



Map 6. Manchuria: Rainfall

Beyond the circle of mountains encasing the central valley are regions on the periphery of Manchuria. In the west the deserts of Inner Mongolia extend from the Grand Khingan Mountains to the Outer Mongolian border, and the Barga Plateau stretches from the northern Grand Khingans to Mongolia and the Argun river border between Manchuria and Siberia. North-east and east of the Eastern Highlands are marshy lowlands along the Ussuri River and at the junction of the Ussuri, Amur, and Sungari rivers.



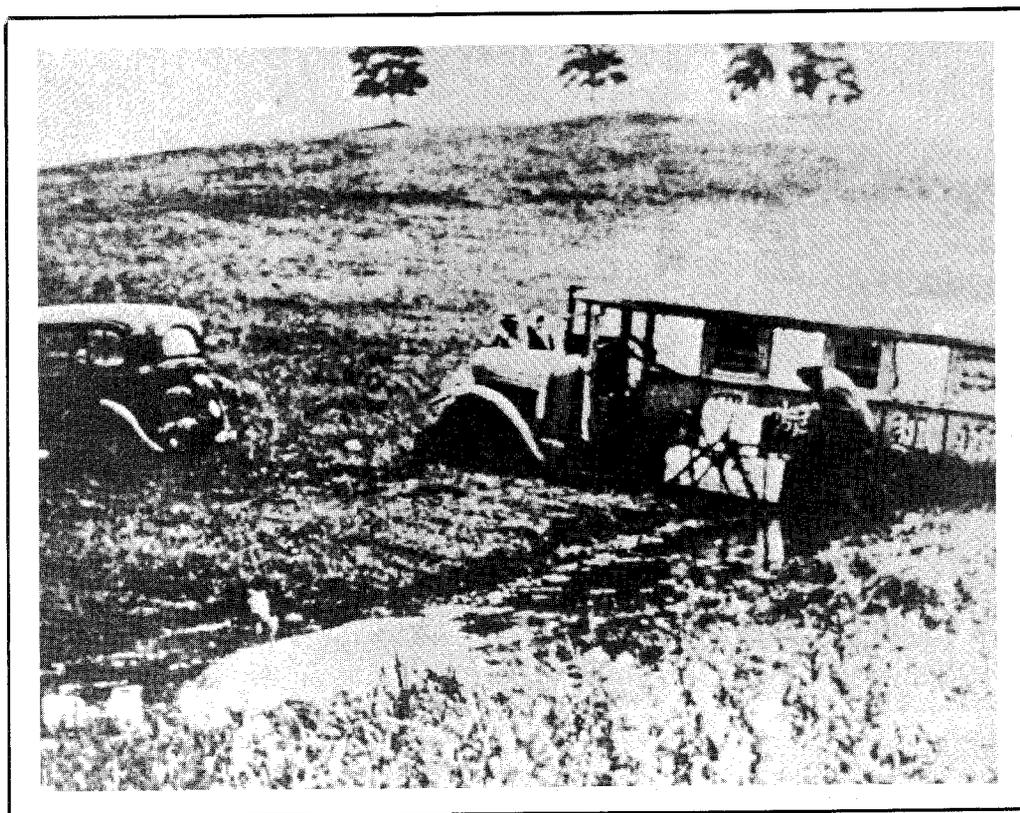
The Tunghua Mountains along the Korean border

The arid deserts of Inner Mongolia (the Dalai Plateau, an eastern extension of the Gobi Desert) extend west from the Grand Khingan Mountains into Mongolia. The distance from the mountains to the Mongolian border varies from 200 kilometers in the north to 400 kilometers in the south (the Linhsi area). This region of high plateau (1,000 to 1,200 meters) contains



Sand dunes and brush of the southern Barga Plateau

numerous sand dunes, some small hills of 100 to 150 meters, dry stream beds, and occasional saline lakes. Water is in scarce supply. Farther to the north, the Barga Plateau stretches west of the Grand Khingans from the Yakoshih area to the Argun River and the Soviet Outer Mongolian border. Sand dunes, numerous shallow depressions, and wide rock mesas make up the plateau of 600 to 800 meters, with isolated hills rising an additional 200 meters. The Hailar River meanders from east to west across the plateau, and in the west are two large saline lakes, the Dali Nuur and the Buyr Nuur. Numerous small tracks, but no hard-surfaced roads, traversed the Dalai Plateau in 1945. Running from Manchouli in northwest Manchuria to the Grand Khingan mountain passes at Yakoshih, the historic single-track Chinese Eastern Railroad bisected the Barga Plateau. A third class road paralleled the railroad, and other similar roads radiated from north and south of Hailar.



