General Circulation Model Output IPCC 4th Assessment

The General Circulation Model (GCM) output presented in The Nature Conservancy's Climate Analysis Tool was process (checked for errors) and downscaled by the US Forest Service at the Forestry Sciences Laboratory, Corvallis, Oregon whose contributing members include Ron Neilson, Jim Lenihan, Ray Drapek, Dominique Bachelet, and Chris Daley. The data were processed in a manner designed to faithfully translate the trends coming out of the coarse grid GCMs, but retaining the relatively fine grid patterns consistent with the terrain and observable in historical datasets. To do this, anomalies were used. Difference anomalies (future – historical) were used for temperature data and ratio anomalies (future / historical) were used for precipitation and vapor pressure. Anomalies were calculated relative to the average value for that month for the years 1961 to 1990, so for example future January values were compared with the average historical January value. Anomalies were calculated using GCM-derived data for both historical and for future climate values. In this way the anomalies showed how the climate changed for the GCM relative to its own climatology.

The anomalies were then interpolated to the final grid, which has a relatively high spatial resolution (1/2 degree latitude by 1/2 degree longitude). A bilinear interpolation was used. The fine grid anomalies were then either multiplied with or added to the mean ground-based historical climate. The mean historical climate was a 12 month average climate for the years 1961-1990 (average January value, average February value, etc). Anomalies were applied to the appropriate month. So a January anomaly was applied to the mean historical January, etc.

Source Data Description

Resolution: 50 kilometer (0.5 degree, WGS84)
Spatial Extent: Global
Temporal Extent: 2000-2099 monthly time-series
Models: UKMO-HadCM3
                     CSIRO-MK3.0
                     MIROC3.2(medres)

Emissions Scenario: A2
                     A1B
                     B1

Climate Variables: Precipitation
                     Average Maximum Temperature
                     Average Minimum Temperature