What can we tell from different resolutions of maps?

This illustration shows how the amount of detail in climate models has increased in recent years, largely because of the calculation power provided by newer supercomputers. In the 1990s, high-resolution global climate models operated on the T42 resolution scheme (upper left). At this resolution, temperature, moisture, and other features were tracked in grid boxes that each spanned about 200 by 300 kilometers at midlatitudes (120 x 180 miles), an area roughly as large as West Virginia.

In more recent modeling that led up to the 2007 IPCC Working Group I report, the NCAR-based Community Climate System Model (CCSM) routinely operated at T85 resolution (upper right), with midlatitude grid points of about 100 by 150 km (60 x 90 miles)—the size of Connecticut.

Better resolution not only provides a more true-to-life depiction of atmospheric processes, but also allows for more realistic topography, which makes regional climate projections more accurate. For example, the highest Rocky Mountains appear as two coarse grid points at T42 but as a more diverse assortment of high peaks at T170 (lower left). Enhancements in computing power will help scientists explore the use of higher resolutions, such as T170 and T340 (lower right). Click here or on the image to enlarge. (©UCAR, illustration courtesy Warren Washington, NCAR.)

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