



The Payerne atmospheric survey station

Switzerland has just one atmospheric survey station which is located in Payerne and belongs to MeteoSwiss. Each day without exception, a balloon probe is released once every six hours. These probes are tracked to an altitude of 30 to 35 kilometres, when the balloon bursts. The climbing speed of the balloon is in the order of five metres per second and the survey lasts around 90 minutes. As well as the wind strength and direction, the surveys carried out at midday and midnight also measure the pressure, temperature and humidity of the atmosphere. Furthermore on Mondays, Wednesdays and Fridays, the concentration of ozone is also measured. The values measured during the ascent of the probe are documented and sent to meteorological services all around the world, as well as being archived for future climatological studies.

Some technical information

- **Measuring instruments:** the temperature is measured using a copper-constantan thermocouple. Pressure measurement is taken care of by a hypsometer (boiling point barometer). A hygistor is used to measure humidity (hygroscopic resistance) using measurements taken at a maximum altitude of 12 km. The pressure and humidity measuring equipment is queried once every ten seconds and the temperature measuring instrument three times every ten seconds. This means that the vertical distance between each of the measuring points is approximately 60 metres for pressure and humidity, and 20 metres for temperature.
- **Probe:** as well as the measuring instruments, the probe has a transmitter and a battery which supplies it with the power it needs to operate.
- **Radar:** the system used is based on secondary radar, tuned into the 403 - 406 MHz frequency band, which tracks the active target, namely the probe responding to the radar signals. The distance, azimuth and elevation of the target are also measured.

To supplement the airborne probes, a wind profiler has been in service at Payerne for several years. Every half hour, this automatic teledetection system supplies a wind profile up to an altitude of approximately 5 km. It forms part of a European network which transmits real-time data to digital meteorological forecasting centres.

The first surveys carried out in Payerne date back to 1942, but it was only in 1954 that regular operation started with two surveys a day.

The altitude data archives are available for scientific studies.

If you require any further information, please use the contact form under "Data portal".