

Dubai Municipality Radar Project



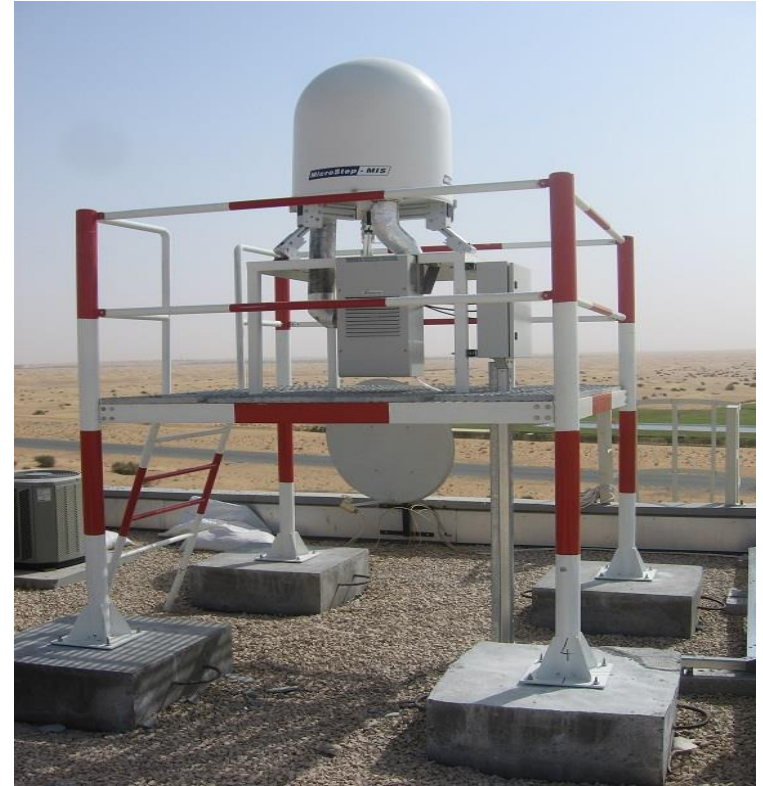
- **Dubai Municipality Radar MMR-50 Mini Meteorological Radar**

Radar is a device for examining the object's location in the space (azimuth, distance, and height) and its reflectivity.

Weather Radar or surveillance radar or Doppler radar it is type of radar uses radio waves to determine the range ,angle , or velocity of object to locate the precipitation ,calculate its motion and estimate its type (rain, snow, hail etc).



The DM weather radar MMR116 installed in the rooftop of the Inflight building, ($24^{\circ}53'13.47''\text{N}$ $55^{\circ}32'40.78''\text{E}$) this location is perfect for the radar ,above all nearby obstacles , in addition to easy access to the power and intent connection.



Mini Meteorological Radar (MMR 116) General Overview:

Simple Mini-portable Meteorological Radar (MMR) produced by MicroStep-MIS provides real time information about weather situation of the atmosphere up to 200 km range.

MMR answers the increasing demand for water management tools and hazardous meteorological phenomena detection. Watershed management, global warming adaptation strategies, flood protection, operational weather forecast, military and civil defense actions or aviation safety are supported by this radar.

MMR Mini Meteorological Radar provides:

