

MORE WIND CHILL

Reference V6N1P7c. Philip Karras has improved his wind chill to 55 steps. The improved version follows:

STEP	INSTRUCTIONS	INPUTS	KEYS	OUTPUTS
1.	Load card			
2.	Enter data: Wind Speed or air temp if air temp in °C then	Vmph T(°F)	Enter A fA	WCET (°F) WCET (°F)
3.	To see WCET in °C		h x ≠ y	WCET (°C)
4.	For new problem go to step 2.			

The following equations were used.

$$H = (A + B \sqrt{V} + CV)$$

$$WCET = 33 - (H / (A + B \sqrt{V_4} + CV_4)) = 33 - (H / 22.034)$$

Where: A = 10.45 V = wind speed (m/s)
 B = 10.00 V₄ = velocity, 4 mph
 C = -1.00 CV₄ = Constant for 4 mph
 1 mph = 0.44704 m/s ΔT = (33° - T_{air} °C) °C

The equations for heat loss (H) were taken from *Environmental Information Summaries C-3*, Department of Commerce, National Oceanic and Atmospheric Administration. The following is a quote from the NOAA publication. "The next time you want to know how cold it is outdoors, go ahead and check that thermometer! But keep in mind that other things (wind speed, state of nourishment, individual metabolism, and protective clothing) all help to determine how "chilly" you feel at a given time and place."

Note: 4 mph is roughly the windspeed generated by someone walking briskly under calm conditions and is the generally accepted standard wind speed for calculating equivalent temperature.

WIND CHILL PROGRAM, REF. V6N1P7 Philip Karras (3480)									
001	ALB-A	21	11	020	JA	54	035	3	03
002	3	03	021	LSTX	16-63	046	4	04	
003	2	02	022	CNS	-22	041	+	-24	
004	-	-45	023	ACT	-41	042	CNS	-22	
005	5	05	024	1	01	043	3	03	
006	x	-35	025	0	00	044	3	03	
007	5	09	026	+	-35	045	+	-55	
008	+	-24	027	+	-55	046	ENT1	-21	
009	ALB-A	21 16 11	028	1	01	047	ENT1	-21	
010	CNS	-22	029	0	00	048	9	05	
011	3	03	030	.	-62	049	.	-35	
012	3	03	031	4	04	050	5	05	
013	+	-55	032	5	05	051	.	-55	
014	ACT	-41	033	.	-55	052	3	03	
015	.	-62	034	+	-35	053	2	02	
016	4	04	035	2	02	054	.	-55	
017	4	04	036	2	02	055	RTN	24	
018	7	07	037	.	-62	056	R/S	51	
019	x	-35	038	0	00				

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Jay Stoddard (3609) notes that a less accurate (?) wind chill algorithm appears in John A Ball's book *Algorithms for RPN Calculators*, Pg. 291 gives

$$WCET = F - (0.4013 - 0.6335 \log_{10} V) (F-90)$$

Where:

F is temperature in Fahrenheit degrees.

V is wind velocity in mph.

Data input is F, +,+,V,A

WIND CHILL EFFECTIVE TEMPERATURE HP 97
ALGORITHMS FOR RPN CALC. - JOHN BALL, Pg. 291

$$WCET = F - (.4013 - .6335 \log_{10} V) (F-90)$$

F++V A = Temp. °F, - Wind Vel. mph.

STEP	KEYS	X	Y	Z	T
001	LBLA	V	F	F	
002	LOG ₁₀	Log V	"	"	
003	.				
004	6				
005	3				
006	3				
007	5	.6335	LOG V	F	F
008	X	.6335LogV	F	F	F
009	.				
010	4				
011	0				
012	1				
013	3	.4013			
014	-	()	F	F	F
015	x÷y	F	()	"	"
016	9				
017	0	90	F	()	"
018	x÷y	F	90		
019	-	F-90	()	F	"
020	X	ΔT	F	"	"
021	-	F-ΔT	"	"	"
022	PRTX	WCET	"	"	"
023	RTN				