Marshy valley near Hailar on Barga and Dalai plateaus

In northeastern Manchuria a vast, flat, marshy lowland averaging thirty to 100 meters in elevation covers the region where the Amur, Ussuri, and Sungari rivers converge. The Sungari River cuts through the region from southwest to northeast. The flat, undulating region contains the Sungari River valley proper (thirty-five kilometers wide) and occasional hills. The lowland extends across the Amur River into Siberia. The entire region is swampy and usually flooded during the months of July and August. At the time of the campaign, overland routes consisted of third and fourth rate roads and trails, the most important of which extended from the Amur River at Lopei and Tungchiang along both banks of the Sungari to the city of Chiamussu.

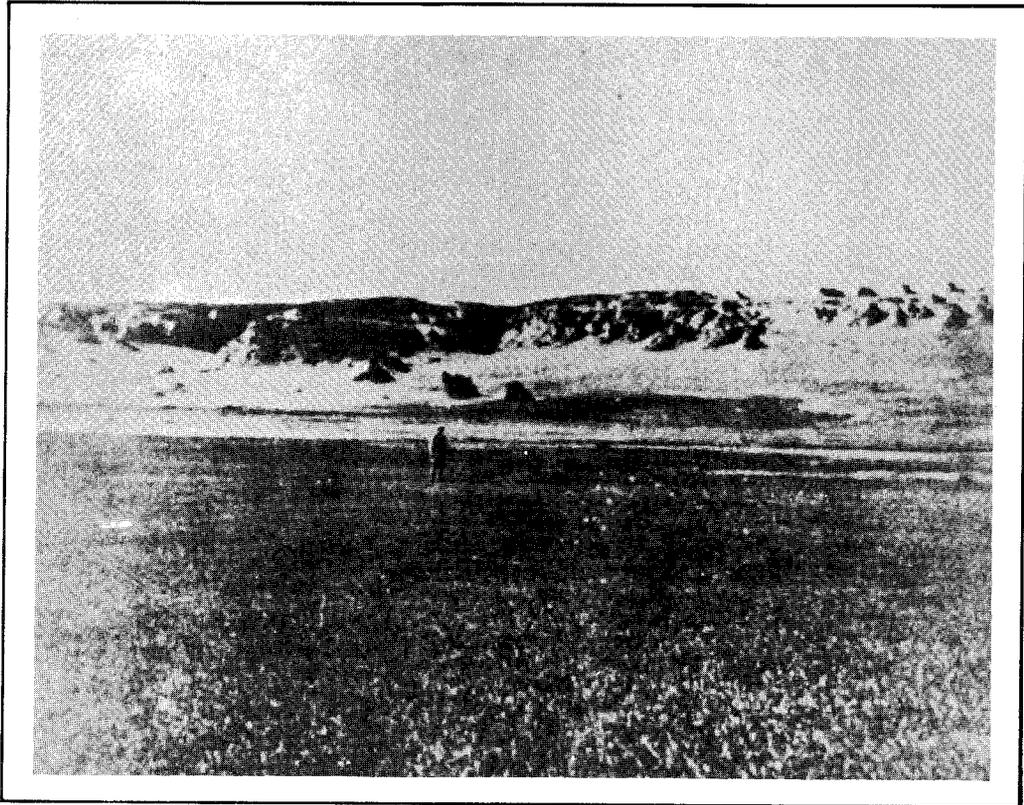
Climatic differences parallel geographic differences: the more temperate coastal area clashes with the extreme temperature and rainfall ranges of the interior. In the interior, winter brings extremely low temperatures. Temperatures decrease to the west of the Grand Khingan Mountains. Also, the interior generally lacks rainfall in winter. Summer is the season of heavy rains in most of Manchuria. The monsoon drift of moist warm maritime



Dolonnor region

air from the southeast crosses central Manchuria, bringing with it widespread low overcasts and heavy rains. Most of the year's precipitation occurs during July and August. Rainfall is heaviest in the east, while the summer months also bring rains as far west as the Grand Khingan Mountains and the Barga Plateau. The highest temperatures are in July and August with the severest temperatures recorded in the desert regions of the west.

Spring and fall are transitional periods with limited rainfall and moderate temperatures. Autumn (September to November) is the best season for military operations. Heavy rains stop, temperatures moderate, and high winds and dust storms subside.



Grassy plains and bluffs on the Barga and Dalai plateaus near Hailar

Militarily, the key to Manchuria is the central valley region. With its high population densities, its agricultural and industrial value, and its strategic position, control of the valley means control of Manchuria as a whole. Thus, defense of the central valley is a critical issue for any occupying power. In order to control any central valley, an occupying force must deny enemy access to the area by establishing adequate defenses in mountainous regions surrounding the central valley and by controlling potential avenues of approach.

