



## **Present and past air pollution at Linfen city recorded by magnetic properties**

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Linfen city is a pollution hotspot due to vast coal mining and production activities associated with heavy metal (HM) contamination by combustion. Within last year's governmental action led to strong improvement of atmospheric conditions by the shutdown of numerous uncontrolled smaller factories. Our study is focusing on the possibility of using magnetic proxies for discriminating past and present pollution in this changing environment. Soil accumulates pollutants over the period of severe industrial atmospheric emissions during the last three decades, while dust on leaves and passive samplers record only atmospheric particulates of recent pollution. Strong agricultural activities and a relatively high natural magnetic background at Linfen make the assessment of soil difficult. However, grain-size sensitive magnetic results allow separating anthropogenic and natural contributions. Spatial maps of magnetic susceptibility (MS) identify differences of the past and present environmental conditions. MS values are well correlated with HM contents for leaf samples and partly also for topsoil samples. The abandoned industrial area is outlined as a pollution hotspot in the soil MS map while it is not showing an anomaly in the MS map of leaf samples. MS results from leaves and passive samplers yield similar results, and both indicate emissions from present major industrial plants, even reflecting seasonal variations. Our results demonstrate the suitability of applying magnetic site assessment for this complex case.