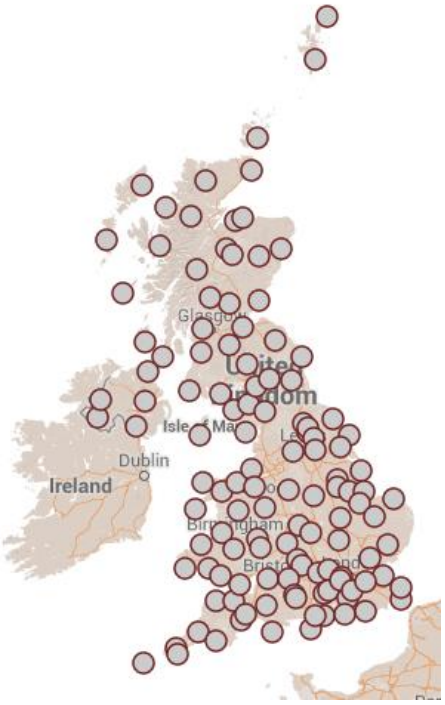
Y12 Lesson 3 Activities

This worksheet uses measurements[1] from the 122 Met Office observation sites, as shown right[2], at 12:00 on 10/07/2013 across the UK. The data set includes the latitude, longitude and temperature observations for each site.

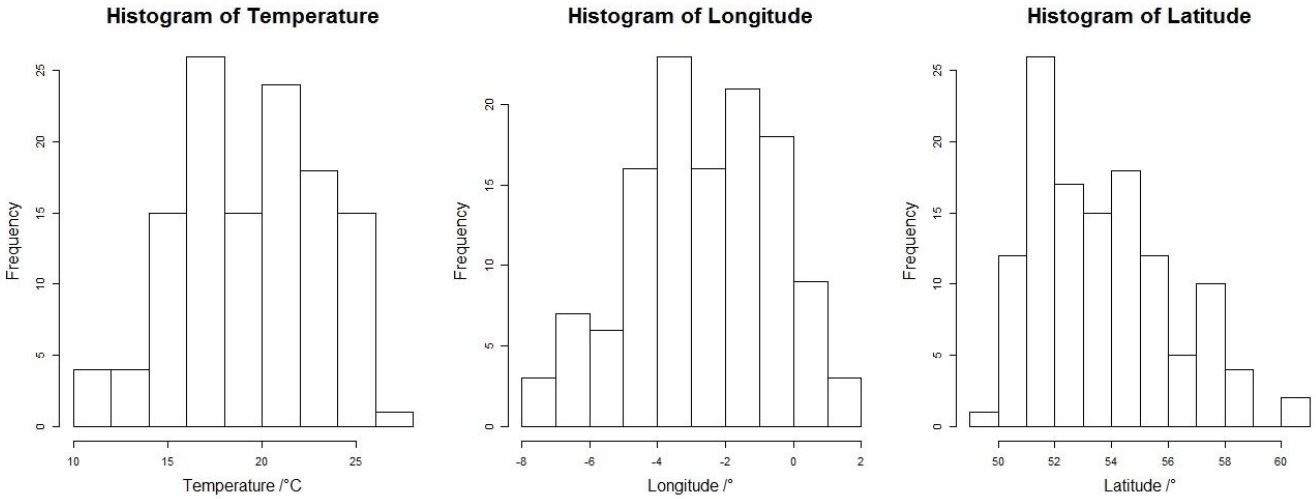


Temperature Prediction:

1) Using only the first 10 rows of data from the table produce scatter plots on sensible axes of:
   a) Longitude (horizontal axis) against Temperature (vertical axis)
   b) Latitude (horizontal axis) against Temperature (vertical axis)
   c) Do either of these plots suggest a correlation?

2) Using the linear regression coefficients calculated by the spreadsheet:
   a) Write down the expected temperature **y** in terms of latitude **x**.
   b) Calculate the expected temperature at your school latitude for 10/07/2013, how does this compare to the local observation sites on the scatter plot?

3) Using the histograms below:
   a) Describe scale, shape and location of the Temperature, Latitude and Longitude distributions.
   b) With reference to the map of observation sites above, explain the skewness of the latitude histogram.
   c) How could the reliability of temperature predictions using this regression model vary with latitude? *[Hint: Think about the sample size of observations for each range of latitudes]*



[1] Data provided by Met Office DataPoint Service. Contains public sector information licensed under the Open Government Licence, available at: http://www.nationalarchives.gov.uk/doc/open-government-licence/version/1/open-government-licence.htm

[2] Map produced using Google Maps Engine Lite. Map © 2013 Basarsoft, GeoBasis-DE/BKG (© 2009), Google, basado en BCN IGN Espana.

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