Iran has a complex topography because it consists of rugged, mountainous rims surrounding high interior basins, as a result of this condition, in some cases the NWP output has a significant error because of mesoscale variations induced by the diverse topography. In this paper, Real-time gridded 24h and 48-h temperature forecasts from NCAR models (Advanced Research Weather Research and Forecasting model; ARW) are verified over the complex terrain of Iran from 1 to 15 January 2010. All forecasts have been mapped to a 25km latitude–longitude grid and have been verified against an operational temperature analysis, mapped to the same grid. The subsequent statistical evaluation is designed to assess the model’s surface temperature forecast accuracy. Results show that the model biases caused by inadequate parameterization of physical processes are relatively large, for the 2-m temperature. The total model forecast errors for temperature at the surface show a substantial spatial heterogeneity; the errors are relatively larger in higher mountain areas that show model forecast errors in 2-m temperature forecasts are closely related to the terrain configuration. The model underestimates 2-m temperature over the peak and overestimates in the range of mountains. In addition, the diurnal cycle variation of these near-surface temperature forecasts from the model is much smaller than what is observed.