantry Bay

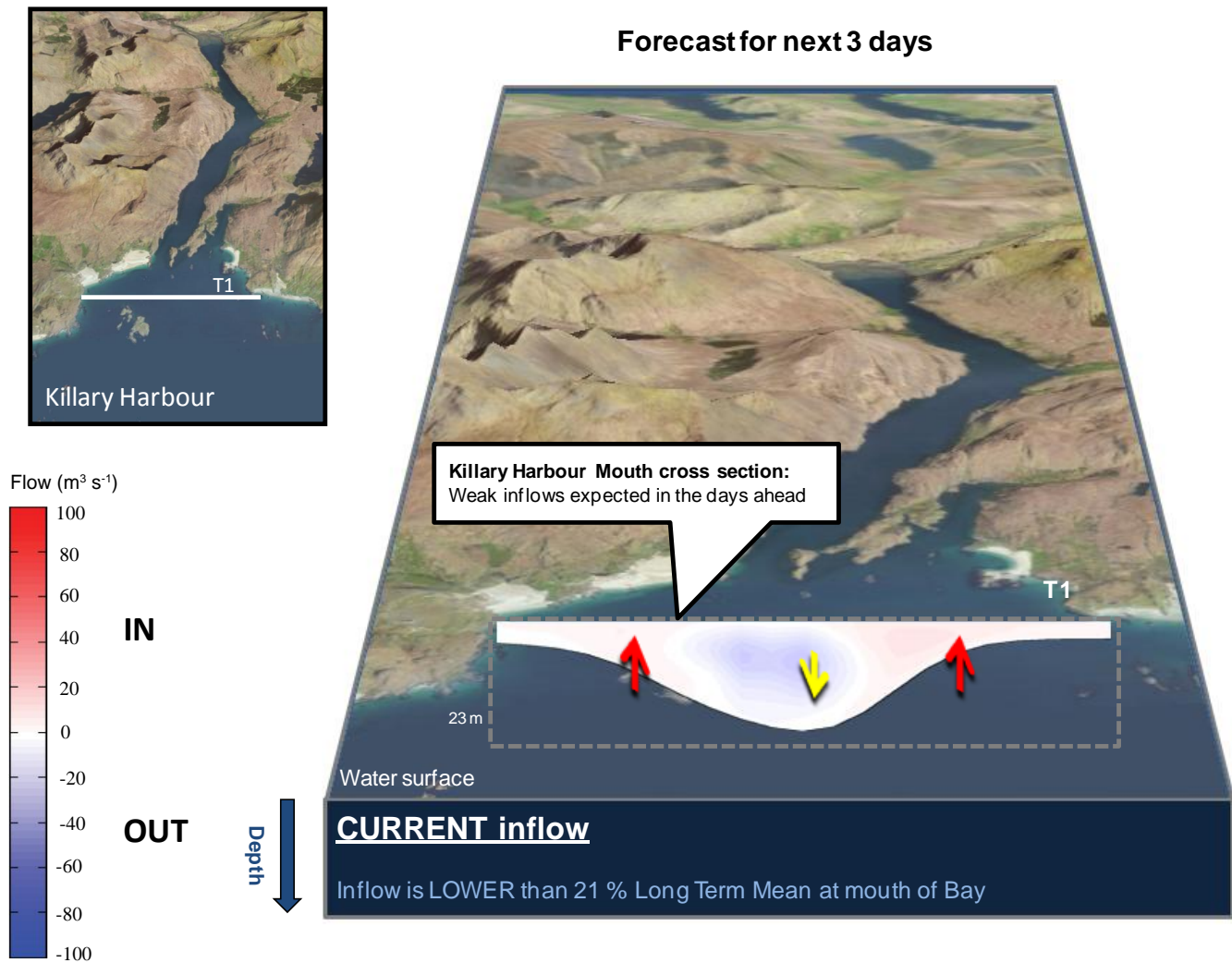
The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** (black lines off Mizen Head and the Mouth of Bantry Bay) and **water depths** (bottom, 20 metres and surface)

