Magic Numbers Summary

This is a summary of the magic numbers used in this guide for thresholds of storm and severe development. Please note that the worst thing you could do is continually refer to this page an thresholds and apply them to the current situation that you are currently experiencing!!! The extremely dynamic and these thresholds can only be considered as a guide and not law.

Just because something is outside a threshold, or in another does not in anyway mean that is v happen. I strongly suggest that you read all sections of this guide in order to obtain a better ic these thresholds actually mean and how they can best be used. For example, just because a C falls in one category and a CAPE of 1050 falls in another does not mean that the latter is signif than the former!

Instability Figures

Lifted Index

LI Value	Result
+2 or higher	The 500mb level looks relatively stable, might get some showers if the lower levels are cool enough though. Storms unlikely.
0 to +2	Possible showers, low risk of storms (but storms in more unstable areas might move into this region and survive).
-2 to 0	Weak instability, potential for some showers and storms.
-4 to -2	Moderate instability, ample potential for storms - starting to become favourable for severe storms if other conditions are right.
-4 to -6	Strong instability, more than ample potential for storms and severe storms.
-6 and below	Very strong instability, same as above.

CAPE & LIs

CAPE (LIs)	Description
< 500 (-1 to 2)	Very weak instability, showers likely wi isolated storms. If shear is absolutely fa then there is the chance of severe storms
500 -1000 (0 to -3)	Weak instability, showers and storms li generally weak unless shear is good.
1000-1750 (-2 to -5)	Moderate instability, storms (possibly s pulses), becoming quite severe if shear i good, updrafts may be strong enough t large hail (2cm+).
1750-2500 (-4 to -8)	Strong instability, possible severe pulse weak shear - probable severe storms in shear, large enough to sustain large (2c large hail (5cm).
2500-4000 (-6 to -12)	Very strong instability, severe pulse sto in weak shear. Good shear will result in very severe storms with updrafts strong sustain very large (5cm+) to extreme (8c
4000 > (-10 to -16)	Extreme instability, severe pulse storms weak shear. If you have good shear - w Updrafts strong enough to sustain hail 10cm.

Shear Figures

300mb Winds

Wind Strength	Effects
< 20 knots	It is unlikely that there will be enough wind shear at this level to help blow cirrus and other high cloud that is produced from storms. Storms would collapse on themselves unless the mid level shear is relatively stro
20 - 30 knots	This is marginal, it should allow enough shear for thunderstorms, and the ris severe pulses but you will need some strong instability to offset this, or at good shear in the mid levels.
30 - 45 knots	Adequete but not good, this should allow enough shear for thunderstorms severe thunderstorms providing there's some moderate instability t
45-70 knots	Good shear, allows reasonable outflow for thunderstorms at the 300mb including supercells and severe storms.
70-100 knots	Very good shear, ample outflow for all storms.
100 knots >	Very strong shear, perhaps too strong for weak storms, but fantastic for ot

Surface Winds

Wind Strength	Effects
< 5 knots	Negligible

5 - 10 knots	Light inflow, helps storms a little but not really ideal
10 - 15 knots	Moderate inflow, helps storms organise themselves near the surface, in Aus lack a low level jet a lot of the times and if I had a 10-15 knot surface flow I happy!
15-25 knots	Strong inflow, probaby only experienced around frontal systems in Austra the coast from seabreeze fronts - great for severe storms and supercells!
25 knots >	Very strong inflow!

Wind Strength Guide

	Poor	Marginal	Adequate	Good	Very
1000mb	< 5 knots	5 - 10 knots	10 - 15 knots	15 - 25 knots	25 k
850mb	< 7 knots	7 - 10 knots	10 - 17 knots	17 - 30 knots	30 k
700mb	< 10 knots	10 - 15 knots	15 - 20 knots	20 - 40 knots	40 k
500mb	< 15 knots	15 - 20 knots	20 - 30 knots	30 - 50 knots	50 k
300mb	< 20 knots	20 - 30 knots	30 - 45 knots	45 - 70 knots	70 k

Assorted Figures

Cap (summer)

Temperature	Effect
< 15C	Weak cap, development likely early.
15 - 17C	Moderate cap, not really ideal but should hold convection off until midday afternoon - later if the trigger is weak.
17 - 19C	Good cap, should hold convection off until the afternoon but will require a trigger to break.
19 - 21C	Strong cap, will need a good trigger to break.
21 - 23C	Marginal - the trigger will need to be very strong or it's going to need to get break the cap!
23C >	22-23C approaches the limit of thunderstorm development in most situatio

Specific Humidty to Dewpoint Conversion

Specific Humid.	Dew Point	Specific Humid.	Dew Point	Specific Humid.	D
2	-9	9	12	16	
3	-3	10	14	17	
4	0	11	15.5	18	
5	4	12	17	19	
6	6	13	18	20	
7	8	14	19	21	
8	10	15	20		

NB: The above table is a conversion chart and not a guide like the others.