Relation of the atmospheric circulation to cloudiness over territory of Poland

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Atmospheric circulation plays the dominant role in the formation of cloudiness in the middle latitudes i.e. also over Central Europe and Poland. Each circulation type produces specific atmospheric features which create particular types of the clouds as well as the total cloudiness values. The study concerns the influence of the atmospheric circulations upon the total cloudiness occurrence. All analyses are based on daily mean total cloudiness values available for 1961-1990. They are performed for 54 synoptic stations located across the entire territory of Poland. Simultaneously, a well - established circulation calendar - “Grosswetterlagen” was applied. The crucial part of the study is devoted to the mutual analyses between each circulation type and daily cloudiness values. Most types produces different total cloudiness values. They are especially well expressed looking at both cyclonic and anticyclonic situations. However, much smaller differentiation can be observed during cyclonic types. On the other hand, anticyclonic situations are usually responsible for rather large spatial differences mainly in the Southern, mountainous areas. All mentioned relations can be seen in the year as well as in particular seasons. The received results were basis for creation of the maps and distinguishing of the particular cloudiness regions. They have been constructed using tree clustering methods and k – means clustering analysis.