Rural Training Center – Thailand (RTC-TH)



Community-based Environmental Education for the Self-sufficiency and Sustainability of Small Rural Family Farms

Advanced MEWS

Weather bserving Lesson A2:

Measuring Wind Speed and Wind Chill



Advanced Temperature measurements are needed to

Wind Chill Temperature

The topics below are covered in other Advanced MEWS lessons.

- Calculate Relative Humidity
- Heat Stress Index
- Dew Point Temperature
- Cloud Base Height



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You may want to review MEWS Lesson B1 about basic temperature measurement before proceeding.

A Mobile Emergency Weather Station (MEWS) **Training Series** presentation





Rural Training Center-Thailand Emergency Communications Program

Ready to serve and sustain our community

For other lessons in the series e-mail hsØzhm@gmail.com www.neighborhoodlink.com/RTC-TH_Tech/pages

A part of the RTC-TH EmComm Program

The Rural Training Center-Thailand Emergency Communications program is a volunteer effort to provide emergency





amateur radio communications for local community self-sufficiency and sustainability in times of need.

The Rural Training Center-Thailand (RTC-TH)



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is an all volunteer organization providing community-based environmental education for self-sufficiency and sustainability of small rural family farms

www.neighborhoodlink.com/org/rtcth

E-mail: rtc2k5@gmail.com

MEWS adapts weather lessons from two existing RTC-TH programs







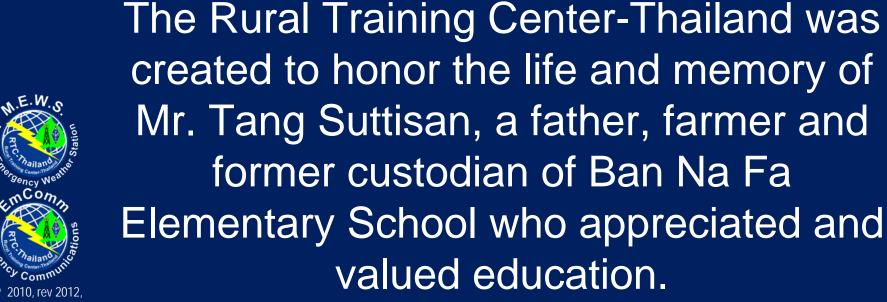
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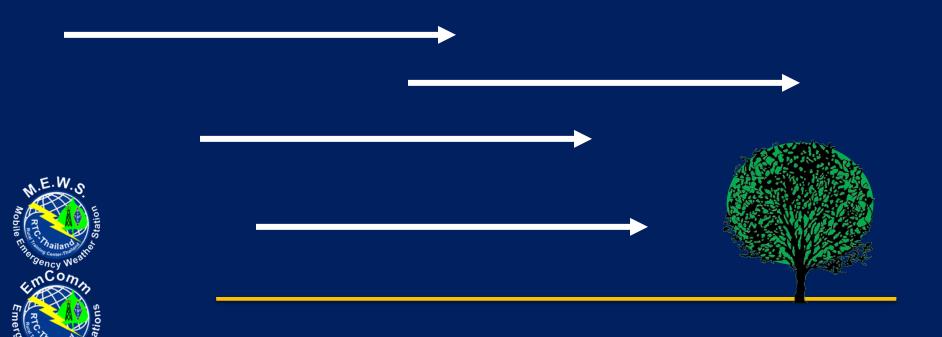






Wind

is the horizontal movement of air over the surface of the Earth.



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The wind can move at different speeds.







Wind affects survivors

Wind + Low temperatures + high relative humidity =

Survivors feeling colder.
They are more stressed and uncomfortable.

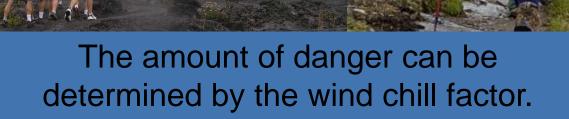
This is also true if you are wet or high in the mountains.

Photos from the Internet:

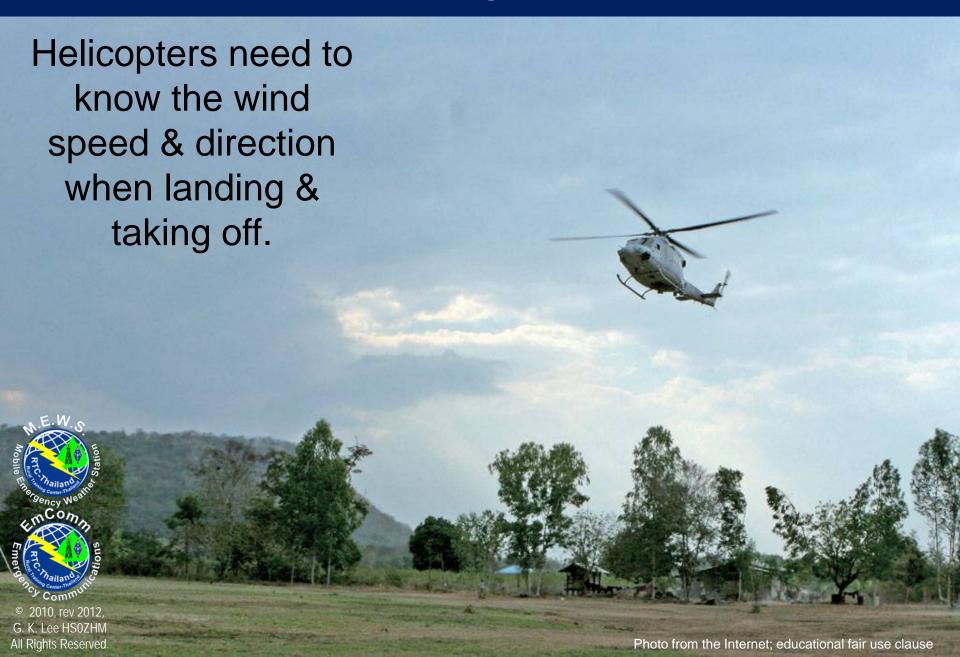
educational fair use

clause





Wind affects flight operations.



Wind affects flight operations.

Blowing dust and debris can obscure landing zones making flight operations hazardous



Record the wind speed in Section 3.1

Guide notes are on the front of the form. More notes are on the back of the form.

		-	to serve stain our		Local time 24-hr format	Hour-	>					
		comn	runity.	ΙГ	Observer (initi	al; see back	:)					
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	dit	2.2	Wet Bu	lb	m above	ground		°C		°C		°C
	Ē	2.3	Differen	ce	Subtract 2.1	2 from 2.1;		°C		°C		°C
	ive	2.4	Rel. Humi	idity	Use 2.1, 2.3	; R H Table		%RH		%RH		%RH
	Relat	2.5	Dew Po	int	Use 2.1, 2.3; 0	Dew Pt Tabl	e	°C		°C		°C
	re/				Use 2.1, 2.4	; HSI Table	Heat Stres	s °C	Heat Stress	°C	Heat Stress	°C
	Temperature / Relative Humidity	2.6	Heat Stre	ess		Danger Level (if any from Heat Stress Index table) Use 2.1, 3.1; Wind Chl Tbl		□Danger □Ex Dangr	□Cautn □ Ex Cautn	□Danger □Ex Dangr	□Cautn □ Ex Cautn	□Danger □Ex Dangr
	Tem				Use 2.1, 3.1;	Wind Chl Tk	Wind Chill.	°C	Wind Chill.	°C	Wind Chill.	°C
5/	2	2.7	Wind Ch	hill		Danger Level (if any from Wind Chill chart)		□Frstbte10 □Frstite30 □Frstbte5	□TrvI Dngr □TShltr Dgr □Frostbite	□Frstbte10 □Frstite30 □Frstbte5	□TrvI Dngr □TShltr Dgr □Frostbite	□Frstbte10 □Frstite30 □Frstbte5
					Report	wind spe	eed in knots	to air cre	ws; km/h t	all other	3.	
	ction		Averag	e	Get 3 reading	ıs & average	e km/h	knts	km/h	knts	km/h	knts
	Direction	3.1	Averag Gusts		Record hig	hest gust	km/h km/h	knts	km/h	knts	km/h	knts knts
	ed / Direction	3.1			Record hig	hest gust	km/h	knts	km/h	knts	km/h	
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Long

Sunrise

Location

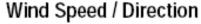
Lat

RTC-TH M.E.W.S. Weather Observation Log

Weather Observations Time Mid-Afternoon

m AMSL

Sunset



3.1 Average and Gust Wind speeds: Use Beaufort Table or direct measurements 3 times and average results. Gusts are short, strong blasts of wind. Report wind speeds in knots to air crews. Advise air crews when wind speeds are close to affecting helicopter flight operations.

