Selex Systems Integration GmbH

Gematronik Weather Radar Systems

Dual Polarized X-Band Radar 50DX

RainGain April 2013

presented by Maik Schürmann

SELEX
Systems Integration

METEOR 50DX

METEOR 50DX

Mobile Version

Stationary Version

METEOR 50DX

- Location: Columbia, Antonio Narino Airport
- Type: Fixed Installation
- Altitude: 1834m

Sientific Customers

METEOR 50DX	1	France	2013	ENPC ParisTech
METEOR 50DX mobile	1	Germany	2011	KIT Karlsruhe Institute of Technology
METEOR 50DX mobile	2	Iceland	2011	Icelandic Meteorological Office
METEOR 50DX mobile	1	UK	2011	University of Leeds
METEOR 50DX mobile	1	Japan	2011	Japan Agency for Marine-Earth-Science and Tech.
METEOR 50DX	1	Russia	2010	Hydrom. University of St. Petersburg
METEOR 50DX mobile	1	Brazil	2010	INPE, Instituto Nacional de Pesquisas Espaciais
METEOR 50DX	1	France	2009	Meteo France
METEOR 50DX mobile	4	Italy	2006	DPC Department of Civil Protection
METEOR 50DX mobile	1	Italy	2005	ARPA Piemonte

METEOR 50DX Summary

METEOR 50DX

- Medium range high-power X-Band Weather Radar System
- Doppler, Dual Polarization
- Detection of rainfall, radial wind
- Classification of rainfall intensity, type, wind, turbulence
- Compact, robust, Mobile, easy to install

Benefits

- Extremely sensitive
- High resolution
- Rapid update rate
- Precise Measurements, Tracking, Warnings & Nowcasting

Applications

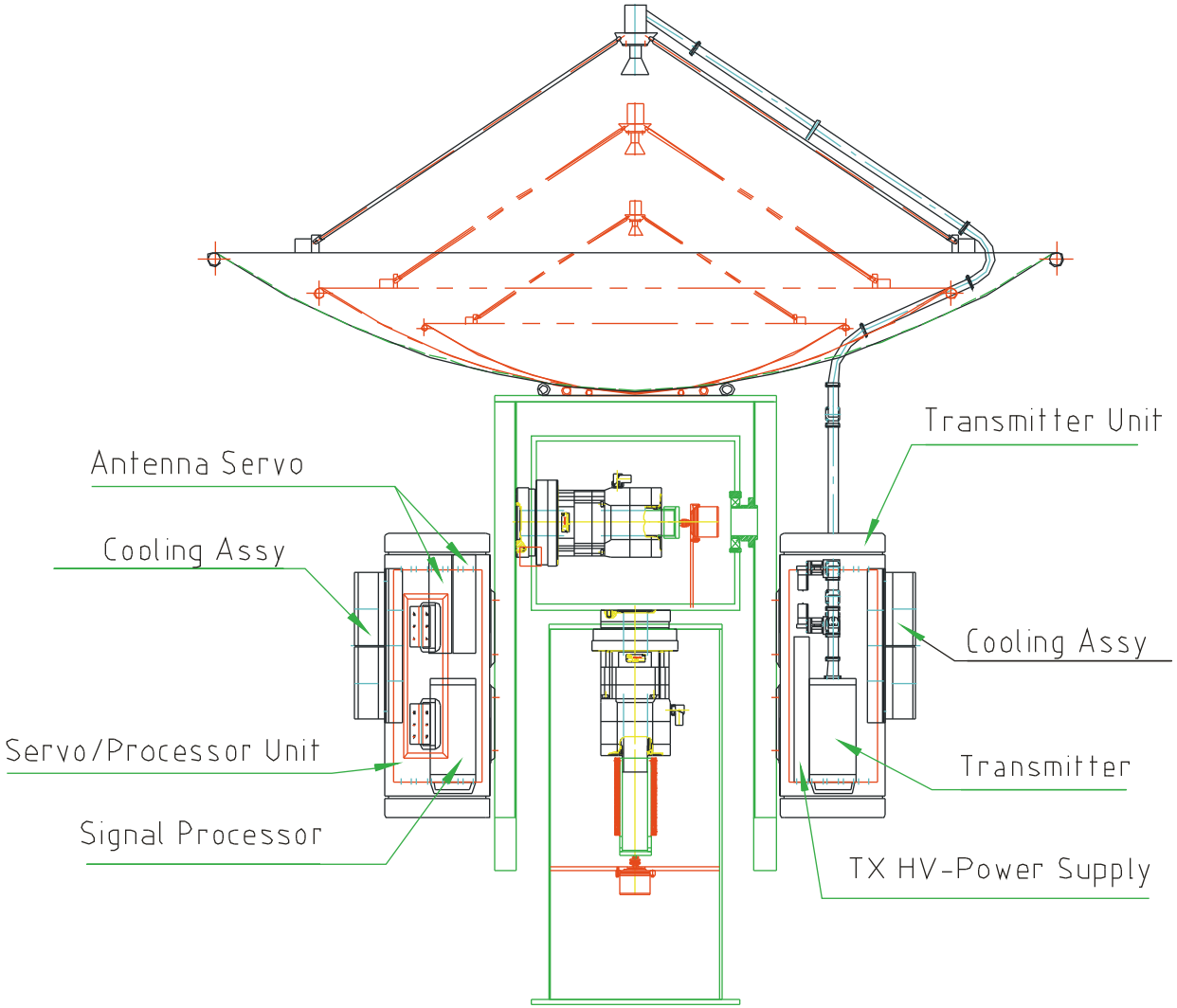
- Gapfiller in country-wide meteorological networks
- Research and temporary research campaigns
- Sensor for hydrological systems (flood/river/urban area monitoring, water reservoirs, drainage systems)
- Sensor for aviation met systems in the terminal area (hazardous weather, wind shear, gusts)

