

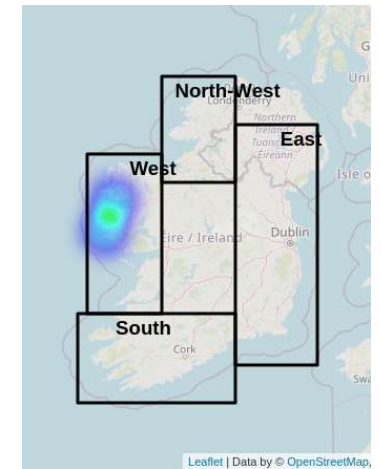
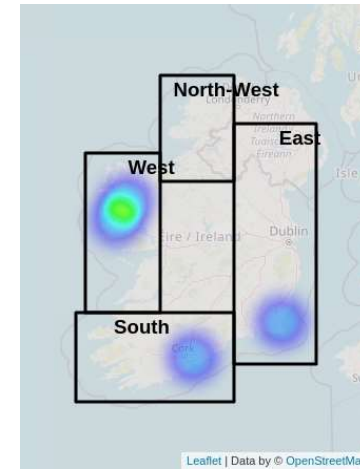
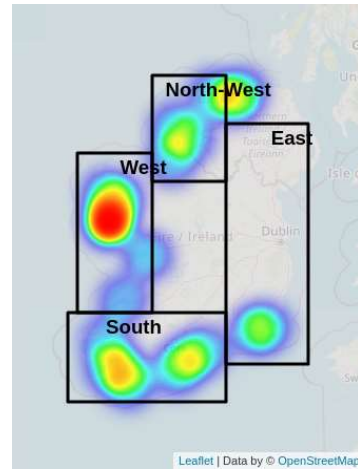
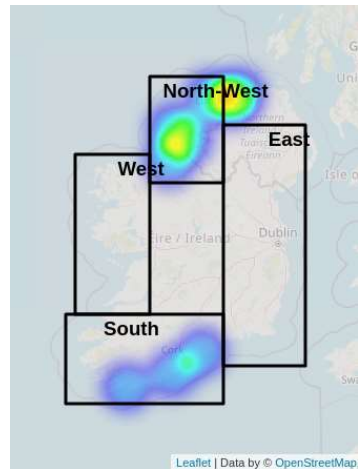
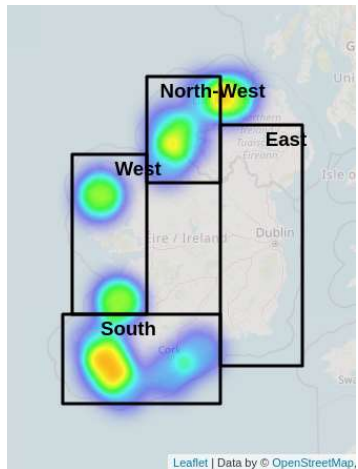
Diarrhetic Shellfish Toxins

Azspiracid Shellfish Toxins

Amnesic Shellfish Toxins

Paralytic Shellfish Toxins

Yessotoxins



Toxic Sites	0
Analysed Sites	43

Toxic Sites	0
Analysed Sites	43

Toxic Sites	0
Analysed Sites	42

Toxic Sites	0
Analysed Sites	8

Toxic Sites	0
Analysed Sites	2

AST: (Amnesic shellfish toxin) Low risk generally, however continued presence of toxic producing cells and caution still advised in traditionally affected.

AZA: (Azspiracid toxin) Low risk on all shorelines. Transportation movements have added increased risk in some areas i.e. adjacent sites.

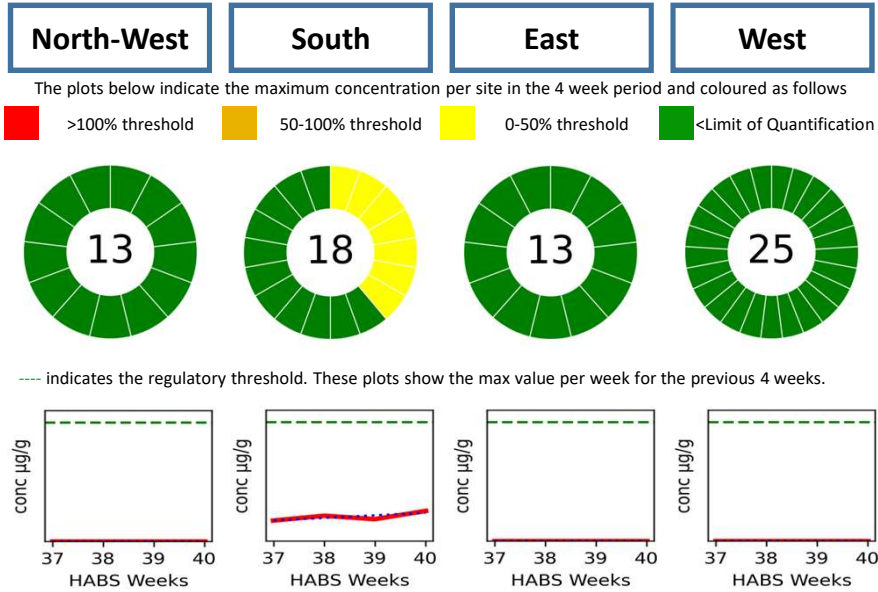
DST: (Dinophysis shellfish toxin) Low risk of toxicity in the in W. In historical period of occurrence and weather, transportation and environmental conditions are suitable, highest caution advised in historically prone sites.

PST: (Paralytic shellfish toxins) Low risk as environmental conditions expected to be suitable for bloom establishment. Alexandrium cells can occur in both toxic and nontoxic forms.

Diarhetic Shellfish Toxins & *Dinophysis* species

Regional 4-Week Trends 08/09/24 - 05/10/24

In this 4 week period there were 174 Samples tested for DST. These samples were collected at 69 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 0.16 µg/g



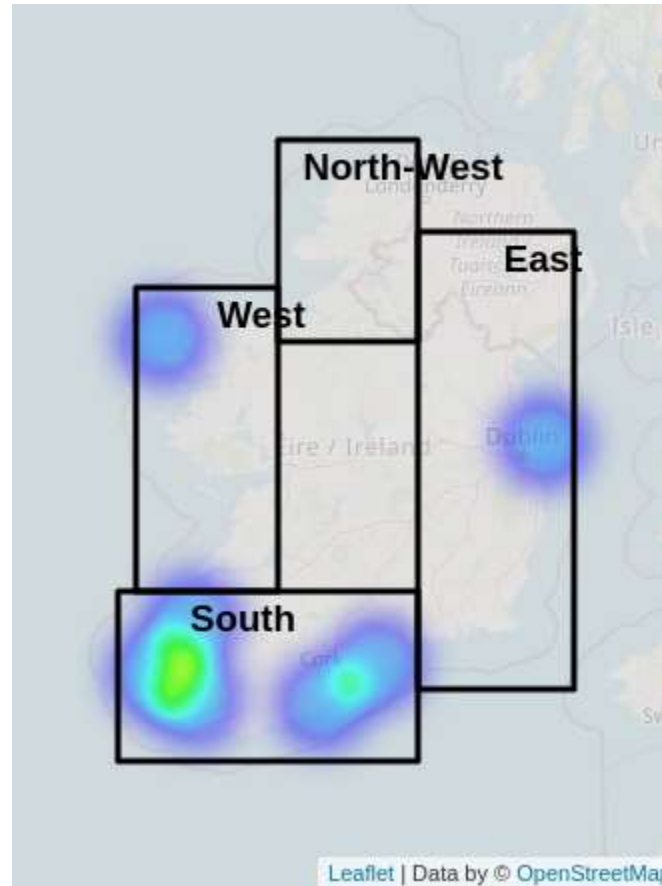
Risk: **Low** **Medium** **Low** **Low**

Trend:

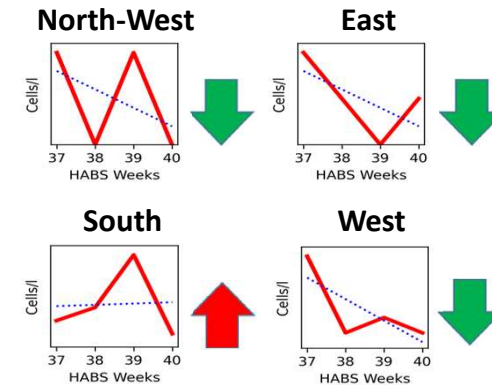
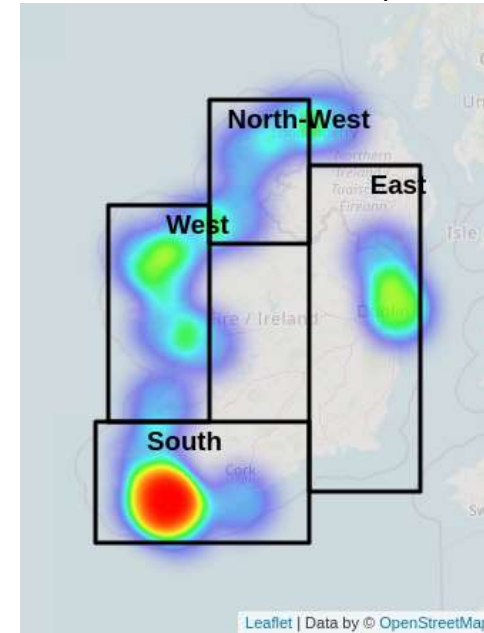
Risk:

Low levels of cells present and quantifiable levels of toxins detected in the West. This group could increase dramatically at this time.