			Report wind speed	d in knots to air crews; km/h to all others.								
Direction	3.1	Average	Get 3 readings & average	kmh	knts	knh	kets	lons#n	kests			
8		Gusts Record highest gust		kmh	konto	knh	keta	km/h	kesto			
			Wind Speed Guide	elines for	Helicop	ter Flight C	perati	ons				
Wind Speed		10 kno	ts / 18.5 km/h ideal; OK	to fly	Al	bove 45 knot	s / 83 km	m/h; No fligh	nts.			
12		Gusts abo	ve 20 knots/ 37 km/h; N	lo flights	Max	tailwind 5 km	iots/ 6 k	m/hr; No tal	ke off			
>		Steady Wind	Circle direction steady Wind	N NE	S SW	N NE 8	SW	N NE	S SW			
mi	3.2	Direction	comes FROM	E SE	W NW	E SE V	N NW	E SE	W NW			
	3.2	Variable Wind	Circle 1 or more directions	N NE	6 SW	N NE 8	SW	N NE	s sw			
		Direction	wind comes FROM	E 8E	W NW	E 8E 1	N NW	E 8E	W NW			

3.2 Steady or Variably blowing winds. If steady, circle letter for direction. If variable, circle all appropriate letters for directions.

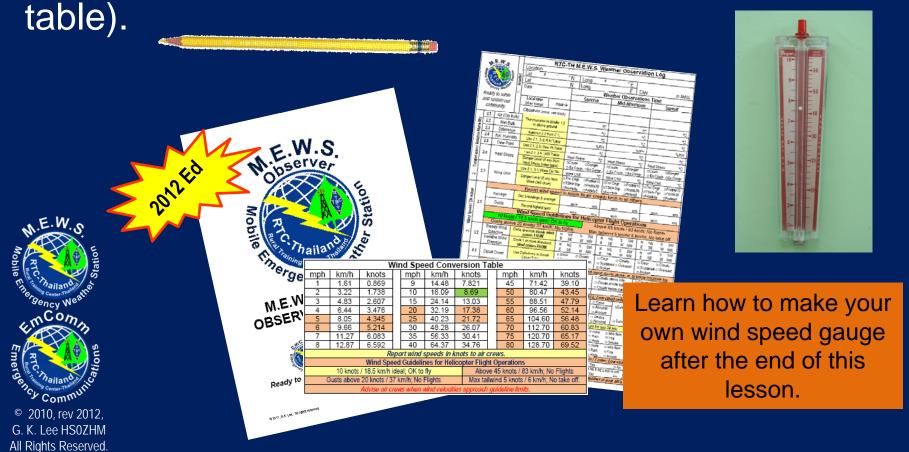
See Handbook: 3.1 Wind Speed, p. 17



-	4.5	(Visibility)	Name of 3.2 km mark		□ more	🗆 less than	□ more	🗆 less than	□ more	□ less than
-					□ Rain	□ Fog	□ Rain	□ Fog	□ Rain	□ Fog
-					□ Haze	□ Smoke	□ Haze	□ Smoke	🗆 Haze	□ Smoke
Ш		Helicopte	er minimum	visibility: Day = 3	3.2 km / 2	miles; Night -	5 km/3 m	niles; Low visit	bility – No	flights
П			Thu	nderstorms	□ Yes	□ No	□ Yes	□ No	□ Yes	□ No
-	4.6	Severe	Lightning	Flash, count secs	N NE E S	E S SW W NW	N NE E S	E S SW W NW	N NE E	SE S SW W NW
-	4.0	Weather	Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km
				Wai	m air crei	vs of any seve	re weathe	er in your area).	

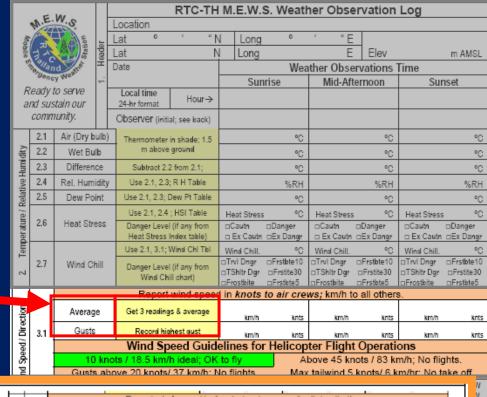
You can know the wind chill using a wind speed gauge

You will need a pencil, the MEWS handbook & log sheet, and a wind speed gauge (with conversion



Report the measured wind speed in Section 3.1

Guide notes are on the front of the form.



Wind Speed / Direction

3.1 Average and Gust Wind speeds: Use
Beaufort Table or direct measurements 3 times
and average results. Gusts are short, strong
blasts of wind. Report wind speeds in knots
to air crews. Advise air crews when wind
speeds are close to affecting
helicopter flight operations.

												_		_	
			Report wind speed	d in <i>k</i>	nots	to ai	rcre	ws; k	um/h t	n all	others	5.			
Speed/Direction		Average	Get 3 readings & average		km/h		knts		km/h		knts		kmh		knts
	3.1	Guete	Record highest gust		kmh		knés		km/h		knts		kmih		knts
B			Wind Speed Guid	eline	s for	He	licop	ter l	-ligh	t Op	erati	ons			
		10 kno	la / 18.5 km/h ideal; OK	to fly		Т	Al	pove	45 kr	1068 /	83 kr	m/ħ; l	No fii	ghta.	
Wind		Gusts abo	we 20 knots/ 37 km/h; N	lo flig	hta		Max	tailw	vind 5	knot	ta/6 k	mihr	; No t	ake o	M.
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οŝ	3.2	Direction	comes FROM	Е	SE.	W	NW	E	SE.	W	NW	E	5E	W	NW
-	32	Variable Wind	Circle 1 or more directions	N	ΝE	5	5W	N	NE	5	SW	N	NE	5	5W
		Direction	wind comes FROM	E	SE.	W	NW	E	SE.	W	NW	E	5E	W	NW

3.2 Steady or Variably blowing winds. If steady, circle letter for direction. If variable, circle all appropriate letters for directions.

More detailed notes are on the back of the form.

See Handbook Section 3, pp.17-19

			□ Haze	□ Smoke	□ Haze	□ Smoke	□ Haze	□ Smoke		
Helicopt	e <i>r minimum</i>	visibility: Day - 3	3.2 km / 2	miles; Night -	5 km/3 n	niles; Low visit	hility – No	flights		
	Thu	nderstorms	□ Yes	□ No	□ Yes	□ No	□ Yes	□ No		
evere	Lightning	Flash, count secs	N NE E S	E S SW W NW	N NE E S	E S SW W NW	N NE E S	SE S SW W NW		
/eather	Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km		
Warn air crews of any severe weather in your area.										



Record all wind speeds in km/h and knots.



	=	101		RTC-	TH I	H M.E.W.S. Weather Observation Log										
	Mir	.W.s	Location													
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		cy Weather				Sun			ternoon	Sur	set					
	Ready	to serve	Local tim	e Hour												
		stain our	24-hr form	at nour	7											
	comn	nunity.	Observer	' (initial; see bac	k)											
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	_	Wet Bulb		neter in shade; 1 ibove ground	1.5		°C									
	2.3	Difference							°C		°C					
	2.3			act 2.2 from 2.1;			°C	°C		°C						
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0	2.7	Wind Chill		Danger Level (if any from Wind Chill chart)			□Frstite30	□TShltr Dgr		□TShltr Dgr						
						Frostbite	□Frstbte5	□Frostbite	□Frstbte5	□Frostbite	□Frstbte5					
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	3.1			Speed Gu	iidal	ince for	Halicon	tor Eliab	t Operati	one	-					
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There is a reminder to report wind speed in knots to air crews



