



Changes in the duration of European wet and dry spells during the last 60 years

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Rain gauge data over Europe for the period from 1950 to 2009 were used to analyse changes in the duration of wet and dry spells. The duration of wet spells exhibits a statistically significant growth over Northern Europe. It is especially pronounced in winter when the mean duration of wet periods increased by 15-20% in Northern Europe and over Central European Russia. In summer wet spells become shorter over Scandinavia and Northern Russia. Dry spells decrease over Scandinavia and Southern Europe in both winter and summer. For the discrimination of the role of changing number of wet days and regrouping of wet and dry days we suggest the fractional truncated geometric distribution for quantifying the contribution of wet and dry periods with a given duration to the total number of wet and dry days. The changing numbers of wet days cannot explain the long-term variability in the duration of wet and dry periods, which implies that the observed changes are mainly due to the regrouping of wet and dry days. Over The Netherlands and Eastern Europe both the wet and dry spells extend in length during both the cold and warm season. A simultaneous shortening of wet and dry spells is found in Southern Scandinavia in summer. Over France and Central Southern Europe during both winter and summer and over the Scandinavian Atlantic coast in summer we identified opposite tendencies in the duration of wet and dry spells.