

# Morenci Copper Mine, Arizona

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## Background Information

The Morenci mine is an open-pit copper mine that was first mined in 1881 and converted to open-pit mining in 1937. Morenci is the largest copper producer in North America with over 840 million pounds of copper produced annually. A major porphyry copper orebody was discovered in 1865 through a dissected mountain range.

Electric rotary rigs, drill blast-holes, and electric rope shovels load the mined material into 218t- and 272t-capacity haul trucks.



## Purpose of Study

To assess the rate of growth (in km<sup>2</sup>) of the Morenci copper mine relative to the surrounding areas over the past 25 years.

To make a prediction of the expected growth (in km<sup>2</sup>) of the mine the end of the mine's life in 2023.

## Methods

Study area: 269.19 km<sup>2</sup>  
Images from Landsat 4-5 TM  
Image dates: June 10, 1986; November 17, 1992;  
January 21, 2002; February 7, 2011

## Results

	Mine/Tailings (km <sup>2</sup> )	% Increase
1986	43.67	—
1992	52.17	19%
2002	56.21	8%
2011	65.15	16%
2023	75.46	16%

## Conclusions and Predictions

From 1986 to 2011, Morenci mine has increased in size from 43.67 km<sup>2</sup> to 65.15 km<sup>2</sup> — a rate of 0.86 km<sup>2</sup>/yr for the past 25 years.

The life expectancy of Morenci mine is expected to last until 2023. The measured rate of size increase extended over the next 12 years is predicted to lead to an additional increase of 10.31km<sup>2</sup>, which will result in the final size of the mine to 75.46 km<sup>2</sup>.