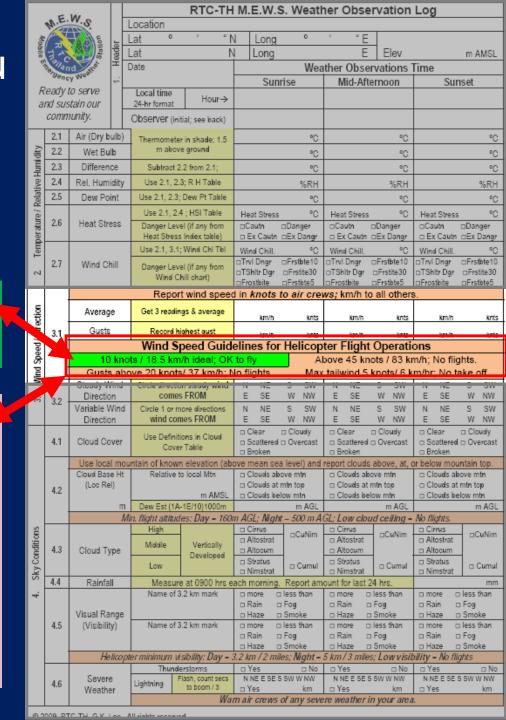
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	-	o serve		Local time	House								
aı	na sus comm	tain our	ŀ	24-hr forma									
L.,	COTINI	unky.		Observer ((initial; see back)								
	2.1	Air (Dry bu	ulb)	Thermome	eter in shade; 1.5		°C		°C		°C		
ŧ	2.2	Wet Bull	b	m ak	ove ground		°C		°C		°C		
Ę	2.3	Difference	ce	Subtrac	t 2.2 from 2.1;		°C		°C		°C		
ive	2.4	Rel. Humi	dity	Use 2.1,	2.3; R H Table		%RH		%RH		%RH		
telat	2.5	Dew Poi	nt	Use 2.1, 2	.3; Dew Pt Table		°C		°C		°C		
dre / Relative Humidity				Use 2.1,	2.4 ; HSI Table	Heat Stress	s °C	Heat Stress	°C	Heat Stress	°C		
	2.6	Heat Stre	SS		evel (if any from	□Cautn	□Danger		□Danger	□Cautn	□Danger		
Тептре					ess Index table)		□Ex Dangr	□ Ex Cautn		□ Ex Cautn			
ie l				Use 2.1, 3	3.1; Wind Chl Tbl	Wind Chill. Tryl Dngr	°C □Frstbte10	Wind Chill.	°C □Frstbte10	Wind Chill.	°C □Frstbte10		
2	2.7	Wind Ch	HIII		evel (if any from	□TShltr Dgr	□Frstite30	□TShltr Dgr		_	□Frstite30		
					Chill chart)		□Frstbte5	□Frostbite		□Frostbite	□Frstbte5		
	1			Rep	ort wind speed	in <i>knot</i> s	to air cre	ws; km/h to	all others	8.			
Wind Speed / Direction		Average	е	Get 3 rea	dings & average	km/h	knts	km/h	knts	km/h	knts		
Dire	3.1	Gusts		Record	l highest gust	km/h	knts	km/h	knts	km/h	knts		
/pa	1			Wind	Speed Guid	elines fo	r Helicop	ter Flight	Operati	ons			
Š							Al	bove 45 kn	ots / 83 ki	m/h; No flig	hts.		
2	1			20.1	10 knots / 18.5 km/h ideal; OK to fly Above 45 knots / 83 km/h; No flights.								
<u>5</u>			Gusts above 20 knots/ 37 km/h; No flights Max tailwind 5 knots/ 6							m/hr; No ta	ake off		
		Oloudy W	IIIW	Circle wire	con sleavy wind	IN INC	5 5W	IN INC	3 377	IN INC	3 3W		
3. Wi	3.2		n	Circle direc					knots/ 6 k S SW W NW S SW		W NW S SW		
	3.2	Oleady W	n /ind	Circle direct	nes FROM	E SE	S SW W NW	E SE	S SW W NW	E SE	S SW W NW		
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Brief notes remind you of wind speeds affecting helicopter flight operations

10 knots / 18.5 km/h ideal; OK to fly

Above 45 knots / 83 km/h; No flights
Gusts above 20
knots / 37 km/h;
No flights
Max tailwind
above 5 knots/ 6
km/hr; No take off



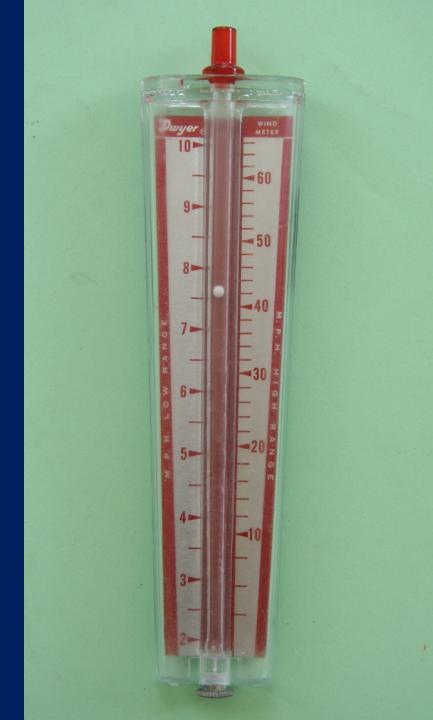


You can use a wind speed gauge to measure the wind.

Note: This one is marked in miles per hour. Use the conversion table to get knots.

See Handbook: Conversion table on p. 19





Parts of the wind speed gauge.

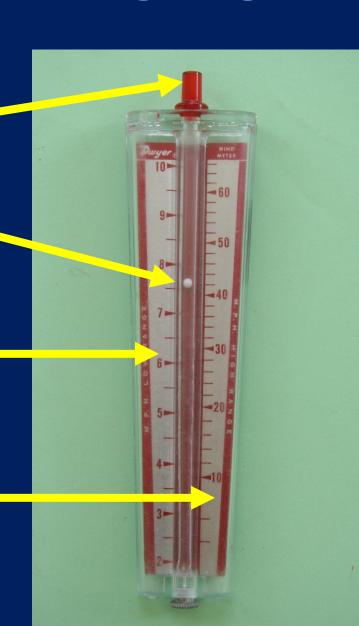
Speed range adjusting tube

Indicator ball

Low speed scale

High speed scale





You need to use the reference table to get the wind speed in kilometers per hour (km/h) and knots.

		V	Vir	nd Spe	ed Conv	/er	sion T	ab	le		
mph	km/h	knots		mph	km/h	k	nots		mph	km/h	knots
1	1.61	0.869		9	14.48	-	7.821		45	71.42	39.10
2	3.22	1.738		10	16.09		8.69	·	50	80.47	43.45
3	4.83	2.607		15	24.14		13.03		55	88.51	47.79
4	6.44	3.476		20	32.19	2	17.38		60	96.56	52.14
5	8.05	4.345		25	40.23		21.72		65	104.60	56.48
6	9.66	5.214		30	48.28	- 2	26.07		70	112.70	60.83
7	11.27	6.083		35	56.33	4	30.41		75	120.70	65.17
8	12.87	6.592		40	64.37	2	34.76		80	128.70	69.52
		Re	фι	ort wind s	speeds in k	mo	ts to air i	cre	WS.		
					nes for Heli	ico	pter Fligl	ht C	perations)	5	
		/ 18.5 km/h i					Abov	ve 4	5 knots / 8	83 km/h; No	Flights
G	iusts above	20 knots / 3	7 k	m/h; No F	lights		Max ta	lwir	nd 5 knots	/ 6 km/h; N	o take off.
		Advise air c	геи	vs when v	vind velociti	ies :	approach	gu	ideline lim	its.	



Flight crews tend to use knots (nautical miles per hour) to report wind speed.

There are 5 steps to measuring the wind speed.





Step 1. Get in an open area away from buildings and trees

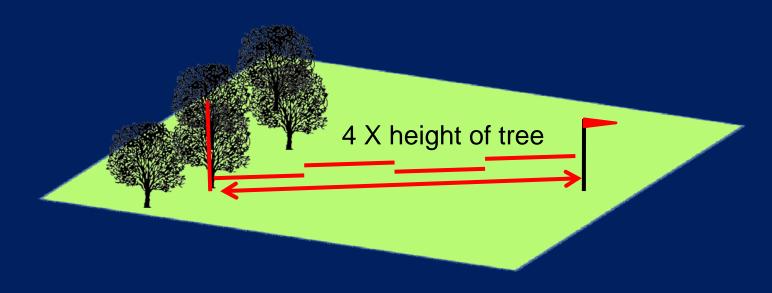




An open area away from buildings and trees means

A distance equal to 4 times the height of the tree or building



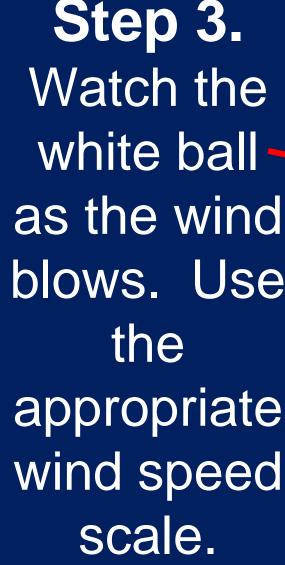


Step 2. Stand facing into the wind. Hold the wind speed gauge away from your body and above your head.





Step 3. Watch the white ball as the wind blows. Use the appropriate wind speed







Step 4. Record the highest and lowest wind speeds you see. Calculate the average speed.







You may want to review MEWS Lesson B2 about basic wind estimating as a back-up skill in case wind speed measuring equipment fails.

Step 5. Convert the wind speed from miles per hour to kilometers per hour and knots using the reference table.

