



## Measuring Visual Air Quality (VAQ) - instructions

Visual Air Quality (VAQ) is a measure of visibility.

How clearly you see an object at a distance depends on the quality of the air between you and the object. If air quality is poor, ie there are a lot of particles in the air, you may not be able to see a certain object. If air quality is good, objects that are at a distance may be easily seen.

VAQ is affected by factors other than just the level of particles in the air. For example, how far you can see can also be affected by the weather conditions. If it is rainy, misty or foggy, then the distance you can see is reduced.

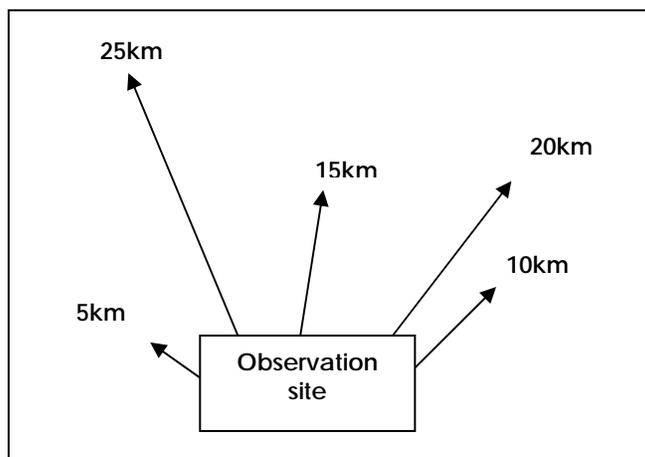
VAQ is a subjective measurement, which means that some people may see things a bit differently from others. However, it is very useful especially when combined with other measurements such as local weather, pollutant measurements and observations of fires.

### Steps to measuring VAQ

To calculate how far you can see (the VAQ) on a particular day you need to:

- 1) Choose an observation site that is reasonably high so that you have a clear, unobstructed view to the horizon. If possible, choose a second-storey balcony at your school, or some other elevated site. If there is no suitable place at your school, another idea is to ask students who live in a location that has a good observation site to undertake the activity before or on their way to school.
- 2) For consistency please record VAQ between 8.30-9.15 am daily.
- 3) Looking in any direction (preferably towards the CBD if you are in the metropolitan area) from your observation site, select five prominent objects in a straight line that are approximately 5, 10, 15, 20 and 25 km from where you are standing. The target objects should be prominent features such as hills, tall buildings, water or mobile phone towers, a grove of trees or monuments.

Example:





- 4) Using a map or street directory, measure the distance each object is away from your observation point.
- 5) You may observe the selected objects over a number of days or weeks from your observation point. This will help you to familiarise yourself with the rating scale (see table below), and observe the effects of different weather conditions.

You may find it useful to photograph your selected objects over a number of days and compare the results. These photos will help you identify and understand the various factors that influence visibility and air quality.

- 6) To estimate VAQ on the day, you need to assess which objects are clearly visible. For example, a tower 15 km away may be difficult to see clearly, ie its appearance is slightly out of focus or hazy. However, a building 10 km away may be quite clear, ie it is sharply defined and its details easy to see. The visual range is therefore 10 km.
- 7) Assign an air quality rating to the visual distance recorded in kilometres:

The scale for rating the VAQ is as follows:

Distance	Visual air quality
25+ km	Very good
20-24 km	Good
15-19 km	Fair
10-14 km	Poor
<10 km	Very poor

- 8) On the record sheet provided note down the weather conditions, ie sunny, in shadow, overcast, raining or fog/mist.
- 9) On the record sheet indicate how windy it is, ie calm, slight breeze, windy, very strong wind.

#### Helpful hints

- Make observations at approximately the same time to allow for comparison of data with other schools. This must be before 11 am.
- Target sites do not have to all be in a line (see example).
- Target site range should be from 0 to 25 km and at reasonably spaced intervals but do not have to be at 5 km intervals.