Supplements

Table S1. Independent variables used in the development of high resolution and all 30-m scale models used in this analysis. SAVI; Soil Adjusted Vegetation Index, NDBI; Normalized Difference Built-up Index, NDWI; Normalized Difference Water Index, NDVI; Normalized Difference Vegetation Index. The 6 bands included in Landsat composites were blue, green, red, near infrared, shortwave infrared 1, and shortwave infrared 2.

2016 10th percentile Landsat composites (6 bands)
2016 50th percentile Landsat composites (6 bands)
2016 90th percentile Landsat composites (6 bands)
Topographic position index
Topographic slope
Cartesian aspect y
Cartesian aspect x
Elevation
Latitude (m of northing)
Longitude (m of easting)
10th percentile Landsat indices (SAVI, NDBI, NDWI)
50th percentile Landsat indices (SAVI, NDBI, NDWI)
90th percentile Landsat indices (SAVI, NDBI, NDWI)
10th percentile Landsat tasseled cap greenness, wetness, dryness, brightness
50th percentile Landsat tasseled cap greenness, wetness, dryness, brightness
90th percentile Landsat tasseled cap greenness, wetness, dryness, brightness

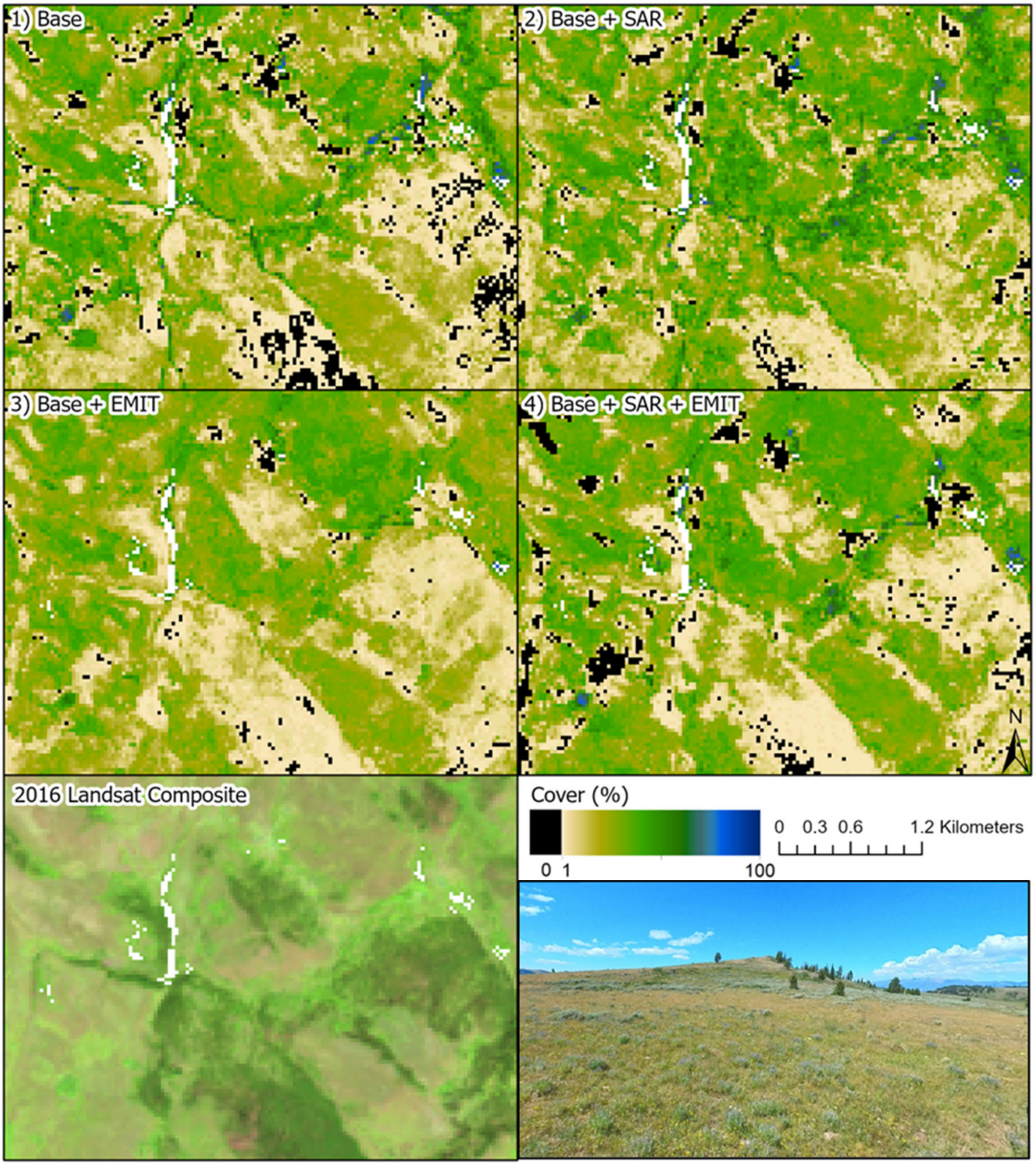


Figure S1. Examples of model differences for shrub cover in a high elevation mountain valley with tree cover depicted as dark green in the Landsat composite. Image depicting common vegetation in the case study area (lower right) obtained from Google Earth. The base + Synthetic Aperture Radar (SAR) prediction displays confusion in the less dense, transitional forested areas, confusing some tree as shrub cover. Base + Earth Surface Mineral Dust Source Investigation (EMIT) prediction shows a clear distinction in the boundaries between shrubs and trees but a flatter range of values, with reduced zeroes and higher values that are seen in the base run. The prediction using both SAR and EMIT is a good compromise showing a higher range of values and a better performance in the forested areas.