Support

- Warranty (24 months)
- Training and operational support
- Tailored service contracts

METEOR 50DX

Full “Radar-over-Elevation”, no Rotary Joints



METEOR 50DX

SELEX Systems Integration

Key Performance Parameters

Operating Frequency Range	**9.36 – 9.38 GHz or 9.30 – 9.35 GHz**
Peak Power (at Magnetron Output)	**100 KW**
Beam Width (1.8m standard)	**1.3º**
Antenna Gain	**42.5, dB**
Pulse Modes	**4**
Pulse Width (PW), configurable	**0,33 – 2.0 µs or**
Range Resolution @ Short Pulse	**50 - 500 m**
Pulse Repetition Frequency (PRF)	**250 – 2500 Hz**
Operational Range	**100 km**
Maximum Unambiguous Velocity @ 5:4	**+/- 80 m/s**
MDS @ Long Pulse	**-113 dBm**
Sensitivity (dBZ) @ LP& 100km	**~ -11 dBZ**
Sensitivity (mm/hr) @ LP, 100km	**~ 0.002 mm/h**

METEOR 50DX

SELEX Systems Integration

Environmental Conditions

Specification	Value	Unit
Temperature range with radome	- 25 to + 55	°C
Temperature range without radome	- 10 to + 35	°C
Relative humidity maximum (non-condensing)	10 to 95	%
Maximum operational wind load Without radome	130	km/h
Permissible operational wind load with radome	200 In gusts	km/h
Precipitation rate	60	mm/h
Weather	Fog, rain, hail, thunderstorm	
Atmosphere	Saline, corrosive	
Installation height	Sea level to 3 km	

Production / Implementation Milestones

SELEX Systems Integration

- April 2013 Kick-off meeting
- December 2013 FAT
- January 2014 Delivery on site
- February 2014 Site Acceptance
- March 2014 End of Project

potential Risks of delay due to:

- Development of NextGen Signal Processor
- Infrastructure
- „Late“ award of contract

RAVIS Maintenance Software

BITE – Built-In Test Equipment

Quick
Easy

Quick radar diagnostics & troubleshooting

Comprehensive analysis of all units at all detail levels
Klystron > 500 BITE messages!

Consequent graphical, top-down visualization

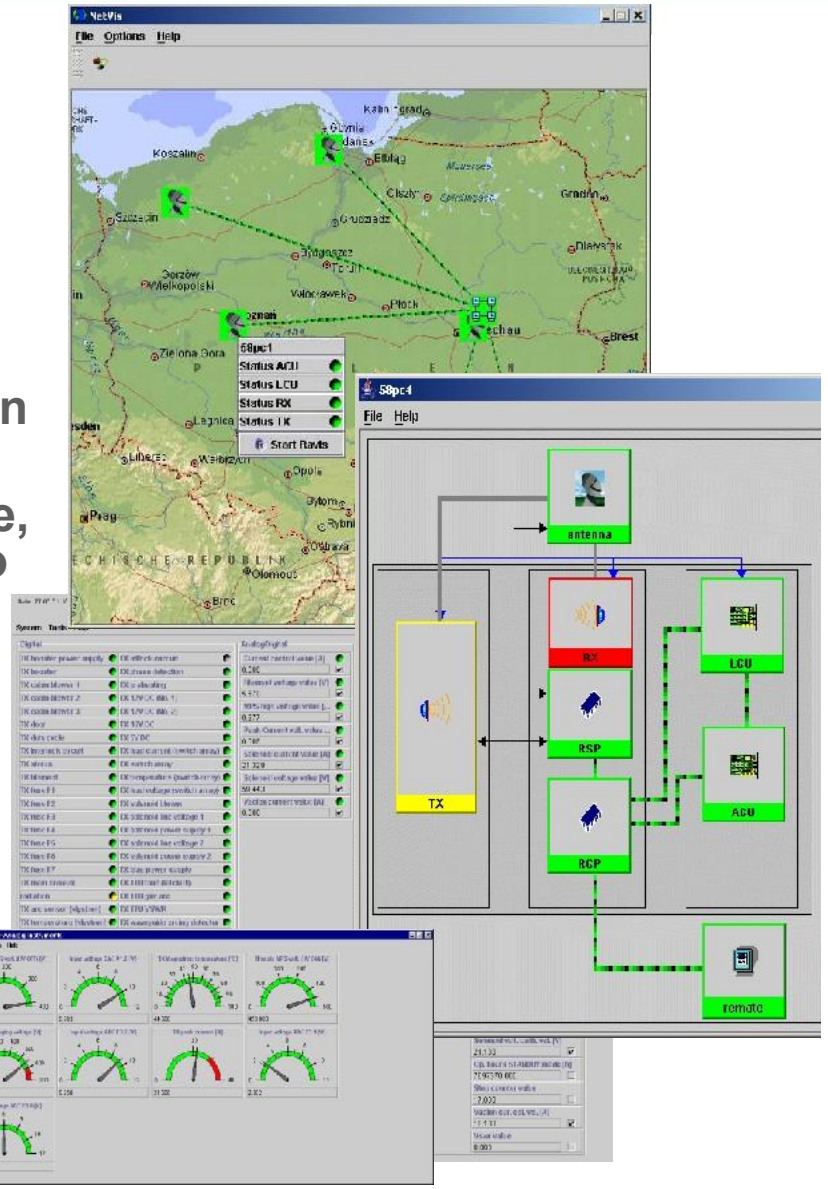
Automated (or manual), realtime, online surveillance in parallel to the running operation

