

## **Climatic events in West Europe from written sources during 1000-1300 AD**

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Climatic events in West Europe in Middle Ages have an effect on agricultural production and social development. Evidence from written sources is one of important methods for studying on it. Using DARMC Scholarly Data Series from Center for Geographic Analysis, Harvard University, this study analyzed the frequency of climatic events, numbers of locations with climatic events records in Western Europe during 1000-1300 AD and focused on several serious climatic events. It draws conclusions: i) Several periods with more climatic events were identified, which were 1150s-1180s, 1210s-1230s, 1250s-1290s with average times of climatic events of 46, 53, 63, respectively; ii) Three periods with large numbers of locations with climatic events records were identified, which were 1070s, 1120s-1170s, 1210-1290s with average numbers of locations with climatic events records of 56, 52, 62, respectively; iii) Several typical serious climatic events including drought in 1137, flood in 1174, harsh winter in 1076-1077 were identified and analyzed. 12 Locations with drought records in 1137 were distributed in the North France, Belgium and Netherland. 15 locations with flood records in 1174 were distributed in North France, Beigium, Middle German and Italy. 24 locations with harsh winter in 1076-1077 were distributed in East France, German, Belgium, and Italy.