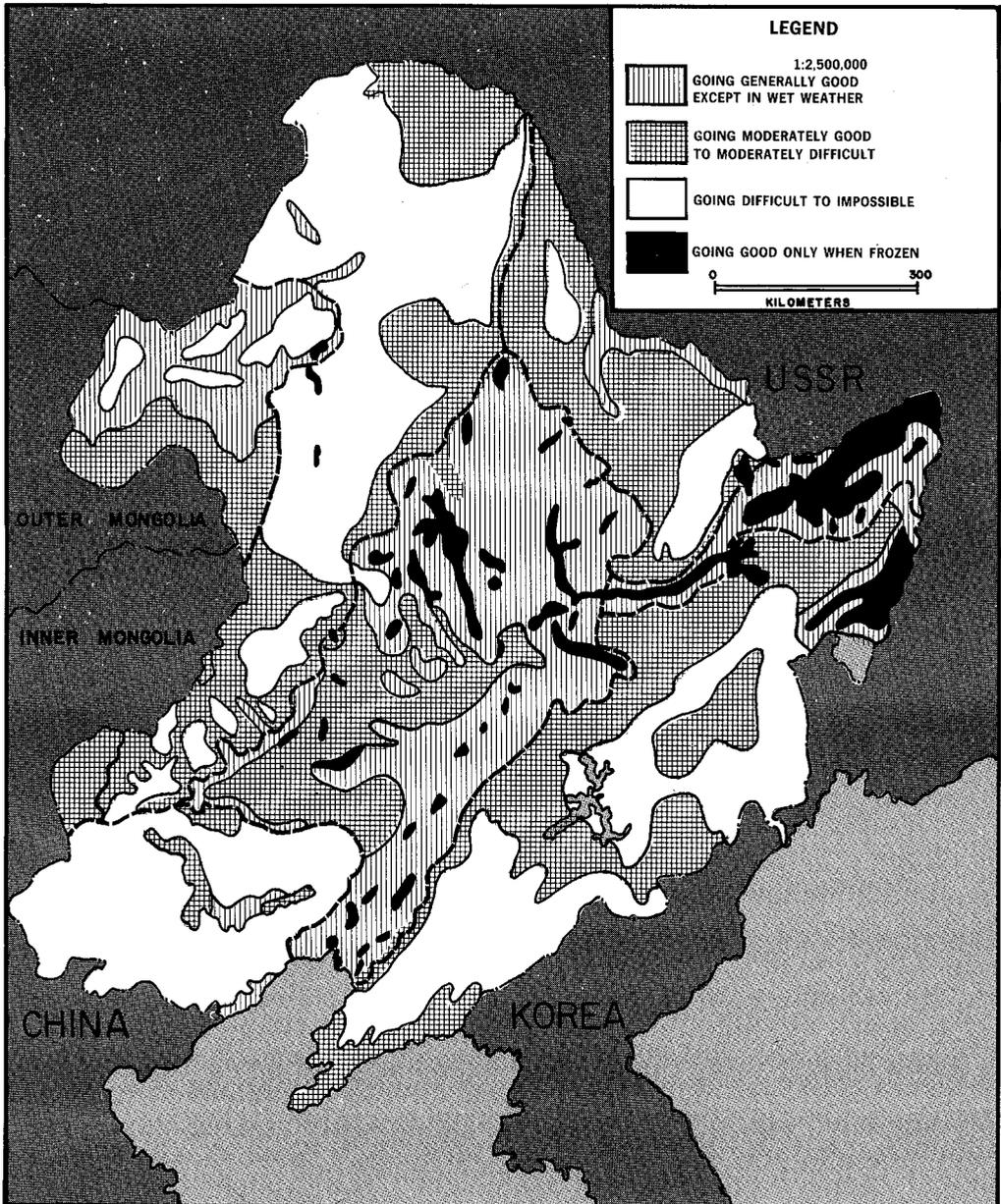
Good avenues of approach into Manchuria were at a premium in 1945 (see map 7). At first glance, a map of Manchuria in 1945 might seem to indicate that rail lines traversed the best avenues, but even these avenues were often restrictive. For example, the Chinese Eastern Railroad, running