Diarhetic Shellfish Toxins National 4-Week Heatmap



Phytoplankton *Dinophysis* spp. 4 Week Heatmap

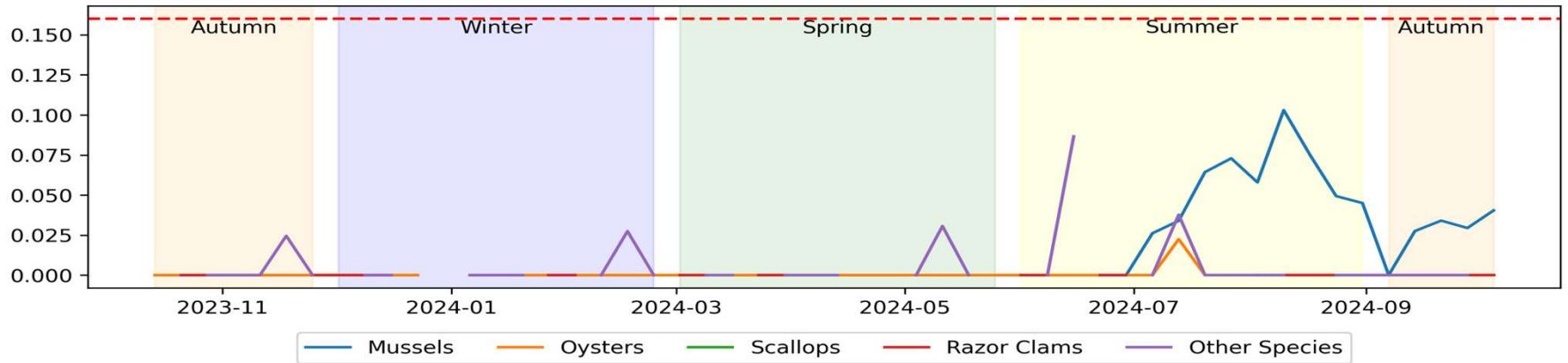


Diarhetic Shellfish Toxins & *Dinophysis* species

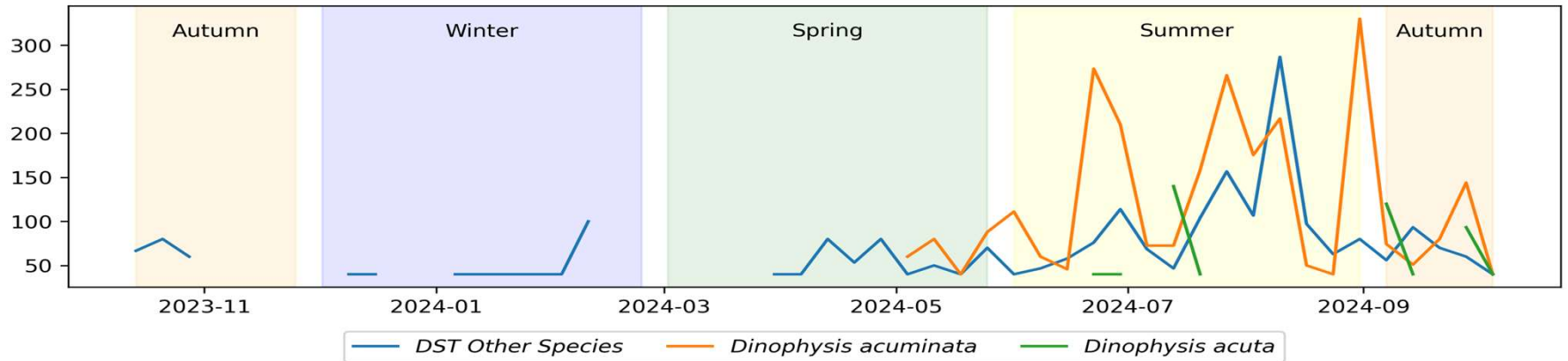
National Yearly Trend 06/10/23 - 05/10/24



Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g/g}$)



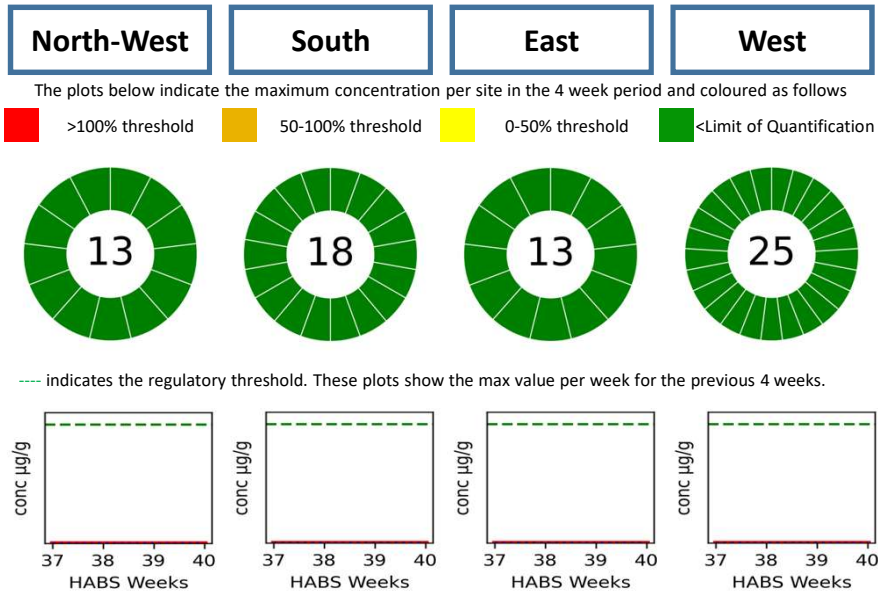
Trend of Average Counts of Toxin Causing PhytoPlankton Species Per Week (measured in Cells per Litre)



Azspiracid Shellfish Toxins & Azadinium species

Regional 4-Week Trends 08/09/24 - 05/10/24

In this 4 week period there were 174 Samples tested for AZT. These samples were collected at 69 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 0.16 µg/g



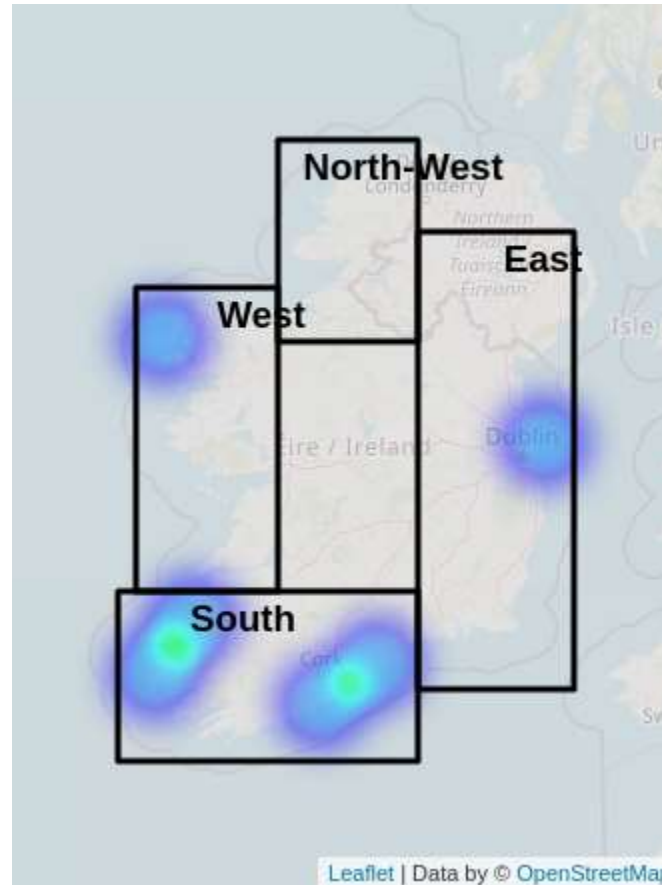
Risk: **Low** **Low** **Low** **Low**

Trend:

