



“seeing things in a different light”

Ground based and Airborne UV and IR monitoring technologies

Nicarnica AS is a highly specialized company developing UV and IR remote sensing imaging technologies to identify substances in air.

The technologies have been developed over the last 20 years of work by Co-Founder Dr. Fred Prata in the area of volcano observation. The systems were developed for the detection and measurement of SO₂ and volcanic ash. These technologies can be utilized as both ground based or airborne solutions which allow great flexibility and increased possibilities for monitoring our environment from a distance.

In addition to the current offerings we have identified various additional research areas with identified market needs.

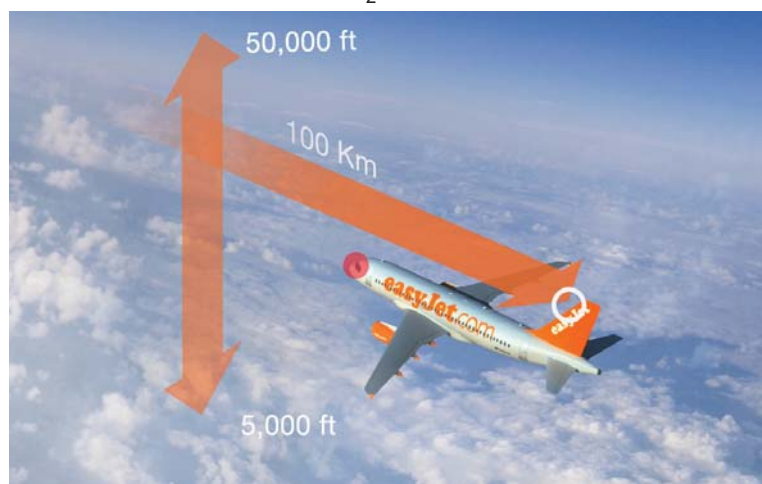
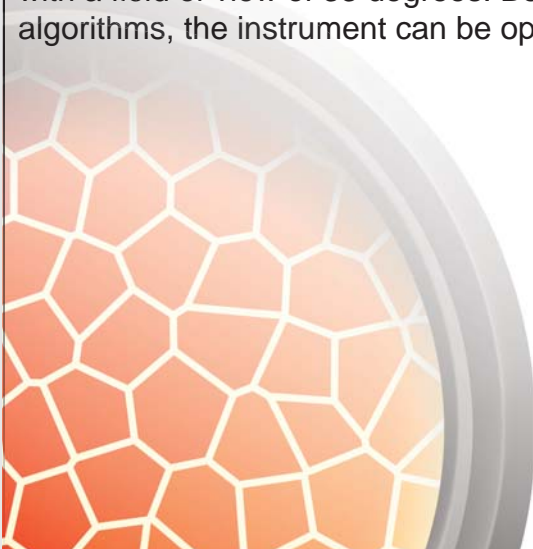
Markets currently served:

- Aviation
- Volcano Observation
- Environmental Monitoring
- Dust Storm Detection



AVOID™ - Airborne Volcanic Object Identifier and Detector

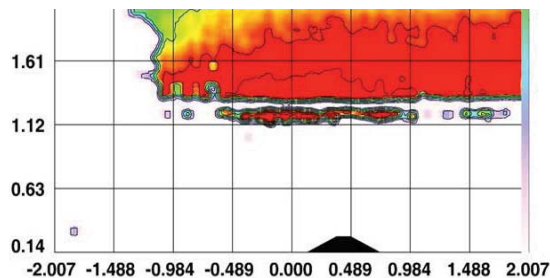
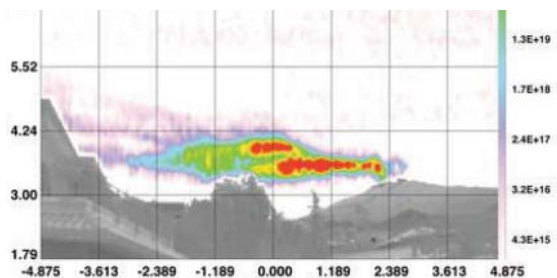
AVOID™ is a airborne-based infrared solution designed to monitor hazardous emissions from volcanoes by utilising infrared spectral imaging technology and sophisticated proprietary algorithms. The instrument can “see” clouds of ash or SO₂ emitted by volcanoes and discriminate these from ordinary meteorological clouds (containing water and/or ice). The field-of-view of the instrument can be specified by the customer, but a standard “fish-eye” configuration allows the instrument to monitor clouds up to 100 km from the monitoring site with a field of view of 33 degrees. Because AVOID™ relies on spectral discrimination algorithms, the instrument can be optimised to measure ash, SO₂ or both.



NicAIR™ - Ground based IR solution

NicAIR™ is a thermal infrared imaging camera used to measure gases and particles in the atmosphere from a safe distance (ground based up to 20 Km) and can operate 24 hours a day. The technology uses an uncooled microbolometer detector array and up to five spectral channels at various wavelengths to measure heat. NILU developed the algorithms which allow CyClops to use these temperature differences at specific wavelengths to determine the amount of ash in the atmosphere.

NicAIR™ can identify hazardous volcanic ash particles and dangerous SO₂ gas in the atmosphere. The information will be used to warn the public when these hazardous substances are in the vicinity and can also be used by general aviation to avoid volcanic clouds. The system has been tested at industrial plants that emit SO₂ and at volcanoes in Sicily (Mt Etna and Stromboli), in Papua New Guinea (Tavurvur), in Hawaii (Kiluea) and in the Northern Mariana Islands (Anatahan).

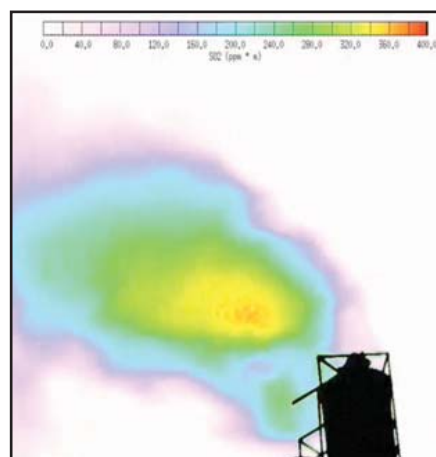


EnviCam™ - Ground based UV solution

EnviCam™ is a ultra-violet imaging camera which has been field tested within volcano and environmental research.

Recent developments in charge coupled device (CCD) technology, mostly in response to demand from the astrophotography community, have catalysed the use of sensitive imaging cameras for remote sensing of gases and particulates. The ultra-violet region of the electromagnetic spectrum can be exploited to measure several important polluting gases, including SO₂, NO₂, O₃ and BrO among others. These latest developments help answer the main downfall of current solutions which, only provide a single field-of-view.

The latest generation of imaging camera can overcome these spatial sampling deficiencies. The SO₂ imaging camera EnviCam, a fast sampling system utilising the region from about 280 –320 nm, has a high quantum efficiency detector and operates from a laptop computer and 12V power supply. The compact size of the system and its ease of use make it ideal for industrial applications in situations where routine monitoring and personal safety are important.



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