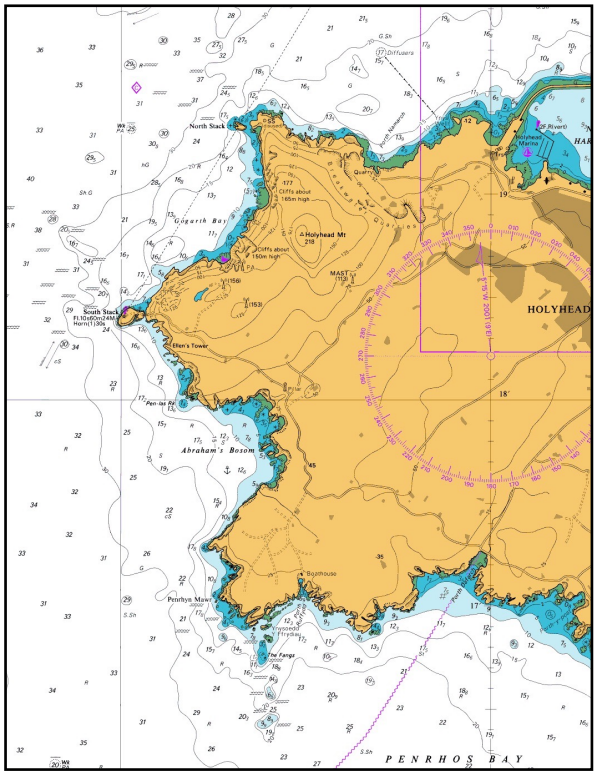
The Stacks

No. 8 | Grade C | 12km | OS Sheet 114 | Tidal Port Liverpool

Start	△ Porth Dafarch (233800)
Finish	◎ Soldiers' Point, Holyhead (236837)
HW/LW	High and low water at Porth Dafarch occur around 1 hour 20 minutes before Liverpool. High and low water at Holyhead are around 48 minutes before Liverpool.
Tidal times	At Penrhyn Mawr the NW going stream (flood) starts around 3 hours 30 minutes after HW Liverpool, the SE going stream (ebb) starts around 1 hour 15 minutes before HW Liverpool. At South Stack the NNE going stream (flood) starts around 4 hours 50 minutes after HW Liverpool, the SSW going stream (ebb) starts around 1 hour 10 minutes before HW Liverpool. At North Stack the NE going stream (flood) starts around 5 hours after HW Liverpool, the SW going stream (ebb) starts 2 hours before HW Liverpool.
Tidal rates	This area has a reputation for fast tidal streams, which can exceed 6 knots on spring tides.
Coastguard	Holyhead, Tel. 01407 762051, VHF Weather 0150 UT repeated every 3 hours.



Using tidal information provided in Worksheet 2:

a. create a tidal picture for 10 January 2019, between 10:00 & 20:00 GMT.

b. calculate HW / LW slack water times for all major headlands.

c. calculate time / speed / direction of maximum tidal streams at each headland.

d. calculate times of the day when the predicted tidal stream will be 50% of its maximum rate.

e. estimate formation of likely eddy streams within each bay - include estimated duration / direction / speed of these eddy streams.

n.b prediction of eddy streams, in the absence of printed information, can only be an estimation.

We may paddle in areas where the tidal picture is relatively complex, and where eddy streams will exist. Effective group management decisions will need to take these factors into account.

Briefly answer the following:

- MHWS / MHWN
- Chart Datum - another common term is LAT. What does the terms mean?
- Drying height - from what reference point are drying heights measured?
- Semi-diurnal - how many High / Low Waters per day?

- IALA - what is the general rule for Direction of Buoyage in UK waters?
- Trinity House
- Fl(2) 10s 36m 29M

- What are the colours of an East Cardinal Mark?
- What is the top mark of a West Cardinal Mark?
- What is the light sequence of a South Cardinal Mark?

- What is the appearance of an isolated danger mark?
- What different functions do special (yellow) marks serve? Give examples.
- What is a sectored light?

- What is a Traffic Separation Scheme?
- What is the Direction of Buoyage in the Menai Strait, between Beaumaris and Caernarfon?
- What do the following terms mean: Flashing? Isophase? Occulting?

- What distance is one Minute of Latitude? How many minutes in a degree?
- Where - on a Nautical Chart - is an accurate place to measure this distance?
- Describe one Nautical Mile in Kilometres (accurate to 2 decimal places).

- A paddling speed of 3 knots is how many kilometres per hour?
- At 3 knots, how long will it take to paddle 3/4 nautical Mile?
- At 5 km/h, how long will it take to paddle 750 metres?

