

## **Modelling and mapping climate change adaptability in the historic tourism region of the Salzkammergut in Austria**

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**Abstract.** Climate change adaptability of a region due to climate change (CC) is of growing concern due to its irreversible character and the multitude of factors supporting or hampering the capability to adapt. Research on climate change adaptation, in its complex character and its global (in terms of both societal and environmental implications), involves several schools according to [Miller et al. 2010]: (1) the ‘vulnerability’ community with its two to three main pillars (exposure, adaptive capacity, sensitivity) following the actor-oriented IPCC approach [IPCC 2007], investigating the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change; and (2) the ‘resilience’ community emerging from the (eco-)systems approach with its dual function [Folke 2006] of absorbing disturbance and self-renewal/-organisation. The concept of ‘transformability’ seems to be the appropriate overarching one to accommodate either notion. Here we treat climate change (CC) adaptability/transformability as a latent phenomenon to be operationalized by decomposition [Weinberg 1975]. After this we re-compose a meta-indicator based on a scale-specific spatial set of regions characterised by uniform response to the phenomenon under concern. In [Lang et al. 2014] we showed how gridded fine-scale data being integrated and regionalised can support ambitious policy interventions in the so-called geon approach. Spatializing a multi-dimensional indicator set using scale-specific regionalisation shall aim for a policy-driven ‘unitisation’ of the intervention space.

We focus our study on a tourism region called Salzkammergut, situated in inner Austria and historically grown. Nowadays intersecting three federal states without an explicit administrative body, this region can be considered ‘latent’ itself. The region, a historic tourism area since the Austrian Empire has received its recognition since the early 19th century. Then being confined to an area around the actual salt production site, some 800 km<sup>2</sup> in size [Geuter 1913], it is now self-defined [Kurz 2006] as a magnet for tourism still steadily growing by attendance of municipalities on its northern fringe (2008: 54 municipalities, 2013: 59). The region is exemplarily for comparable regions in Austria or the Alps in terms of national/regional and transnational (UNFCCC) climate change adaptation strategies towards local/regional transfer and adjustment. Adaption remains an ambitious, cross-cutting issue with a range of societal areas and policy domains involved and to be integrated. The set of indicators to be chosen depends on the focus of the adaptation strategy. Here we focus on tourism, because it is of paramount importance for the well-being of the region from an economic point of view, but also from the perspective of sustainability and conservation of the historic heritage. In order to model the adaptive behaviour towards tourism, we work with the following twelve indicators: (1) bathing lakes / (2) skiing resorts, (4) connection to public transport, (10) bicycle ways, (5) average number of summer days / (6) heat days / (7) freezing days / (11) rain days, (8) temperature raise, (3) elevation a.s.l. / (9) slope, (12) cultural heritage. Using standardisation, we regionalise the set of indicators achieving a set of units that represent areas of uniform adaption behaviour, scaled to the policy scale and revealing in a spatial explicit manner the aggregated adaptability in terms of their potential to sustain tourism. The approach can be applied also to other transformative, yet strongly CC-affected mountain areas with a similar setting regarding their climate change adaptation potential.

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