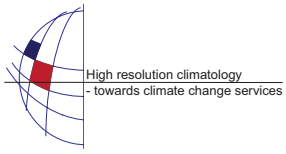
EMS Annual Meeting Abstracts
Vol. 7, EMS2010-739, 2010
10th EMS / 8th ECAC



Estimation of wind shear components over complex terrain, and their removal to enhance wind profiling

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Wind profiles over complex terrain are currently impossible to obtain at requisite accuracy via remote sensing or flow models. We propose a new approach in which, in each sampled height plane, the 3 wind components (u, v, w) and their horizontal shear components (du/dx, du/dy, dv/dx, dv/dy, dw/dx, dw/dy) are estimated from a 9-beam ground-based remote-sensing system. Based on simulations and error-propagation, we show that this characterization of the spatially complex wind field to first order will allow improved estimation of (u, v, w). The effects of temporal fluctuations due to spatial coherence are also discussed. Planned field investigations and coupled CFD data interpretations are described.