The way in which a researcher goes about collecting their data is very much dictated by the focus of their research and their specific research questions that require answering. The data collection methods they employ may also be designed with the particular research site in mind as well as the time and resources they have available to them.

There is no such thing as a definitive way of collecting a particular piece of data: each piece of research is individual and while certain techniques (such as those suggested in this series of guides) are well used by geographers, they should also be adapted to suit the specific conditions and needs of the investigation.

Quantitative Measuring

Many geographical research projects will involve some form of numerical measurement of a phenomenon such as width, depth, velocity, temperature or mass. This is particularly true of studies into elements of physical geography, where measurements in the field at different geographical locations allow the researcher to compare one area with another.

These measurements may be taken at a number of selected single points or along a transect – a line on a map that links two points and along which a researcher takes regular recordings. A researcher may also wish to take measurements at the same point a number of times over the course of a specified time period if they want to see how a phenomenon changes over the space of a day, a week or even a year.

Many school and university departments will have a range of fieldwork equipment which a researcher can utilise for their study. This equipment is designed to make quantitative measuring easier in the field. Some common fieldwork equipment and its uses are listed below.

Anemometer: Used to measure wind speed.

pH meter: Used to measure acidity or alkalinity of a water sample.
**Callipers:** Used to measure the dimensions of small objects such as stones and pebbles.

**Clinometer:** Used to measure the angle of a slope.

**Light meter:** Used to measure the amount of light or cloud cover.

**Compass:** Used to find out a direction or bearing.

**Flow meter:** Used to measure the velocity of moving water.
**Quadrat**: Used to measure species abundance in a set space.

**Stop watch**: Used to measure periods of time.

**Sweep net**: Used to collect invertebrates from a water course or a tree canopy.

**Rain gauge**: Used to measure precipitation levels.

**Tape measure / Meter stick / Trundle wheel**: Used to measure distance, height, width or depth.
**Thermometer:** Used to measure temperature.

![Thermometer Image](Flickr CC User Toshiyuki IMAI)

**Smartphone Decibel Counter:** Used to measure noise levels.

![Smartphone Decibel Counter Image](Wikicommons)

**Ranging Pole:** Used to mark out features that occur in straight lines.

![Ranging Pole Image](RGS-IBG)

Sometimes the data itself cannot be collected directly in the field and a sample is taken which can be analysed in more detail back in a laboratory or classroom.

Handheld devices such as smartphones or tablets can be of enormous use to the researcher in the field. Quantitative measurements can be recorded directly into spreadsheet which allows the researcher the ability to manipulate and analyse the data more easily at a later date. Their use can also allow the researcher to easily download the data into a GIS package, enabling them to map their results effectively. Further guidance is available at [www.rgs.org/dataskills](http://www.rgs.org/dataskills).