Key Stage 3 Lesson 1	2.1 Geographical enquiry Pupils should be able to: a) ask geographical questions, thinking critically, constructively and creatively b) collect, record and display information c) identify bias, opinion and abuse of evidence in sources when investigating issues d) analyse and evaluate evidence, presenting findings to draw and justify conclusions Lesson title: What are the elements that make up our weather? Lesson objectives ➢ To be able to identify connections in an investigation. ➢ To draw conclusions from sets of evidence ➢ To develop an understanding why these conclusions are not always reliable. Resources: ➢ Graph paper or Excel ➢ Web link http://wow.metoffice.gov.uk/home Method: ➢ Outline the main elements of the weather i.e. precipitation, wind speed, wind direction, temperature, humidity, barometric pressure, cloud amount. Perhaps have these ready on resource cards. Students could pair up elements using the resource cards and try to develop a sentence around the possible relationship between the two elements e.g. 'when there is precipitation, cloud amount is usually high'. ➢ **Use the web link** http://wow.metoffice.gov.uk/home **to go to the data home page. Select the nearest location to the school and use the 'latest observation' and 'table view' options. You can use the 'show filter' option to change the time frame.** ➢ Review the structure of the data sets. Try to develop some hypotheses about why some weather variables might be linked. ➢ Focus in on key pairs of variables and collect and represent data sets over variables including time. For example, you could look at how temperature changes with time, or how rainfall changes with pressure.
Lesson 2	Lesson aim: Developing a predictive model Lesson objectives ➢ To be able to identify connections in an investigation. ➢ To draw conclusions from sets of evidence ➢ To develop an understanding why these conclusions are not always reliable.

	Resources: ➢ Graph paper or Excel ➢ Possible links to other map evidence such as Google Earth weather layers http://earth.google.com/support/bin/static.py?hl=en&page=guide.cs&guide=22370&topic=22652&answer=181050 . Method: ➢ Recap on the previous lesson and ensure that all students have adequate sets of data presented well. ➢ Consider the interpretation of that data and reach a conclusion and therefore a predictive model. Using geographical writing frames develop a short conclusion that could be developed into an hypothesis related to a set of data e.g. the temperature is lower when the wind is from the north. ➢ Get the group to test this hypothesis using geographical locations from around the country in real time using the data at http://wow.metoffice.gov.uk/home . The students must determine whether they have proved the hypothesis and to what degree the hypothesis is reliable. ➢ Consider how the exception to this can be explored and where we may look for that exception e.g. N/S temp or E/W rainfall. The students should explore what other variables may make the hypothesis unreliable e.g. a location on the leeward side of a mountain may have a 'micro-climate'. Further support for this could be researched using Google Earth ➢ An extension exercise could be writing a weather report for a newspaper describing the changes over past 24 hours

Lesson 3	Lesson aim: Understanding London's Urban Heat Island Lesson objectives An Urban Heat Island refers to the increased temperature of urban air compared to the temperature of its rural surroundings. There are a number of factors which contribute to this phenomenon, the main one being that the buildings in cities retain the heat from the sun, acting as huge thermal storage systems and so keep the city warm at night. In this exercise you could start by studying London, as being the biggest city in the UK it should show the clearest UHI, but then you could try cities closer to you Resources: ➢ http://wow.metoffice.gov.uk/home ➢ ICT suite Method: ➢ Go to the WOW website http://wow.metoffice.gov.uk/home ➢ Think about what conditions are good for the development of an urban heat island (clear skies, little wind, night, summer etc.) and select a date and time accordingly, by moving the sliding bar at the bottom of the map to the very left, until a calendar appears. ➢ Zoom in on London until the M25 approximately marks the edge of the map and, if you have appropriate software, save the image or use 'print screen' to paste the image in Word. ➢ From the map of weather stations estimate (e.g. using a ruler, Google earth ruler, concentric circles or other means) the distance of each weather station shown from the centre of London (you'll have to decide where this is). Note: this task could be divided between the class so that each small group studies a subset of the available weather stations. ➢ Create an Excel spreadsheet with station name in column A, distance in column B and temperature in column C. ➢ Now fill in the spreadsheet using the WOW data. ➢ Use Excel to plot temperature against distance. ➢ Use the graph to explore the following question: "Does the temperature increase or decrease as distance from the centre?" ➢ Repeat the exercise for other days of your choice. Try and choose clear and cloudy days, summer and winter, times in the day and night . What do you observe and why do you think these factors matter? Are there some weather stations which don't fit the general pattern – they might be anomalously warm or cold? Why might that be?