LANDFIRE Methods for Filling Landsat 7 ETM+ SLC-Off used by the 2011 and 2012 Monitoring Trends in Burn Severity (MTBS) Data and Rapid Assessment of Vegetation Condition after Wildfire (RAVG) datasets

The LANDFIRE disturbance team used two national fire mapping program datasets to locate and characterize large wildfires - Monitoring Trends in Burn Severity (MTBS) and Rapid Assessment of Vegetation Condition after Wildfire (RAVG). MTBS and RAVG processing methods used cloud-free Landsat 5 imagery when possible to circumvent areas of no data in the final products. However, in January of 2013 Landsat 5 was decommissioned, causing MTBS and RAVG programs to use Landsat 7 ETM+ SLC-off imagery exclusively. Landsat 7 ETM+ SLC-off images contain data gaps, or areas of no data. Consequently, the 2011 and 2012 MTBS and RAVG final data products utilized by the LANDFIRE disturbance mapping process contained areas of no data (see figure 1A). Left "as is" these areas would remain in the disturbance data product and affect subsequent LANDFIRE products (e.g. fuel models). In order to mitigate the no-data issues, decision tree modeling using best-pixel composite imagery (or occasionally, other available imagery), or majority focal filling techniques were employed. The flow chart (see figure 2) demonstrates the logic used to select the appropriate filling method for MTBS or RAVG datasets. MTBS data utilized either decision tree modeling or majority focal filling methods. The preferred method, and used most, was the decision tree method. When the decision tree method was not possible the majority focal filling method was applied. RAVG datasets were only filled with the majority focal filling method.
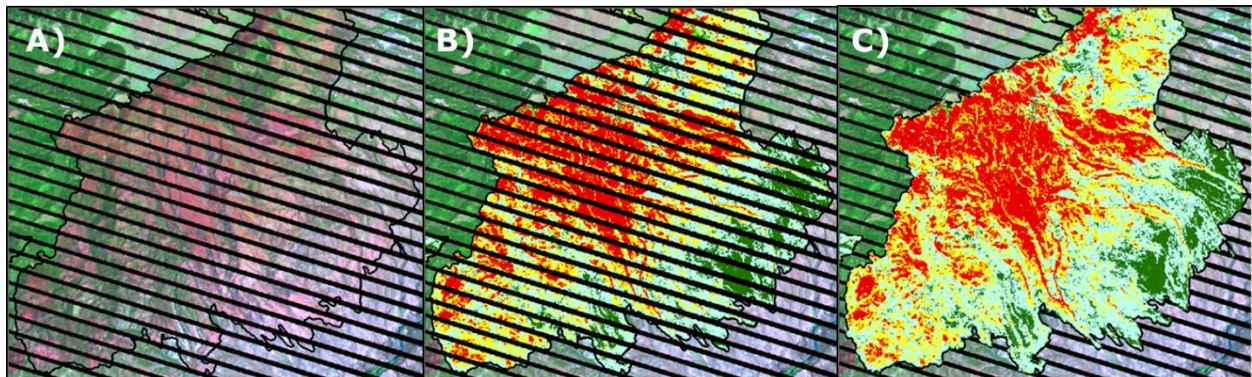

Figure 1. MTBS post-fire Landsat 7 ETM+ SLC-off image (A), burn severity map (B), and LANDFIRE filling method as applied to the 2011 Las Conchas Fire, NM (C).
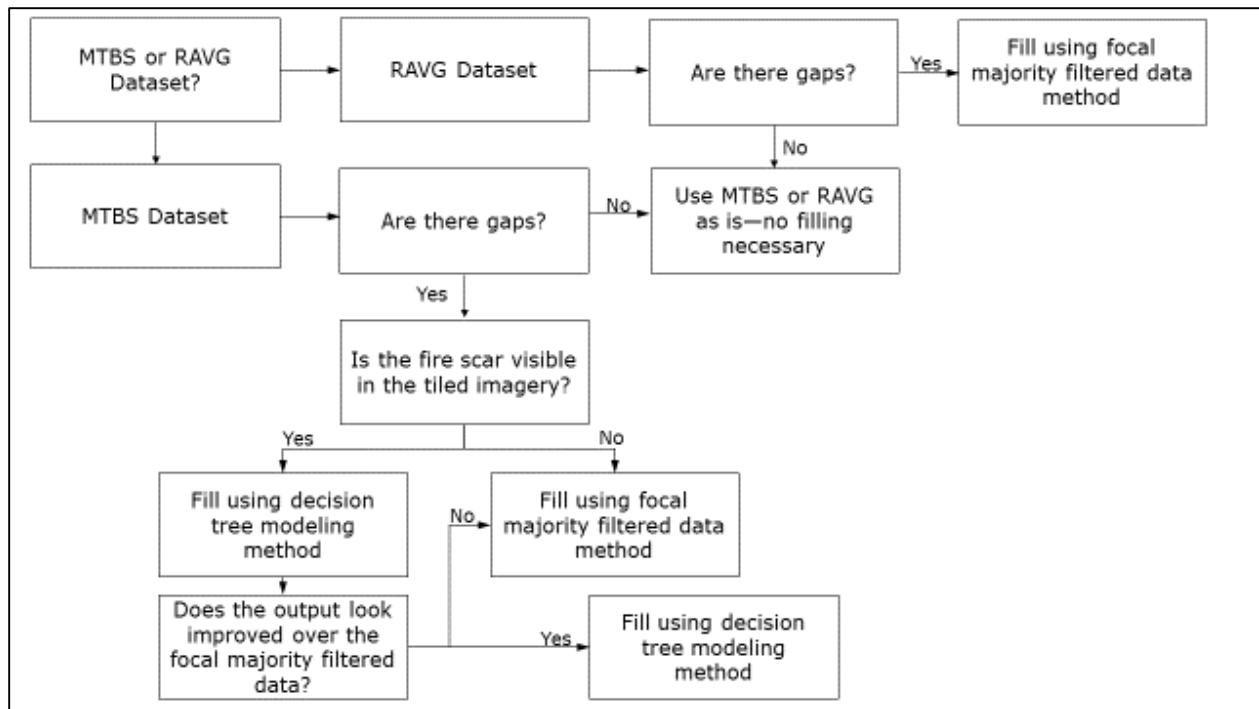
Figure 2. Flow chart developed by LANDFIRE analysts to determine methods for filling no data areas within MTBS and RAVG datasets.