



## **The GAW-WMO Regional Observatory of Lamezia Terme (Italy): environment and climate investigated in the Mediterranean hot-spot**

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The Lamezia Terme GAW Regional Climate Observatory of CNR – ISAC is located in the Tyrrhenian coast area of Calabria Region at the tip of Italy. The Observatory, developed in the framework of the I-AMICA PON Project, fully started the activities at the end of year 2014 and carrying-out measurements of wind profile, radiation, aerosol properties (number size distribution, absorption and scattering coefficient, mass, equivalent black carbon) and their profiles, and reactive and greenhouse gases ( $O_3$ , NO,  $NO_2$ ,  $SO_2$ , CO,  $CO_2$ ,  $CH_4$ ). The site is in a strategic position 600 m from the coastline and well capture and characterize sea breeze regimes. The region is that its long and narrow shape create a complex interaction of breezes which develop perpendicularly the two coasts (Tyrrhenian and Ionian) with the synoptic circulation, that mainly goes west.

Breezes are characterized by seasonal cycles modulated by the temperature gradient between sea and land in addition to the synoptic circulation.

The particular position and the specific orography allow to exploit the Observatory as natural laboratory in order to study and characterize the atmospheric composition and dynamical processes in the Mediterranean region. The surrounding area is characterised by anthropogenic emissions coming from transports (e.g. airport, cruises from/to Gioia Tauro, local and highway traffic), houses and agriculture. Natural emissions due to Saharan dust transports from Sahara deserts can also influence the atmospheric composition as well as the emissions coming from the two active volcanoes in the Mediterranean (Stromboli, 80 km west, and Etna 200 km south-east of the measurement site). Studying atmospheric circulation becomes particularly relevant in order to characterize variability of atmospheric composition also related to climate.

The first year of observations together with evidences of some interesting events will be presented and characterized on large, regional and local scale atmospheric circulation.