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



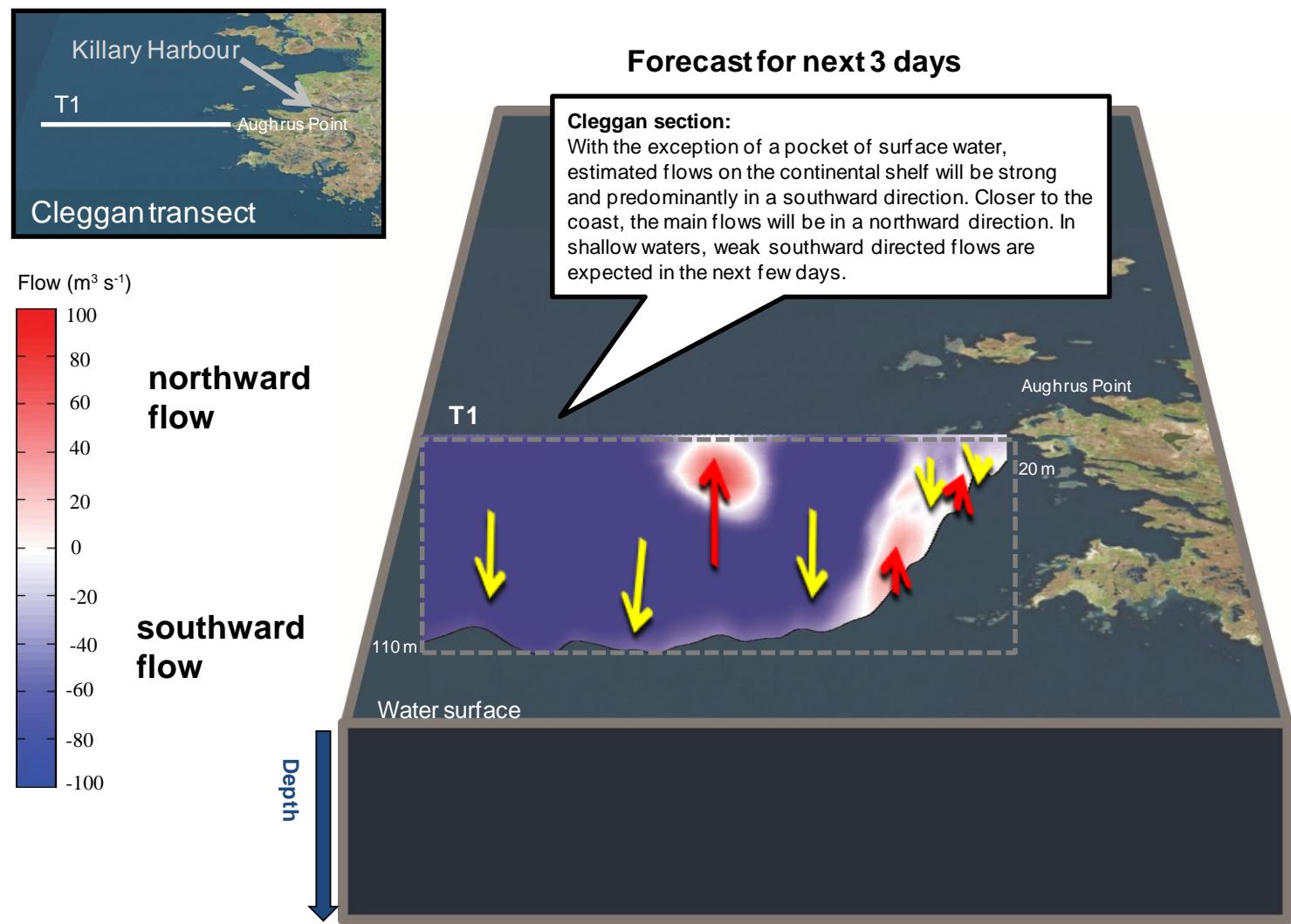
Killary Harbour

3 day estimated water flows at the mouth of Killary Harbour



27 July – 30 July, 2015 (forecast ends at 00:00 hrs)

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




27 July – 30 July, 2015 (forecast ends at 00:00 hrs)

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