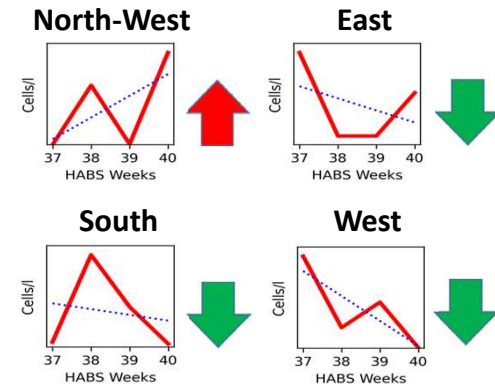
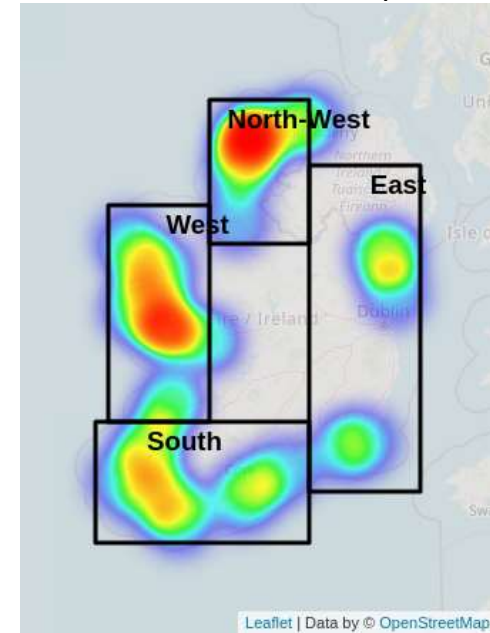
Risk:

Low levels of cells present and quantifiable levels of toxins detected in the West. This group could increase dramatically at this time.

Azspiracid Shellfish Toxins National 4-Week Heatmap



Phytoplankton Azadinium spp. 4 Week Heatmap

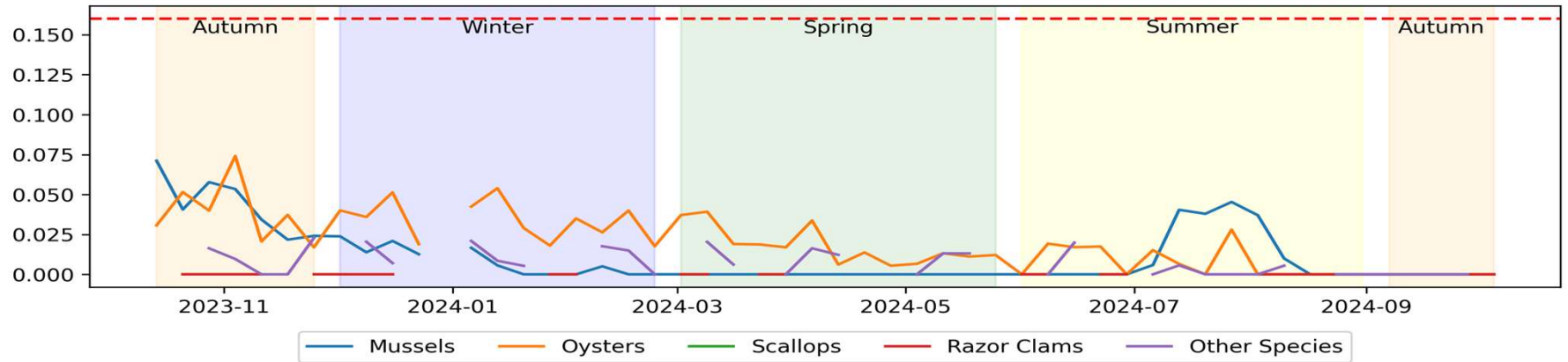


Azaspiracid Shellfish Toxins & Azadinium species

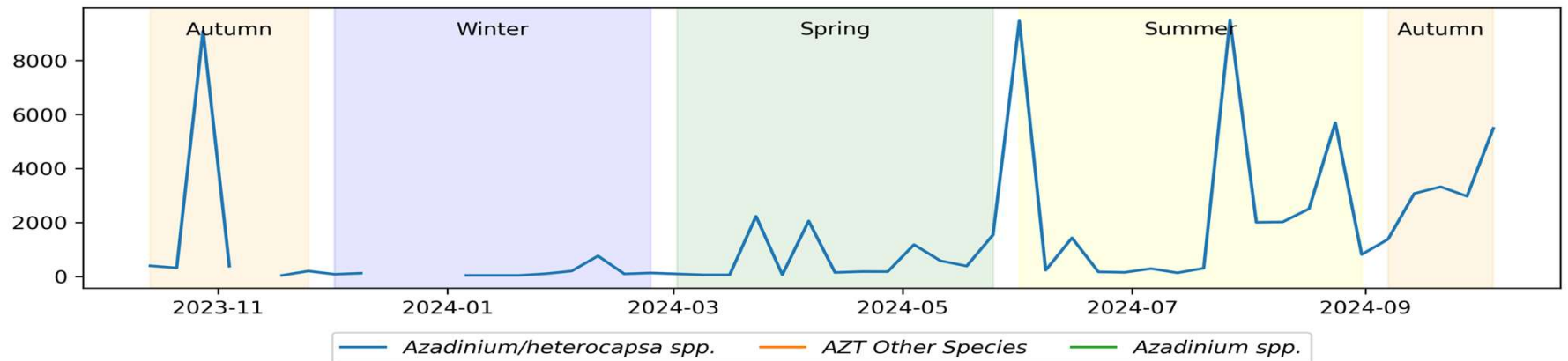
National Yearly Trend 06/10/23 - 05/10/24



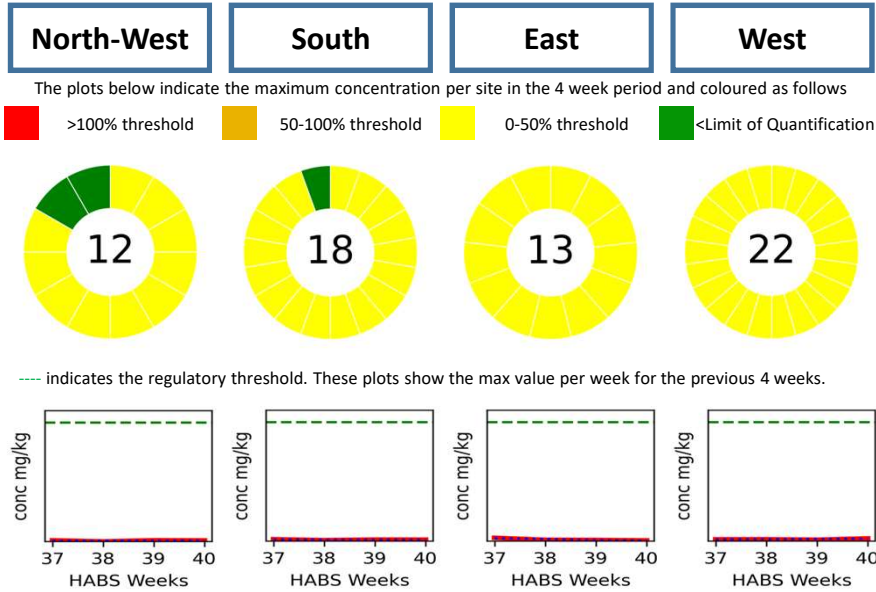
Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g/g}$)



Trend of Average Counts of Toxin Causing Phytoplankton Species Per Week (measured in Cells per Litre)



In this 4 week period there were 149 Samples tested for AST. These samples were collected at 65 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 20.0 mg/kg