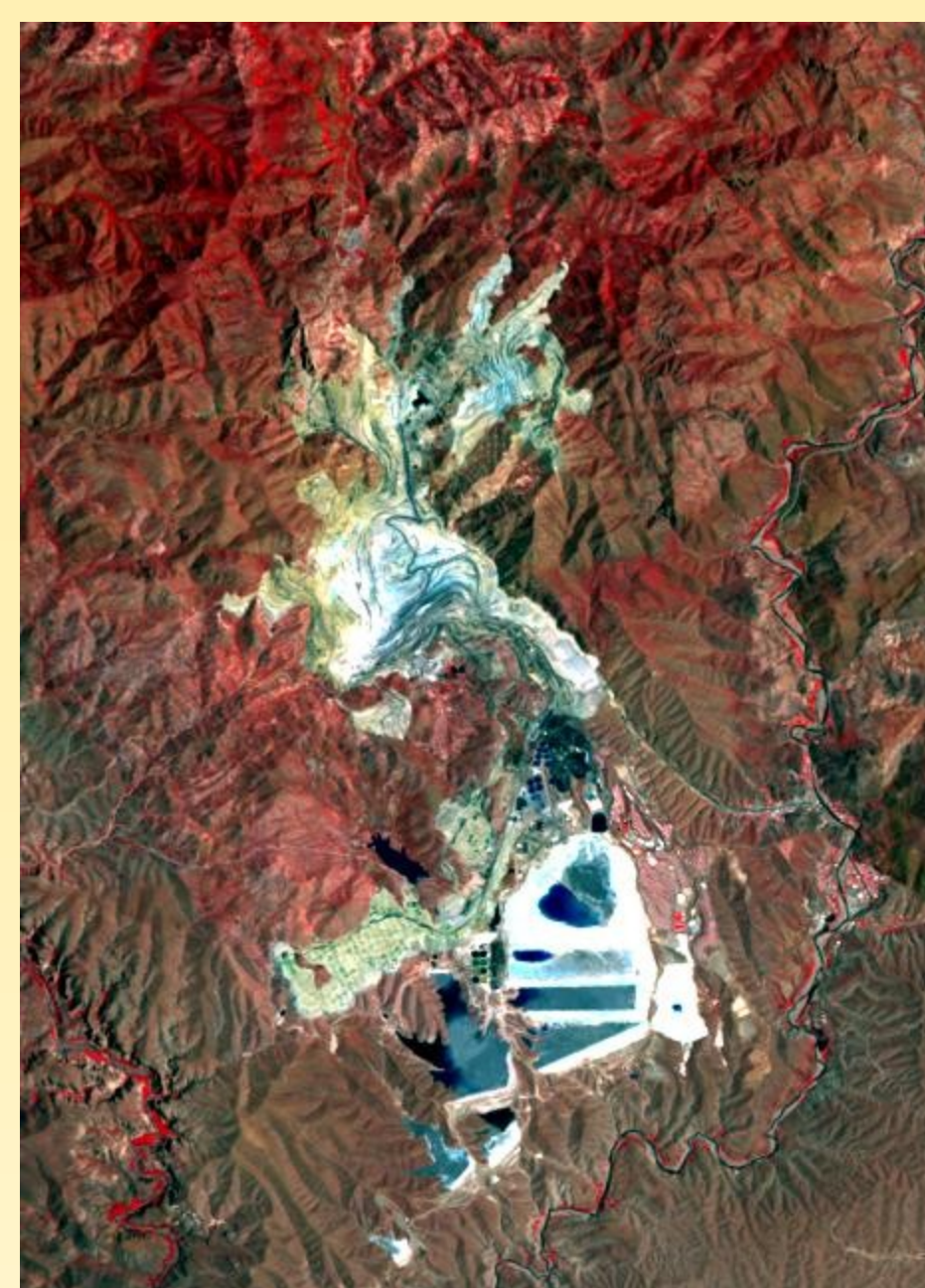
## References

<http://glovis.usgs.gov/>

<http://www.mining-technology.com/projects/morenci/>

LeCain, Timothy J. *Mass Destruction: The Men and Giant Mines that Wired America and Scarred the Planet.* Rutgers University Press, NJ, 2009.

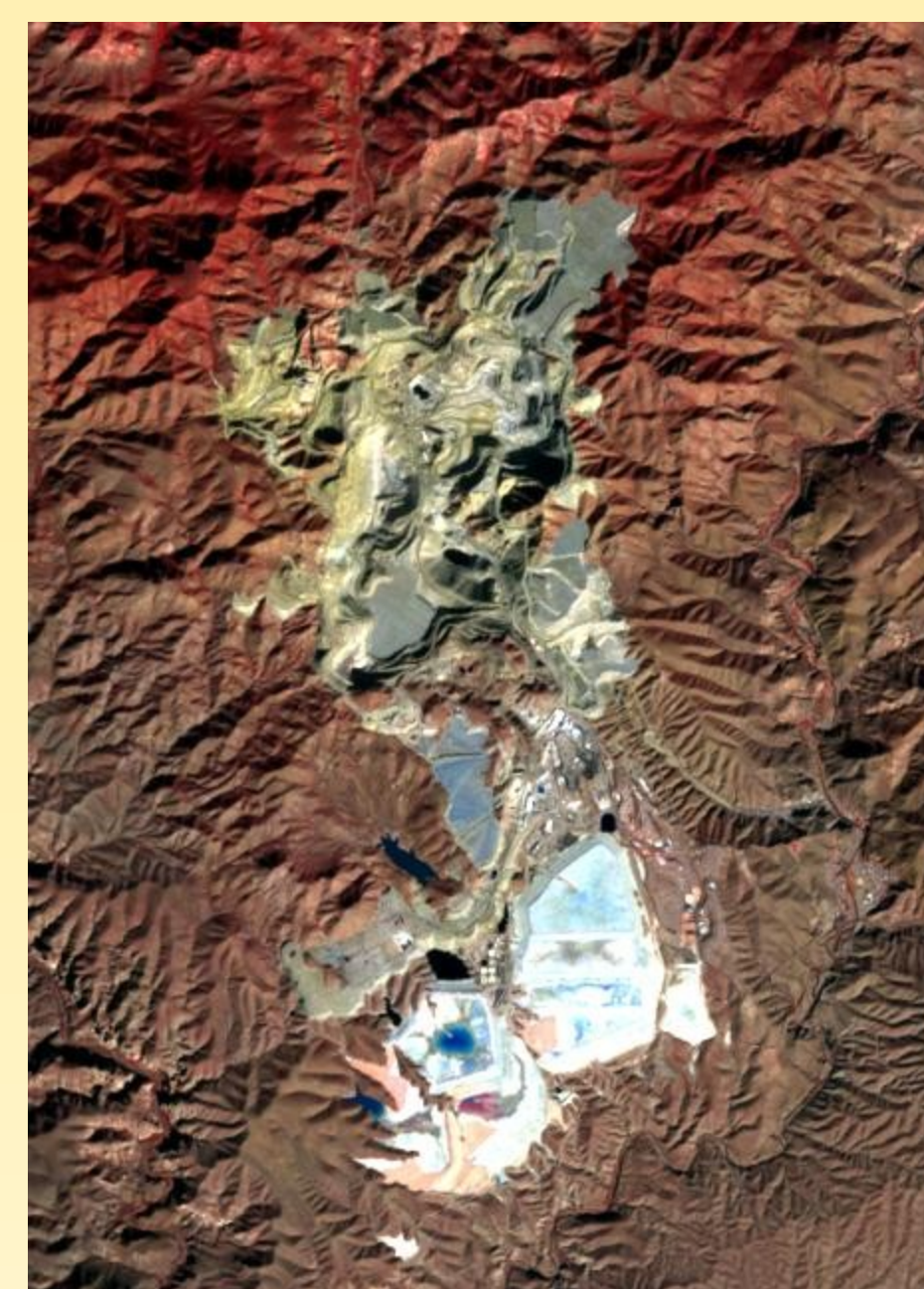
1986



1992



2002



2011

