Modified Partial Thickness Method

Thickness (m)		Precipitation Types
850 – 700 hPa (H1)	1000 – 850 hPa (H2)	
< 1540	< 1300	Snow
	1300 – 1320	Sleet/Snow
	> 1320	Rain
≥ 1540	< 1300	Snow if H1 ≤ 1545
		Sleet/Snow if H1 > 1545
	1300 - 1320	Freezing Rain/Rain
	> 1320	Rain
1570 - 1595	> 1295	Freezing Rain/Rain
1595 - 1605		Freezing Rain/Sleet
≥ 1605	≥ 1310	Freezing Rain
	< 1310	Sleet
Some additional conditions:		
If retrieved ptype = Snow and $T_{surface}$ > 0°C, change ptype to:		Rain/Snow
If H2 > 1335 and $T_{surface}$ > -1°C, ptype is always:		Rain
If all T ≤ -3 °C throughout MWR profile (10 km), ptype is always:		Snow
If $T_{surface}$ > 7°C, ptype is always:		Rain
Within first near-surface 50 hPa, if all T > 0°C and T_{max} > 2 °C, ptype is always:		Rain
For those sites with $P_{surface}$ ≈ 1000 hPa only: If retrieved ptype = Freezing Rain or Freezing Rain/Sleet and $T_{surface}$ < -3°C and H2 < 1320 m, change ptype to:		Sleet
For those sites with $P_{surface}$ > 1000 hPa only: If retrieved ptype = Sleet/Snow or Freezing Rain/Rain and $T_{surface}$ < -1°C, change ptype to:		Freezing Rain/Snow
If retrieved ptype = Rain and $T_{surface}$ < -1°C, change ptype to:		Freezing Rain/Rain
If H1 > 1600 and H2 > 1325, ptype is aways:		Rain

***Note: For sites with higher elevation (above 150 m above sea level) and $P_{surface}$ < 1000 hPa, it has some issues and need further tuning (ongoing), which is main drawback of this parcel method.

For comparison with mPING and ASOS, mixed ptype is collapsed into 4 major ptypes based on FZR > SN > RA > SLT (SLT given least weight because of mPING reporting inconsistencies and ASOS manual override need).