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Measurement of coherent structures in the atmospheric surface boundary layer by a multible beam mini SODAR

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With the new version of the BOKU-Mini-Sodar it is possible to make different antenna setups as well as different software configurations. So it is possible to run mono-static and bi-static configuration with multiple antennas. With different configurations you can get real time measurements of the spatial structure of coherent structures in the surface layer of the atmosphere. Since the measurement interval if individual profiles are 1 to 2 seconds it also possible to derive turbulence quantities. We discuss this system with the potential for high resolution measurements of simultaneous multible profiling of the atmospheric surface layer. Results from different measurements campaigns will demonstrate the potential and limitations. Real time analyses for coherent structures are done by using a diagnostic approach for reconstructing the flow field. An application is the vortex structure and development from landing aircrafts. Examples from measurements at the airport of Vienna and Manchester will be discussed. The potential for further development by combining the acoustic system with an electromagnetic RADAR to overcome limitations of the SODAR principle and also get temperature profiles will be discussed.