		٧	Vir	nd Spe	ed Conv	rer	sion T	ab	le		
mph	km/h	knots		mph	km/h		knots		mph	km/h	knots
1	1.61	0.869		9	14.48		7.821		45	71.42	39.10
2	3.22	1.738		10	16.09		8.69		50	80.47	43.45
3	4.83	2.607		15	24.14		13.03		55	88.51	47.79
4	6.44	3.476		20	32.19		17.38		60	96.56	52.14
5	8.05	4.345		25	40.23	• •	21.72		65	104.60	56.48
6	9.66	5.214		30	48.28	* *	26.07		70	112.70	60.83
7	11.27	6.083		35	56.33	• •	30.41		75	120.70	65.17
8	12.87	6.592		40	64.37	• •	34.76		80	128.70	69.52
					speeds in k						
					nes for Heli	ico	pter Fligh	nt C	perations	5	
		/ 18.5 km/h i								83 km/h; No	
G	iusts above	20 knots / 3	7 k	m/h; No F		Max tailwind 5 knots / 6 km/h; No take off.					
		Advise air ci	геи	is when i	vind velociti	es.	approach	gu	ideline lim	its.	



Air crews use knots when reporting wind speed.

The chart is in the MEWS Handbook, p. 19

Emergency Back-up

Plan B: In case your wind speed gauge is damaged, you can go back to the Basic MEWS lesson B1 method of using the Modified Beaufort Wind Table

See Handbook p. 18

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Beaufort Wind Table for Land Effects

MEWS weather observers should set up a flag mear their operating position. Use the Cescription and flag references to estimate the wind speed. Report the range of wind speeds from the chart rather than a specific number.

Description	Flag	VMO met	Mph	Km/hr	Knots	Force	Pau Ibs/aq ft (Kg/aq m)
		terrii .	F	aport win	d apeed i	n knota to	flight crews
Calm; smoke rises vertically		Calm	<1.0	<1.5	<0.9	0	0.006266 (0.003059)
Smoke indicates wind; flag hangs limp, wind vanes do not move	1	Light Air	1-3	1.5-6	1-3	1	0.02924 (.01428)
Wind felt on face, leaves rustle, flag stirs, wind	B	Light breeze	4-7	6-12	4-6	2	0.142 (0.6834)
Valnes move	101	5 h	(nots ma	oimum ta	illwind for	helicopta	r take-off
Leaves and twigs in constant motion; flag	D	Gentle Breeze	8-12	12-20	7-10	3	0.3759 (1.835)
occasionally extends	-	1	0 Knots	ideal for	helicopte	flight ope	rations
Dust and paper fly; small branches move; Flag flaps	M	Mild Breeze	13-18	21-29	11-16	4	0.8145 (3.977)
Small leafy trees begin to sway; white crested wavelets appear on		Fresh Bresze	19-24	30-39	17-21	5	1 504 (7 342)
lakea/ponda; Flag ripplea		20 Km	ots maxi	mum gust	ts for helic	opter fligh	nt operations
Large branches move; wires whistle; umbrellas hard to use; Flag snaps	m	Strong Breeze	25-31	40-50	22-27	6	2.485 (12.13)
Whole trees sway; hard to walk; Flag extended		Near Gala	32-38	51-61	28-33	7	3 822 (18.66)
Twigs and small branches broken; care veer on roads; Flag tatlers	13	Gale	39-46	62-74	34-40	8	5.597 (27.33)
Slight structural damage	1	Strong Galo	47-54	75-87	41-47	9	7.769 (37.93)
occurs (roof shingles blow off)	SHAP	45 Kno	ota maxin	mum wind	ts for heli	copter flig	ht operations
Trees broken or uprooted, considerable damage to buildings		Storm	55-63	88-101	48-55	10	10.53 (51.39)
Wide spread damage		Violent Storm	64-72	02-114	56-63	11	13.78 (67.3)
caused		Hurricane	>73	>115	>63	12	>13.78 (>57.3)
Disclaimer: Use of the pres HSØZHM assume no liab					-		

Emergency Back-up

Plan C: In case your Modified Beaufort Wind Table is lost or destroyed, you can estimate wind speed by the "Drop Grass Method"

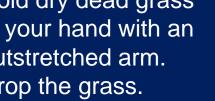






Stand facing the wind. Hold dry dead grass in your hand with an outstretched arm. Drop the grass.

Stand and use your arm to point to where the grass fell to the ground. Measure the angle between your arm and arm. Divide the angle by 4 to get the estimated wind speed in knots.



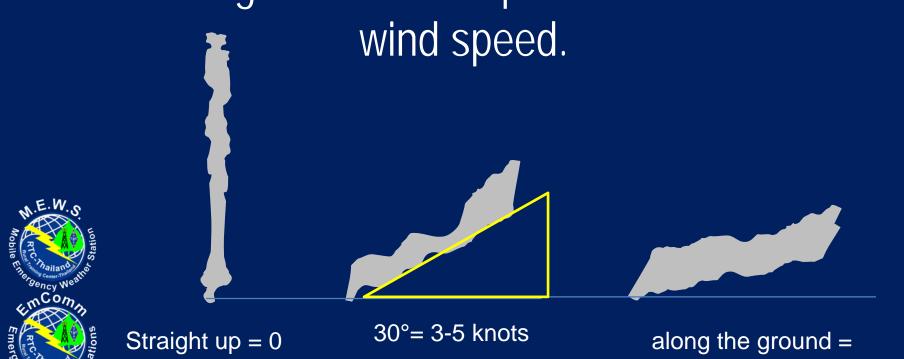






Emergency Back-up

Plan D: In case your Modified Beaufort Wind Table is lost or destroyed and / or you lost an arm, you can use the angle of a smoke plume to estimate the wind speed.



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more than 8 knots

Important Note

Normally MEWS observations are made 3 times a day. However, if flight operations are in progress, try to provide flight crews with weather updated prior to landings and take-offs for flight safety.



Issue a Flight Advisory Immediately at the first sign of a winds approaching limits that affect flight operations.

For flight operations, make and report observations to flight crews before landings and take-offs

Cross out the headings for Sunrise, Mid-Afternoon, Sunset

Record the specific local time of your observations

١			Weather Observations Time										
Į			Sunrise	Mid-Afternoon	Sunset								
ı	Hour→	7	1430										
	al; see brык)		HSØZHM										
	shade; 1.5		°C	°C	•€								
	ground		°C	°C	°C								
	from 2.1;		°C	°C	°C								



If a HAM, print your call sign (or name if no call sign)

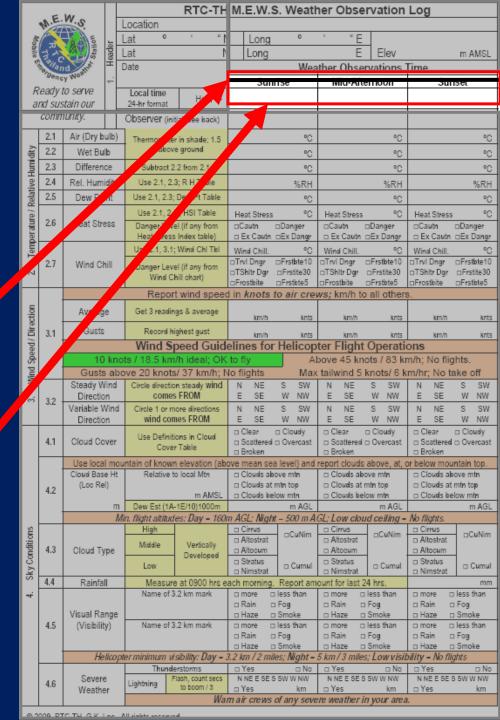
Record wind speeds in Section 3.1

Weather observations to support flight operations are critical for safety of flight crew and LZ area.

If more frequent observations are done to support flight operations...

headings
"Sunrise", etc.
and record the
time of the
observations in
the space
provided.





For flight operations, make and report observations to flight crews before landings and take-offs

Advanced Weather Reports for Flight Crews

- 2.1 Temperature
- 2.4 Relative Humidity
- 3.1 Wind Speed
- 3.2 Wind Direction
- 4.1 Cloud Cover
- 4.2 Cloud Base Height
- 4.3 Cloud Type
- 4.4 Rainfall
- 4.5 Visual Range
- 4.6 Severe Weather



Weather observations to support flight operations are critical for safety of flight crew and LZ area.

Wind Chill

Most people think about wind chill and winter weather.







But for disaster survivors who are wet, with little shelter, the combined effects of wind + rain, or high humidity makes them feel colder than normal.

Low temperatures and high winds in mountain areas...

