

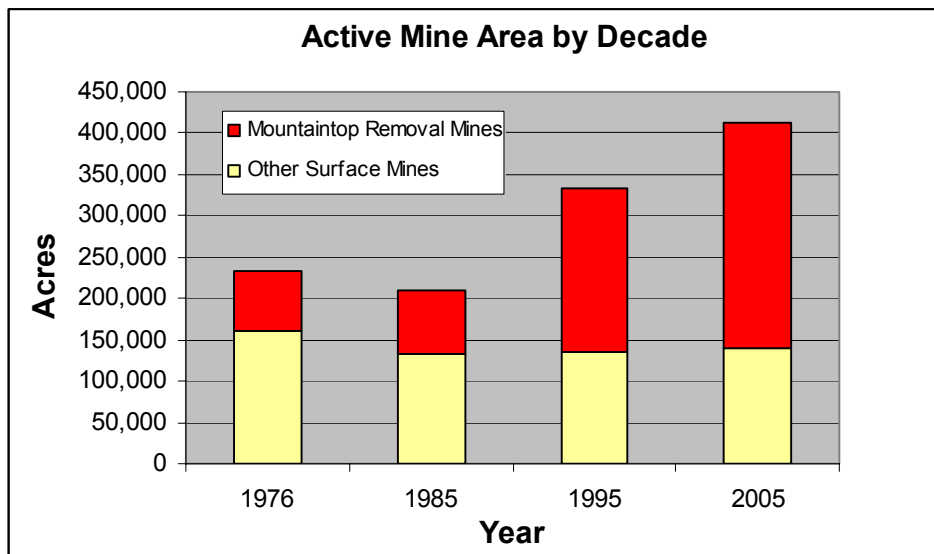
## Measuring Mountaintop Removal Mining over the Decades

SkyTruth, Inc. in partnership with Appalachian Voice recently completed a project that documented the impact of Mountaintop Removal Mining (MTRM) over a 59 county area in Kentucky, West Virginia, Tennessee and Virginia. The goal of the project was to map the historical occurrence of mountaintop removal mining over a 30 year period beginning in 1976 to 2005.

The methodology involved several steps. The first step included a land cover classification for each decade that identified all the mining occurrences at that point in time. This digital spectral classification process was accomplished using Landsat satellite image database totaling eight gigabytes of data. Classification required a two-step process where the spectral signatures of land cover types were identified (vegetation, soil, barren or rock, water, etc) and then through a decision tree analysis, mined areas are classed.

The next step was to classify these mine areas as “MTRM” and “Other Surface Mining.” The definition of MTRM, as put forth by the U.S. Office of Surface Mining, guided the development of a reproducible, rules-based method to classify the mines. Using digital elevation data from the U.S. Geological Survey 1:100,000 series, the terrain parameters of ridge top, slope, and valleys were calculated. The MTRM mines were identified by calculating the percentage of ridge top that comprise the mine’s total area. Simply put, MTRM are mines over 320 acres and contain at least 40 acres of ridge top or for mines between 40 and 320 acres and contain at least 10 - 40 acres of ridge top in the mined area.

The historical record shows significant increases in MTRM occurring in the last two decades from 77,000 acres in 1985 to over 272,000 acres in 2005, a 3.5 times increase. Also increased were the size of the individual mines, some reaching over 15 square miles. In regards to ridge tops, over 2,700 ridges were impacted by mining.



## MTR PROJECT OVERVIEW OF RESULTS

### Mountaintop Removal Mines

Total MTR Mined Area since 1976	445,792	Acres
Largest Single Mined Area	10,410	Acres
Median Mined Area	128	Acres
Average Mined Area	406	Acres
Number of Mines >mile <sup>2</sup>	73	

### Ridges

Number of Ridges Mined	2,789	
Total Acres of Impacted Ridges	130,655	Acres
Average Ridge Length Mined	1/2	Miles
Largest Ridge Removed	504	Acres

### Historical Analysis

	1976	1985	1995	2005
Surface Mine	161,845	132,940	134,452	140,184
MTR Mine	71,046	77,100	199,991	272,252

Map of MTRM areas

