



# PACIFIC REGION TECHNICAL NOTES

No. 78-032

August 15, 1978

A TRANSPORTABLE CB SLY INDEX CALCULATION

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For the past 3 years at Prince George Fire Weather, I have been attempting to find a constantly useable version of the Sly Index as an indicator of CB development in the area.

By using the various trials of W.K. Sly as outlined in his paper "A Convective Index As A Forecast Parameter" (CIR 4087 TEC-531) certain conclusions have been interpreted. An exact diary is now being kept with a radius of 100 miles around Prince George to verify the indicated value, with most promising results. We have not attempted to forecast the amount of CB, only yes or no to probability and by interpretation we are also able to generalize the probable location. The method used is as follows:

$$C = 1.6 \theta W_{00Z} - (T_{500MB})_{00Z} - 11 + (-M_{700MB})_{00Z} + h$$

- When C = index value calculated  
1.6 = constant  
 $\theta W_{00Z}$  = calculated wet bulb for 00Z off 12Z RAOB  
00Z  
T500 = calculated 500 mb temperature for 00Z from 12Z RAOBS  
00Z  
-11 = constant  
M = 700 mb correction factor to compensate for T & Td spread  
700mb  
h = correction for height above sea level

Wet bulb for 00Z is calculated by taking the 12Z 850 mb Td and running it up to the environment curve intersection and then to surface along the saturated adiabatic curve. This method allows for mixing.

Temperature for 500 mb at 00Z is calculated by checking upstream for cold or warm air advection. No iron clad rule is used here, but more of a "fudge factor".

The  $M_{700}$  correction is derived from the following table as by W.K. Sly:

## Spread

0 - 1 = +3 <sup>0</sup>	8 - 9 = -1 <sup>0</sup>
2 - 3 = +2 <sup>0</sup>	10 - 15 = -2 <sup>0</sup>
4 - 5 = +1 <sup>0</sup>	> 15 = -3 <sup>0</sup>
6 - 7 = -0 <sup>0</sup>	

The so called transportability of the index comes into effect with the addition of h. For each 500 ft. increment above sea level a factor of +1 is added. This means that at Prince George, for instance, with an index value of 29, a southwesterly flow aloft pushing into country that is generally at the 3500 ft. level we add another +3 to the value to get 32 which gives us a forecast of CB in the high area but not at Prince George.

Using the figure of index 31 for Prince George as an indicator of strong CB development, we have found a very encouraging rate of success.

Naturally there are other parameters that will affect the results and these must also be taken into consideration on an individual basis. Strength of development including TROP height, mid level stable layers, height of 500 mb pressure level (to a certain extent only) and movement of the upstream pattern.

Technicians interested in using this idea are cautioned that what works well in Prince George may not be quite as successful elsewhere unless you find and apply your "fudge factors". I would be happy to correspond with any of you regarding this subject.