...can make it feel colder.
People can be more stressed and uncomfortable

Photos from the

Internet: educational

fair use clause





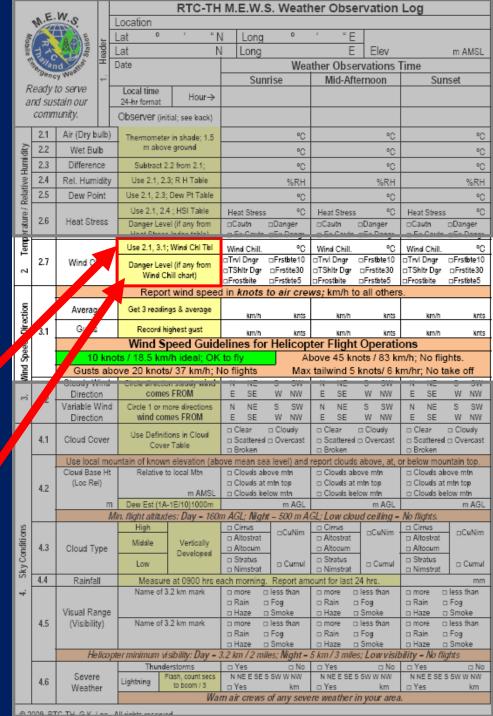
Wind Chill is recorded in Section 2.7

Guide notes are on the front of the form

Use 2.1, 3.1; Wind Chill Table

Danger Level (if any from Wind Chill Table)





Additional brief notes are on the back of the form

Full instructions and all needed reference tables are in the MEWS Weather Observer Handbook.

See MEWS Handbook: Section 2.7, p. 15-16



M.E.W.S. Summary Weather Observation Log Instructions

All weather observers write their initials and clearly print their name using block letters

Header

Location: Local Place Name

Latitude, Longitude from GPS, survey records or map measurement.

Elevation: Survey records or map measurement

(GPS elevations are not reliable).

Date/Hour: Use local Thai standard time in Observer: initials in box. Full name (print clearly) on top/back of form 24-hour format.

Temperature / Relative Humidity

- 2.1 Air (Dry Bulb) Temp: Read thermometer kept in the shade, 1.5 m above the ground.
- 2.2 Wet Bulb Temp from hyrgrometer kept in the shade, 1.5 m above the ground.
- 2.3 Difference between Dry and Wet Bulb temperatures.
 - 2.3 Wind Chill Dangur Level (if any from USB) 12 Clark Dirag Greater's (Grand Darg Greater's (Greater's Greater's Greater'
- 2.4 Relative Humidity: Use Dry Bulb Temp (2.1), Difference (2.3) and Relative Humidity table to find % Relative Humidity.
- 2.5 Dew Point Temperature: Use Dry Bulb Temp (2.1), Difference (2.3) and Dew Point Temp table to find Dew Point Temp.
- 2.6 Heat Stress Temperature: Use Dry Bulb Temp (2.1), % Relative Humidity (2.4) and Heat Stress Index Table to find Heat Stress Temperature and relevant advisory warning.
- 2.7 Wind Chill: Use the Dry Bulb Temp (2.1) and Wind Speed (3.1) and Wind Chill Table to find the Wind Chill Temperature and relevant advisory warning.

Wind Speed / Direction

3.1 Average and Gust Wind speeds: Use Beaufort Table or direct measurements 3 times and average results. Gusts are short, strong blasts of wind. Report wind speeds in knots to air crews. Advise air crews when wind speeds are close to affecting helicopter flight operations.

action		Average		Arrolla keda			kroh kris			kmh		krts			
1.8	3.1	Guete	Record highest gust		km/h		knts		lm/h		ketts		kmh		krts
/poods	·		Wind Speed Guidelines for Helicopter Flight Operations												
8		10 kno	ts / 18.5 km/h ideal; OK	to fly			Al	ove	45 kr	nots /	83 kr	m/h; t	No fi	ights.	
Pul		Gusts abo	ive 20 knots/ 37 km/h; l	lo flic	hts		Max	tailu	rind 5	knot	s/ 6 k	m/hr,	No	take o	off
15		Steady Wind	Circle direction steady wind	N	NE	3	SW	N	NE	9	3W	N	NE	9	SW
- 6	3.2 -	Direction	comes FROM	E	SE	W	NW	E	SE	W	NW	E	SE	W	NW
	0.2	Variable Wind	Circle 1 or more directions	N	NE	S	SW	N	NE	S	SW	N	NE	-5	SW
		Direction	wind comes FROM	Ε	SE	W	NW	E	3E	W	NW	E	SE	W	NW

3.2 Steady or Variably blowing winds. If steady, circle letter for direction. If variable, circle all appropriate letters for directions.

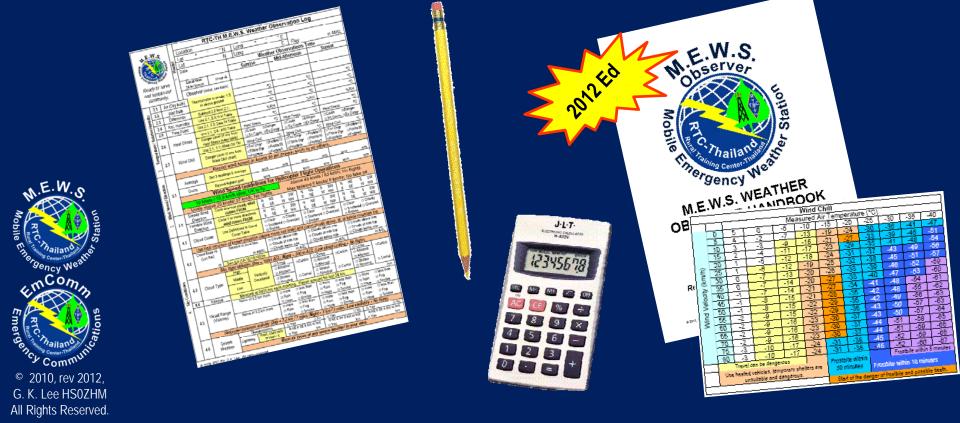
4.3 Cloud Type

Sky Conditions

- 4.1 Cloud cover: Look at the sky and follow the definitions for each cloud cover classification.
- 4.2 Cloud Base Height: If relative to a local mountain, give its name and elevation above mean sea level. Note Local Relief in meters. If using the Dew Point method, subtract Dew point temp (2.5) from Dry temp (2.1) and divide result by 9.8; multiply quotient by 1000m. Advise air crews when cloud base height (ceiling) are close to affecting helicopter flight operations.
- 4.3 Čloud Type: Check the appropriate box based on cloud description in the guide book
- 4.4 Rainfall: Measure water in rain gauge each day at 0900 hrs. Rain gauge should be in open area, away from tall objects, with top of gauge 50 cm above ground to avoid splash water from entering gauge.
- 4.5 Visual Range: Pick landmarks 3.2 km and 5 km from your observation site. Report when visual range is more or less than the known distances to these landmarks. Advise air crews when visual range is close to affecting helicopter flight operations. Check appropriate boxes for reasons of reduced visibility.
- 4.6 Severe Weather: Primary concerns and thunderstorms and lightning. Check the appropriate boxes. If lighting, watch for flash, count seconds until you hear the thunder, divide by 3 = approximate distance in km. Circle direction to storm.

If you know the air temperature and wind speed, you can look up the wind chill

You will need the MEWS log form with air and wind data, a calculator, pencil, the MEWS handbook, and a wind chill table.



Step 1: Get the recorded air temperature (Section 2.1) and the recorded wind speed in Section 3.1 of the Log Form

