

Ștefan cel Mare University of Suceava

Field of study: Geography

Habilitation thesis

Abstract

**The practical - applied and scientific implications of the
conducted climatic or interdisciplinary studies**

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The habilitation thesis titled *Practical - applied and scientific implications of the conducted climatic and interdisciplinary studies* is structured in five parts (named chapters), which coherently present the evolution of the scientific and methodological-didactic activity of the candidate.

Chapter I presents the *Evolution of scientific activity between February 2003 - May 2017*. This period was characterized by continuous search and challenges. The search has attempted to focus the research topic on certain directions, whereas the challenges have been related to the rapid pace in which the Romanian and international climatology has been developing.

The scientific activity has directly depended on the informational, material and time resources available and on the development context of the research activities carried out within the Department of Geography at Stefan cel Mare University of Suceava and in Romania.

As far as information resources are concerned, I can say that they have always been hardly available. Here I firstly refer to meteorological data (diversified in format and content) that are the basis of climatological studies. It is undoubtedly known that climate studies should focus on data resulting from detailed meteorological observations (often hourly or sub-hourly) and spanning longer timeframes (often decades). They generally characterize vast territories. The climatic studies conducted were based on detailed, consistent meteorological data sets that were long enough to allow for robust conclusions to be drawn following processing and critical analysis. They were also based on a vast bibliographic background made available by the USV through its library or access to international databases. Material resources comprised two categories: institutional (financial support from the Department and the University, unrestricted access to the laboratory facilities) and personal resources. Time has not always favored research activities because it was shared with both didactic and other personal activities. Research conducted in the Department of Geography in Suceava is of national and international dimension. The effervescent research atmosphere empowers researchers to develop themes that are challenging even for a number of scientific entities with more financial power. USV has made great efforts in supporting research, as there is scientific emulation in the institution transpiring from all its activities. Institutions empowered to coordinate and support research activities at the national level (UEFISCDI, CNATDCU) have continuously raised requirements particularly on the quality of scientific work.

My research activity has been focused on several coordinates from the beginning.

One of the coordinates was the *originality* of the work performed. Constructed on a bibliographic support base, the studies have addressed climatological or interdisciplinary topics for understudied or not studied geographic entities. Originality has also emerged from the fact that all the studies are based on real, consistent data, analyzed and interpreted in an original manner. This was followed by the comparison of the results with the findings of other studies.

Moreover, another characteristic of the studies is the *attention to detail* or the *high degree of detail of the analyses*. The studies conducted display clear analytical features. All published works provide sets of conclusions that synthesize the results obtained.

The studies performed aimed as much as possible to approach *useful objectives*. More specifically, in each of these works we have tried to highlight how it responds to real problems or practical needs of some communities, and I believe we have succeeded to meet this aim.

All research undertaken was partly *integrated in the didactic activity* of the department for the completion of scientific training of the future geographers and climatologists.

Finally, through the topics addressed I aimed to integrate our research activities in the *urgent requirements and trends of the recent research in the field*, thus anticipating future trends.

The research activity has resulted so far in the publication as author or co-author of five scientific papers in ISI impact-factor ranked journals, six articles in ISI indexed journals, 19 articles indexed in international databases and 17 articles in scientific journals that were not BDI indexed at the time of publication. To this are added the doctoral thesis *The Moldavian Plain. Climatic Study*, chapter II (*Climatic regime and meteorological-climatic hazards occurring in the Prut catchment area* - co-author) integrated in the study *Prut catchment. Diagnosis of the ecological status of the natural water resource*, as well as a series of unpublished papers communicated at various scientific meetings. A large extent of the presented papers consisted in scientific communications at symposia, conferences or workshops, while others were research topics in various contracts and projects.

The preferred study areas were: the city of Suceava and its surroundings, Suceava Plateau, Suceava County, Moldavian Plain, North-East Development Region of Romania, Moldova as historical region, counties of the historical region Moldova, Siret and Prut catchments, Carpathian lakes, balneary-climatic resorts in Moldova, landfills in Suceava County, the Mondeco hazardous waste incinerator, the territory between the Carpathians and the Dniester or the territory of the Republic of Moldova.

The published works can be divided into several categories: approaching climatic and climatic-applicative themes related to a series of climatic, hydrological and geomorphological risk phenomena, focused on bioclimatic and balneary-climatic themes, related to climatic teleconnections, trends in climatic evolution, analysis of topo-climate and water balance in karst areas with thermal springs, air chemistry, pollution of natural environmental factors (water, soil) at the non-compliant waste disposal sites, the development of the hydrographical network under the influence of the climate or the configuration of the current climatic conditions in the area of some lake catchments as the basis of comparison for palaeoclimatic and palaeoenvironmental reconstructions, the impact of the climate on forests and other related objectives. All the approached themes show, next to the scientific part, a practical, applicative or useful component.