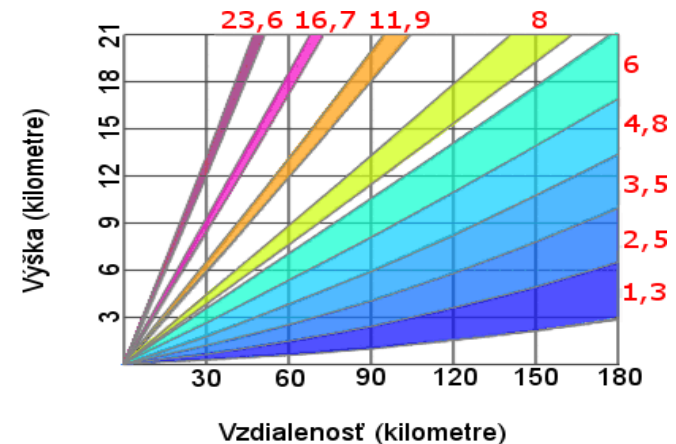
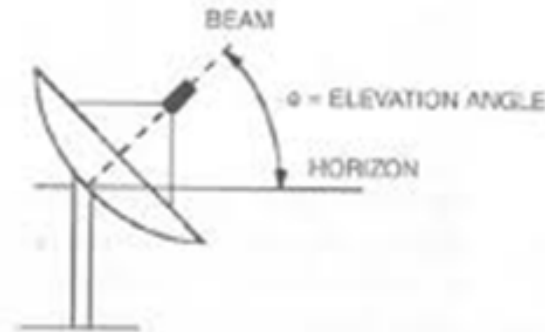
- Scan of echoes from the radar range.
- Data transformation into spatial matrix.
- Input data processing.
- Data distribution to customer graphic workstation.



Radar principle:

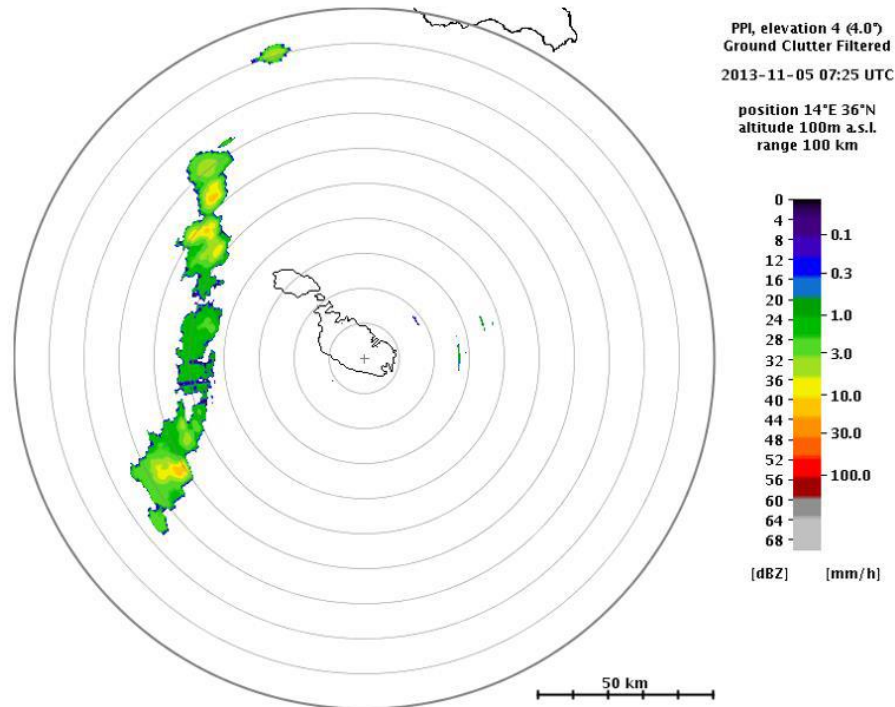
MMR radar is operating in X-band frequency range. The radar transmitter sends an electromagnetic energy pulse at a specific frequency which is focused by an antenna and transmitted through the atmosphere. As soon as this electromagnetic pulse strikes an object, the electromagnetic energy is scattered.

A small portion of that energy returns to the radar and is received by receiving antenna. This returned energy is called echo. Radar sets use the echo to determine the direction and distance of the reflecting object. The ratio of returned energy to transmitted energy is commensurable to size of an object. The larger the object, the stronger the signal and finally, the higher the reflectivity radar detects. This works also for raindrops (for their size as well as for their density in specific volume). Weather Radar MMR-116 MMR Radar changes its antenna elevation in regular intervals, before changing the elevation, radar spins around its axis by 360°, Therefore, the radar detects objects in different heights and different elevation angles .