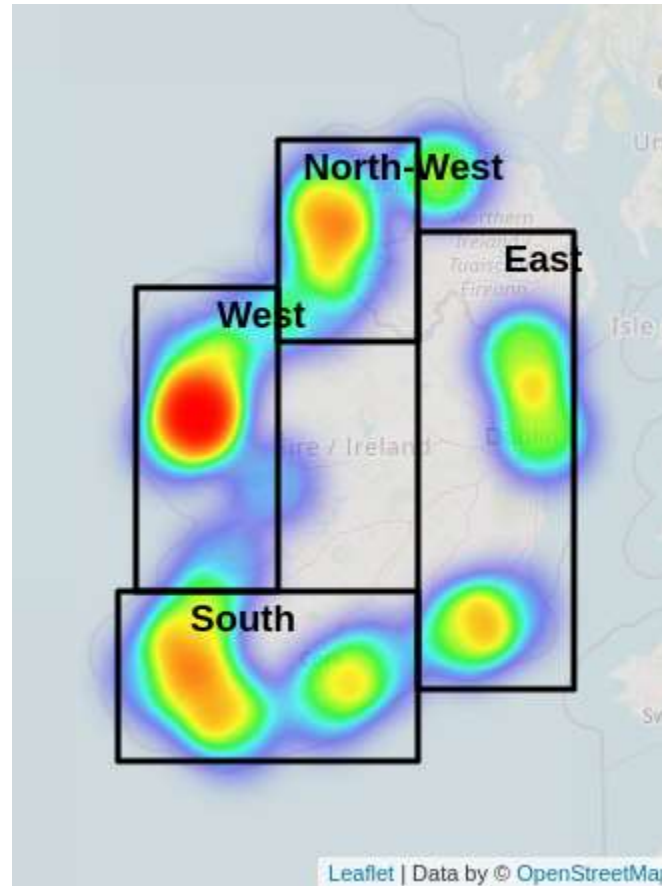


Risk: **Low** **Low** **Low** **Low**

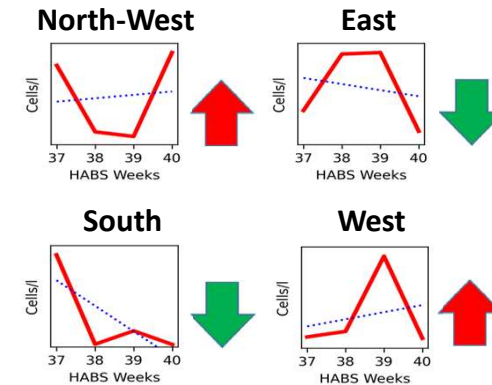
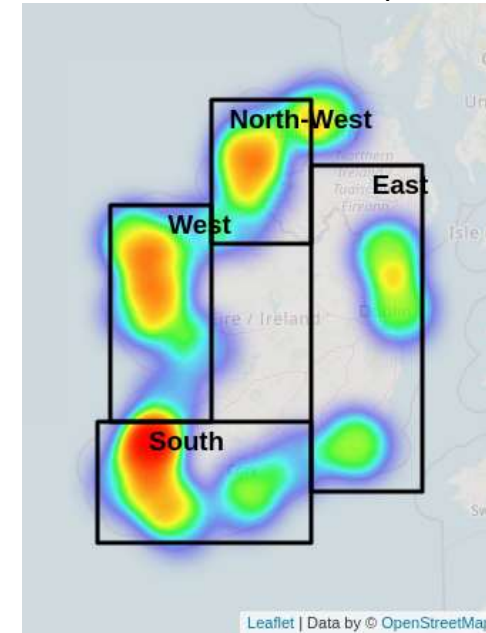
Trend:

Low risk:
Risk levels are on the decrease on all coasts.

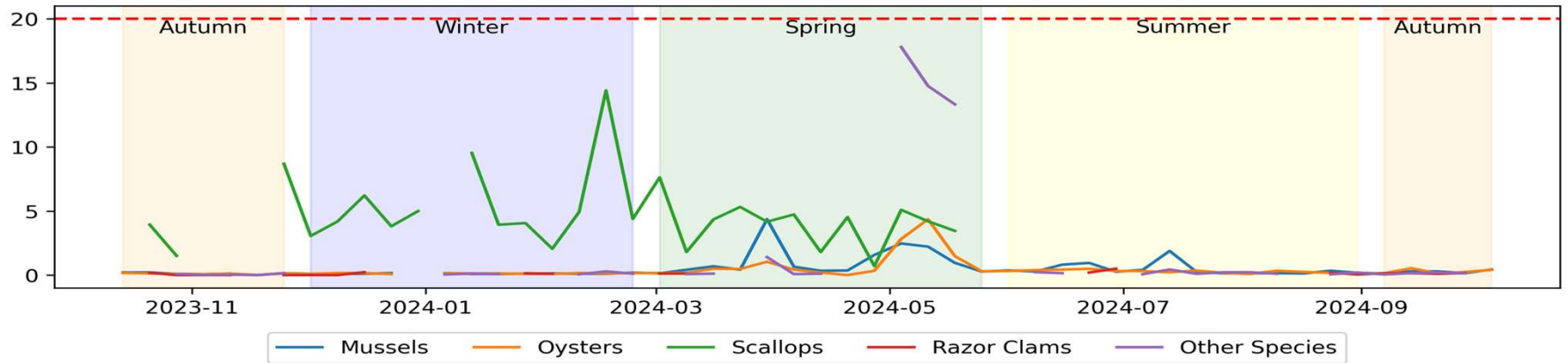
Amnesic Shellfish Toxins National 4-Week Heatmap



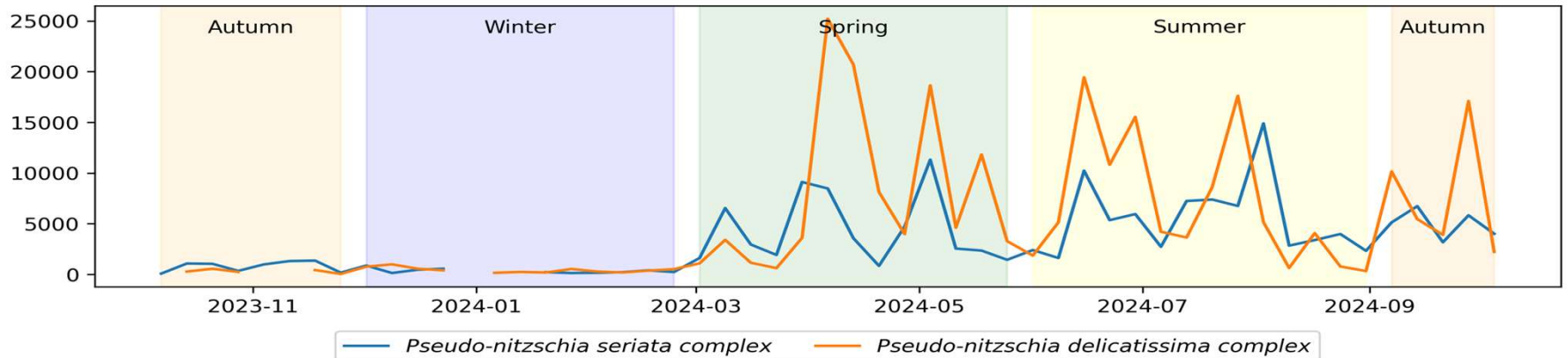
Phytoplankton *Pseudo-nitzschia* spp. 4 Week Heatmap



Trend of Maximum Toxin concentrations in Shellfish Species (measured in mg/kg)



Trend of Average Counts of Toxin Causing PhytoPlankton Species Per Week (measured in Cells per Litre)



Paralytic Shellfish Toxins & *Alexandrium* species

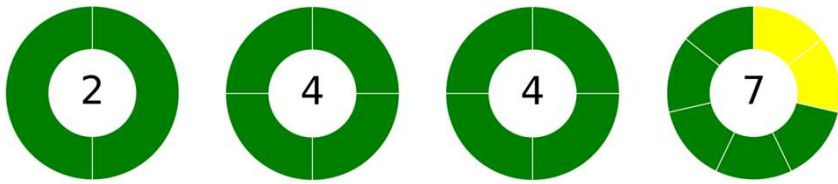
Regional 4-Week Trends 08/09/24 - 05/10/24

In this 4 week period there were 38 Samples tested for PST. These samples were collected at 17 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 800.0 µg/kg

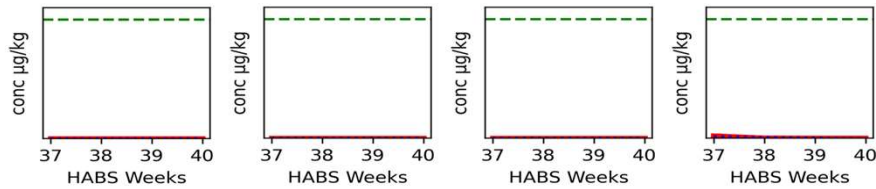
North-West **South** **East** **West**

The plots below indicate the maximum concentration per site in the 4 week period and coloured as follows

■ >100% threshold
 ■ 50-100% threshold
 ■ 0-50% threshold
 ■ <Limit of Quantification



--- indicates the regulatory threshold. These plots show the max value per week for the previous 4 weeks.

