

Payne Institute Spring Seminar Series

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Global Satellite Studies of Nighttime Lights and Infrared Emitters at Mines

1:00pm-2:00pm | Tuesday, March 10, 2020

Green Center – Metals Hall

The Earth Observation Group (EOG) is a new unit within the Payne Institute for Public Policy, established in 2019. EOG's focus is on global nighttime remote sensing of electric lighting and infrared (IR) emitters, such as fires and flares, using data collected by the NASA/NOAA Visible Infrared Imaging Radiometer Suite (VIIRS). EOG ingests 300 GB of VIIRS data per day from two satellites, which is processed into three primary product lines: nighttime lights, boats, and IR emitters. Boat and IR emitter detections are generated in near-real time, nominally within four hours from the collections. The nightly data are later distilled into monthly and annual summaries. Current EOG research is focused on: 1) Improving the accuracy of flared gas volume estimates. 2) Development of temporal indices for rating the reliability of electric power services. 3) Near-real time assessment of electric lighting at refugee camps. And 4) Discrimination of flaming and smoldering combustion.

EOG pioneered the development of global satellite mapping of nighttime lights and gas flaring with meteorological satellite data in the mid-1990's while at NOAA's National Geophysical Data Center in Boulder, Colorado. The team produced a 22-year time series of global nighttime lights, spanning 1992-2013. In 2012, EOG's focus shifted to nighttime VIIRS data, with the development of three product lines: lights, boats, fire and flares. In 2019 EOG moved to the Colorado School of Mines.