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Regional scale aspects of the diurnal precipitation cycle over Austria

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Diurnal precipitation patterns as function of season and region over Austria were analysed using a clustering technique. Hourly precipitation data are used from the automatic station networks built up in the last 20 years over Austria. A total of 18 stations were used. Mean hourly precipitation was calculated for each month over six years. To reduce the effect of extreme precipitation events, precipitation values above the 98^{th} percentile were skipped. Different regions with specific diurnal cycles were identified using cluster analysis based on the correlation coefficient between different weather stations. The characteristic behavior of the clusters is represented by their respective cluster centres. The diurnal cycles of precipitation of the centres exhibit systematic patterns and seasonal cycles, reflecting intensity and timing of convective activity over these regions. In the light of topographical features, synoptic patterns and local affects, these diurnal cycles yield very interesting features including causes and effects of different meteorological phenomena specially in the Alps and the surroundings. The Vienna region for example tends to make a cluster of its own perhaps due to the urban effect with a maxima late into the evening. Some unexpected results are also observed in diurnal cycles of some regions such as a precipitation minimum at day time and a maximum at night time or early morning.

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