

Climate Change Vulnerability Assessment in the Regional Context

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Abstract

Adapting sectors to new conditions under climate change requires an understanding of regional vulnerabilities. Vulnerability assessments have become a key tool within the climate change field. However, there is a disagreement on how to make the concept operational in studies from a scientific perspective. On the basis of several spatially explicit studies for German regions I have analysed the applicability of the vulnerability concept regarding climate change in practice. This has been achieved by a multi-sectoral study for municipalities in North Rhine-Westphalia, which quantifies the exposure, sensitivity and adaptive capacity and proposes a formal concept for a vulnerability assessment. This implies that for each considered impact a clear sensitive entity is defined and related to a direction of change for a specific climatic stimulus. As for many relevant sectors, suitable indicators to express the vulnerability components are lacking, new quantification methods are developed and applied in this thesis, for example for the forestry and health sector. In the next step I analyse the potential for a reduction in complexity of such studies. For German states for example, existing forest fire indicators are therefore systematically assessed regarding their predictive performance, which span over different levels of complexity. Results from this can ease the practical application.