Chapter II briefly presents the *Evolution of teaching activity and academic career between February 2003 and May 2017*. During this time, I worked as a Lecturer (February 2003 - September 2014) and then as an Associate Professor (October 2014 - May 2017). My areas of expertise have been: climatic and topo-climatic studies, natural risks, environmental and atmospheric chemistry, bioclimatic and health tourism (balneary-climatic), interdisciplinary studies (climatic and hydrological, climatic and geomorphological, climatic and forestry-related, climatic and agricultural) a.s.o. The research activity required my participation in several national and international scientific events, as well as the organization of scientific activities (conferences, symposia, round tables).

Chapter III refers to the *Involvement in coordinating research teams and in teams aimed to explain and facilitate research*. One of my contributions in this direction is related to the participation in the advisory committee of PhD students undergoing preparation of doctoral thesis. At the Department of Geography in Suceava I am currently involved in four such committees. Involvement in such committees was also a part of my activities conducted at the Department of Geography, 'Al. I. Cuza' University of Iasi. Discussions developed within these committees are extremely productive and useful to everyone, contributing to stimulating research and strengthening the concept of doctoral school. Another way to contribute to the development of the personality of young researchers is to supervise dissertation works, many of which focused on novel research topics and of real importance. We have encouraged students interested in attending student symposia organized in both USV or other educational institutions in the country. Finally, my involvement in coordinating / supporting research teams has resulted in the publication of numerous papers / studies (26 in number) in which PhD students are co-authors. During preparation for communications and papers, PhD students acquire and refine their working methods and methodology, becoming inspired by the experience of established researchers, whereas the latter are positively influenced by the energy, work potential and the desire of younger collaborators to prove themselves.

Chapter IV analyzes the *Involvement in the organization and management of didactic activities and of activities explaining and facilitating learning*.

My teaching assignments have also included teaching courses and practical works on the subjects Meteorology and Climatology, Topo-climatology and Microclimatology, Atmosphere and Air Quality, Environmental Pollution and Waste Management, Urban Climatology and Hydrology, Balneary climatology and Spa Tourism, Climate Potential and its use in tourism, all conducted for full-time and part-time students enrolled in bachelor studies in the specialties of Geography, Geography of Tourism, Environmental Geography or Geography-English, Geography-French and History-Geography, the last three specialties annulled with the transition to the Bologna system. I also taught courses and practical activities for students enrolled in master studies. The subjects taught were Climate Risks and Climate Risk Assessment and climatotherapeutic potential. The teaching activity also involved teaching Climatology and Hydrology courses / laboratories at the Faculty of Mechanical Engineering, Mechatronics and Management (for three years), teaching courses / laboratories in the field of Air and Water Monitoring - specialty Meteorology - Hydrology, Faculty of Geography and Geology, 'Al. I. Cuza' University of Iasi and teaching seminars in Climate Risks and Atmospheric Pollution and Climate Change within the Master's degree programme at the Faculty of Geography and Geology, 'Al. I. Cuza' University of Iasi (2008-2010 period). Next to the didactic activity conducted in the classrooms and laboratories, all the subjects taught have been paralleled by practical activities in the field. Student assessment has been extensively and carefully prepared both during the year and in exam sessions based on clearly formulated requirements, well known by all the parts involved. In my teaching years, I have been involved in the organization of many student fieldwork training activities. I also supervised around 15 methodological - scientific theses performed by geography teachers applying for the teacher certification level 1.

The didactic activity was based on a series of courses specially designed for distance education and electronically accessible for students. These are the courses on Meteorology and Climatology, Climatology and Urban Hydrology (co-author), Balneary climatology and Spa tourism (co-author). Moreover, for the scientific training of all the students the libraries provide access to the

studies Introduction to Practical Climatology (co-author), Terrestrial Atmosphere - Elements of favorability and unfavourability for human organism and tourism activities and Terrestrial Atmosphere. The Climatology and Hydrology Laboratory is well-equipped (with instruments, machines, computers, video projectors, software, maps and other tools), thus satisfying the needs and requirements of modern education.

Chapter V refers to the *Perspectives of the development of scientific activity (of the candidate) over the following years*. It starts from a series of concrete realizations with a high probability of being finalized in the proposed framework, then presents a series of coordinates of the evolution of scientific activity from the perspective of a possible doctoral advisor. Everything is realistically designed, by considering the developing reality of the geography school in Suceava, its potential stemming from the human resources, the experience and the accumulated material resources.

I thank my family, those who supported me and all my collaborators!

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