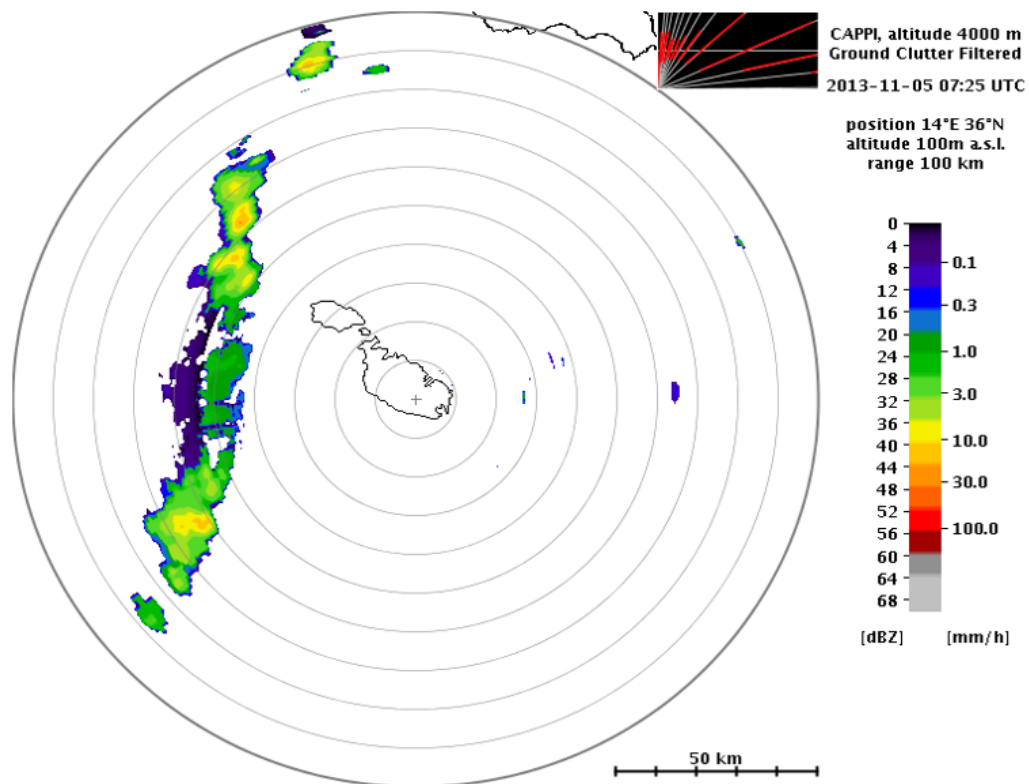


The data processing software offers interpretation of the 3D data in following standard outputs: -

