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Topic: Using Remotely Sensed Observations to Managing Natural Resources within Nations, Counties and Cities - Development of climate data records and essential climate variables

Title: Preliminary Assessment of USGS Burned Area Essential Climate Variables Product over the Conterminous United States 2000-2013

Presentation type: Oral

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Abstract:

The U.S. Geological Survey (USGS) is generating a suite of Essential Climate Variables (ECVs), as defined by the Global Climate Observing System, from the Landsat data archive. The archive provides high spatial resolution and long-term (1984 to present) global land products, meeting the needs of climate and ecological studies at multiple scales. Validation protocols for these products are being established, incorporating the Committee on Earth Observing Satellites Land Product Validation Subgroup's (LPVS) best practice guidelines and validation hierarchy stages. The USGS validation plan will incorporate protocols that span the Landsat sensors (TM, ETM+, and OLI) and temporal range of the archive. A LPVS stage 2 validation was performed on the Burned Area ECV (BAECV) version 1 product, using a sample of 29 Landsat path/rows distributed across 5 different regions of the conterminous United States: East, eastern Great Plains, western Great Plains, Arid West, and Mountainous West. The validation reference data consisted of fire perimeters from the Geospatial Multi-Agency Coordination Group (GeoMAC) fire history database (2000-2013). The validation process superimposed a five-kilometer grid on GEOMAC polygons and BAECV data because the database did not contain a complete census of all fires that might have occurred on the sampled Landsat path/rows. Not all regions had GeoMAC data for the sample path/rows and/or years; the eastern Great Plains region was most underrepresented. For 2000-2013, the BAECV mean overall accuracy of sample path/rows was 93% (mean commission error of 16% and mean burned area accuracy dice coefficient of 57%). Relative bias showed a consistent underestimation of BAECV products, which is typical while using fire perimeters as reference data because not all areas within a fire perimeter burn. Validation efforts are planned to continue with an LPVS stage 3 assessment, using a more rigorously sampled reference dataset and covering a greater sample size.

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