

<p>Key Stage 4 Lesson 1</p>	<p>Lesson aim: Linking the weather experienced in the UK to the dominant air mass</p> <p>Prior Learning:</p> <ul style="list-style-type: none"> <li>➤ Air masses influencing climate of UK – students should be familiar with the names and characteristics of the 5 air masses influencing the UK climate i.e. Tropical Maritime, Tropical Continental, Arctic Maritime, Polar Continental and Polar Maritime.</li> </ul> <p>Learning objectives:</p> <ul style="list-style-type: none"> <li>➤ To use the weather data to develop a clear understanding of the characteristics of the UK climate</li> <li>➤ To illustrate patterns in the climate of the UK using data extracted from a variety of weather stations</li> </ul> <p>Resources:</p> <ul style="list-style-type: none"> <li>➤ Web links to <a href="http://www.metoffice.gov.uk/home">http://www.metoffice.gov.uk/home</a></li> <li>➤ Graph paper or Excel</li> <li>➤ Air masses resources such as those found on <a href="http://www.radicalgeography.co.uk/weatherandclimate.html">http://www.radicalgeography.co.uk/weatherandclimate.html</a> or <a href="http://www.ngfl-cymru.org.uk/eng/vtc-ks4-geography-weather-and-climate-a-depression-and-its-associated-fronts">http://www.ngfl-cymru.org.uk/eng/vtc - ks4 - geography - weather and climate - a depression and its associated fronts</a></li> </ul> <p>Method:</p> <ul style="list-style-type: none"> <li>➤ Begin by brainstorming the basic elements of the weather as learnt in KS3 and from personal experience.</li> <li>➤ Take pairs of these and get students to develop short statements or mini-hypotheses related to the connections between them.</li> <li>➤ Re-cap on the air masses influencing the climate of the UK (you could use one of the suggested links for this).</li> <li>➤ Consider how these patterns are reflected in the weather associated with the air masses influencing the climate of the UK along with other variables such as latitude. Develop some hypotheses such as 'the coldest weather is associated with the arctic maritime air mass and North-West winds'.</li> <li>➤ Explore the variety of data available at <a href="http://www.metoffice.gov.uk/home">http://www.metoffice.gov.uk/home</a>, by selecting stations, and using the 'show latest observation', 'table view' and 'show filter' options.</li> <li>➤ How would we test, from the data available, the strength of the hypothesis linked to the air masses? Are we able to use the data to predict which air mass is dominant at any given time?</li> <li>➤ Frame an exercise to explore this evidence gathering e.g. is there a link between wind direction and rainfall? This exercise would need to be completed using common and consistent data presentation tools.</li> <li>➤ Students should present one set of data and conclusions.</li> </ul>
<p>Lesson 2</p>	<p>Lesson aim: What happens when two air masses meet?</p> <p>Prior learning:</p> <ul style="list-style-type: none"> <li>➤ Some understanding of synoptic charts and frontal systems would support the learning.</li> </ul>



Lesson objectives:

- To re-enforce the learning related to characteristics of air masses.
- To use data to show the links between key air masses and the passage of a depression

Lesson resources:

- <http://wow.metoffice.gov.uk>.
- Dundee satellite receiving station <http://www.sat.dundee.ac.uk/>
- [http://www.wetter3.de/Archiv/archiv\\_ukmet.html](http://www.wetter3.de/Archiv/archiv_ukmet.html)

Method:

- Recap on weather systems and front, maybe using a resource such as <http://www.ngfl-cymru.org.uk/eng/vtc - ks4 - geography - weather and climate - a depression and its associated fronts> or <http://www.metlink.org/weather-climate-resources-teachers/key-stages-weather-climate/a-level-weather/anticyclonesdepressionsfront.html>
- Go to <http://wow.metoffice.gov.uk> and move the slider at the bottom of the page to the left edge. Now you will be able to select 8/12/2011 and various time intervals through the day.
- Start by looking at temperature between 0600 and 0659. Where are the warmest temperatures? Could you guess where a warm front might be?
- Now look at temperature between 1800 and 1859. Where are the coldest temperatures? Could you guess where a cold front might be?
- You could look at wind and pressure to see whether they give you any more information.
- Pick a particular weather station near Birmingham (eg Catshill) and, by choosing 'latest observation', 'graph view' and using the filter options, graph air temperature through that day. When did the cold and warm front pass?
- Now graph the rainfall rate for the same period. Is there any additional information about when the cold front passed?
- You can also look at how pressure (at the station) and wind speed changed through the day.
- Now investigate some other stations, for example in Scotland.
- If time allows this work can be linked to the synoptic charts for the event, for example use [http://www.wetter3.de/Archiv/archiv\\_ukmet.html](http://www.wetter3.de/Archiv/archiv_ukmet.html), select 08 12 2011 in the bottom left hand box, then use the forward arrow to move through the charts at 6 hourly intervals. You could also link the weather to the satellite images available from the Dundee satellite receiving station, and BBC news stories about the event, for example:

➤ The BBC weather forecast for the day <http://www.youtube.com/watch?v=UpK0oszLf40>

BBC News report <http://www.youtube.com/watch?v=SPq3A16QdsA>

<http://www.bbc.co.uk/news/uk-scotland-16079849> and <http://www.bbc.co.uk/news/uk-scotland-16094360>