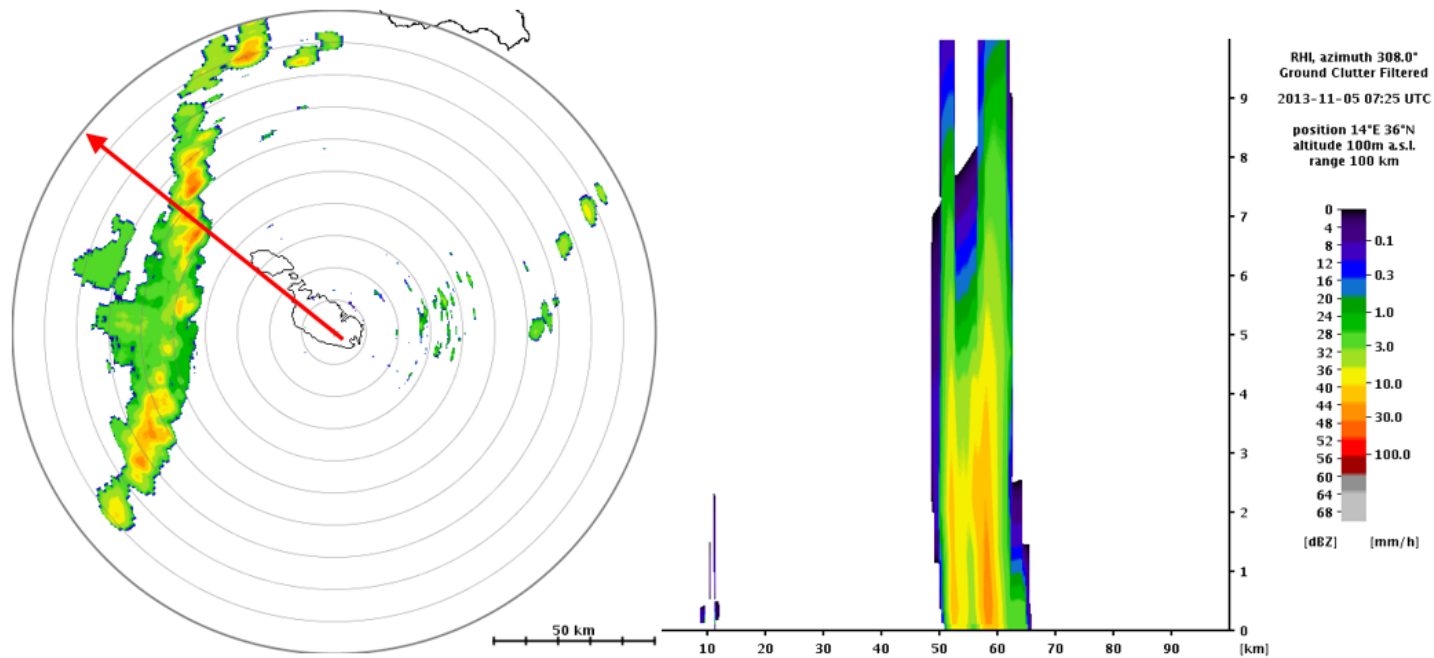
PPI (Plan Position Indicator) one radar elevation.



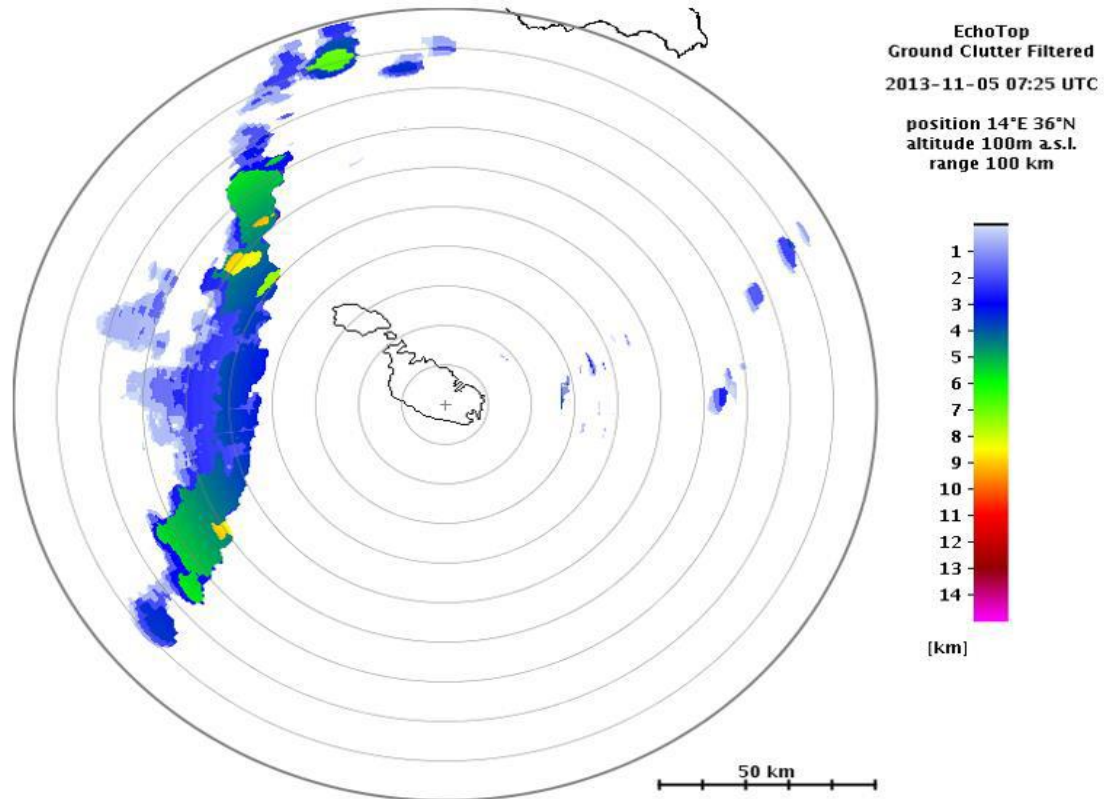
CAPPI (Constant Altitude PPI) horizontal cross section.



