Introduction

Radar wind profilers (RWP) are special Doppler radars designed for measuring the vertical profile of the wind vector in the lowest 5 - 20 km of the atmosphere (depending on the operating frequency), on timescales ranging from seconds to years. Example (real-time) data are available from CWINDE.

RWP's are also able to provide additional information about the atmospheric state through the profiles of backscattered signal intensity and frequency spread (spectral width) of the echo signal. In contrast to the automated wind measurement, however, such data need still to be carefully analyzed by instrument experts due to the complexity of the measurement process. Comprehensive reviews of the technical and scientific aspects of RWP have been provided by Gage (1990),Roettger/Larsen (1990),Doviak/Zrnic (1993) Muschinski (2004) and recently Fukao:07. For a successful operational application of RWP's, a number of practical aspects need to be considered which are usually not discussed in the scientific literature.

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RWP Fundamentals

RWP Operational use

RWP Error characteristics

RWP Practical aspects

RWP Challenges