The following buoys can all be found near the Anglesey coastline, between Holyhead Harbour and Cemlyn Bay. Locate and identify them, including any light sequences:

- Lighthouse at seaward end of Holyhead Breakwater
- Bolivar Rock buoy
- Langdon Ridge Buoy

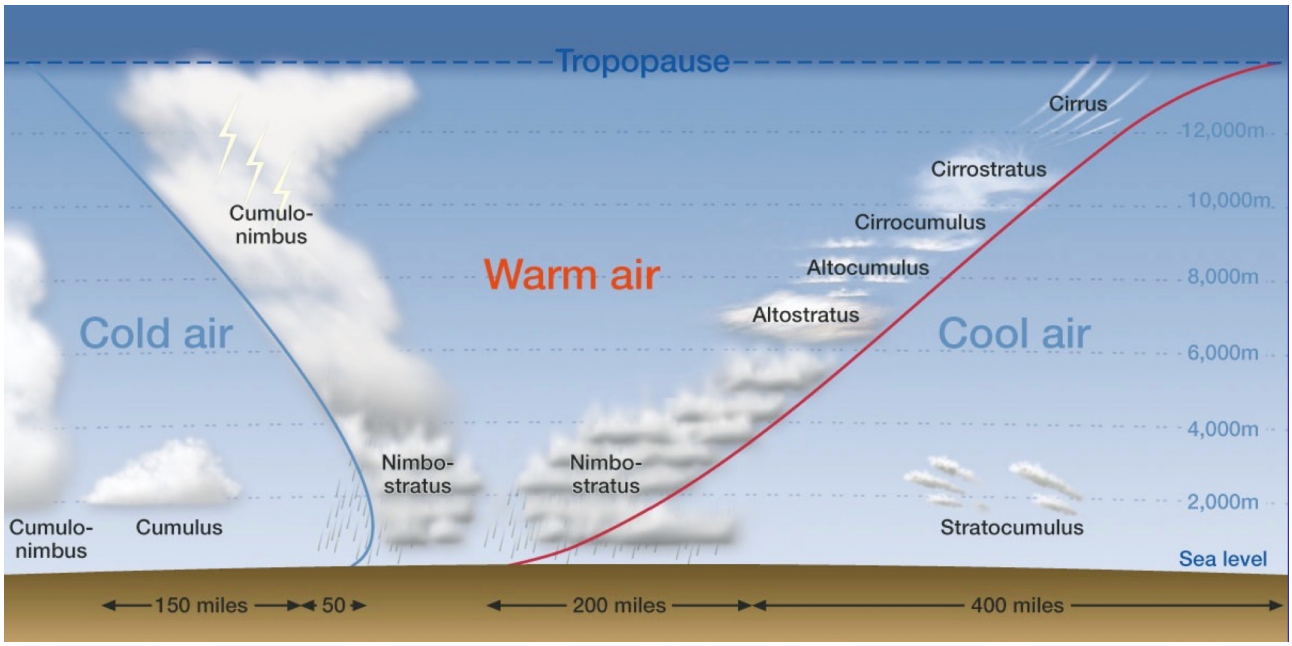
- Skerries Lighthouse
- Victoria Bank Buoy
- Harry Furlong's Rock Buoy

The areas of knowledge covered in the questions above are of practical relevance in planning, navigation and group management situations.

Describe the weather (wind, precipitation, visibility, other factors) typically associated with the following elements of a low pressure system, in UK waters:

a. The arrival of the warm front
b. The passage of the warm sector
c. Following the passage of the cold front

a. Which of the low pressure sectors above is most likely to produce unstable, gusty winds?
b. Which sector is most likely to produce the worst visibility for the sea paddler?
c. What weather characteristics are typically associated with an occluded front?



You are leading a group of sea kayakers on Anglesey, between Rhoscolyn Head and Penrhyn Mawr, with a range of possible route choices. The following weather information is available:

There is a low pressure system approaching the UK, with the centre of the low situated over the west coast of Scotland.

- At 09:00 GMT the forecast wind direction / strength for Anglesey is: S / SW 15-18 knots.
- At 11:00 the forecast predicts the arrival of the warm front, with typical weather changes.

- Between 11:00 and 15:00 the west coast of Anglesey will be in the warm sector of the low.
- At 15:00 the forecast predicts the arrival of the cold front, with typical weather changes.

- What are the weather implications, assuming that you will be afloat between 09:00 and 17:00?
- What changes will likely occur?

