# Wooden and plastic screen intercomparison for temperature measuremets in a Mediterranean climate

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The measurement of accurate surface air temperature provides valuable data for weather prediction models, forecast, climate monitoring and other studies. The uncertainty of the measurement is influenced by several environmental factors, i.e. global radiation, cloud cover, wind speed, precipitation, albedo. . . and instrumental exposure and radiation shield typology.

At the Meteorological Service of Catalonia (SMC), two types of wooden screen have been used historically: medium type B wooden screen, widely used in the manned network, and big type wooden screen, used in few observatories. As is well-known, wooden screens have several maintenance problems, linked to deterioration of wood and paint. One possible solution to solve this problem is the installation of plastic screens, successfully tested by Met Office in UK (Technical Report – TR19). The main advance of this screen is a longer lifespan combined with less maintenance. Nevertheless, no studies have been undertaken in warmer climates, as the Mediterranean and that is the main objective of this study.

In September 2017, a Metspect plastic screen was installed in Barcelona (at Fabra Observatory), jointly with a medium type B wooden screen, a big wooden screen, and a multi-plate type screen used in the Automatic Weather Stations (AWS) network at the SMC. The same temperature sensor was installed in all sites, with a common ultrasonic wind sensor and pyranometer.

Within one year of measurements, a characterization of the performance of the plastic screen in comparison with the remaining screens has carried out. This study analyses the main mean differences found between screens, and which is the behavior under episodes of extreme heat/cold, rain and snow.