Automatic Microburst Detection Algorithm for Improved Aircraft Safety
Technology #12755

Applications

Applications for this algorithm is found in aircraft safety.

Problem Addressed

Microbursts are short, sudden bursts of wind that pose a major hazard to planes, as they can appear without warning and force the plane downwards. Detecting microbursts is essential for safe air travel, but is challenging because they arise suddenly. The ASR-9 Microburst Detection Algorithm (AMDA) is a new approach that automatically detects microbursts with higher accuracy than previous methods. This technology should improve safety outcomes in air traffic monitoring and will enable meteorologists to rapidly interpret large amounts of data.

Technology

The ASR-9 Microburst Detection Algorithm (AMDA) is based on the earlier TDWR Microburst Detection Algorithm, but is more accurate and more powerful. This technology detects overhead microbursts, a reflectivity processing step used to help detect velocity signatures that have been biased by overhanging precipitation, and a modification to some of the shear segment grouping and thresholding parameters to make them a function of range. In addition, AMDA has been designed to be as efficient as possible, and runs at the radar's 4.8 seconds/scan antenna rotation rate using only single board computer. This algorithm reduces the need for humans to identify microbursts, saving time and reducing costs. It will be useful for detecting microbursts before they influence aircraft, improving flight safety.

Advantages

- Works with the ASR-9 radar system, which will be in use until at least 2025
- Runs efficiently on a single computer, lowering costs
- Reduces the need for human intervention in microburst detection, leading to improved efficiency

Categories For This Invention:

Lincoln Laboratory
Software (Copyright)
Other (Software)

Intellectual Property:

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**Image Gallery:**

![Image of a cloud formation](image_url)