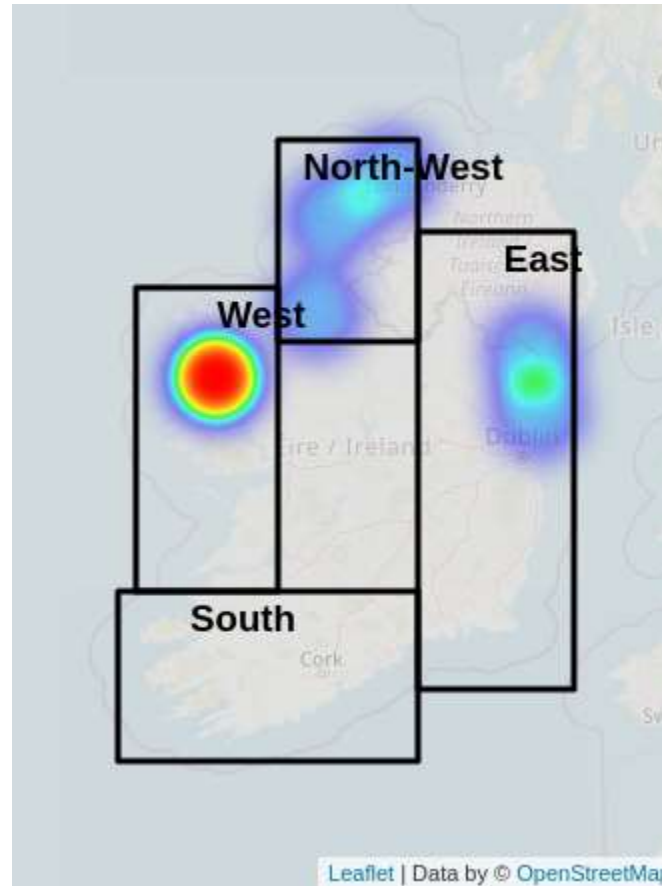


Risk: **Low** **Low** **Low** **Low**

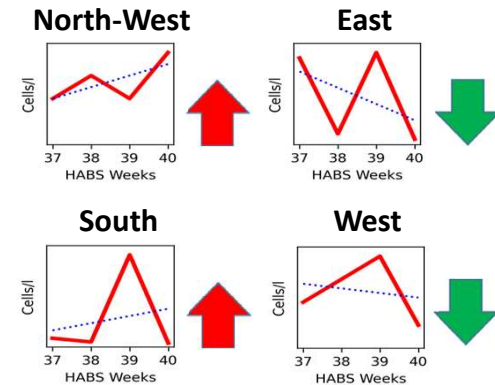
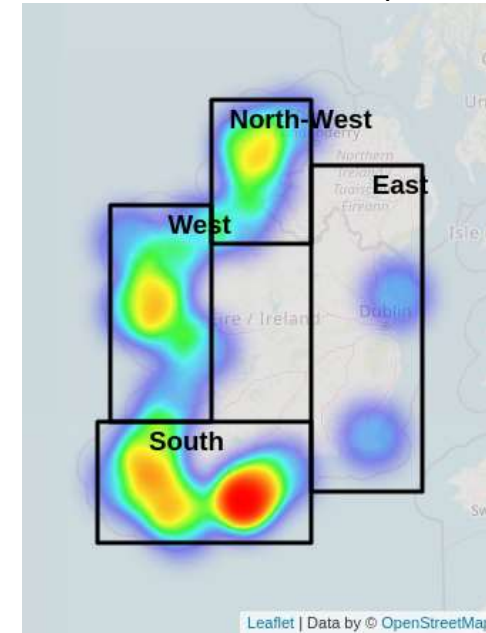
Trend:

Low Risk.
Risk levels low on all coasts.

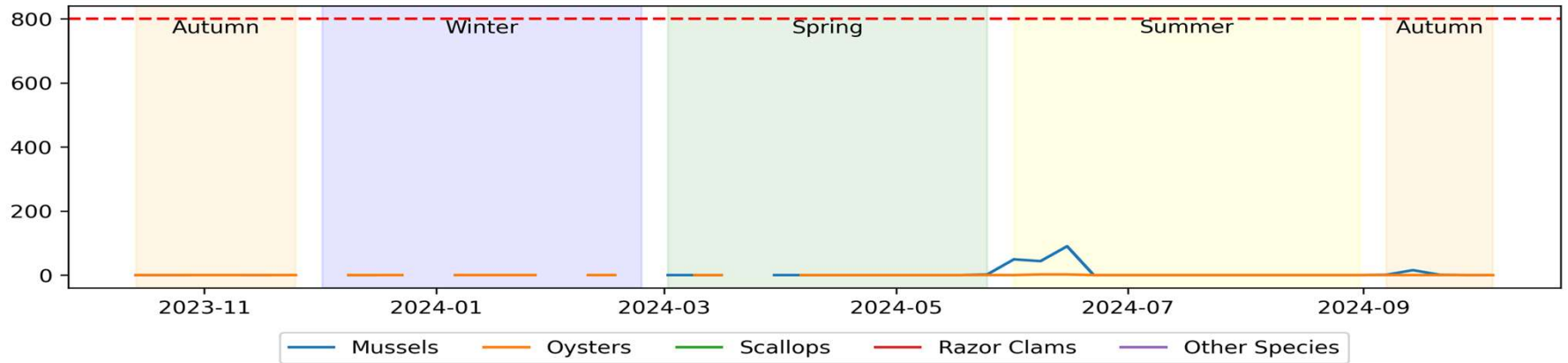
Paralytic Shellfish Toxins National 4-Week Heatmap



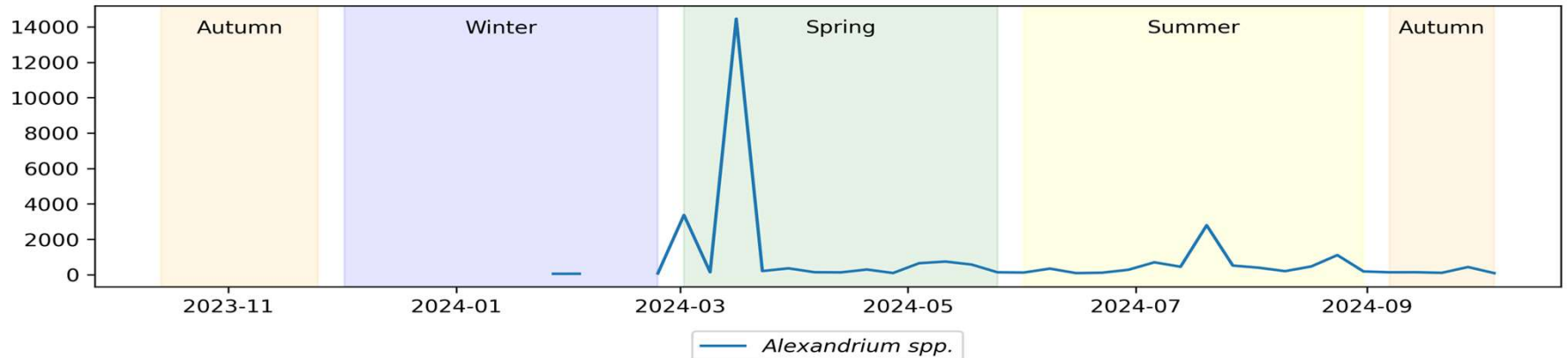
Phytoplankton *Alexandrium* spp. 4 Week Heatmap



Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g}/\text{kg}$)

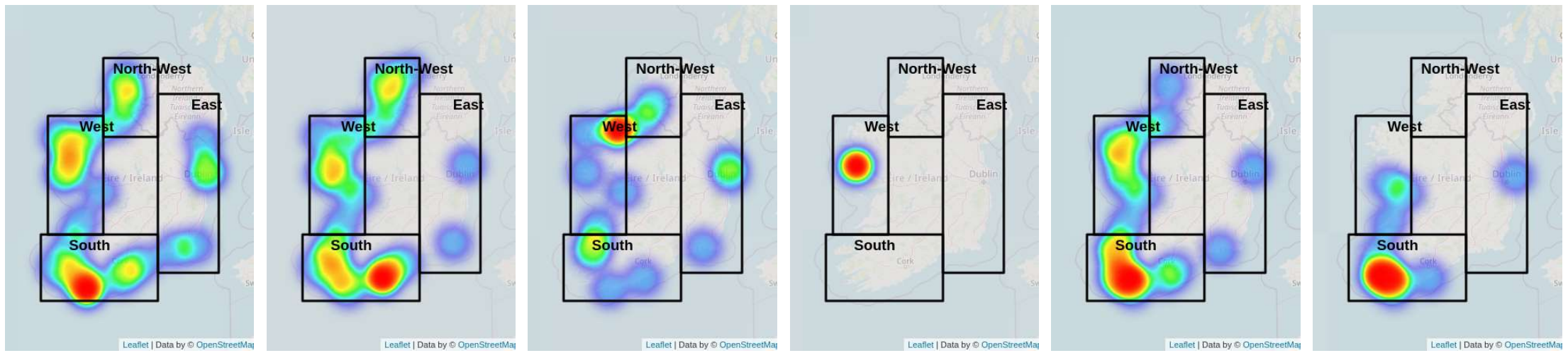


Trend of Average Counts of Toxin Causing PhytoPlankton Species Per Week (measured in Cells per Litre)



Fish Harming Phytoplankton

National 4-Week Analysis: 08/09/24 to 05/10/24



Heterocapsa sp.

