ANALYSIS OF THE AFTER-EFFECT OF FOREST FIRE TO VEGETATION QUALITY USING LANDSAT 8 OLI/TIRS TM IMAGERY

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Abstract: Forest fires, in general, are deemed problematic since this phenomenon heavily contribute to greenhouse gas emissions, destruction of biodiversity, and soil degradation. Meanwhile, the slash and burn agriculture is widely used as it is believed to produce a nutrient-rich soil layer that helps fertilize crops. This study verifies how forest fires affect the quality of vegetation during recovery over the affected area in the Rapu Rapu wildfire in August 2014. The determination and analysis of the recovery of vegetation post-fire disturbance were done using three spectral recovery metrics – the Relative Recovery Index (RRI), Ratio of 80 Percent (R80P) and Year on Year Average (YrYr). The recovery metrics were adopted for vegetation indices, NBR, NDVI,EVI, SAVI, and MSAVI, to monitor development concerning various vegetation properties such as its chemical properties and plant canopy vigor. Assessment was done by utilizing a 4-year window post disturbance in comparison with a 1-year window pre-disturbance. Results from the spectral forest recovery metrics show evidence of vegetation growth after the forest fire incident. Within the 4-year window post-disturbance, vegetation quality has shown significant improvement in all aspects accounted for by the vegetation indices used for analysis.

Keywords: forest fire, vegetation quality, remote sensing, vegetation indices, recovery metrics