Automated
Online

Textual, graphical, acoustical alerts

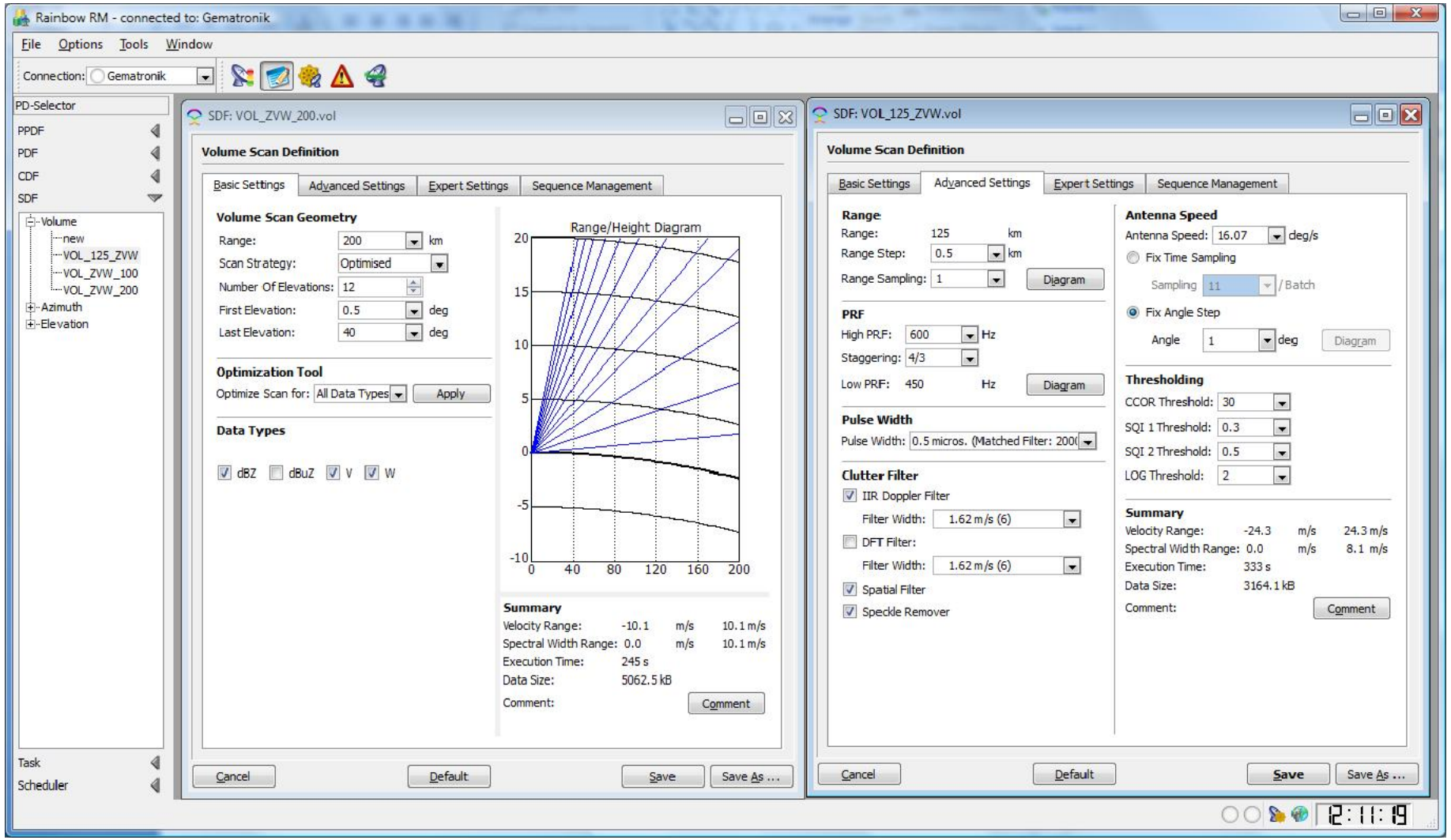
Alerting via E-mail / SMS

Easy to configure & extend

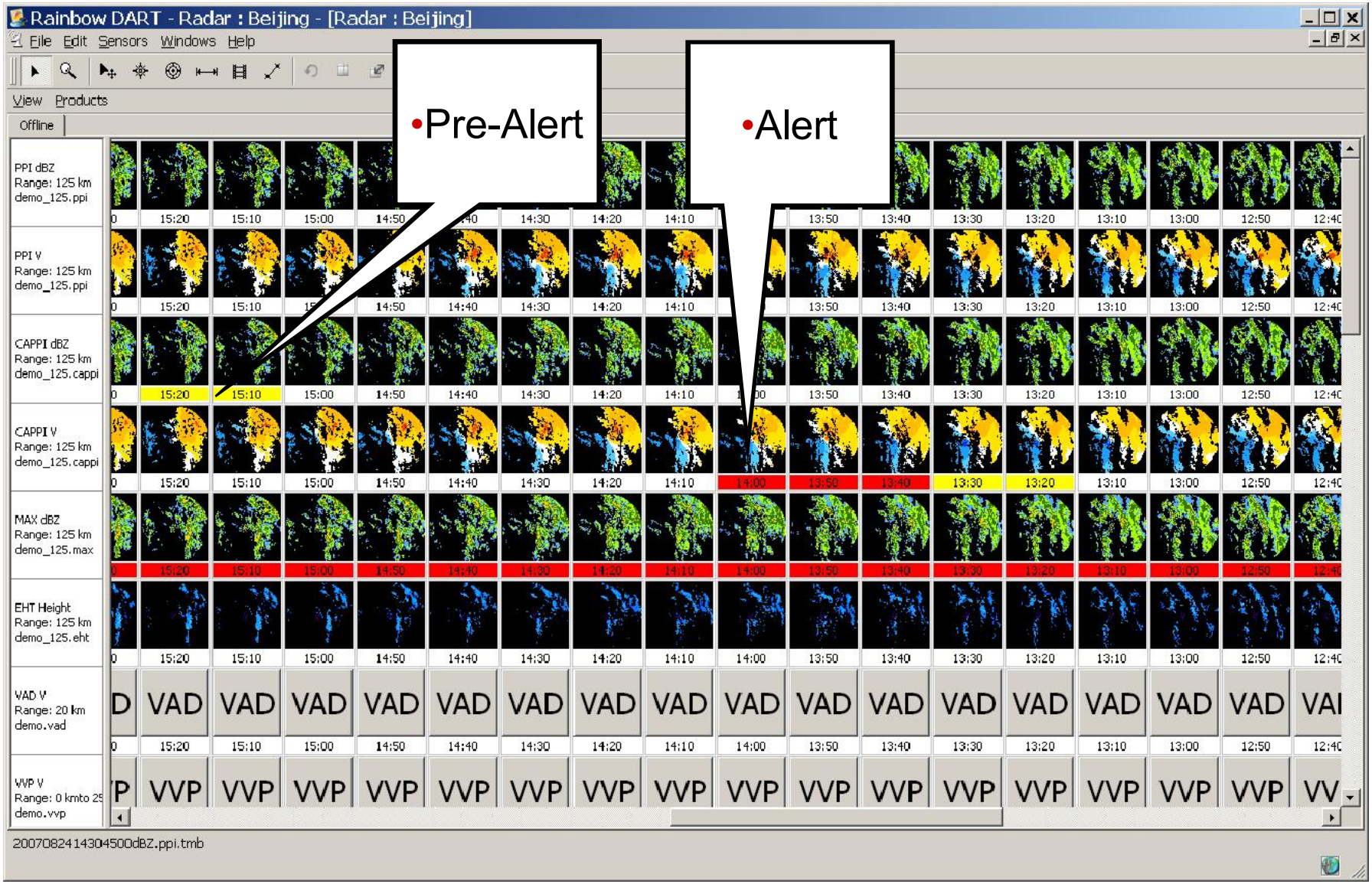


RAINBOW Display Software

