

## **COST733 - Harmonisation and Applications of Weather Types Classifications for European Regions**

O. E. Tveito (1), R. Huth (2), C. Beck (3), M. Demuzere (4), P. Esteban (5), M. Pasqui (6), A. Philipp (2), P. Post (7), and C. Prudhomme (8)

(1) Norwegian Meteorological Institute, Climatology Division, Oslo, Norway (ole.einar.tveito@met.no, +47 22963000), (2) Institute of Atmospheric Physics, Prague, Czech Republic, (3) Institute of Geography University of Augsburg, Augsburg, Germany, (4) Catholic University Leuven - GEO Institute, Earth and Environmental Sciences, Physical Geography, Leuven, Belgium, (5) Snow and Mountain Research Center of Andorra (CENMA-IEA), Andorra, (6) National Research Council - Institute of Biometeorology, CNR - IBIMET, Rome, Italy, (7) University of Tartu, Institute of Physics, Tartu, Estonia, (8) Centre for Ecology and Hydrology, Wallingford, United Kingdom

Classification of atmospheric circulation has a long and proud history. During the last couple of decades research in relationships between large scale atmospheric circulation and different climatic and environmental variables has multiplied, and with it the need for a simple description of atmospheric conditions. This has led to renewed interest for weather and circulation type classifications. With the development of computer assisted techniques in classifications, numerous different classification approaches have been developed for use in meteorology and climatology. The high number of classifications and the lack of a harmonised, universal reference for such classifications was the motivation for initiating COST Action 733 entitled “Harmonisation and Applications of Weather Types Classifications for European Regions”. The objective was to develop a classification technique scalable to any European region and to different spatial and temporal scales, and resulting in circulation classes relevant for a wide range of applications. A necessity to reach this goal was to develop a general numerical approach for assessing and comparing classifications of atmospheric circulation and typical weather situations in European regions. In addition, the action aimed to increase the knowledge of the relationships between atmospheric circulation and responding weather, climate and environmental variables. This was achieved by gaining an overview of existing weather and circulation classification methods applied in Europe.

During five years the Action succeeded to produce an extensive, consistent catalogue of atmospheric circulation type classifications (cost733cat) based on different methodological concepts, while developed on a unified dataset. The resulting catalogue and associated classification types are produced through an open source (GPL) software developed within the Action (cost733class). The software allows one to generate classifications from a wide number of algorithms and includes many parameter options, hence providing a large degree of freedom to generate classifications tailored to any location or potential application. The Action has focused on defining a number of criteria and procedures to systematically evaluate circulation type classifications, and several of these evaluation indicators are included in the software. Within the Action, the classifications of cost733cat were tested on a wide variety of applications in meteorology, climatology, hydrology, air quality warning and monitoring, forest fires etc.

The Action has provided a unique opportunity to systematically evaluate an extensive number of classifications within a coordinated inter-disciplinary environment. The feedback from this evaluation procedure has increased the knowledge on a range of classification approaches, extremely useful for developing any new weather type classification method for European Regions.

The perhaps most important outcome of the Action was the creation of an arena for scientists focusing on circulation type classifications and their applications. Through this cross-disciplinary activity, the COST Action 733 has grouped experts from various disciplines together into a fruitful scientific network.