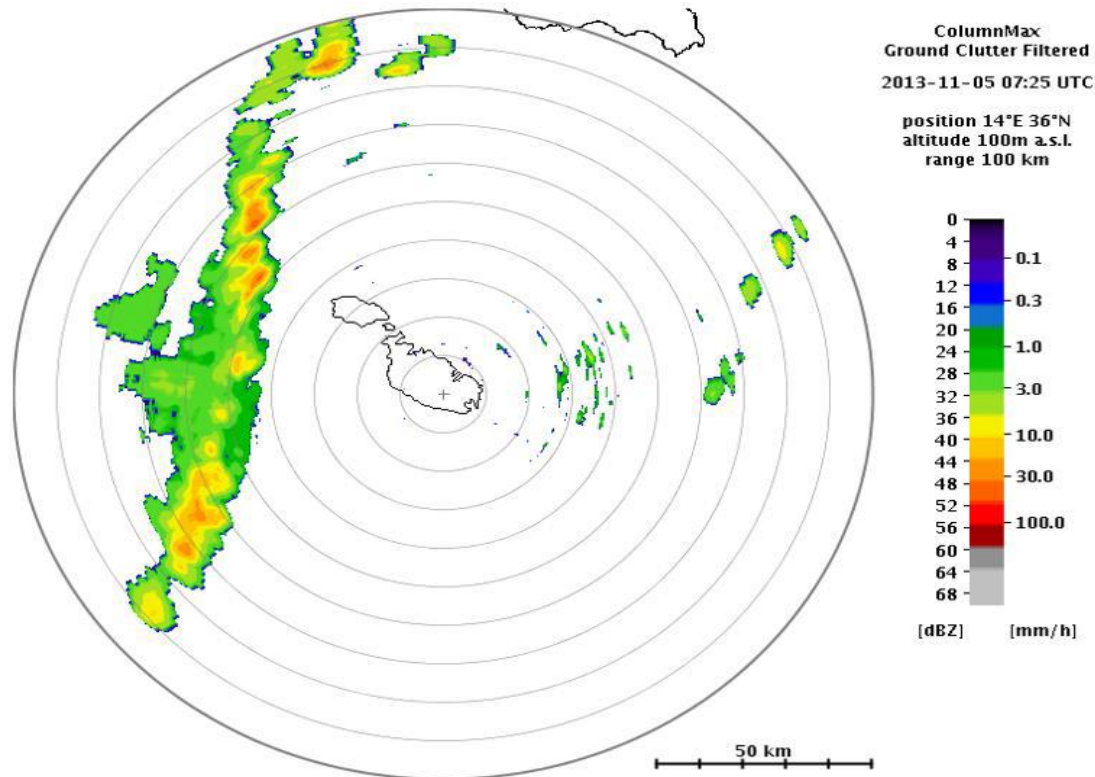
- RHI (Range Height Indicator) vertical cross section.