Alexandrium sp.

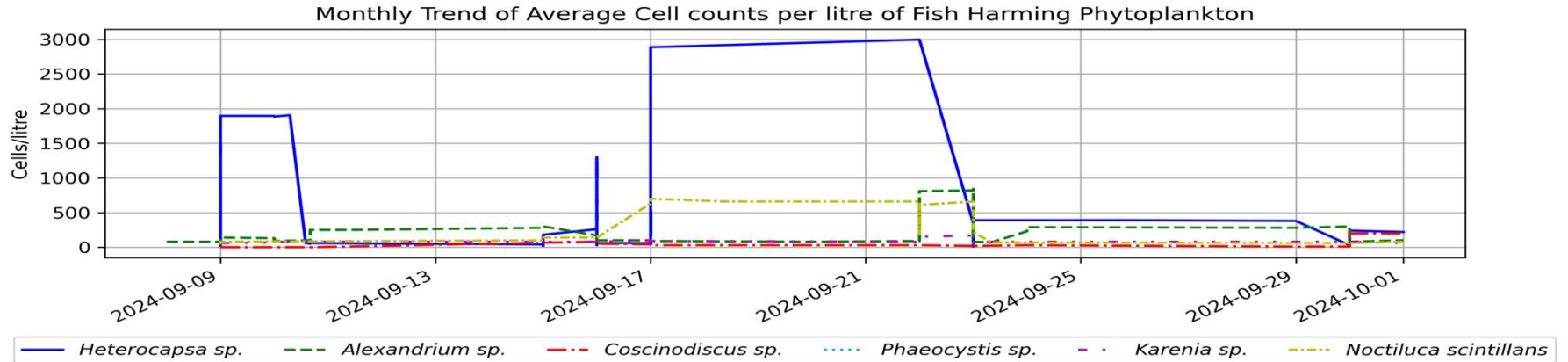
Coscinodiscus sp.

Phaeocystis sp.

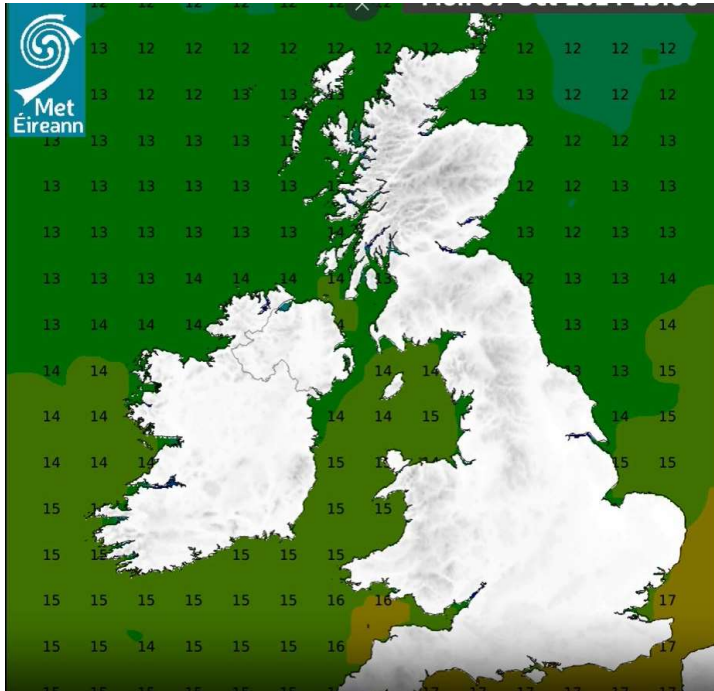
Karenia sp.

Noctiluca Scintillans

Generally phytoplankton cell levels continuing at low levels consistent into the autumnal cycle. Sea water temperatures starting to cool, light levels decreasing and cloud cover fluctuates. Offshore transportation potential higher likelihood of occurrence as insitu risk levels of HABs growth decrease significantly. Any Phytoplankton species at sufficient numbers may cause temporary issues in water quality which could impact specific areas over the course of a tidal cycle or for a period of days while specific suitable conditions prevail. Please note some blooms can occur rapidly and acutely. If concerned about a problematic or toxic species level please check specific site information updates at www.marine.ie.



Sea Surface Temperature (°C)



Chlorophyll Concentrations (mg/m3)



Steady levels of chlorophyll in all inshore areas around the Irish coast. Please check specific area information for local activity, see table. Water temperatures are increasing steadily with warmer waters still indicated in offshore. Mixed dominance of dinoflagellates and diatom phytoplankton species present. Please check specific area information for local activity.

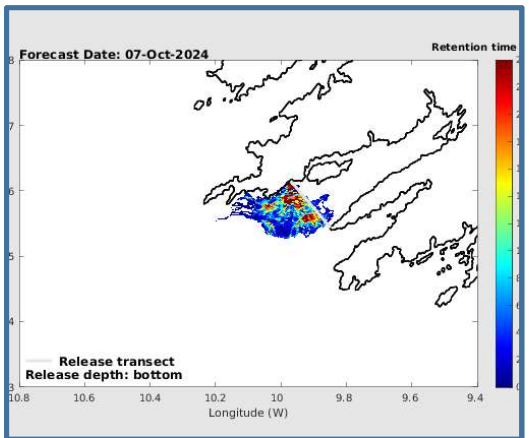
Marine Institute Data Buoy – Temperature Data



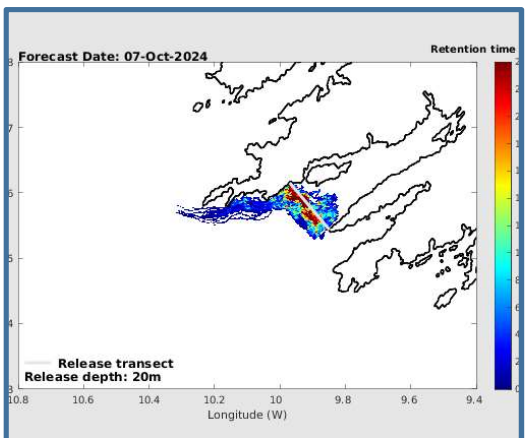
- NW Coast (M4) Average SST of 13.65 Celcius: Increase of 0.12 Celcius over the historic Weekly Average
- SW Coast (M3) Average SST of 14.67 Celcius: Decrease of -0.03 Celcius over the historic Weekly Average
- SE Coast (M5) Average SST of 14.83 Celcius: Increase of 0.01 Celcius over the historic Weekly Average

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).

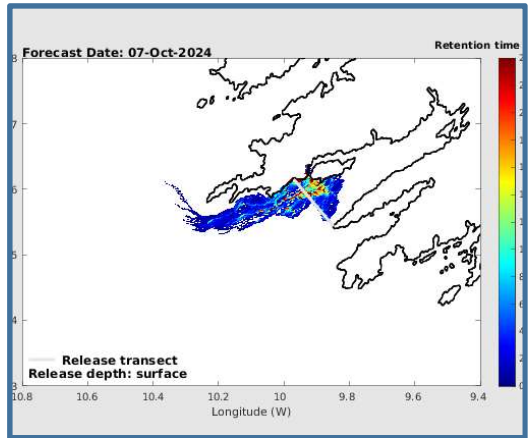
Reddish colours represent areas where phytoplankton remain longest. **Cooler colours represent areas where phytoplankton remain for shorter periods**



