



Connecting minds. Advancing light.
SPIE is the international society for optics and photonics

SEARCH

- Conference Proceedings

- Journals

- SPIE Digital Library

- Books

- Collections

- Open Access

- Contact SPIE Publications

- Subscribe to receive free
New Titles Updates**



PROCEEDINGS PAPER

A study on aspect sensitivity of clear-air turbulence using coherent radar imaging of VHF atmospheric radar

Author(s): **Jenn-Shyong Chen; Jun-ichi Furumoto**

Published: **27 November 2012**; 6 pages; 36 papers;
DOI: **10.1117/12.974988**

SPIE Digital Library subscribers: [Download this paper](#)

PDF
Member: **\$15.00**
Non-member: **\$18.00**

[Add to cart](#)

Paper Abstract

Aspect sensitivity of clear-air turbulence was examined with multiple-receiver coherent radar imaging (CRI) of VHF atmospheric radar. The study was carried out by means of aspect angle, estimated from two CRI parameters: direction of arrival of echo center from oblique radar beam and brightness distribution width from vertical radar beam. The brightness distribution was retrieved by the Capon method. Modification of brightness value has been made with a suitable radar beam-weighting function before estimating the two CRI parameters. The radar beam-weighting function used for correction is a Gaussian form, and its standard deviation (beam width) varies with off-beam direction angle and is also adaptive to signal-to-noise ratio of echoes. The use of adaptable beam width can avoid over-modifying the brightness values at the edges of the imaged map, yielding a more reliable estimate of aspect angle. The CRI-estimated aspect angle was compared with that obtained from comparison of echo powers of different oblique radar beams. The statistical features of aspect angles obtained from the two approaches are consistent.

This paper was published in SPIE Proceedings Vol. 8523 Remote Sensing of the Atmosphere, Clouds, and Precipitation IV, [Tadahiro Hayasaka](#); [Kenji Nakamura](#); [Eastwood Im](#), Editors, 85231T

© SPIE - Downloading of the abstract is permitted for personal use only. [See Terms of Use](#)

