Characterization of new weather-climate scenarios in the Campania region

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In recent years it has been possible to observe a variation in the frequency of some types of meteorological phenomena having the ability to influence, almost always in a negative way, various human activities. These include prolonged periods of drought alternating with periods characterized by significant pluviometric surpluses, occurrence of short duration and great intensity rainfall events capable of inducing flash flood processes, hail storms, heat waves in summer but also in intermediate seasons, etc. One of the sectors most affected by this meteorological variability is that of agriculture because the crops do not adapt well to these thermo-pluviometric anomalies. This situation leads to significant variations in the quantity and quality of production, which can also lead to very substantial economic damage for farms. The new meteorological trends are redesigning the thermo-pluviometric climatology of the Campania region, which is, at present, extremely poorly characterized. The meteorological monitoring networks of public bodies are, in fact, generally uncoordinated and independent of each other, with little or no post-processing of the data collected: hence the importance of conducting a research activity and subsequent organic structuring of data, in order to create a database.

The main aim of the research project is to bridge the knowledge gap currently affecting the climate classification sector in the Campania region, through the definition of new thermo-pluviometric scenarios. The objective will be pursued through an in-depth analysis of recently surveyed meteorological data, compared and analyzed comparatively with the historical series available.

The final objective is to determine a new thermo-pluviometric framework for the Campania region, evaluating the changes that have occurred with respect to the outdated scenarios dating back to the Sixties and Seventies, hypothesizing and establishing correlations with the dynamics of Climate Change.

A proposed 3-year research schedule:

First year

- Search for accredited sources of meteorological data;
- Verification of completeness of the acquired time series;
- Archiving of recently detected data.

Second year

- Search for accredited sources of meteorological data;
- Verification of completeness of the acquired time series;
- Archiving of recently detected data.

Third year

- Archiving of recently detected data;
- Setting up the database;
- Data analysis and production of thematic maps of thermo-pluviometric characterization;
- Dissertation.

Proposal for a PhD position

A position for a research doctorate will be required for a candidate who can carry out research in Meteorological and Climatological matters. In particular, the doctoral project will focus on the collection and statistical analysis of data series for the climate classification of the regional territory of Campania but also on the meteorological phenomenology having the capacity to generate territorial critical situations (hydrological and hydro-geological). The work program will include the study of available literature and the analysis of acquired meteorological data series. The doctoral project is divided into two work packages that, to a large extent, respect the temporal progression of the PhD program: 1st and 2nd year will be fundamentally dedicated to the acquisition of data series and setting of the analysis

support formats statistics that will be carried out in particular during the 3rd year. The structure and the personnel belonging to the Federiciano Meteorological Observatory of the University of Naples Federico II will provide the didactic and informative support for an optimal development of the Research path.