



Benefits and Challenges of using Satellite Remote Sensing to Monitor Active Fires

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DESCRIPTION

Satellite remote sensing is a powerful tool for monitoring active fires around the world. By using satellite technology, it is possible to detect, monitor, and track fires from a distance. This technology can provide valuable information about the location, size, intensity, and duration of an active fire. The most widely used satellite remote sensing technology for fire detection is Moderate Resolution Imaging Spectroradiometer (MODIS) imagery. MODIS imagery can detect both thermal anomalies that indicate where active fires are burning as well as smoke plumes that are emitted by burning vegetation. MODIS imagery can be used to identify areas of high fire risk as well as monitor existing fires in real-time. The benefits of using satellite remote sensing to monitor active fires are numerous. It provides a comprehensive view of the entire landscape, rather than relying on limited ground-based observations or aerial surveys. This data can be used to inform decision making related to resource management and fire prevention strategies. Additionally, this technology offers the ability to monitor large areas quickly and accurately with relatively low cost and minimal environmental impact. However, there are also some challenges associated with using satellite remote sensing for fire monitoring. For example, clouds can interfere with the accuracy of the data collected by satellites due to their ability to block or distort signals from the Earth's surface.

Additionally, smoke plumes may not always be visible due to their variable thicknesses and concentrations which can affect their reflectivity levels. Satellite images may not always provide detailed enough information about a specific fire due to resolution limitations or other factors such as terrain features or atmospheric conditions. Satellite remote sensing is a valuable tool for monitoring active fires around the world due its ability to provide comprehensive data quickly and accurately at relatively low cost with minimal environmental impact. However, there are still some challenges associated with this technology that must be taken into account when utilizing it for fire monitoring purposes. Remote sensing has become an invaluable tool for monitoring the

active fires. By using satellite imagery, can gain a better understanding of the fire's intensity, size, and behavior. This information is crucial for making decisions about fire management and mitigation strategies. Here we will explore the benefits and challenges of utilizing satellite remote sensing to monitor active fires. One of the primary benefits of satellite remote sensing is its ability to provide a comprehensive overview of an area affected by the fire. By combining data from multiple sources such as infrared and visible light sensors, thermal cameras, and radar images, can get a complete picture of how a fire is affecting an area. This information helps them make decisions about when to evacuate people from danger zones or implement containment strategies. Satellite remote sensing also enables to monitor active fires in real-time, which can be incredibly useful during emergency situations. The data gathered from these satellites provides up-to-date information on the location and intensity of the fire so that firefighters can plan their response accordingly. Additionally, this data can help track smoke plumes and predict how they might disperse in order to minimize health risks associated with breathing in smoke particles. Satellite remote sensing allows collecting data over large areas quickly and efficiently without having to rely on manual surveys or physical observations. This helps speed up projects while reducing costs associated with field operations. While there are many benefits associated with using satellite remote sensing for monitoring active fires, there are also some challenges that must be addressed before this technology can be used effectively.

Satellite remote sensing is a powerful tool that can be used to monitor active fires and provide real-time data that helps firefighters and emergency personnel better respond to wildfires. While satellite remote sensing offers many advantages, it also presents some unique challenges. The most significant challenge is the limited resolution of satellite imagery. The resolution of the images collected by satellites depends on the size of the sensors and other factors, but it is usually much lower than aerial photographs taken from aircraft or drones. This means that it can

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can be difficult to distinguish between small features on the ground such as individual trees or individual fire spots, which makes it difficult to accurately pinpoint the location and size of a fire. Another challenge is that satellite images are affected by atmospheric conditions such as clouds, haze, and smoke from wildfires. Clouds and haze can block parts of the image from view, while smoke can obscure details in areas where there is an active fire. This makes it difficult for satellite images to accurately

detect active fires in heavily clouded or smoky areas. Satellite imagery can be expensive and time-consuming to acquire. Depending on the type of sensor being used, acquiring high-resolution satellite images may require multiple passes over an area before all of the data has been collected. This increases both costs and time constraints when trying to monitor active fires in real-time using satellite remote sensing technology.