Assessment of climate change impacts on our ecosystems and society requires downscaling of GCM projections from GCM scale to the high spatial resolution. The reliability of the downscaled outputs depends significantly on the reliability of the large-scale climate model simulations that serve as boundary conditions or forcings to the downscaling model used. Statistical correction of GCM output is often necessary when significant systematic biases occur between the real world and its modeled presentation. A common procedure is to standardise the GCM output by removing the systematic biases in the mean and variances relative to observations or reanalysis data at daily, monthly or seasonal time scale. In this paper, we present an improved bias correction approach used to correct the surface and atmospheric variables of GCMs at multiple time scales. The proposed methodology relies on a Nested Bias Correction (NBC) technique, which progressively corrects GCM simulations from lower to higher time scales to impart the same distributional and persistence properties as observations across the selected multiple time scales. Different variations of the bias correction methods starting from a standard procedure to more complex iterative multiple time scales NBC methods are tested to assess their impacts on the resulting series. Results of the study suggest that three iteration using NBC procedure are the most effective in removing distributional and persistence related biases at all time scales considered.