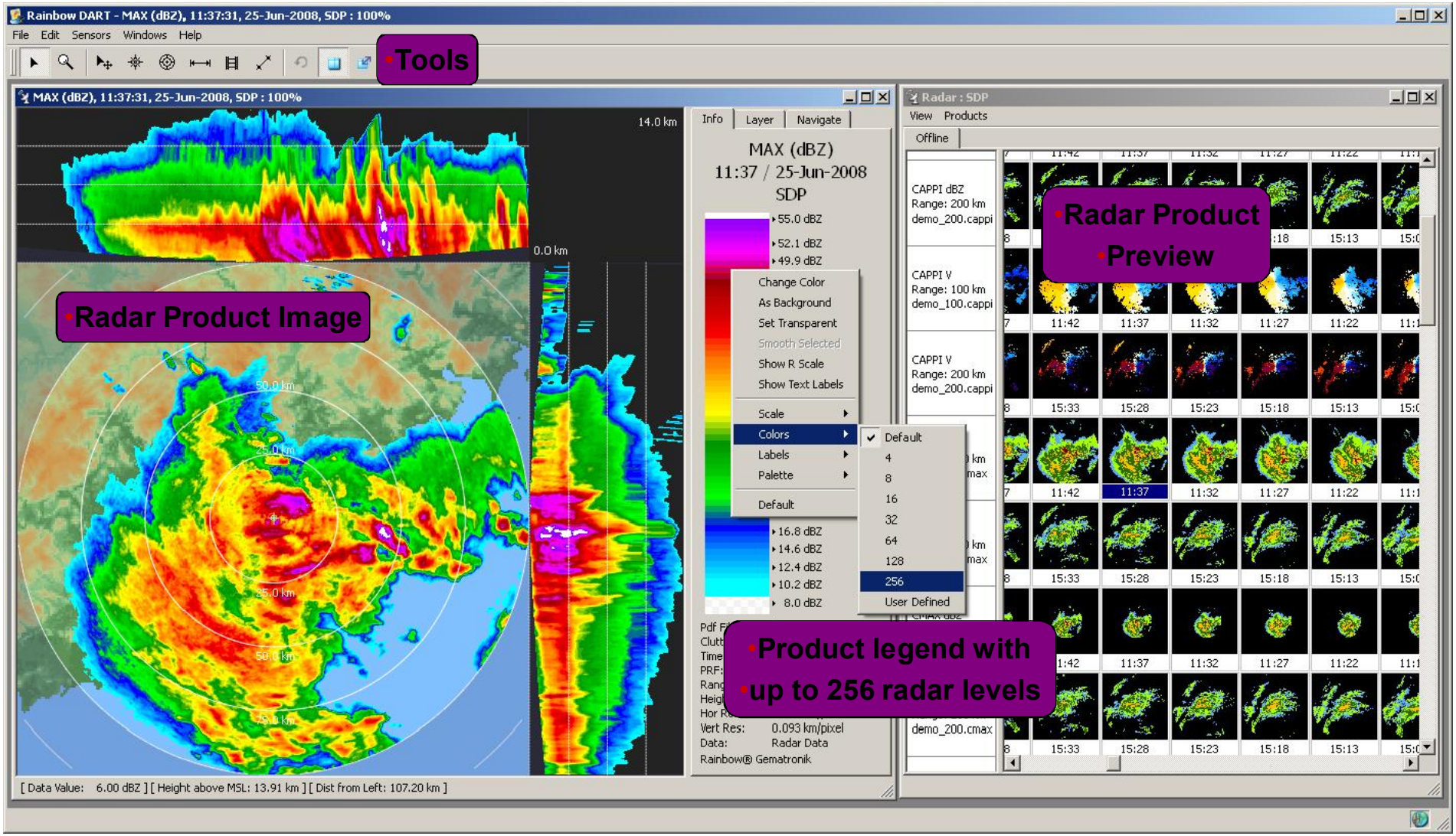
Flexibility…



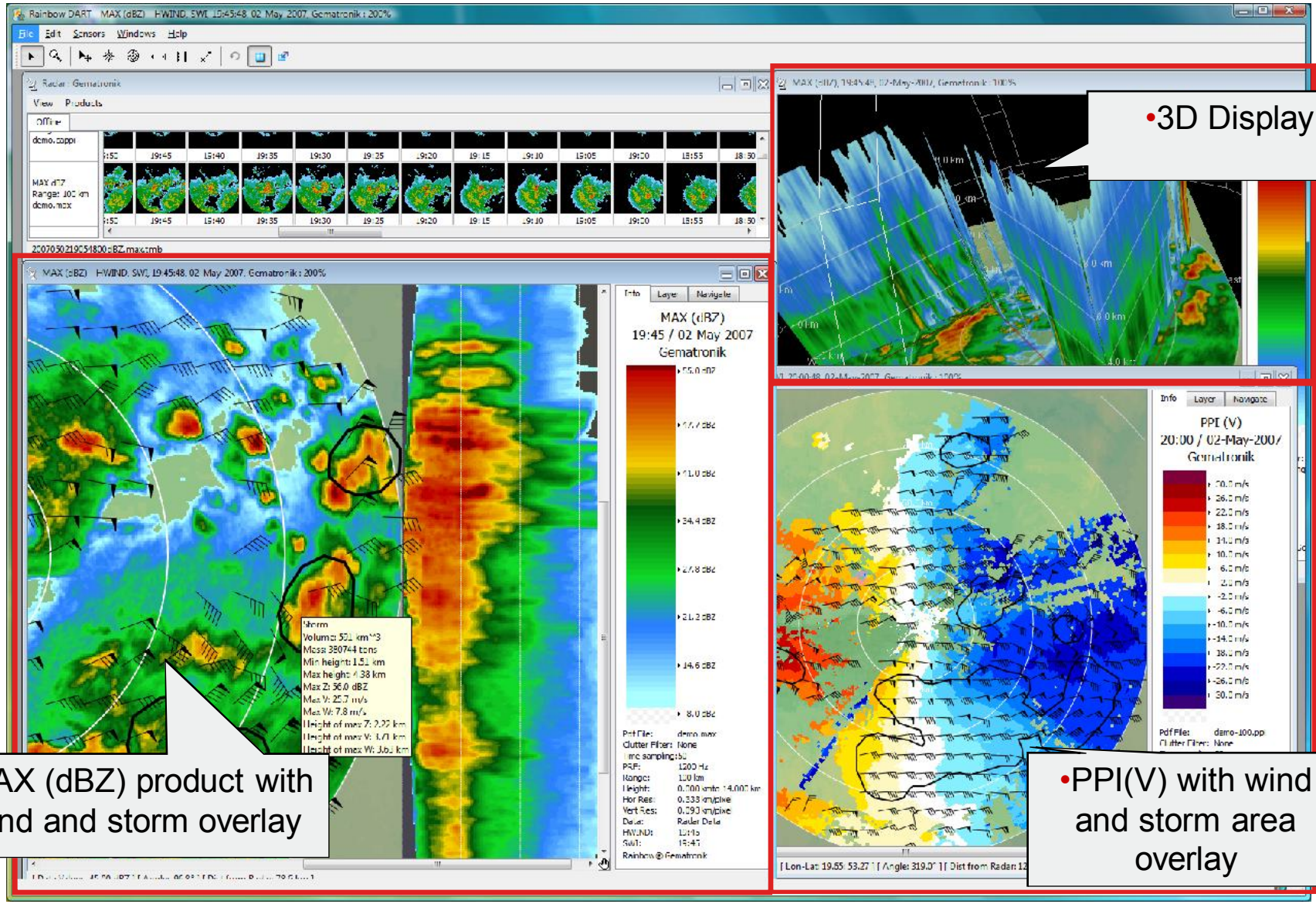
Product Preview



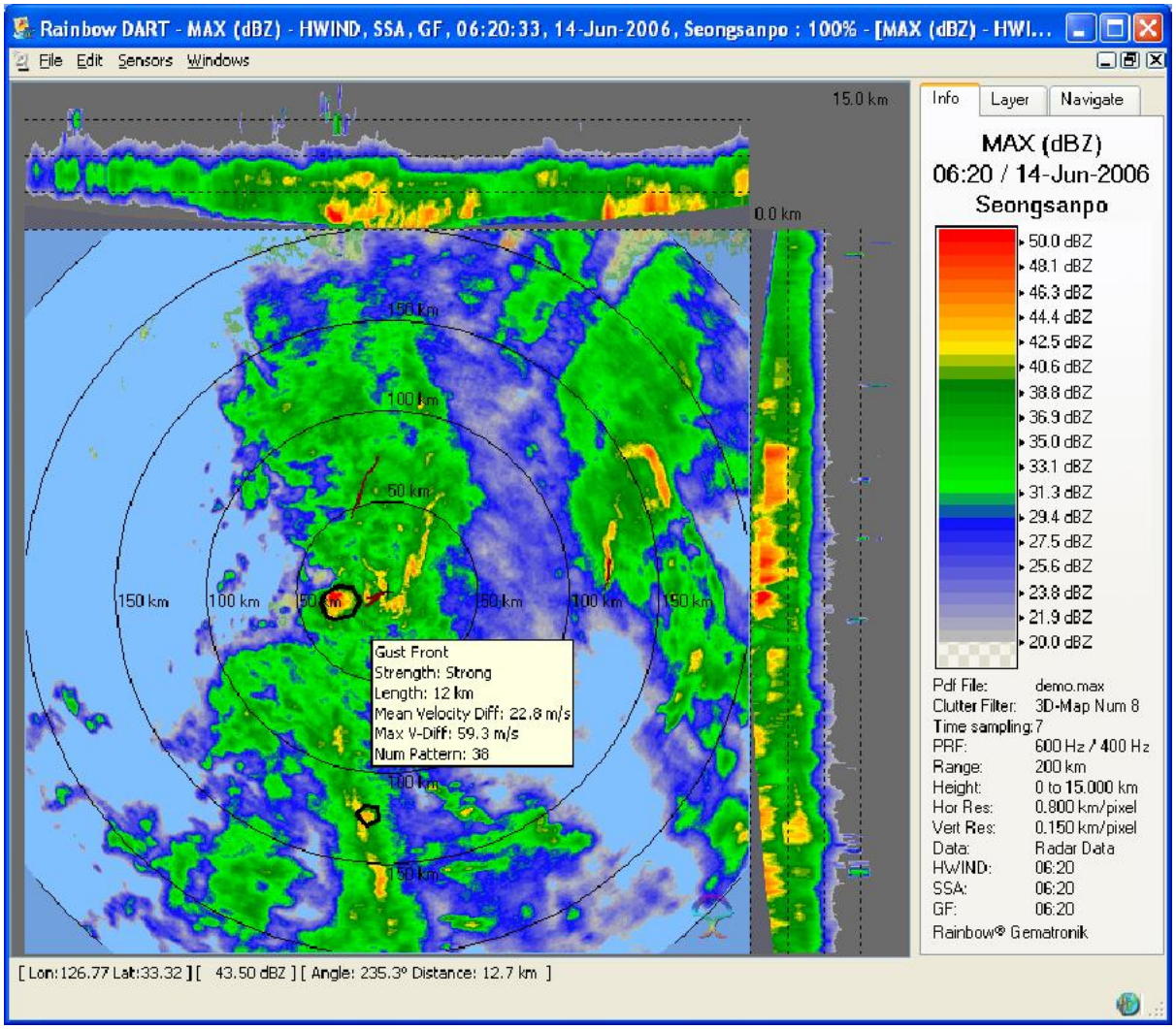
Rainbow DART Product View



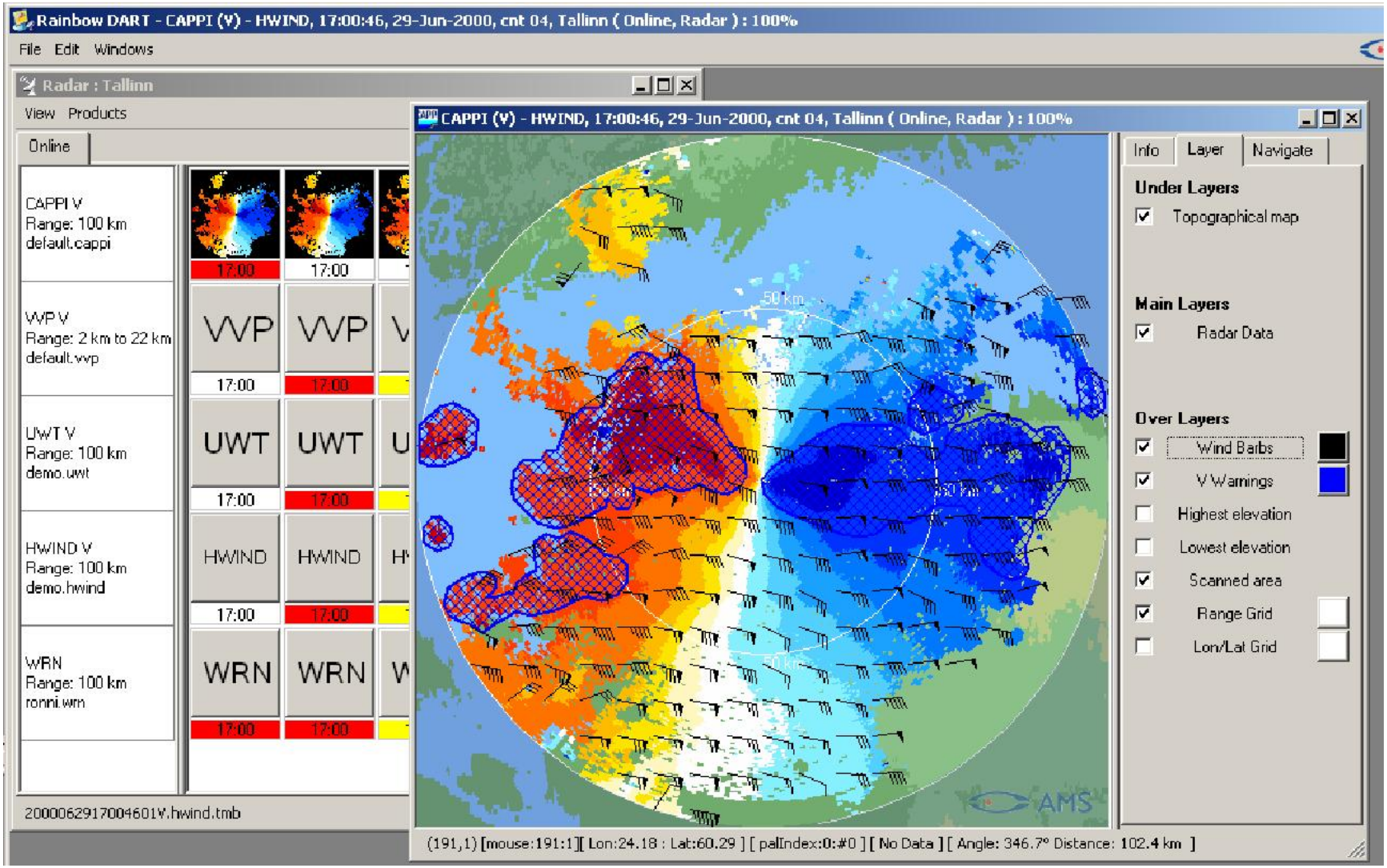