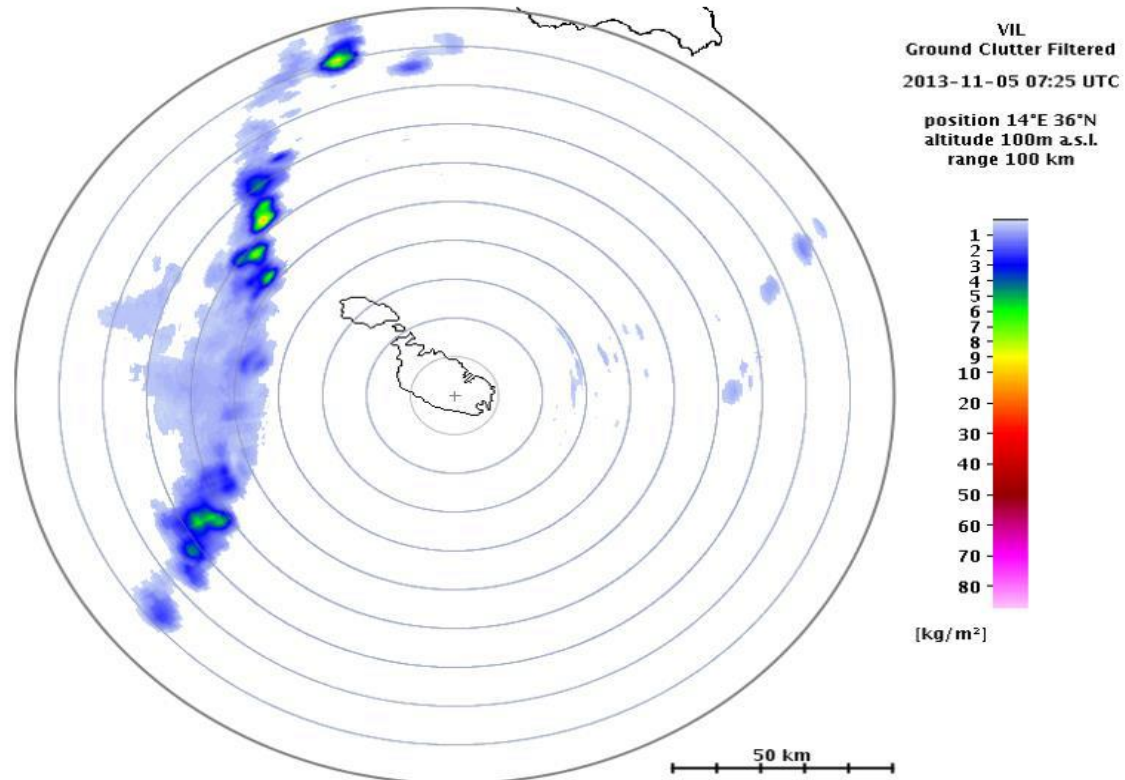
- Echo Tops heights of cloud tops.



