CUMULATIVE WATERSHED EFFECTS ANALYSIS WITH THE GEOSPATIAL INTERFACE FOR THE WATER EROSION PREDICTION PROJECT (GEOWEPP)

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Abstract: Hundreds of millions of dollars are spent each year on mitigation practices following wildfire. Additional hundreds of millions of dollars are proposed to be spent on fuel treatments - including prescribed fires - to reduce the likelihood of wildfires. One of the stated reasons for both of these large expenditures is that such investments are necessary to reduce (in the case of wildfire) or prevent (in the case of fuel management) damage to our nation's wildland watersheds. Wildland management agencies are frequently challenged by the public to demonstrate the watershed benefits of wildfire treatments, or watershed risks associated with fuel management treatments. Wildfire rehabilitation teams and fuel management teams require state of the art erosion prediction tools to aid in justifying or supporting such expenditures to Congress and to the general public. The development of a new tool focusing on wildfire treatments is currently funded by 2004 and 2005 Joint Fire Science Program (JFSP). The Geospatial Interface for the Water Erosion Prediction Project (GeoWEPP) (Renschler, 2003; Renschler and Lee, 2005) is based on the WEPP model (Laflen et al., 1997), a spatial erosion modeling tool that is widely accepted for soil erosion, runoff and sediment yield prediction in forests, woodlands, shrublands, grasslands, rangelands, and agricultural lands. In addition to assessing post-fire treatments, GeoWEPP can be used to perform a Cumulative Watershed Effects (CWE) analysis that allows fuel management activities to prevent fires. GeoWEPP received overwhelming positive response from fuel and watershed managers during several BLM and FS organized workshops. To meet these users' additional requests the development goals were expanded and implemented in the widely used Geographic Information System (GIS) ArcGIS. In particular the project targets applications to Burned Area Emergency Rehabilitation (BAER) for erosion analysis, postfire salvage logging analysis, and small scale CWE analysis of fuel management treatments including thinning and prescribed fire. The overwhelming positive response from fuel and watershed managers during several BLM and FS organized WEPP workshops and the successful GeoWEPP application for the largest US fire during the 2005 season use in confirmed that it is capable of answering crucial questions related to wildland fuel management. To meet the users' additional requests in ArcGIS, we will introduce more CWE analysis capabilities for much larger watershed scales that include roads and timber harvesting activities.

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