Bottom water

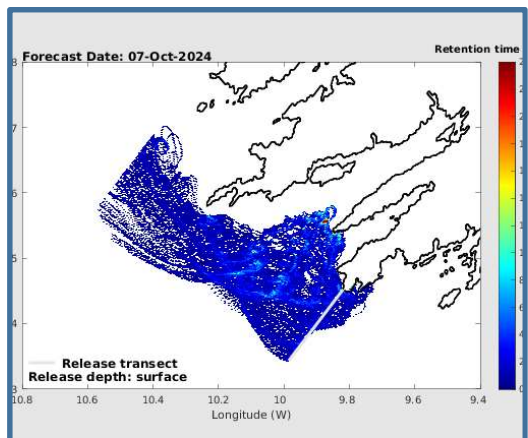
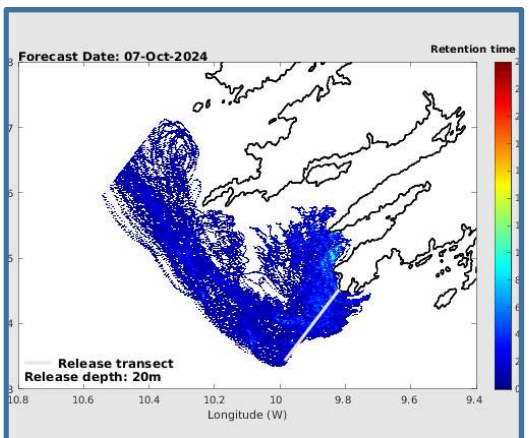
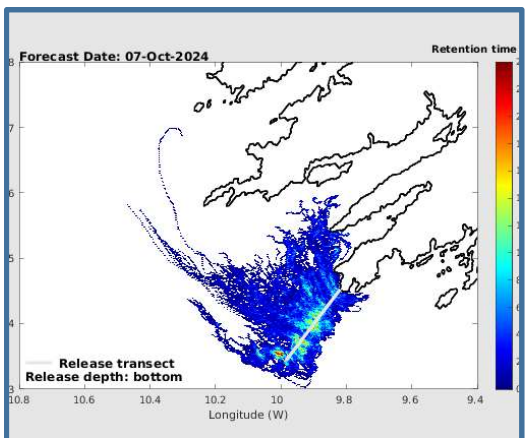


Water @ 20 metres

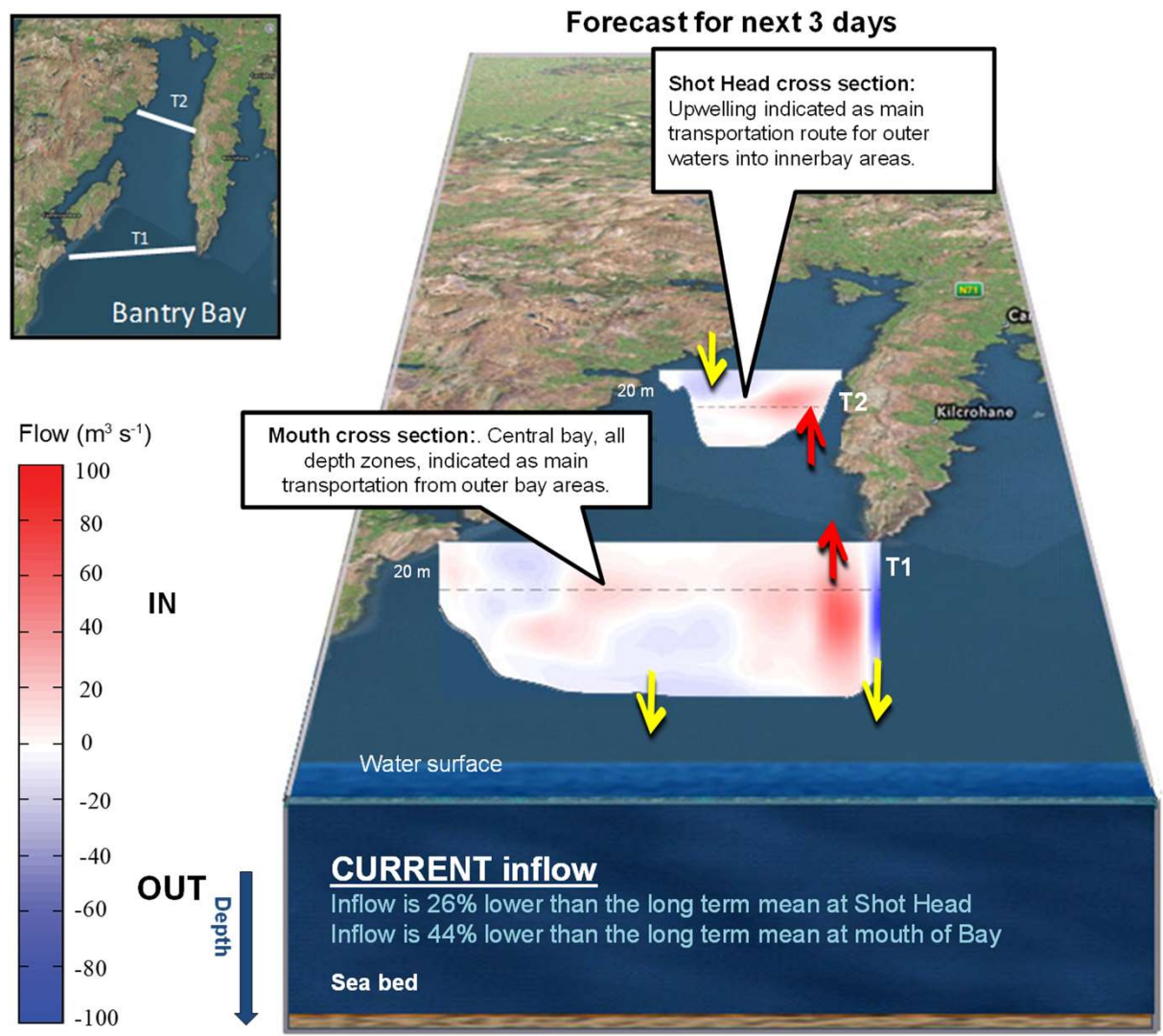


Surface water

Southerly upwelling inshore as main transportation of outer bay waters into inner bay areas.

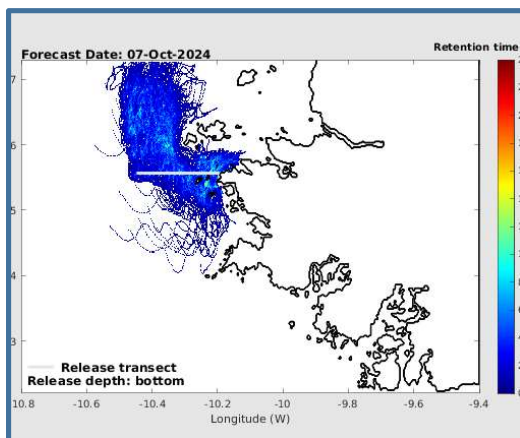


Northerly directional movement dominance at surface & middle depths.

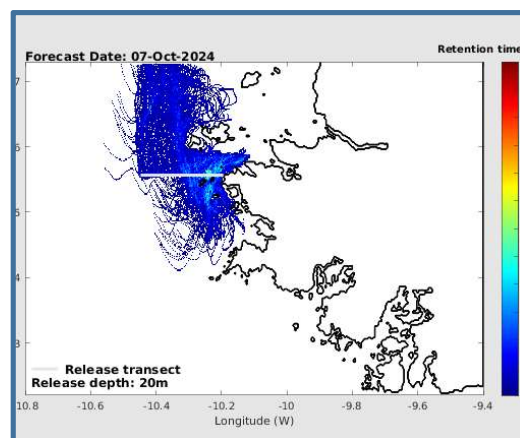


The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** i.e. white lines off Aughrus Point and the Mouth of Killary Harbour, and **water depths** (bottom, 20 metres and surface).

