



## **Nitrogen and sulphur deposition trends over the period 1981-2017**

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Precipitation is one of the indispensable life components. It has impact on vegetation, wildlife and humans. All kinds of contamination can affect ecosystems through wet and dry deposition. Beside emission, geographical location, climate and land cover play a huge role in the overall concentration and deposition levels of pollutants. Excessive pollution leads to acidification and eutrophication, deterioration of the ecosystem health and diversity, and influences regional and global climate.

To meet the needs for global air and precipitation monitoring based on WMO recommendations, Meteorological and Hydrological Service of Croatia (DHMZ) established a precipitation monitoring network, in the late 1970's, which encompassed nearly 30 sites. Number of sites varied from 20-26 until 2010 and finally, after optimisation of the network, settled at fourteen sites currently representing long-term continuous deposition monitoring network. Two of these sites (Puntijarka and Zavižan) are included in EMEP monitoring and evaluation programme of LRTAP Convention.

In this work we analyse spatial and temporal distribution and trend changes in precipitation chemistry and deposition from 14 sampling sites, during the period 1981-2017. The daily bulk precipitation samples were collected according to WMO and EMEP precipitation measurement protocol. Annual and seasonal distributions of volume-weighted concentrations of main ions (sulphate, nitrate, chloride, ammonium, calcium, magnesium, sodium and potassium) and acidity (pH) are presented and compared with EMEP model wet and dry deposition calculations over the period 1981-2017. Model calculations confirmed downward long-term deposition trend over the whole territory of Croatia but showed underestimation compared to observations. In addition, years with meteorological conditions considerably different from average climate conditions (excess precipitation vs. lack of precipitation) were examined in order to address possible influences of climate change.