Rainbow DART Product View



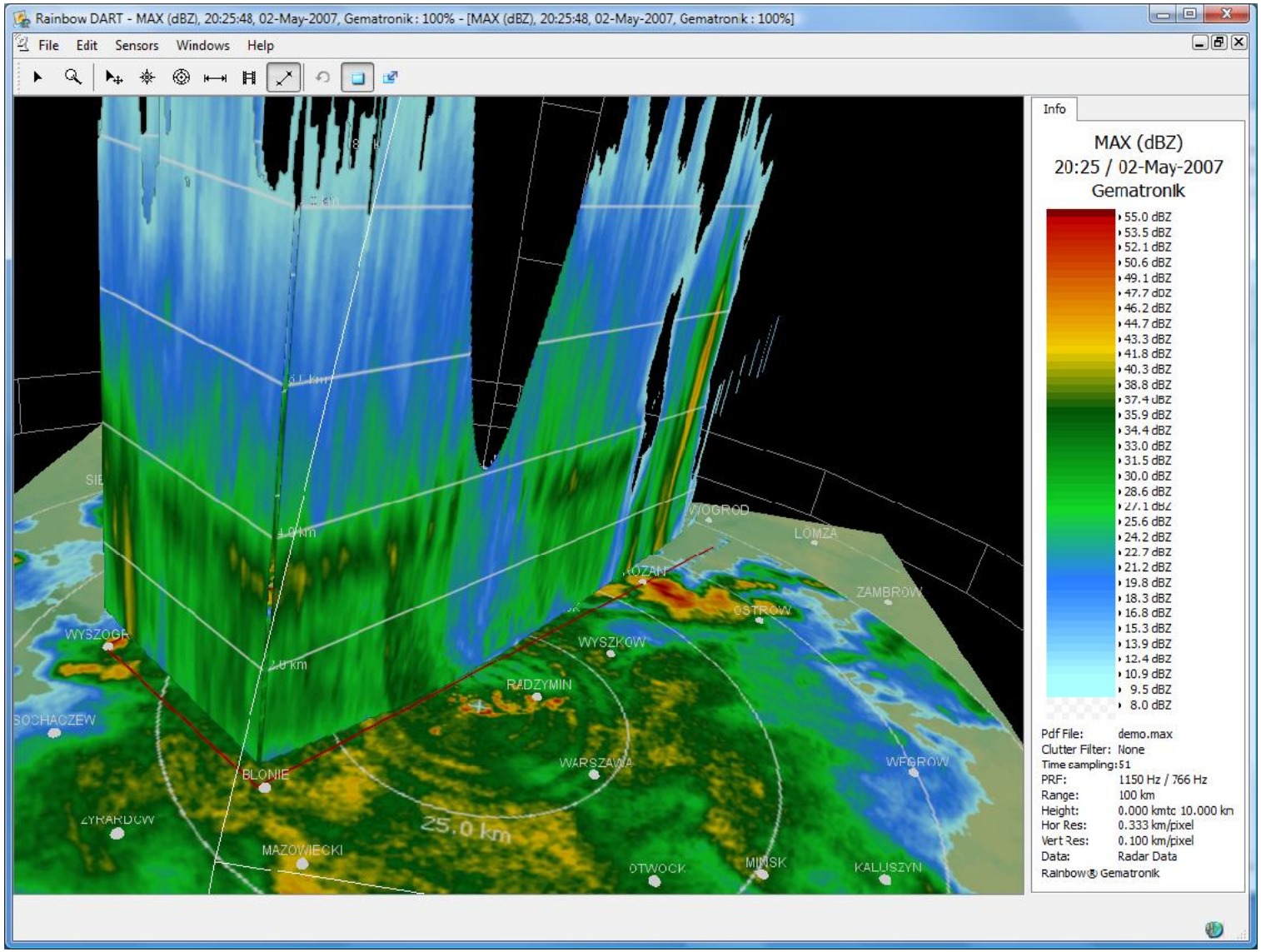
Typical Reflectivity Product



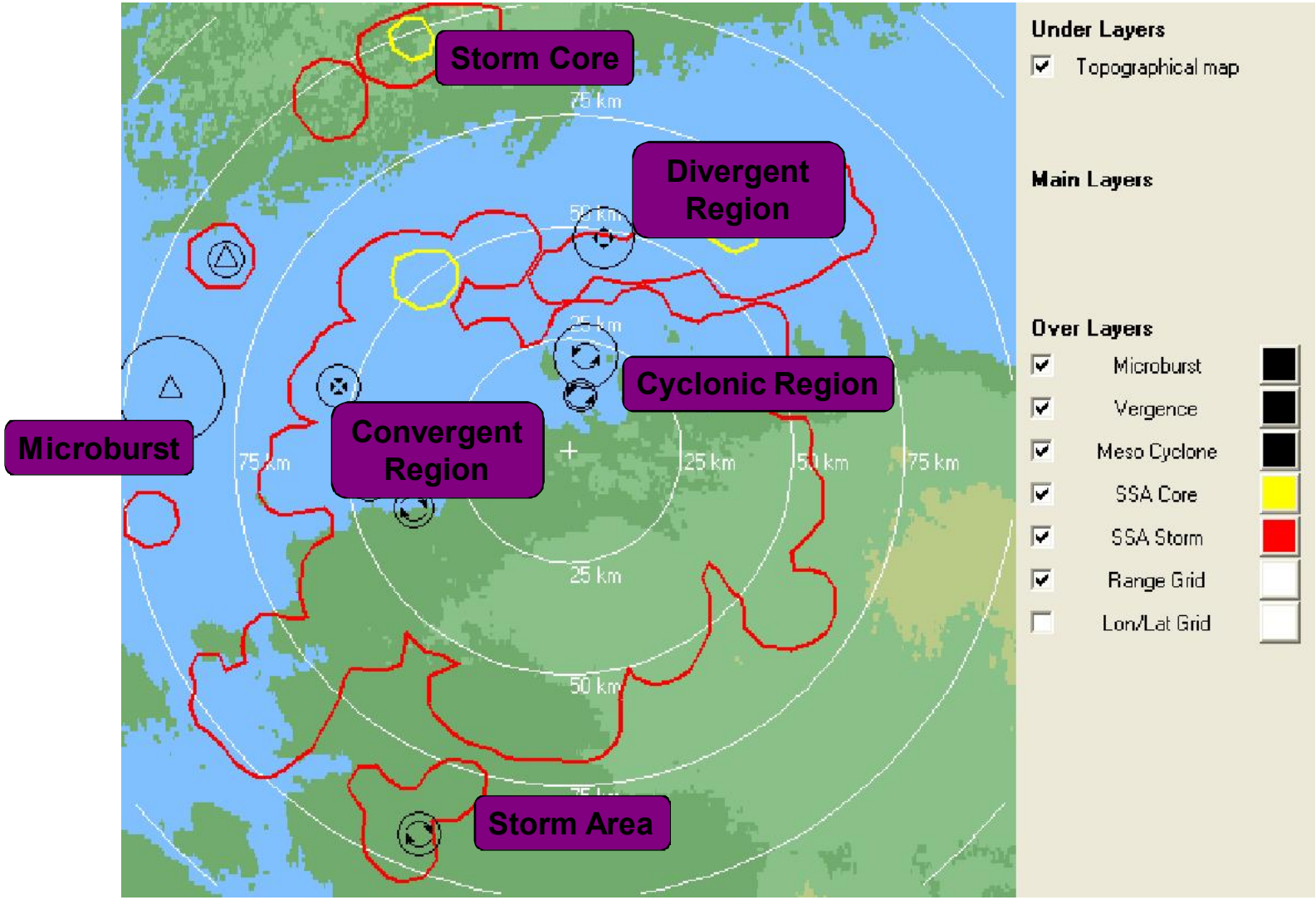
Velocity Product with Wind Overlay



3D Analysis of Convective Systems



Symbols for Severe Weather Phenomena



METEOR 50DX

- Location: France, Sait-Andre-Les-Alpes
- Type: Fixed Installation
- Altitude: 1775m

METEOR 50DX

On the road in France

On the road in Libya

Off the road in Iceland

On the road in Brazil

METEOR 50DX

On the road in Poland

Special Site Inspection Nice Airport

Measurement Campaign Nice Airport

Fuel for the generator, South Africa

METEOR 50DX

Volcanic Ash Tracking in Sicily

Measurement Campaign Arpa Piemonte, Italy

Volcanic Ash Tracking in Island

50DX welcome ceremony South Africa

METEOR 50DX

Volcanic Ash Tracking in Island, Artic version, double-axis, wide-base tyre