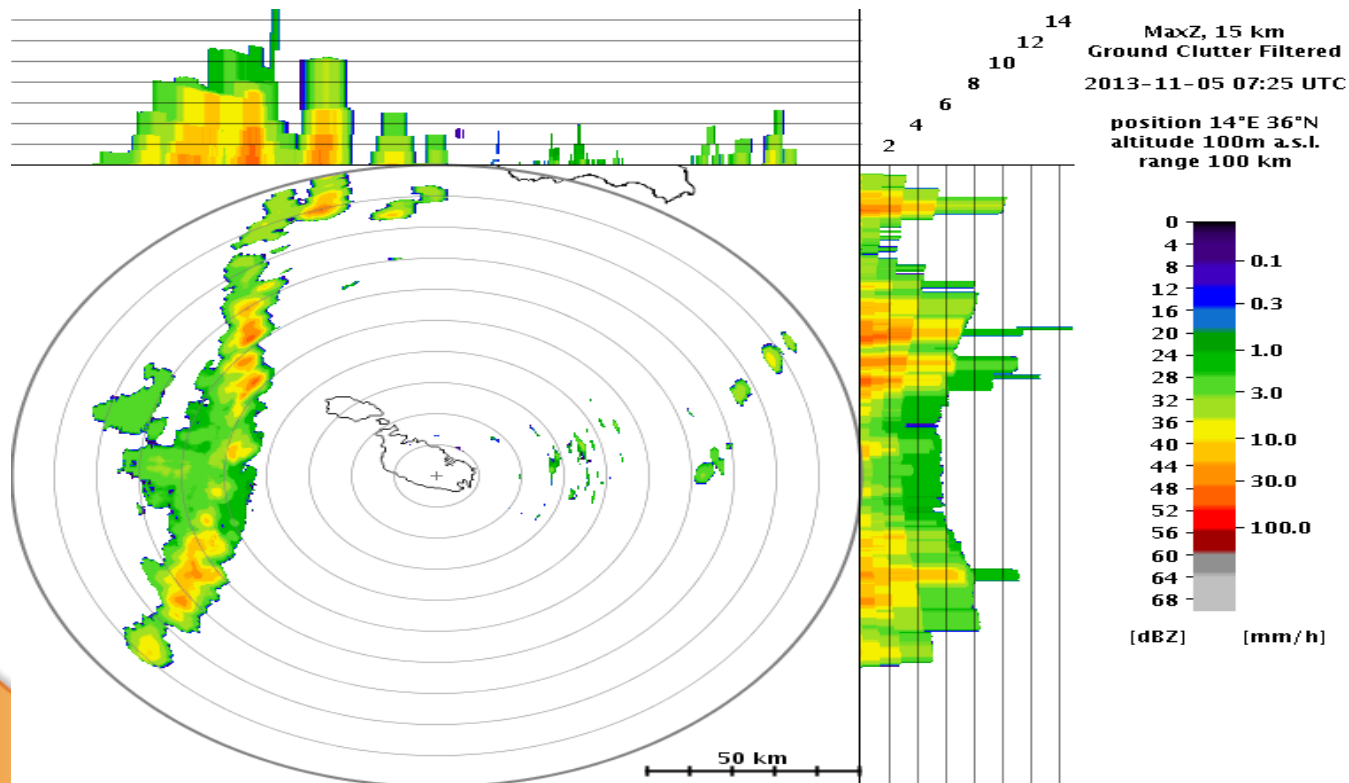
- **Composite Reflectivity (Column max) maximum in columns.**



VIL (Vertically Integrated Liquid Water) column sums.



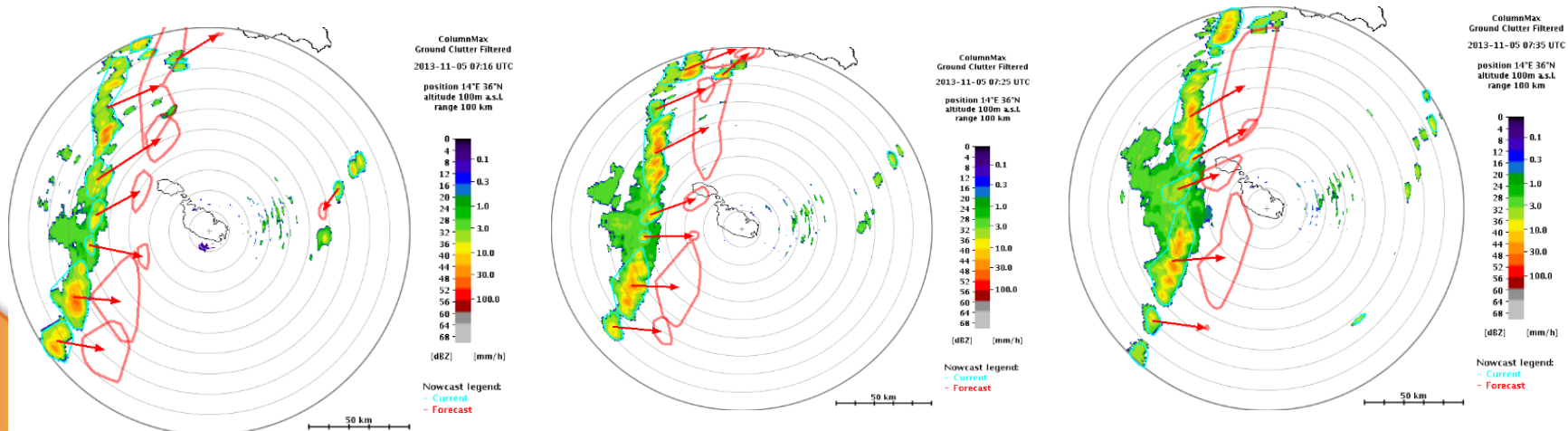
- MaxZ (maximum precipitation intensity from different views)

