

PAYNE INSTITUTE COMMENTARY SERIES: **COMMENTARY**

## Oil Depot Fire in Proletarsk Rages On for Sixth Day

By Mikhail Zhizhin

Firefighters are now in their sixth day of battling a massive blaze that erupted at an oil storage facility in Proletarsk<sup>1</sup>, Russia. The fire ignited early on Sunday, August 18th, following the downing of Ukrainian drones by Russian air defense systems near the town.

The state-owned facility, located approximately 150 kilometers (94 miles) east of Rostov, houses 78 storage tanks containing various oil products, including diesel, lubricants, gasoline, and aviation fuel. It serves as a critical component of Russia's national fuel reserves.

According to reports, a second wave of Ukrainian drone attacks targeted the same site on August 23rd<sup>2</sup>.



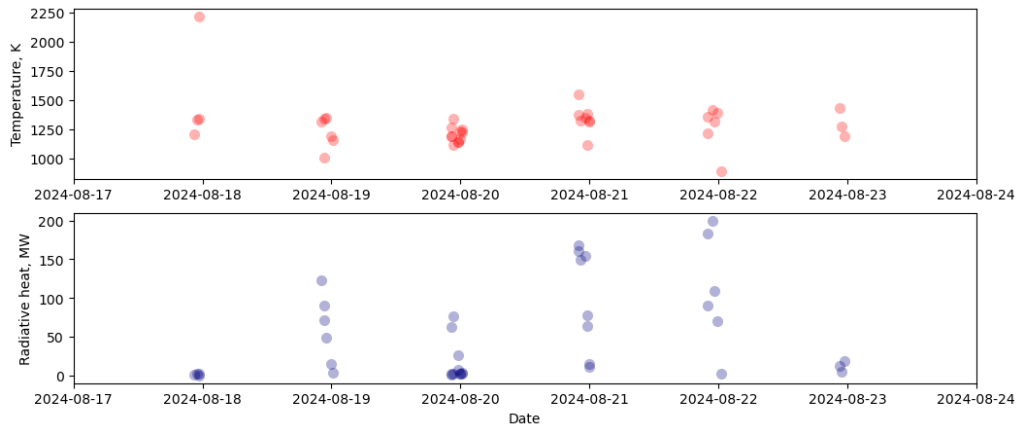
*A satellite image of the fire at the oil depot in Proletarsk.*

© Planet Labs

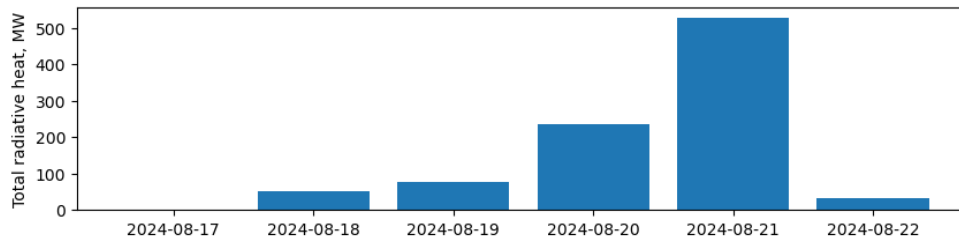
<sup>1</sup> <https://www.themoscowtimes.com/2024/08/20/russia-struggles-to-contain-oil-depot-fire-2-days-after-drone-attack-a86078>

<sup>2</sup> <https://www.kyivpost.com/post/37868>

By leveraging the VIIRS Nightfire algorithm<sup>3</sup> and satellite imagery from NOAA weather satellites Suomi NPP, NOAA-20, and NOAA-21, the Earth Observation Group at the Payne Institute for Public Policy (Colorado School of Mines) has been closely monitoring the fire's evolution. The team has tracked the fire's size, radiative heat output, and temperature from its inception. The peak of the fire's intensity was observed on August 21, with total radiative heat exceeding a staggering 500 MW. The satellite-derived temperature measurements of the open pool fire from the oil products have shown remarkable agreement with ground-based experimental data<sup>4</sup>.