- How might these weather factors affect the development of sea state?
- What route choice decisions might we make, to manage the likely conditions?

Prediction of likely exposure to wind / sea conditions, and the potential effect on groups members, is an important skill for sea kayak leaders in moderate and advanced conditions.

List 3 or more potential sources of weather forecast for sea kayakers on the Welsh coastline. Outline the usefulness, and limitations, of each weather source.

Consider:

- Forecast time period of each weather source: hour by hour breakdown?
- Or summarised 12- / 24-hour period?

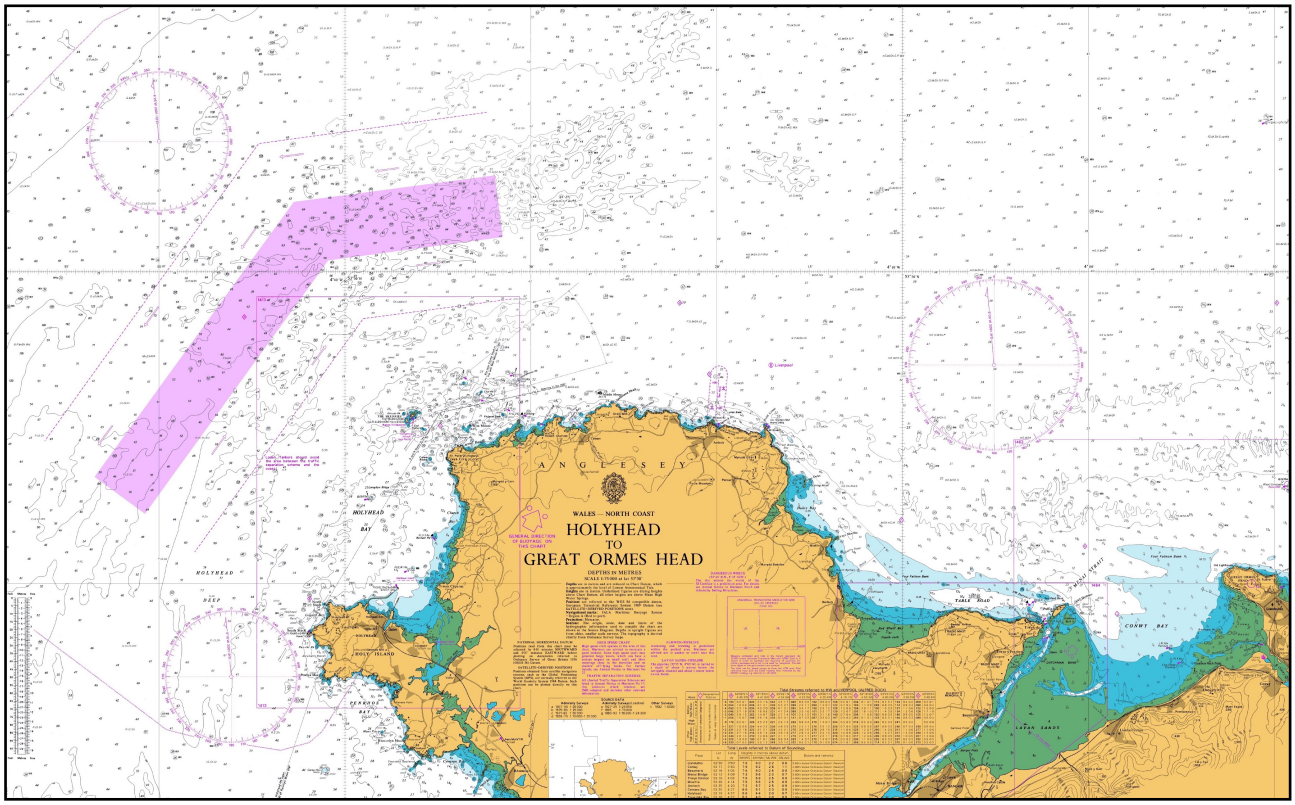
- Scale of forecast area:
- Spot forecast? - confined coastal area, e.g Anglesey? - or larger area, e.g. W coast of Wales?

- Units of measurement? Knots, mph, m/sec? - or summarised Beaufort Scale number?

- Visibility, temperature?
- Sea state?

- Size / direction of wind waves?
- Swell - direction, period?

- Pressure chart information - large scale synopsis?
- History of weather patterns / likely sea conditions?
- Future changes - next 24 hours?



Kayakers on the Anglesey coastline will need to predict likely paddling conditions, using relevant sources of weather information.