		lar.	RTC-TH M.E.W.S. Weather Observation Log									
	W.E.	W.S.	Location									
80		AAN S	Lat °	· "N	l Long	0	" E					
bile	37	Statio	Lat	1	Long		E	Elev		m AMSL		
	Man	y Weather I	Date			Wea	ther Obser	vations 1	Time			
,					Sur	nrise	Mid-Afte	rnoon	Sun	set		
	-	to serve tain our	Local time 24-hr format	Hour→								
d	сотт Сотт											
		,		initial; see back)								
	2.1	Air (Dry bulb		ter in shade: 1.5		°C		°C		°C		
	2.2	Wet Bulb	m ap	ove ground		°C		°C		°C		
Æ	2.3	Difference	Subtrac	t 2.2 from 2.1;		°C		°C		°C		
tive	2.4	Rel. Humidit	y Use 2.1,	2.3; R H Table		%RH		%RH		%RH		
Relai	2.5	Dew Point	Use 2.1, 2	.3; Dew Pt Table		°C		°C		°C		
70.				2.4 ; HSI Table	Heat Stress	s °C	Heat Stress	°C	Heat Stress	°C		
Temperature / Relative Hy	2.6	Heat Stress	Danger	evel (if any from	Cauth	□Danger		Danger		Danger		
edu.				ess Index table)		□Ex Dangr	□ Ex Cautn o		□ Ex Cautn			
l e	2.7	MC 1.013		.1; Wind Chl Tbl	Wind Chill. Tryl Dngr	°C □Frstbte10	Wind Chill.	°C Frstbte10	Wind Chill.	°C =Frstbte10		
2	2.7 Wind Chi			evel (if any from	□TShltr Dgr	□Frstite30		□Frstite30		□Frstite30		
			vvina	Chill chart)	□Frostbite	□Frstbte5	□Frostbite :	Frstbte5	□Frostbite	□Frstbte5		
			Pon	art wind appar	lin knoto	to air arm	un lunih ta	all athor				
tion		Average	Get 3 read	dings & average	kendh	kete	kenth	kete	ken b	kete		
Wind Speed / Dire	3.1	G۲	Record	l highest gust	km/h	knts	km/h	knts	km/h	knts		
/pe	0.1			Speed Guid						MILS		
Š		10 k		m/h ideal; OK			bove 45 knd			hts.		
E.				ots/ 37 km/h; N		_	tailwind 5 k					
>		eady Win.		tion steady Wind	N NE	S SW	N NE	S SW	N NE	S SW		
mi	3.2	Direction		nes FROM	E SE	W NW	E SE	W NW	E SE	W NW S SW		
		Variable Win Direction		more directions omes FROM	N NE E SE	S SW W NW	N NE E SE	S SW W NW	N NE S SV E SE W NV			
Н	74	Diroccon			□ Clear	□ Cloudy		Cloudy	□ Clear □ Cloudy			
	4.1	Cloud Cove		nitions in Cloud ver Table			□ Scattered □	Comment	□ Scattered □ Overcast			
		Use level of				□ Overcast		Overcast		3 010,0030		
		Use local mountain of known elevation (ab Cloud Base Ht Relative to local Mtn			□ Broken		□ Broken		□ Broken			
		Cloud Base F		wn elevation (ab	□ Broken	ea level) and	□ Broken	above, at, o	□ Broken	ntain top.		
	4.2			wn elevation (abo e to local Mtn	□ Broken ove mean se □ Clouds al □ Clouds at	ea level) and bove mtn t mtn top	□ Broken report clouds □ Clouds abo □ Clouds at n	above, at, o we min nin top	□ Broken or below moun □ Clouds abo □ Clouds at t	ntain top. ove mtn mtn top		
	4.2	Cloud Base H (Loc Rel)	t Relativ	wn elevation (ab e to local Mtn m AMSL	□ Broken ove mean se □ Clouds al	ea level) and bove mtn t mtn top elow mtn	□ Broken report clouds □ Clouds abo	above, at, o we mtn ntn top ow mtn	□ Broken or below mous □ Clouds abo	ntain top. ove mtn mtn top		
	4.2	Cloud Base H (Loc Rel)	m Dew Est (1	wn elevation (abo e to local Mtn	□ Broken ove mean se □ Clouds al □ Clouds al □ Clouds be	ea level) and bove mtn t mtn top elow mtn m AGL	□ Broken report clouds □ Clouds abo □ Clouds at n □ Clouds belo	above, at, o we mtn ntn top ow mtn m AGL	□ Broken or below mout □ Clouds abo □ Clouds at t □ Clouds bel	ntain top. ove mtn mtn top		
NIS	4.2	Cloud Base H (Loc Rel)	m Dew Est (1	wn elevation (ab e to local Mtn m AMSL (A-1E/10)1000m	□ Broken ove mean se □ Clouds al □ Clouds al □ Clouds be m AGL; Nigl □ Cirrus	ea level) and bove mtn t mtn top elow mtn m AGL	□ Broken report clouds □ Clouds also □ Clouds at n □ Clouds belo GL; Low cloud	above, at, ove mtn ntn top ow mtn m AGL d ceiling -	□ Broken or below mour □ Clouds abr □ Clouds at r □ Clouds bel No flights. □ Cirrus	ntain top. ove mtn mtn top ow mtn m AGL		
ditions		Cloud Base H (Loc Rel)	m Dew Est (1 Min. flight altitut High	wn elevation (ab e to local Mtn m AMSL (A-1E/10)1000m	□ Broken ove mean se □ Clouds al □ Clouds al □ Clouds be m AGL; Nigt □ Cirrus □ Altostrat	ea level) and bove mtn t mtn top elow mtn m AGL	Broken report clouds Clouds also Clouds at n Clouds belo CL; Low cloud Cirrus Altostrat	above, at, o we mtn ntn top ow mtn m AGL	Broken or below mour Clouds about Clouds below Clouds below No flights. Cirrus Altostrat	ntain top. ove mtn mtn top		
Conditions	4.3	Cloud Base H (Loc Rel)	m Dew Est (1 Min. flight altit High Middle	wn elevation (abset to local Mth m AMSL 1A-1E/10)1000m udes: Day = 1606	□ Broken ove mean se □ Clouds al □ Clouds al □ Clouds be m AGL; Nigl □ Cirrus	bove mth t mth top elow mth m AGL	Broken report clouds Clouds also Clouds at n Clouds belo GL: Low cloud Cirrus Altostrat Altosum	above, at, over min top ow min m AGL deiling =	Broken or below mour Clouds abi Clouds at Clouds bel No flights Altostrat Altocum	ove mtn mtn top ow mtn m AGL		
Sky Conditions	4.3	Cloud Base F (Loc Rei)	n Dew Est (1 Min. flight altitu High Middle Low	wn elevation (ab. e to local Mtn m AMSL (A-1E/10)1000m udes; Day = 160 Vertically Developed	□ Broken ove mean se □ Clouds al □ Clouds be m AGL; Nigl □ Cirrus □ Altocum □ Stratus □ Nimstrat	bove mth t mth top elow mth m AGL tt - 500 m A	Broken report clouds Clouds abo Clouds at Clouds at Clouds at Clouds at Clouds abo Clouds at Clouds at Clouds at Clouds at Clouds at Clouds below the Clouds below the Clouds below the Clouds at Clouds at Clouds at Clouds	above, at, over minning top ow minning m AGL deciling =	Broken or below mour Clouds about Clouds below Clouds below No flights. Cirrus Altostrat	ntain top. ove mtn mtn top ow mtn m AGL		
. Sky Conditions		Cloud Base H (Loc Rel)	m Dew Est (1 Min. flight altite High Middle Low Measi	wn elevation (abie to local Mtn m AMSL (A-1E/10)1000m udes: Day = 160 Vertically Developed ure at 0900 hrs e	□ Broken ove mean se □ Clouds al □ Clouds be □ Clouds be □ Cirrus □ Altostrat □ Stratus □ Nimstrat ach morning	bove mth the thing elow mth m AGL fit - 500 m AGL CuNim	Broken report clouds Clouds abo Clouds ato Clouds ato Clouds ato Clouds belo Cirrus Altostrat Altosum Stratus Nimstrat ount for last 2	above, at, over min top ow min m AGL deiling =	Broken or below mour Clouds abi Clouds at i Clouds bel No flights Cirrus Altostrat Stratus Nimstrat	mtain top. ove mtn mtn top ow mtn m AGL CuNim Cumul		
