

# Scaling Down: Mapping the “Austrian” Climate Between Empire and Republic

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## *Abstract*

This paper begins by questioning the traditional model of meteorology’s history as a story of inevitable globalization. According to the familiar narrative, networks of observing stations arose due to overseas imperialism and the telegraph, driving scientists to invent new analytical techniques to explain weather on a global scale. Meteorology in the Austro-Hungarian empire up to the First World War would seem to fit this model well. Vienna’s renowned Central Institute for Meteorology was the central node of a vast imperial network and the Viennese became pioneers of global or “synoptic” mapping for the purposes of forecasting and theoretical analysis. But the globalization narrative is far too simple. It fails in particular in the case of meteorology in the First Austrian Republic, the rump state left over after the collapse of the Habsburg Empire in 1918.

If globalization were really the driving force in the history of modern weather science, then meteorology in an amputated Austria should have floundered. Intriguingly, it flourished. The claim of this paper is that Austrian meteorologists succeeded because they learned to shift strategically between global and local perspectives. Under the direction of Felix Exner in the 1920s, Vienna’s Central Institute for Meteorology and Geophysics continued to develop new synoptic methods and large-scale statistical surveys. Yet Exner and his successor Wilhelm Schmidt also fostered research on the peculiarities of the Austrian climate and geomorphology. They developed innovative, local methods of research, such as the use of mobile observing stations to study the bioclimate of the modern metropolis in relation to its surroundings. In the laboratory, they modeled the interactions of wind, water, and earth, then compared these measurements to observations along the Danube and in the Alps. (See figure below.)

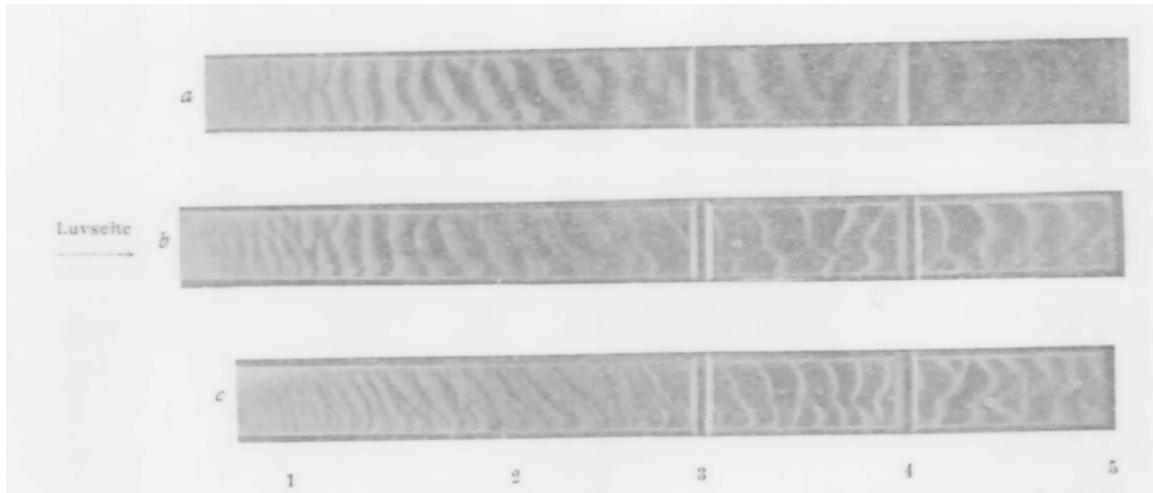


Figure 1: Photograph of artificial dunes created by Felix Exner. The source of wind is on the left.

Note that the wavelength grows from left to right. As Exner showed, this effect could be approximated by choosing a different solution to the continuity equation of classical hydrodynamics. In this solution, Exner drew attention to the boundaries between the layers of air. At these surfaces, no truly eddyless motion was possible, since the concavities of one layer were larger than the convexities of the next. Exner argued on this basis against the Norwegian Vilhelm Bjerknes' seminal theory that cyclones were waves at the surface between two air "fronts." Exner insisted that fronts could not be considered stable at the surfaces where they met. Image source: Exner, "Zur Physik der Dünen," *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften zu Wien Ila* 129 (1920): 929-952, on 935.

Above all, the Austrians cultivated the relatively new field of "mountain meteorology." This research was calculated to boost Austria's failing economy. Austrian meteorologists explicitly promoted new mountaintop medical spas and used their data to feed the new tourism economy. More broadly, the project of describing the Austrian climate in the interwar period helped solidify a series of dichotomies that became central to the politics of this region: urban versus rural, central versus provincial, local versus international.

This paper is the beginning of a larger project that will treat this episode in the history of meteorology as a tool for exploring the role of science in the construction of a post-imperial national identity. Much recent research in science studies has been devoted to overseas empires, comparatively little to "traditional" or contiguous empires like those of the Habsburgs, Romanovs, or Ottomans. Studies of the collapse of contiguous empires seem highly relevant today, as we witness the aftermath of the Soviet Union's collapse and the continuing conflicts in the Balkans. As Eric Hobsbawm and others have recently pointed out, the fall of a contiguous empire effects the metropole far more fundamentally than does the fall of an overseas empire. Rump states like the first Austrian Republic face an "identity crisis."

If, as these post-imperial studies suggest, imperial institutions are a key factor in determining the course of nation-building after the fall of a traditional empire, then the role of scientific institutions demands attention. In Austria's case, the Central Institute for Meteorology remained responsible after 1918 for describing, quite literally, the national

“climate.” Since the rise of the “Heimatschutz” movement in Austria at the end of the nineteenth-century, Austrians had imagined their natural and man-made landscape as the embodiment of a regional identity. I would suggest that meteorologists in the First Republic drew on this symbolic potential to make their research vital to the fledgling state.

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