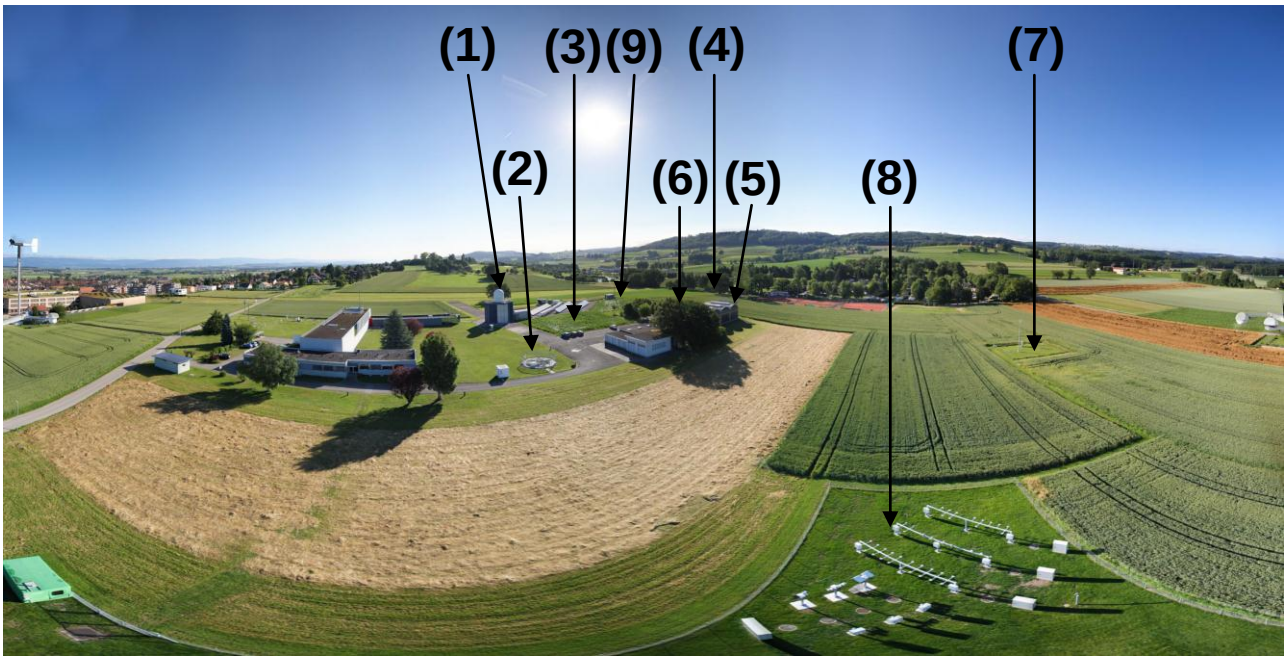
Description of the MeteoSwiss Payerne Atmospheric Observatory



Panoramic view of the MeteoSwiss Payerne station from the top of the 30m mast (looking East). Numbers refer to text below.

Payerne is the principal atmospheric observation station of Switzerland, with collocated operational and research surface and upper air measurement systems belonging to several international long-term monitoring networks and research projects. Other measurement systems are located at higher altitudes within the Alps at some distance from Payerne up to 3500 m asl (Jungfraujoch). Both in situ and surface based remote sensing techniques are used. The main objectives are the high-quality monitoring of surface parameters, the vertical atmospheric column on a long-term basis, the quality assurance of atmospheric measurement systems, as well as the validation of the numerical weather prediction models.

The measurements meet the requirements of several international networks (GSN, GRUAN, GAW, BSRN, NDSC, EMEP). Payerne is also presently involved in several COST and EUMETENET projects/programmes and has a close collaboration with several research groups.

The station is located at 46.8 N, 7.0 E, at an altitude of 491 m asl, on a hilly terrain within the Swiss Mittleland between the Jura Mountains and the Alps. The main measurement systems are the followings:

(1) Operational radiosonde system

a. 2 PTU soundings per day (12 and 00 UTC)
b. 2 tropospheric “reference” humidity sounding per month
c. 3 ozone soundings per week

(2) Low Level Wind Profiler (1290 MHz), 144 wind profiles/day, 100m-~4'000m, ~50m-200m vertical resolution

(3) Temperature and water vapour microwave "RPG", 144 profiles/day, 50m-~5'000m, 50m-200m vertical resolution

(4) Raman Lidar for operational water vapour, aerosol, and temperature profiling, 48 profiles/day, day- and night-time operation

(5) GPS (water vapour column), 24 values/day

(6) Ozone microwave, 48 profiles/day, 20'000m-65'000m

(7) Full surface meteorological station including a 10m turbulence measurement

(8) Surface radiation measurements (full Baseline Surface Radiation Network programme + UV components + surface layer measurements on a 30 m mast)

(9) Surface air pollution station

Additional information can be found in the following web-sites:

http://www.meteoswiss.admin.ch/web/en/climate/observation_systems.html

http://www.metoffice.gov.uk/science/specialist/cwinde/profiler/

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