RADAR ERROR SOURCES

**Beam height:** For a precipitation radar, we need a measurement at the ground level but the altitude of the beam measurement increase with the distance from the radar.

**Radar calibration:** the radar system should be well calibrated and stable during the time.

**Attenuation by radome:** a wet radome (or dirty) attenuate the radar signal

**Clear air:** Backscattering of the signal by birds, turbulence, insects, …

**Ground clutter:** the radar signal is backscattered by obstacles (building, terrains, …)

**Partial beam blockage:** the radar signal can be blocked totally or partially by Masks

**Radar revisit time:** cells move and a revisit time too slow leads to underestimates of integrated rainfall

**Interference:** The radar signal is interfered by a signal of foreign sources (sun, WiFi, radar, …).

**Attenuation by the precipitation:** The radar signal is attenuated when it passes through a precipitation cell (rain – hail – wet snow)

**Z-R relationship:** The radar measure is not directly the rain rate but the reflectivity. How we move from one type to another type of precipitation?

**Anomalous propagation:** the change of the direction due to changes in atmospheric pressure, temperature and moisture.

Location: Selex ES Germany
Location: Selex ES Germany
Location: Selex ES
Germany
Radar location: Jaraguari (Brazil)
Local time = UTC – 3h

reflectivity (dBZ)  radial velocity (V)
ANOMALOUS PROPAGATION

$T_0 = 9$
ATTENUATION
BY PRECIPITATION
before
after
ATTENUATION
BY PRECIPITATION

Before

After
before

after
VOLCANO ERUPTION

For Dual Pol radars:

Volcanic Ash Detection and Classification algorithm (VADC) in Rainbow® uses DP moments to analyze and visualize volcano eruptions.

Iceland (Grimsvotn), mobile X-band Radar (METEOR 50DX), 22 Mai 2011
dBZ

PPI (dBZ)
18:45 / 30-Jun-2008
INTA_Parana

PPI (V)
18:45 / 30-Jun-2008
INTA_Parana
FIRE