4. Sky Conditions	4.3	Cloud Base F (Loc Rei)	m Dew Est (1 Min. flight altite High Middle Low Measi	wn elevation (ab. e to local Mtn m AMSL (A-1E/10)1000m udes; Day = 160 Vertically Developed	Broken Ove mean se Clouds al Clouds be Clouds be AGL; Nigi Cirrus Altostrat Altocum Stratus Nimstrat ach morning	ea level) and bove mth top elow mth m AGL of the country of the co	Broken report clouds abo Clouds abo Clouds at n Clouds bek Cl: Low clour Cirrus Altostrat Altosum Stratus Nimstrat ount for last 2:	above, at, over min not poor min age. mag. acciling - m	Broken Broken Broken Broken Clouds abi Clouds at Clouds at Clouds at Clouds at Clouds at Clouds bel No flights Altostrat Altostrat Nimstrat	mtain top. ove mtn mtn top ow mtn m AGL CuNim Cumul mm less than		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang	m Dew Est (1 Min. flight altitut High Middle Low Measi Name o	wn elevation (abset to local Mtn m AMSL (A-1E/10)1000m Vertically Developed ure at 0900 hrs e f 3.2 km mark	□ Broken ove mean se □ Clouds al □ Clouds be □ Cirrus □ Cirrus □ Altostrat □ Altosum □ Stratus □ Nimstrat ach morning □ Rain □ Haze	a level) and bove min to min top elow min m AGL int - 500 m Air CuNim Cunul less than Fog Smoke	Broken report clouds about Clouds below Clouds below Clouds about Clou	above, at, c we mith intop ow mth m AGL d ceiling - □ Cunvil □ Cunvil 4 hrs. less than Fog Smoke	Broken or below mout Clouds ab: Clouds at: Clouds at: Clouds at: Clouds te: Cirrus Altocum Stratus Nimstrat Rain Rain Haze	mtain top. over mtn mtn top ow mtn m AGL Cunviim Cunviim Iess than Fog Smoke		
4. Sky Conditions	4.3	Cloud Base H (Loc Rel)	m Dew Est (1 Min. flight altitut High Middle Low Measi Name o	wn elevation (abie to local Mtn m AMSL (A-1E/10)1000m udes: Day = 160 Vertically Developed ure at 0900 hrs e	□ Broken ove mean se □ Clouds al □ Clouds be □ Clouds be □ Cirrus □ Altostrat □ Altostrat □ Altocum □ Stratus □ Nimstrat ach morning □ more □ Rain □ Haze □ more	a level) and bove min to min AGL ht - 500 m AGL CuNim Cunul Report am Fog Smoke	Broken report clouds abo Clouds abo Clouds abo Clouds ab o Clouds abo Clouds	above, at, c we min in top ow min m AGL d ceiling - CuNim Cunul 4 hrs. less than Fog Smoke less than	Broken or below mour Clouds abi Clouds at i Clouds bel Allostrat Altostrat Nimstrat more Rain Haze more	mtain top. over mtn mtn top ow mtn m AGL CuNim Cumul mm less than Fog Smoke less than		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang	m Dew Est (1 Min. flight altitut High Middle Low Measi Name o	wn elevation (abset to local Mtn m AMSL (A-1E/10)1000m Vertically Developed ure at 0900 hrs e f 3.2 km mark	□ Broken ove mean se □ Clouds al □ Clouds be □ Clouds be □ Cirrus □ Altostrat □ Stratus □ Nimstrat ach morning □ more □ Rain □ Rain	a level) and bove min to min top elow min m AGL int - 500 m Air CuNim Cunul less than Fog Smoke	Broken report clouds abo Clouds abo Clouds at Clouds at Clouds at Clouds at Clouds abo Clouds at Clouds at Clouds at Clouds at Clouds about Clouds at Clouds bekeep Clouds at Clouds at Clouds about Clo	above, at, c we mith intop ow mth m AGL d ceiling - □ Cunvil □ Cunvil 4 hrs. less than Fog Smoke	Broken britished Clouds abi Clouds at i Clouds bel No flights Cirrus Altostrat Altostrat Stratus Nimstrat	mtain top. over mtn mtn top ow mtn m AGL Cunviim Cunviim Iess than Fog Smoke		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang (Visibility)	m Dew Est (1 Min. flight altite High Middle Low Measi Name o	wn elevation (abie to local Mtn m AMSL (A-1E/10)1000m vides: Day = 160i Vertically Developed ure at 0900 hrs e if 3.2 km mark visibility: Day = -	□ Broken ove mean se □ Clouds al □ Clouds al □ Clouds bi □ Cirrus □ Altostrat □ Altostrat □ Altostrat □ Altostrat □ Altostrat □ Altostrat □ Haze □ more □ Rain □ Haze □ more □ Rain □ Haze	a level) and bove min to min top elow min m AGL mt - 500 m Al CuNim Cunul Report am less than Fog Smoke less than Fog Smoke sless Might -	Broken report clouds abo Clouds abo Clouds abo Clouds belo Clouds abo Clouds belo Clouds b	above, at, see with the top ow mth m AGL d ceiling - CuNim - Cunul 4 hrs. less than Fog Smoke less than Fog Smoke ; Low visit.	Broken below mout Clouds abt Clouds to Clouds to Clouds to Clouds to Clouds to Altour Stratus Nimstrat more Rain Haze more Rain Haze	mtain top. ove mth mth top ow mth m AGL □CuNim □ Cumul mm less than Fog Smoke less than Fog Smoke		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang (Visibility)	m Dew Est (1 Min. flight altite High Middle Low Measi Name o	wn elevation (abie to local Mtn m AMSL (A-1E/10)1000m udes; Day = 160 Vertically Developed ure at 0900 hrs e if 3.2 km mark visibility: Day = siderstorms	□ Broken ove mean se □ Clouds al □ Clouds be □ Cirrus □ Altocum □ Stratus □ Nimstrat ach morning □ more □ Rain □ Haze □ more □ Rain □ Haze	a level) and bove min top elow min m AGL int - 500 m Ai CuNim Cunul in Eport am in Eport in	Broken report clouds Clouds abo Clouds abo Clouds at Clouds at Clouds at Clouds at Clouds abo Clouds at Cl	above, at, c we mith int top ow mth m AGL d ceiling - □ Cunul 4 hrs. less than Fog Smoke less than Fog Smoke less than	Broken below mout Clouds abt Clouds abt Clouds bel Clouds bel Alo flights Cirrus Altocum Stratus Nimstrat more Rain Haze more Rain Haze Tase Altocum Stratus	ntain top. owe mth mth top ow mth m AGL Cumul mm less than Fog Smoke less than Fog Smoke		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang (Visibility) Helia	m Dew Est (1 Min. flight altite High Middle Low Measi Name o	wn elevation (abie to local Mtn m AMSL (A-1E/10)1000m vides: Day = 160i Vertically Developed ure at 0900 hrs e if 3.2 km mark visibility: Day = -	□ Broken ove mean se □ Clouds al □ Clouds be □ Cirrus □ Altocum □ Stratus □ Nimstrat ach morning □ more □ Rain □ Haze □ more □ Rain □ Haze	a level) and bove min to min top elow min m AGL mt - 500 m Al CuNim Cunul Report am less than Fog Smoke less than Fog Smoke sless Might -	Broken report clouds abo Clouds abo Clouds abo Clouds belo Clouds abo Clouds belo Clouds b	above, at, c we mith int top ow mth m AGL d ceiling - □ Cunul 4 hrs. less than Fog Smoke less than Fog Smoke less than	Broken below mout Clouds abt Clouds to Clouds to Clouds to Clouds to Clouds to Altour Stratus Nimstrat more Rain Haze more Rain Haze	ntain top. owe mth mth top ow mth m AGL Cumul mm less than Fog Smoke less than Fog Smoke		
4. Sky Conditions	4.3	Cloud Base F (Loc Rel) Cloud Type Rainfall Visual Rang (Visibility)	m Dew Est (1 Min. Hight altit High Middle Low Meass Name o Name o	wn elevation (abie to local Mtn m AMSL A-1E/10)1000m udes: Day = 160i Vertically Developed ure at 0900 hrs e f 3.2 km mark usbillity: Day = 1 nderstoms Flash, count secs to boom / 3	Broken Ove mean se Clouds al Clouds al Clouds al Clouds al Clouds by AGL: Nigt Clorus Altocum Stratus Nimstrat Charach morning more Rain Haze Rain Haze Yes N NE E SE Yes	a level) and bove min to make to make the common th	Broken report clouds also Clirus Altostrat Altostrat Altostrat Nimstrat Ount for last 2- more Rain Haze more Rain Haze Rain Haze Nimstrat Nimstr	above, at, s we mbn int top ow mtn m AGL d ceiling - Cunvil Cunvil 4 hrs. less than Fog Smoke Fog Smoke Stow Nov km	□ Broken □ Clouds abu □ Clouds to □ Clouds bel **Mo flights □ Cirrus □ Altostrat □ Altostrat □ Altostrat □ Altostrat □ Haze □ more □ Rain □ Haze □ more □ Rain □ Haze □ N NE SE S S □ Yes □ Yes □ Yes	ntain top. over mtn mtn top ow mtn m AGL CuNim Cumul mm less than Fog Smoke less than Fog Smoke smoke vivts No SW W NW		

