

## Remote Sensing for Carbon Surface Mining in Colombia. How much Carbon Mining Really Pollutes?

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### **Abstract:**

Doubts about how much environmental damage Carbon does generate, still persist. Various indicators had been used from Modis and Sentinel satellite images and comparisons with other surface mining products such as Iron and Nickel was performed. Results showed that for Carbon surface mining, the average value for the period 2000 to 2023 where 616 g C /m<sup>2</sup>/year, while for the green zone it was 632 g C /m<sup>2</sup>/year. For Iron-Nickel surface mining, it was 323 g C /m<sup>2</sup>/year, while the corresponding green zone it was 414 g C /m<sup>2</sup>/year. For Iron surface mining the values found were 1161 g C /m<sup>2</sup>/year and 1257 g C /m<sup>2</sup>/year for surface mining and green zones respectively. Modis bands 33 to 36 from MYD021KM MODIS product, compared changes from 2012 to 2022 at the same areas, with similar results where green zones absorbed the CO<sub>2</sub> generated by surface mining therefore, offsetting the possible environmental damage. Results from Sentinel 5P showed that carbon mining had methane maximum values of 1952, 1956 and 1957 ppb in January 2023. Swaps areas for the same studied period had the highest methane concentrations, demonstrating that there are other more polluted natural environments than carbon surface mining for methane pollution.

### **Keywords:**

Carbon, CO<sub>2</sub>, Iron, Modis, Nickel, Sentinel 5P.