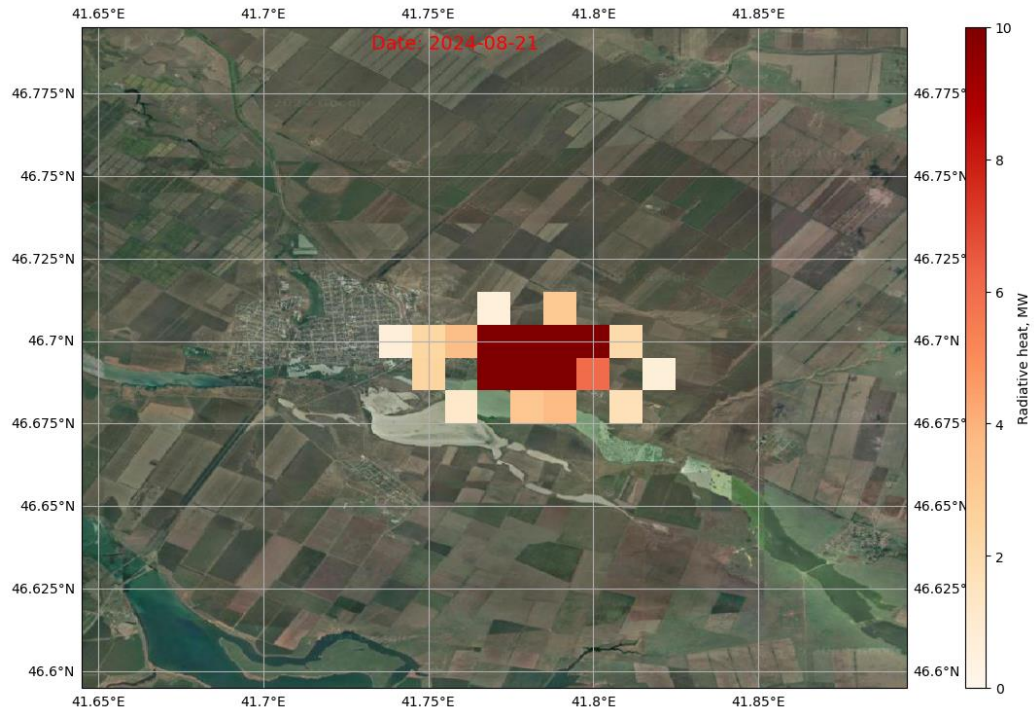
*Temperature and radiative heat from satellite detections at the Proletarsk storage facility*



*Total radiative power of the fire detected by NOAA-20 satellite*

<sup>3</sup> <https://www.mdpi.com/2072-4292/5/9/4423>

<sup>4</sup> <https://link.springer.com/content/pdf/10.1007/BF01039781.pdf>



*Radiative heat from multiple fire detections by NOAA-20 satellite on August 21, 2024*

### Video time lapse of fire



Proletarsk\_fires\_RH.  
mp4

## **ABOUT THE AUTHOR**

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Mikhail Zhizhin, M.Science in mathematics from the Moscow State University in 1984, Ph.D. in computational seismology and pattern recognition from the Russian Acad. Sci. in 1992. Research positions from 1987 to 2012 in geophysics, space research and nuclear physics at Russian Acad. Sci., later at NOAA and CU Boulder. Currently he is a researcher at the Earth Observation Group at Colorado School of Mines. His applied research fields evolved from high performance computing in seismology, geodynamics, terrestrial and space weather to deep learning in remote sensing. He is developing new machine learning algorithms to better understand the Nature with Big Data.

## ABOUT THE PAYNE INSTITUTE

The mission of the Payne Institute at Colorado School of Mines is to provide world-class scientific insights, helping to inform and shape public policy on earth resources, energy, and environment. The Institute was established with an endowment from Jim and Arlene Payne, and seeks to link the strong scientific and engineering research and expertise at Mines with issues related to public policy and national security.

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