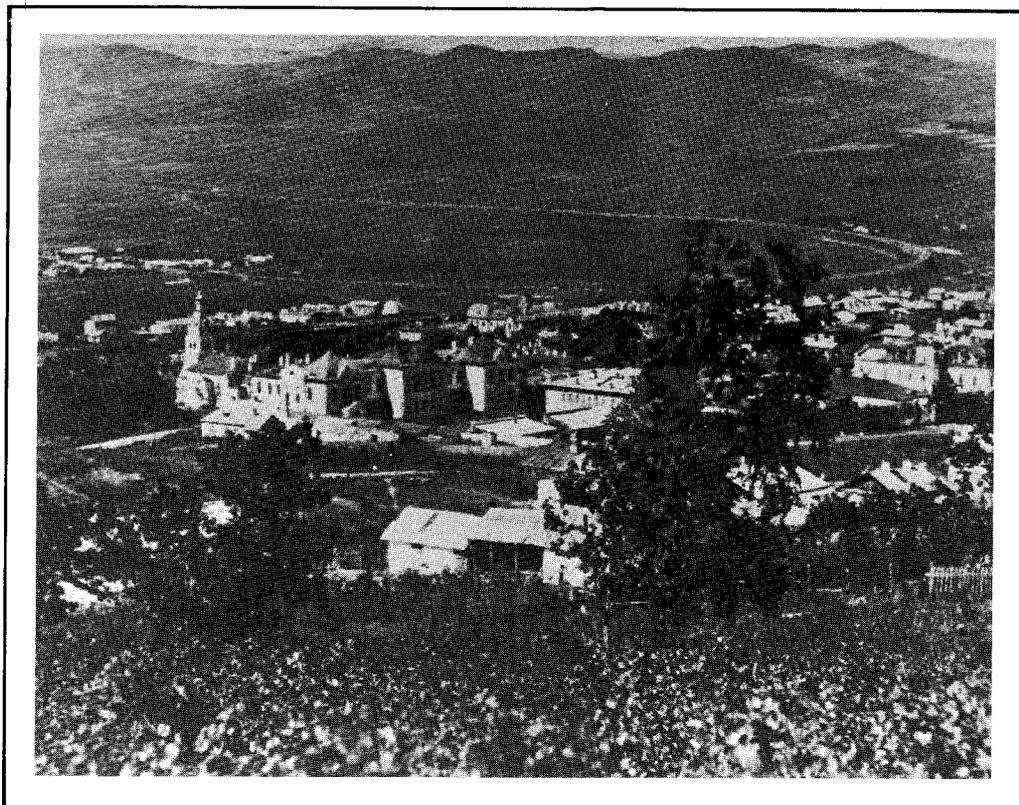
A cultivated river plain near Chiamussu

from Manchouli across the Barga Plateau and hence across the Grand Khingans from Yakoshih to Pokotu, did offer limited space for a military advance, but roads paralleling the rail lines were poor and prone to deterioration in bad weather. The branch rail line from the Halung-Arshaan region near the Mongolian border to Solun, Wangyemaio, and Taonan suffered from the same restrictions. The Grand Khingans could be crossed farther south through a number of narrow passes, but a force crossing these passes must first cross hundreds of kilometers of trackless desert waste. The actual height and slopes of the Grand Khingans do not prohibit military operations by mechanized forces. The major limiting factors are absence of good roads, lack of water, and rough terrain, which inhibits rapid movement.

Two potential avenues of approach traverse the Lesser Khingāns. The first, south and southwest from Sunwu, involves crossing hilly, wooded terrain on poor roads. The second, along the Sungari River by way of Chiamussu, involves mastery of swamplands, also traversed by poor roads. The Sungari River, however, offers an excellent arena for amphibious advance.



Map 7. Manchuria: Trafficability



Suifengho

Eastern Manchuria offers a variety of avenues of approach, none particularly good. The better avenues follow the rail lines, rivers, or major roads of the region. The Iman-Hutou-Mishan axis is limited by marshlands, which are virtually inundated in the rainy months of July and August. The roads into eastern Manchuria south of Lake Khanka by way of Suifengho and Tungning offer restricted corridors of advance across hilly, brushy terrain. The roads themselves lack hard surfaces. In the southeast a force could advance along the Tumen River by way of Hungchun, Tumen, Yenchi, or Tunhoa, but as in other areas, the advance would be hindered by water obstacles, bottlenecks, and poor roads. On all of these potential axes of advance (Halung-Arshaan, Hailar, Yakoshih, Sunwu, the Sungari River, and those of eastern Manchuria), the Japanese built obstacles to block passage of military forces. These obstacles were often concrete and steel fortifications with extensive field fortifications extending across the avenues of approach. Those major passes through the Grand Khingan Mountains containing major rail lines or roads were fortified in depth. Passes lacking major roads were not fortified. Other areas not considered feasible avenues of approach (that is, those lacking roads) also had no fortifications.



Railroad line through the Laoyehling Mountains

In view of the paucity of good avenues of approach through the barrier mountains into central Manchuria, any military force would have to rely on its imagination and resourcefulness to create avenues either by overcoming terrain obstacles or by mastering the problems of operations in remote regions.