



Drought characteristics in Catalonia: a spatio-temporal analysis

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Droughts have several consequences for citizens, agriculture, hydrological resources, forest, and most economic sectors. The areas affected by droughts are typically larger than those for other natural hazards. Their duration is also a particularity of this hazard: a persistent meteorological drought (rain deficit) can turn into an agricultural drought and into a hydrological drought, depending on its duration.

Drought frequency observed over the Mediterranean region has increased in recent decades. Furthermore, climate models place the Mediterranean region as a hotspot of climate change with dryer conditions expected.

Taking into account the importance of this natural hazard in our territory, the Meteorological Service of Catalonia (SMC) has created a first version of a high-resolution drought monitoring system. The first two indexes calculated are the Standard Precipitation Index (SPI) for different accumulation periods (3, 6, 9, 12 and 24 months) and the Drought Code from the Canadian Forest Fire Index. Both indexes are calculated at a high-resolution grid (1 km cell size), and are daily updated. In order to observe the temporal dynamics of the percentage of territory affected by different drought severity classes (and for wet conditions), graphs for the time period 1971-present (monthly updated) are also generated. These graphs are calculated for the entire territory, for each hydrographic basin, and at a municipal level. These indexes (and others that will be incorporated in the near future) are expected to provide useful information to manage future hydrological and agricultural impacts, forestry decays and wildfire forest prevention campaigns. At present, this new survey is already used by the Catalan Water Agency (ACA) to activate drought alerts.