

Research group takes down controversial Indonesia fire analysis

The government had criticized the claim that more than 1.6 million hectares were burnt this year.



Fires ravaged vast swathes of Indonesia this year. Credit: Ulet Ifansasti/Getty

How much did Indonesia burn this year? An international research organization has taken down an online report that suggested fires burnt more than 1.6 million hectares of land in the country during 2019, 40% more than the government's own calculations for the same period.

The Indonesian government and local scientists had criticized the analysis, by the Center for International Forestry Research (CIFOR), saying that it relied on satellite data that hadn't been confirmed with ground observations. The environment ministry's own calculations suggest that just under 950,000 hectares were burnt between January and October.

CIFOR, whose headquarters are in Bogor, Indonesia, published the analysis on 2 December based on time-series imagery from the European Space Agency's Sentinel-2 Earth-observation satellites. The group calculated that 1.64 million hectares were burnt across 7 Indonesian provinces from 1 January to 31 October.

"The number just doesn't make any sense," says Raffles Panjaitan, the director of forest and land-fire management at the Ministry of Environment and Forestry in Jakarta.

Any analysis using satellite data needs to be confirmed with observations on the ground, says Bambang Hero Saharjo, a forest-fire expert at Bogor Agricultural University. CIFOR "haven't done that", he says.

Number crunching

Panjaitan says that the ministry used satellite data and ground observations to calculate that about 942,000 hectares were burnt across 34 provinces between the beginning of January and the end of October. According to its website, the ministry uses imagery from US Geological Survey's Landsat 8 OLI/TIRS Earth-observation satellite. Panjaitan says that although the total area burnt will probably be higher by the end of the year, it won't be as high as CIFOR's figures. Panjaitan says he asked to meet the CIFOR scientists at his office in Jakarta on 4 December.

On 6 December, CIFOR took down the analysis from its blog. "CIFOR's practice is to submit our research to the scrutiny of the peer-review process carried out by scientific journals. In this case, that practice was not fully adhered to. We regret this oversight and apologize to our readers," says Robert Nasi, CIFOR's director-general.

Before the meeting with the ministry, David Gaveau, a landscape ecologist at CIFOR in Bogor, told *Nature* that the differences in the data might stem from the different satellite imagery the two groups relied on.

Both Sentinel-2 and Landsat 8 measure infrared light, which can be used to detect charred vegetation. But Sentinel-2 takes images at a finer spatial resolution than Landsat 8 does, says Gaveau. Sentinel-2 also captures images of the same location at more frequent time intervals — every five days, compared with every sixteen days for Landsat 8.

Computer power

Gaveau says that this is the first time CIFOR has used images from Sentinel-2, because these only recently became available for scientists to use for free on Google Earth Engine, a cloud-based platform that allows scientists to use Google's massive computational capabilities for geospatial analysis.

A previous study that compared Sentinel-2 and Landsat 8 images for mapping logging in the Brazilian Amazon¹ found little difference between the accuracy of the two satellites, but other research showed that Sentinel-2 was 5% more accurate at mapping land use in Burkino Faso² in Africa.

Regardless of the technology's capabilities, remote sensing data can be misinterpreted if not confirmed with ground observations, says Dwiyanti Kusumaningrum, a geographer at the Indonesian Institute of Sciences in Jakarta.

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UPDATES & CORRECTIONS

Correction 13 December 2019: A previous version of this story gave the wrong owner, and repeat cycle, for Landsat 8.

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