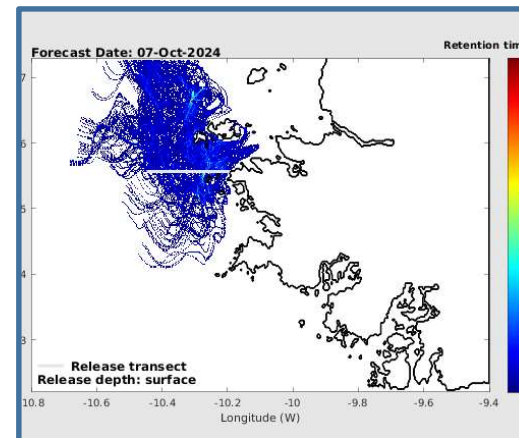
Reddish colours represent areas where phytoplankton remain longest. **Cooler colours represent areas where phytoplankton remain for shorter periods**



Bottom water



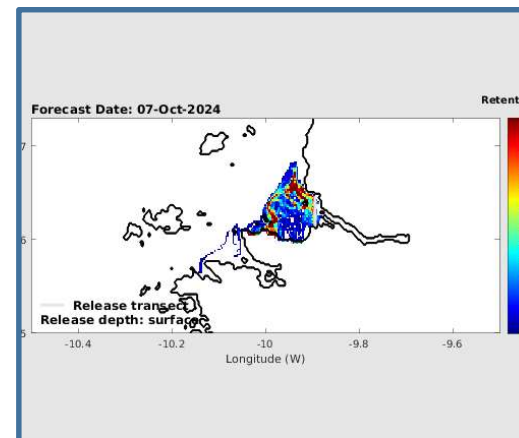
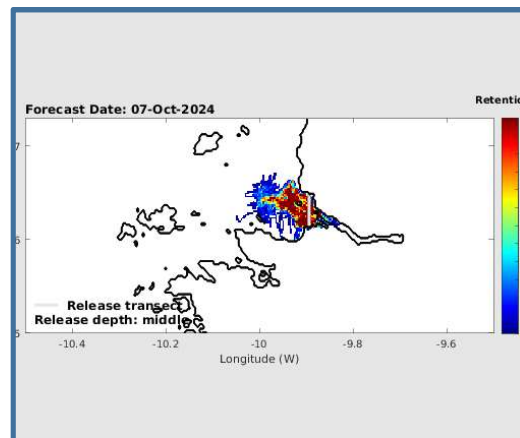
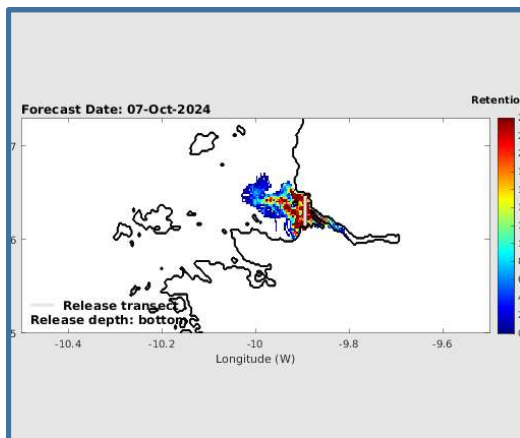
Water @ 20 metres



Surface water

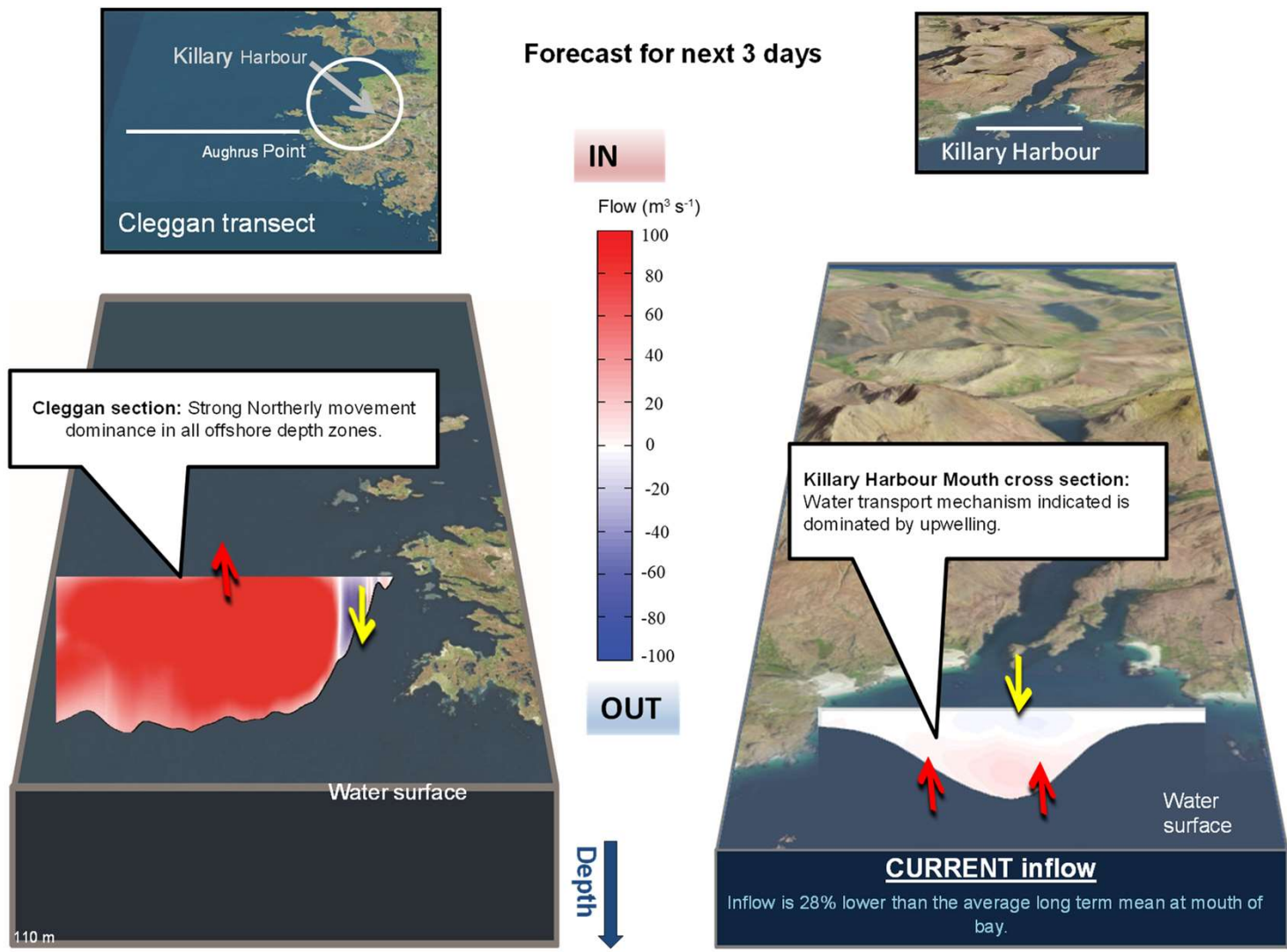
Cleggan

- Change to Northerly transportation as dominant direction at surface water and mixed dominance at depths. Developing Southerly counter movement.



Killary

- Low water movement with downwelling predicted as transportation likely, as far as mid bay regions or further.



This Harmful Algal Blooms (HAB) Bulletin aims to provide a short (3-5 day) predictive forecast on the likelihood of the onset of a HAB event occurring/continuing in a region. The data provided for the compilation of this report is derived from a number of sources comprising of in-situ, remote sensing and hydrodynamic modelling datasets. For the latest and historical biotoxin and phytoplankton results for aquaculture production areas please visit <https://webapps.marine.ie/habs>

In-situ Data

- Biotoxin and Phytoplankton data is provided by National Monitoring Programmes from the HABs database (Marine Institute)
- Heat map images – Leaflet.

Remote Sensing Data

- Sea Surface Temperature Data Product: SST_NWS_SST_L4_NRT_OBSERVATIONS_010_003 (ODYESSA L4 SST from Copernicus CMEMS MCS).
- Chlorophyll image data is provided by:EUR-L4-CHL-ATL-v01 (IFREMER/ DYNECO and CERSAT).
- Sea Surface Temperature observations: Irish weather buoy network (Marine Institute).

Hydrodynamic modelled data

- Particle Tracking Simulation data: The downscale models of areas of particular interest (Bantry Bay, Killary Harbour and Cleggan Bay) incorporate online particle tracking with virtual particles released at pre-defined transects at the start of each model. The operational model produces an estimate of the ocean state once a week and a daily 3-day forecast of the dominant regional physical processes that result in water exchange events between the bay and its adjacent shelf (Marine Institute).
- Hydrodynamic model data: Hydrodynamic nowcast/forecast models show the latest 3-day volumetric flux forecast for vertical transects at the mouth and mid-bay. The results are plotted graphically on a map of the area.

Definitions

- A toxic site is defined as a site that had at least 1 result in the time period indicated greater than the regulatory limit.
- Heat maps represent relative distribution and patterns, and should not be interpreted as indicative of the maximum or absolute concentrations of a toxin in a region.
- Risk levels are calculated based on internal logic applied to measurements captured over the period, along with any additional information available to the evaluator. These risk levels are to be regarded as advisory only.
- Trends are calculated based on average or maximum values per week over the period of time and the slope of the line connecting these points.

Disclaimers

The predictions and comments produced within this bulletin are based on our expert opinion on the datasets and sources as outlined above. The Marine Institute cannot accept any responsibility for business and risk management decisions on harvesting and husbandry based on this report.

Acknowledgements

Funding for the development of this bulletin version has been provided by Interreg Atlantic Area Project: PRIMROSE (Predicting the Impact of Regional Scale events on the Aquaculture Sector) EPA 182/2106