

Using a balloon to measure the wind

Hot air balloons float where the wind takes them, so the balloon's movement is essentially a measure of wind speeds. Meteorologist Cisco de Bruijn used that fact to turn balloons into a free wind gauge, with the aid of a mobile phone with GPS.

His employer KNMI (Royal Netherlands Meteorological Institute) gave him the opportunity to do an experiment where information from various mobile phones on board a hot air balloon was compared to a very accurate GPS receiver. It worked. 'Phones measurements of the absolute position give a big error, of up to five metres. But they work fine when subtracting one position from another, which is what you need to measure speed.'

The new measure of speed is only

0.5 metres per second off. De Bruijn says that is good enough for use in weather models. But its mass means the balloon takes time to adjust to the wind surrounding it. 'I investigated that by suspending an accurate wind gauge under the balloon. If that gauge measures zero, it means the balloon is travelling at the same speed as the wind. It takes about five minutes for that to happen after a change in the wind speed.'

9000 observations

Hardly any wind speed measurements are made at the altitudes hot air balloons travel at. There are about 8000 to 9000 balloon trips a year in the Netherlands, so there is a huge potential for observations. For his experiments, De Bruijn developed an app to collect and pass on the raw

data. It is not yet clear whether a more user-friendly variant of the app will be launched. ^{RK}

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