

## Topics (T)

Earth Observing Missions and Systems to Address Climate Change and Its Impacts [2] (3B)

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## THERMAL INTELLIGENCE FOR A SUSTAINABLE EARTH

**Abstract**

Climate change is causing increasingly severe environmental and economic damages from natural disasters and extreme weather events. It has been established during COP27 in 2022 that the goal of the 2015 Paris Agreement to limit global warming to 1.5C will not be reached, leading to a pressing need to take action immediately, both to predict and manage extreme events, and to reduce greenhouse gas emissions. For climate change adaptation and mitigation, decision makers require reliable and accurate insights on global temperature and its effects on the environment. Continuous monitoring and analysis of global temperature can be provided by earth observation data, however, for many applications, currently available data sets are limited through long monitoring gaps, insufficient resolution and accessibility. This paper illustrates the need for high-temporal resolution thermal-infrared data, the acquisition process during the FOREST-1 mission as well as environmental monitoring use cases based on thermal data. Since January 2022, OroraTech is operating its own space infrastructure in lower earth orbit, which continuously delivers thermal data in medium-wave infrared as well as long-wave infrared bands. Through thermal earth observation data, we can monitor and protect forests and infrastructure from fires, support agriculture, predict typhoon tracks, monitor emissions from industrial facilities, and identify urban heat islands, directly helping to mitigate the effects of climate change