Large eruptions of silicic magmas happen episodically in the Earth history and can significantly modify composition and structure of the continental crust. Specifically, emissions of voluminous volcanic gases to the Earth atmosphere can result in catastrophic climate changes and mass extinction events. In this context, it is important to constrain the duration of the magmatic episode, since the shorter it is, the larger its potential impact on the environment. In Europe, the most important event of silicic volcanic activity occurred at the Carboniferous/Permian boundary (the presently established timespan is from 301 to 289 Ma). However, the obtained ages are not precise enough and taking into account possible analytical errors, the period of the volcanic activity could be longer or shorter by several million years. Also, the imprecise ages are not only due to analytical uncertainity, but also are related to the complex processes of silicic magma formation and diversification. Current research shows that several zircon populations with distinct ages can occur in a single sample of volcanic rock. The populations may represent both earlier plutonic and last volcanic environments. Therefore, dating of such a rock may give the wrong age being an average of different zircon ages. It is important to develop new approach for dating such rocks and our proposal is to follow several steps during zircon analyzes (1) detailed characteristic of zircons in thin sections showing the structural position of zircon in the rock, (2) detailed chemical analyses, (3) identification of sub-groups of zircon with different characteristic and potentially different ages and (4) dating of each sub-group be means of the most precise dating technique. The final result will include precise determination of the timespan of the volcanic activity and reconstruction of processes causing large eruptions and if the processes evolved in time.