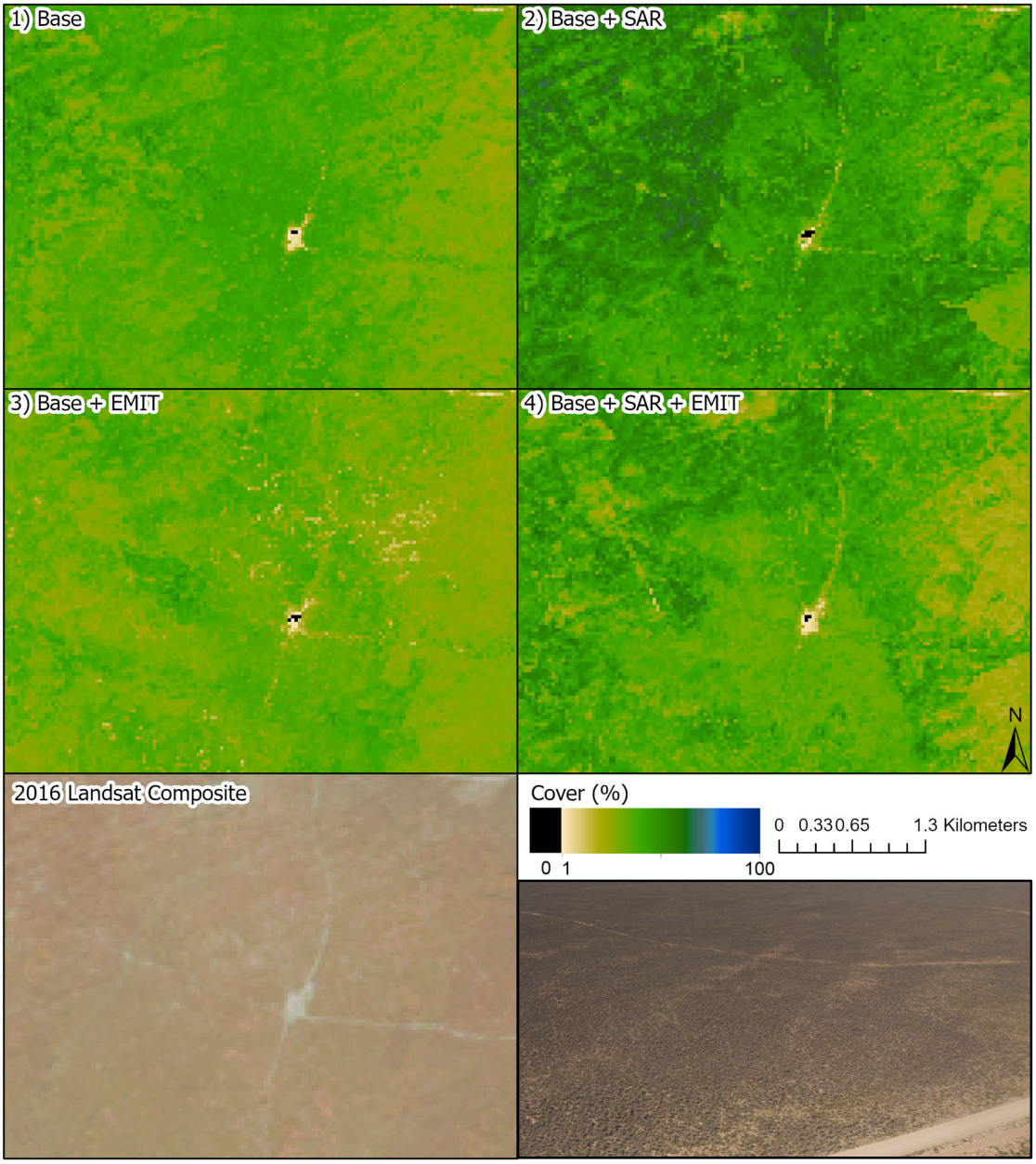


Figure S2. Examples of model differences for herbaceous cover in relatively intact sagebrush site at moderate elevation. Drone image covering case study area (lower right) obtained from Google Earth. Relative to the base run, including Synthetic Aperture Radar (SAR) results in stark increase in the herbaceous cover overall as well as an increase in the range of values which help identify patches of bare ground and roads. The Base + Earth Surface Mineral Dust Source Investigation (EMIT) model lowers the herbaceous values in favor of shrub/sagebrush while keeping the range of values closer to that of the base prediction.