We have developed an atmospheric correction algorithm to retrieve the surface BRF and albedo from MISR measurements for small areas around AERONET sunphotometer sites, using AERONET aerosol and column water vapor information. Our goal is to develop an indirect validation method for global surface reflectance products over heterogeneous land. Our algorithm makes independent retrievals with both the Li Sparse – Ross Thick kernel BRF model and the modified Rahman-Pinty-Verstraete BRF model used in the MODIS and MISR land algorithms, respectively. In this study, we report the first results of processing MISR Collection 4 data for 2003-2004 for two sites, Mongu, Zambia, and Greenbelt, Maryland (USA). We found that MISR generally provides accurate retrievals of BRF and albedo in both clear and hazy atmospheric conditions, correctly reproducing the parameter time series and spatial distribution. We also found that the MISR BRF on average is less anisotropic than actual BRF in the visible bands. The difference is greatest in the blue band, but decreases with increasing wavelength such that it is negligible in the near-IR band. Our initial results suggest that the MISR surface albedo is on average lower than the actual albedo by about 0.005 in the green and red bands.