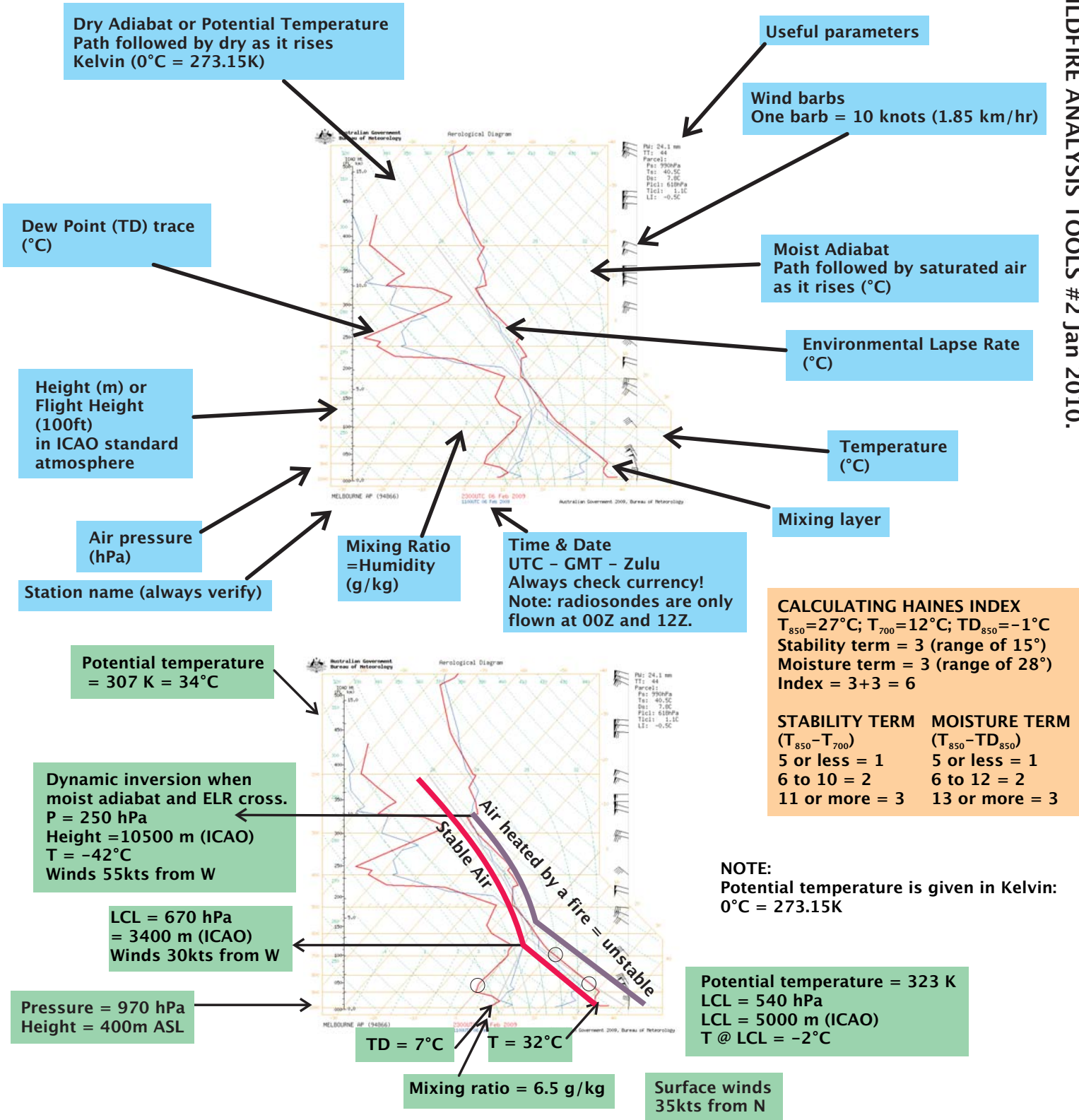


# USING AN AEROLOGICAL DIAGRAM

The Skew-T Log-P Aerological Diagram is a very complex tool for depicting the vertical profile of the atmosphere. As a parcel of air rises through the atmosphere from the ground, its height, temperature, winds, pressure, and water content can be read off a diagram. The Environmental Lapse Rate, measured by a rising radiosonde balloon with an instrument package attached, is of critical importance for the behaviour of severe wildfires.



**CALCULATING HAINES INDEX**  
 $T_{850} = 27^{\circ}\text{C}$ ;  $T_{700} = 12^{\circ}\text{C}$ ;  $TD_{850} = -1^{\circ}\text{C}$   
 Stability term = 3 (range of 15°)  
 Moisture term = 3 (range of 28°)  
 Index = 3+3 = 6

STABILITY TERM ( $T_{850} - T_{700}$ )	MOISTURE TERM ( $T_{850} - TD_{850}$ )
5 or less = 1	5 or less = 1
6 to 10 = 2	6 to 12 = 2
11 or more = 3	13 or more = 3

**NOTE:**  
 Potential temperature is given in Kelvin:  
 0°C = 273.15K

**CALCULATING CONTINUOUS HAINES INDEX (CH)**  
 $CA = (T_{850} - T_{700}) / 2 - 2 = 5.5$   
 $CB = (T_{850} - TD_{850}) / 3 - 1$   
 If  $(CB > 9)$  then  $CB = 9$ ; If  $(CB > 5)$  then  $CB = 5 + (CB - 5) / 2$   
 $CB = 6.7$   
 $CH = CA + CB = 12.2$   
 95% HI = 8.5

**Ventilation Index ( $\text{m}^2 / \text{s}$ ) =**  
 Mixed Layer Depth (m) \* Ave Wind Speed (m/s)

VI value	Dispersion Class	Alternative (km times km/hr)
0-2350	Very Poor	0 - 8.5
2350-4700	Poor	8.5 - 17
4700-7050	Fair-Marginal	17 - 25.4
>7050	Good	>25.4

**CALCULATING FUEL MOISTURE CONTENT**  
 $FMI = 21 - (2 * T - TD) / 4 = 7\%$   
 $DF = 10$   
 $FMC = 7 * FMI / DF = 5\%$

**WHERE DO I GET IT?**  
<http://radar.strikeone.net.au/?fuseaction=loops.select&displayitem=5>  
<http://weather.uwyo.edu/upperair/sounding.html>