Dust is a key atmospheric aerosol that affects environment and climate systems. While surface wind is a major driver for dust uplift process, dust emission is also affected by erodibility and surface conditions such as vegetation and snow cover. Recent studies suggest that the erodibility derived from the satellite vegetation can make significant difference in dust emission in several source regions. However, the current NU-WRF model uses only static dust source function, excluding dust from vegetated sources. This presentation shows an ongoing effort to improve the current static dust source functions of the model with 1) a satellite observation based dust source function and 2) a time resolved dynamic dust source function. This presentation compares three dust source functions in different regions. The result shows that the new dust source functions are quite different in distribution pattern and magnitude than the static source and it will affect dust simulation over smaller and vegetated sources.