北極ニーオルスンにおけるミリ波雲レーダ FALCON-A による雲観測

鷹野敏明[1]、河村洋平[1]、矢永賢洋[1]、宇野賢吾[1]、永瀬雄斗[1]、
塩原匡貴[2]、小池真[3]、浮田甚郎[4]、小林拓[5]、矢吹正教[6]

[1] *千葉大学*、[2] *国立極地研究所*、[3] *東京大学*、[4] *新潟大学*、[5] *山梨大学*、[6] *京都大学*

Cloud Observations at Ny-Alesund with Millimeter-wave Doppler Radar FALCON-A

TAKANO T.[1], KAWAMURA Y.[1], YANAGA K.[1], UNO K.[1], NAGASE Y.[1],
SHIOBARA M.[2], KOIKE M.[3], UKITA J.[4], KOBAYASHI H.[5], YABUKI M.[6]

[1] *Chiba University*, [2]*NIPR*, [3]*The University of Tokyo*, [4]*Niigata University*,
[5]*Yamanashi University*, [6]*Kyoto University*

The new millimeter-wave (95 GHz) Doppler radar FALCON-A (Frequency Modulated Continuous Wave (FMCW) Radar for Clouds Observations - Arctic) has been developed by Chiba University cooperating with National Institute for Polar Research (NIPR), under Arctic Climate Change Research Project in GRENE Program (Fig.1, Table 1). FALCON-A was installed at Ny-Alesund, Svalbard Norway in September 2013 and started regular observations. Sensitivities of FALCON-A is, for example, below -40 dBZ around 5 km in height as shown in Fig.2., which would be good enough for observation of faint clouds at high altitudes. Observations were successfully done even in winter time. In this paper we we present results of observations of clouds at Ny-Alesund and also present preliminary results of comparison to Micro Pulse Lider (MPL) and in situ measurement of cloud perticles using a fog-monitor instrument.

レーダー諸元	
中心周波数	94.84GHz
送信出力	約1W
観測高度	15km (通常時)
高度分解能	48m (最小 9m)
ビーム幅	0.2度 (15m at 5km)
ドップラー速度幅	±3.16m/s(通常時)
時間間隔	10秒毎に1データ (最小 1秒)

Table 1. Characteristics and performance of FALCON-A.

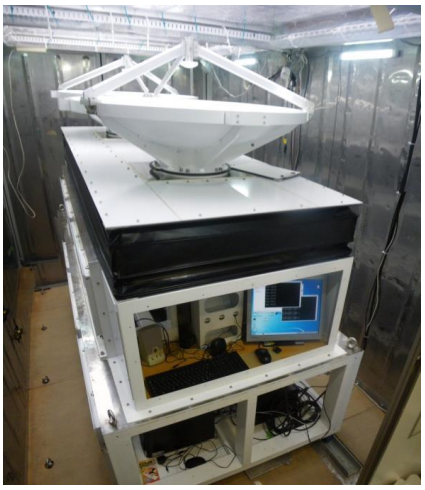

Fig.1. Millimeter-wave Doppler radar FALCON-A made of two 1m antennas for transmiting and receiving.

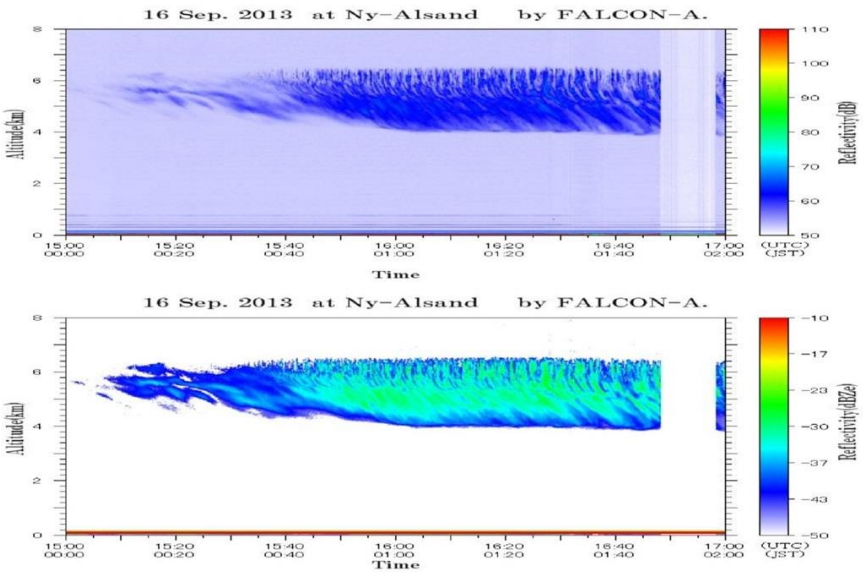

Fig.2. Cirrocumuli on 16th Sept. 2013 at Ny-Alesund.