Radial Component of HMF

Leif Svalgaard
March 2016
HMF as Sum of Two Gaussians

Radial Component of B

2014 OMNI, 456562 1-minute data
Bin-width 0.1 nT

-2.5 nT

2.2 nT

2011 OMNI, 486134 1-minute data
Bin-width 0.1 nT

+2.3 nT
Radial Component of HMF

Computing \( B_r \) as average over 1 day underestimates the radial component by 35% on average.
Radial Component vs. Magnitude

The radial component $B_r$ is nearly proportional to the total field magnitude $B$.

The plot shows the radial component $B_r$ as a function of the total field magnitude $B$ for the period 1995-2014. The linear relationship is described by the equation $B_r = 0.4551B$ with $R^2 = 0.8523$. 
HMF Magnitude and $Br$
Long-term Variation of HMF $B$