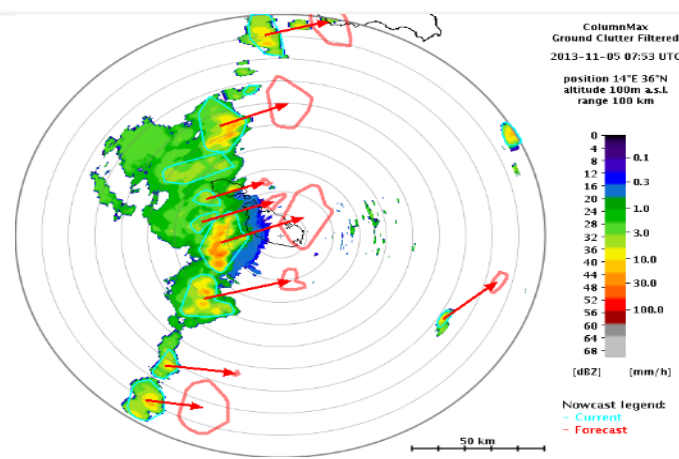
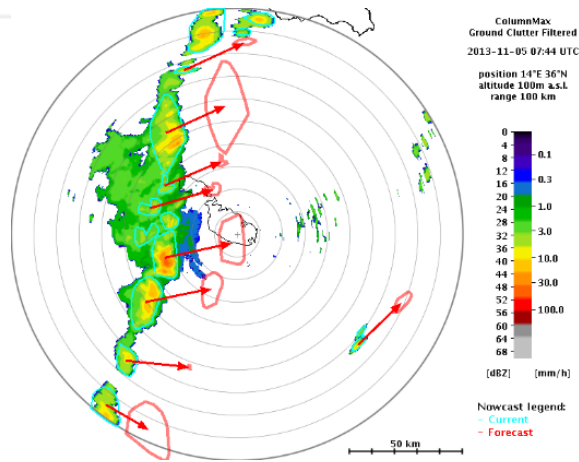


Typical fields of the MMR-116 radar include:

- * Floods warning
- * Storm rainfalls warning, thunderstorms warning, hails warning
- * Forecast of the thunderstorm evolution and movement
- * Additional information for the air traffic
- * Research activities
- * Now casting

Now casting example:-





The radar-based now casting is a powerful tool in warning the public of hazardous and high-impact weather. In broad terms, now casting contributes to the: Weather Radar MMR-116

- * Reduction of fatalities and injuries due to weather hazards.
- * Reduction of private, public, and industrial, property damage.
- * Improved efficiency and savings for industry, transportation and agriculture.

Weather Radar is the mainstay of Now casting. This is because radar data is very detailed. For example, the intensity of rainfall from a particular cloud or group of clouds can be estimated, which gives a very good indication as to whether to expect flooding, the swelling of a river, etc.

Thanks

