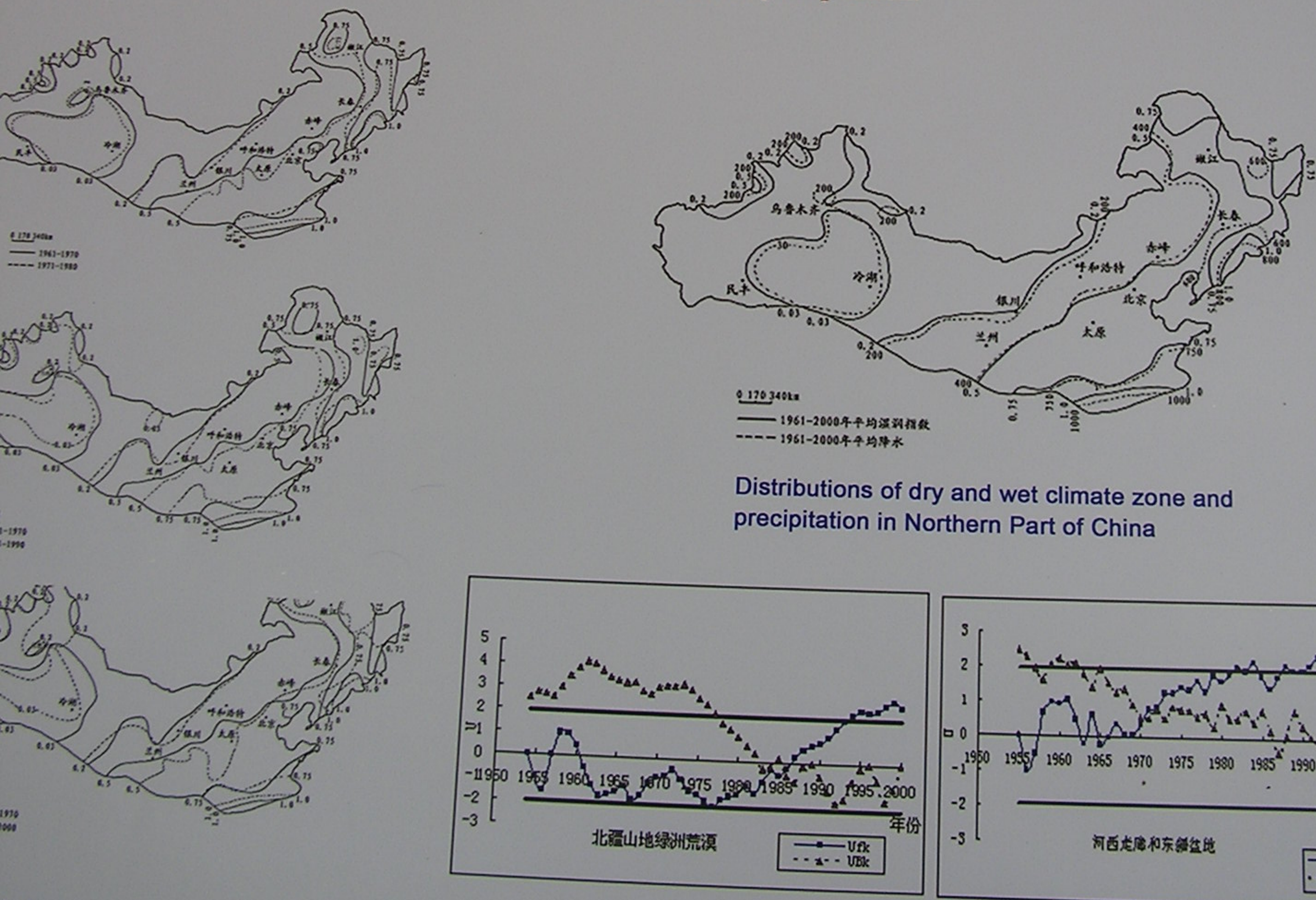


Changes of Humid Index and Borderline of Wet and Dry Climate Zone in Northern Part of China over the Past 40 Years

Abstract: In this paper mean locations of borderline for wet and dry climate zone in Northern Part of China over the past 40 years from 1961-2000 and their decadal changes were studied. Over 40 year in Northern Part of China, boundary line of semiarid zone and subhumid zone where W is 0.5 was gradually moved toward eastern direction in the eastern region to $100^{\circ}E$, especially in the 1990s it moved toward the east and south compared in the 1960s, which resulted in enlarged semiarid area and shrunken subhumid area and the climate tended to become dried; in the western part to $100^{\circ}E$ the extremely dry region was dwindled in area and the climate tended to become wetted evidently. By combining the temperature with W we can call the eastern part to $100^{\circ}E$ where the North China Plain and the Loess Plateau are located at a sustaining dry and warm type; the North-West parts of western parts to $100^{\circ}E$ can be called transition zone from arid-warm type into humid and warm one, of them the Great Loop and East Basin started to change in the early 1970s, eastern mountain, oasis, and desert region started to change around the middle of 1980s. The deterring factor for changes of borderline for the wet and arid climate zone is the variation rate of precipitation vs. potential evaporation. Over the past 40 years both precipitation and potential evaporation tended to decrease in the eastern region to $100^{\circ}E$. but the decreased rate for precipitation is higher than that for potential evaporation. We think that the cause of the western region to $100^{\circ}E$ becoming humid was that the potential evaporation has been tending to get lower with the increasing of precipitation, moreover the absolute value for decreased rate of potential evaporation is higher than that of increased rate of precipitation.



Distributions of dry and wet climate zone and precipitation in Northern Part of China

Changes of dry and wet climatic zone

Statistical Mann-Kendall curves of humid index