MAARSY - The new MST radar on Andøya/Norway

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for more than 10 years.

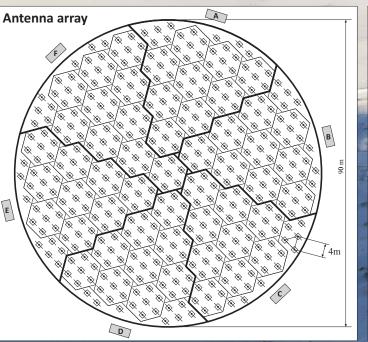
with an active phased array antenna consisting of 433 Yagi to each 7 antennas arranged in a hexagon are combined to 61 resolution. antennas. The 3-element Yagi antennas are arranged in an equi- receiving channels. Selected channels or combinations of IF siglateral triangle grid forming a circular aperture of approximately

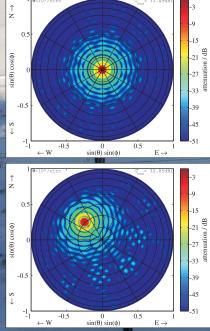
The Leibniz-Institute of Atmospheric Physics in Kühlungsborn, 6300m². Each individual antenna is connected to its own trans- sampling resolution and 16-bit digitization specified which will installation of the new antenna array and the laying of the RF Germany is installing a new powerful VHF radar on the North- ceiver with independent phase control and a scalable output up be upgraded to 64 channels in the final stage. The high flexibility cables between the 433 antennas and the six containers accom-Norwegian island Andøya (69.30°N, 16.04°E). The new Middle to 2 kW. This arrangement allows very high flexibility of beam of the new system allows classical Doppler beam swinging as modating the transceivers as well as the 61 IF cables from the Atmosphere Alomar Radar System (MAARSY) replaces the forming and beam steering with a symmetric radar beam of a well as experiments with simultaneously formed multiple containers to the radar control house was completed in August ALWIN radar which has been operated continuously on Andøya minimum half power beam width of 3.6°, a maximum directive beams and the use of modern interferometric applications for 2009. The radar control and data acquisition hardware as well as gain of 33.5 dBi and a total transmitted peak power of approxi- improved 3D studies of the Arctic atmosphere from the tropo- 217 transceiver modules were installed in spring 2010. This ini-The new system is a monostatic radar operated at 53.5MHz mately 800 kW. The IF signals of each 7 transceivers connected sphere up to the lower thermosphere with high spatiotemporal tial expansion stage using 31 hexagons of the array has full beam steering capability with a symmetric radar beam of a half The installation of MAARSY started in September 2008 with power beam width of 5.8°.

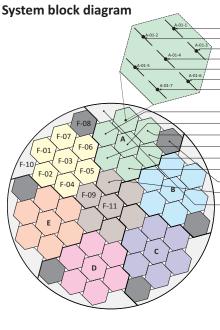
nals are sent to a 16-channel data acquisition system with 25 m the dismantling of the antenna array of the ALWIN radar. The



1	Basic system parame	eters
	Location	Andenes, Norway (69.30°N, 16.04°E)
	Operating Frequency	53.5MHz
	Peak power	~ 800kW
	Allocated bandwidth	4 MHz
	Maximum duty cycle	5%
	Pulse length	≥ 0.33 µs
	Sampling resolution	25m
	Transmitted waveforms	Single pulse, Complementary code, Barker code
	Pulse shapes	Square, Gaussian, Shaped Trapezoid
	Antenna array	433 three-element (crossed) Yagi
	Effective antenna area	~ 6300 m ²
	Half power beam width	3.6°
	Directive gain	33.5 dBi
	Beam directions	arbitrary zenith angles < 30°
	Receiving channels	16 (64)
	and the second second	







The full extension of MAARSY is scheduled for spring 2011.

	1			
Container A Transceiver chassis A-01		Combiner Unit	Radar Control House	
Transceiver chassis A-01		combiner Onic	,	
Transceiver 1	A-IF-01	combined	Antenna Interface	
Transceiver 2			and Switch Unit	
Transceiver 3		· 58 □ 28	F1 C	
Transceiver 4		intro to the total of total		
Transceiver 4 Transceiver 5		Multifunction		
Iransceiver 5		≥		
Transceiver 6		control	KF2 · · · · · · · · · · · · · · · · · · ·	
Transceiver 7				
Transceiver 8				
Iransceiver 8				
Transceiver chassis A-02	A-IF-02			
	A-IF-03			
Transceiver chassis A-03			RES RX5	
Transceiver chassis A-04	A-IF-04			
	A-IF-05			
Transceiver chassis A-05	Ant-US			
Transceiver chassis A-06	A-IF-06			
	4.15.07			
Transceiver chassis A-07	A-IF-07			
Transceiver chassis A-08	A-IF-08			
manacencer citassis Aroa				
Transceiver chassis A-09	A-IF-09			
Transceiver chassis A-10	A-IF-10		10	
mansceiver chassis A-10			RF10 Rx10	
Container B	<u> </u>			
	B-IF-01 - B-IF-07		KF12	
Container C				
	C-IF-01 - C-IF-07		KF130	
Container D				
container D	D-IF-01 - D-IF-07			
	D-IP-01 - D-IP-07		LO IF15	
Container E				
	E-IF-01 - E-IF-07			
Container F			RF16 Rx16	
	F-IF-01 - F-IF-07	N		