Using the Wind Chill Factor

Step 2: Find the air temperature in top row. Let's use 0°C.

0°C would be about the air temp at the top of Doi Phu Kha in Jan.



See Handbook, p. 16 for the Wind Chill Table.

					Wine	Chill					
				Me	asured	Air Ter	nperatu	ire (°C))		
	0	5	U	-5	-10	-15	-20	-25	-30	-35	-4 0
	5	4	-2	-7	-13	-19	-24	-30	-36	-41	-4 7
	10	n	ကု	φ	-15	-21	-27	-33	-39	-45	-51
	15	2	-4	-11	-17	-23	-29	-35	-41	-48	-54
-	20	1	-5	-12	-18	-24	-31	-37	-43	-49	-56
(km/h)	25	1	-6	-12	-19	-25	-32	-38	-45	-51	-57
돌	30	0	-7	-13	-20	-26	-33	-39	-46	-52	-59
20	35	0	-7	-14	-20	-27	-33	-40	-47	-53	-60
Veloaty (40	-1	-7	-14	-21	-27	-34	-41	-48	-54	-61
9	45	-1 -8		-15	-21	-28	-35	-42	-48	-55	-62
	50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63
Wind	55	-2 -9		-15	-22	-29	-36	-43	-50	-57	-63
36	60	-2	-9	-16	-23	-30	-37	-43	-50	-57	-64
	65	-2	-9	-16	-23	-30	-37	-44	-51	-58	-85
	70	-2	-9	-16	-23	-30	-37	-44	-51	-59	-66
	75	-3	-10	-17	-24	-31	-38	-45	-52	-59	-66
	80	-3	-10	-17	-24	-31	-38	45	-52	-60	-67
		Travel car	n be dangero	us		Frostbib	e within		Frestbib	e within 5	minutes
	Usel		hicles, tempo table and dan		ers are	30 mi	nutes		te within '		
						Start o	of the dan	ger of fro	stbite and	possible :	death.

Using the Wind Chill Table

Step 3: Find the wind speed in the left column. Let's use 40 km/h.



	Wind Chill Measured Air Temperature (°C)											
				Me	asured	l Air Ter	nperatu	ure (°C)				
	0	5	0	-5	-10	-15	-20	-25	-30	-35	-4 0	
	5	4	-2	-7	-13	-19	-24	-30	-36	-41	47	
	10	ß	ကု	φ	-15	-21	-27	-33	-39	-45	-51	
	15	2	4	-11	-17	-23	-29	-35	4	-48	-54	
	20	1	-5	-12	-18	-24	-31	-37	43	49	-56	
E	25	1	-6	-12	-19	-25	-32	-38	45	-51 -	-57	
(km/h)	30	0	-7	-13	-20	-26	-33	-39	46	-52	-59	
200	35	0	-7	-14	-20	-27	-33	-40	-47	-53	-60	
E	40	-1	-7	-14	21	-27	-34	41	48	-54	-61	
Vel	45	-1	-8	-15	-21	-28	-35	-42	48	-55	-62	
	50	-1	-8	-15	-22	-29	-35	-42	49	-56	-63	
Wind	55	-2	-9	-15	-22	-29	-36	-43	-50	-57	-63	
336	60	-2	-9	-16	-23	-30	-37	-43	-50	-57	-64	
	65	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	
	70	-2	-9	-16	-23	-30	-37	-44	-51	-59	-66	
	75	-3	-10	-17	-24	-31	-38	-45	-52	-59	-66	
	80	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	
		Trewel ca	n be dangero	us		Frostbit	e within		Frostbib	e within 5	minutes	
	Use		hicles, tempo table and dar		ers are	30 mi	nutes		e within '			
						Start (of the dan	ger of fro	stbite and	possible :	death.	

Determining the Wind Chill Factor

Step 4: Read across the row and down the column into the chart (-7°C).

You will feel
-7°C cooler
than the
measured
air
temperature

					1.02	1 2501 501					
						Chill					
						Air Ter		3 6			
_	0	5	U	-5	-10	-15	-20	-25	-30	-35	-4 0
<u> </u>	5	4	-2	-7	-13	-19	-24	-30	-36	-41	-4 7
<u> </u>	10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51
	15	2	-4	-11	-17	-23	-29	-35	41	-48	-54
	20	1	-5	-12	-18	-24	-31	-37	43	49	-56
₩.	25	1	-6	-12	-19	-25	-32	-38	45	-51	-57
(km/h)	30	0	-7	-13	-20	-26	-33	-39	-46	-52	-59
25	35	0		-14	-20	-27	-33	-40	-47	-53	-60
g	40	-1	-7	- #	-21	-27	-34	-41	-48	-54	-61
Veloc	45	-1	R	15	-21	-28	-35	-42	-48	-55	-62
	50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63
Wind	55	-2	-9	-15	-22	-29	-36	-43	-50	-57	-63
220	60	-2	-9	-16	-23	-30	-37	-43	-50	-57	-64
	65	-2	-0	-16	-23	-30	-37	-44	-51	-58	-65
	70	-2	-9	-16	-23	-30	-37	-44	-51	-59	-66
	75	Ġ	-10	-17	-24	-31	-38	-45	-52	-59	-66
	80	Ş	-10	-17	-24	-31	-38	45	-52	-60	-67
		Travel car	n be dangero	us		Frostbib	a within		Frestbib	e within 5	minutes
	Usel		hicles, tempo table and dar		ers are	30 mi	nutes		e within '		
						Start o	of the dan	ger of fro	stbite and	passible :	death.



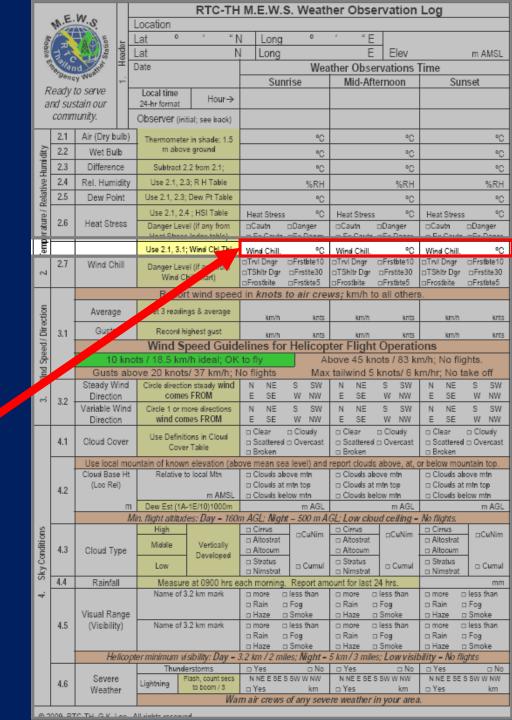
Record the Wind Chill in Section 2.7



ı		M.E.	W -			RTC-TH	M.E.W.	S. Weatl	ner Obse	rvation	Log		
п	•	M.E.	S.		Location								
п	100	7	- A 5	-	Lat °	° "	V Long	0	" E				
п	bile	ゴス	Stat	Header	Lat	1	Long		Е	Elev		m AMSL	
п	E	Man	y Westret	티키	Date			Wea	ther Obse	rvations	Time		
1		9enc	A Men	.			Sur	nrise	Mid-Aft			nset	
п	R	eady t	o serve		Local time	Hour→							
п			tain our		24-hr format	⊓our→							
1		comm	unity.		Observer (initial; see back)							
ı	П	2.1	Air (Dry b	ulb)	Thomas	ter in shade; 1.5		°C		°C	°C		
п	≥	2.2	Wet Bu		Incilionic	ove ground		°C		°C			
п	흶	2.3	Differen									°C	
п	롸					t 2.2 from 2.1;		°C	°C 9				
п	Relative Humidity	2.4	Rel. Humi			2.3; R H Table		%RH		%RH		%RH	
	Rel	2.5	Dew Po	ınt		.3; Dew Pt Table		°C		°C		°C	
	lre/	26	Harri Di			2.4 ; HSI Table	Heat Stress		Heat Stress		Heat Stress		
	rature/	2.6	Heat Stre	ess		evel (if any from	Cauth Cauth	□Danger □Ev Danse	Cauth Cauth	□Danger	Cauth Cauth	Danger	
Ī	Temo				_	.1; Wind Chl Tbl		°C		°C		°C	
	Ę	2.7	Wind Ch	hill			Wind Chill. □Trvl Dngr	□Frstbte10	Wind Chill.	□Frstbte10	Wind Chill.	=Frstkite10	
	A	2.7	wind Gr	ıIII		evel (if any from Chill chart)	□TShltr Dgr	□Frstite30	□TShltr Dgr	□Frstite30	□TShltr Dgr	□Frstite30	
4						,	□Frostbite	□Frstbte5	□Frostbite	□Frstbte5	□Frostbite	□Frstbte5	
		+			Rep	ort wind spee	a in <i>knots</i>	to air cre	ws; km/h to	o all other	S.		
п	흥		Averag	е	Get 3 read	dings & average	km/h	knts	km/h	knts	km/h	knts	
п	jë.	3.1	Gusts		Record	highest gust							
п	Wind Speed / Direction	3.1					elines for	r Helicon	ter Fliaht	Operati	ons km/h	knts	
п			Wind Speed Guidelines for Helicopter Flight Operations 10 knots / 18.5 km/h ideal; OK to fly Above 45 knots / 83 km/h; No flights									nhts	
п	핃					ts/ 37 km/h; ř		_	Above 45 knots / 83 km/h; No flights. Max tailwind 5 knots/ 6 km/hr; No take off				
п	>		Steady Wir			tion steady Wind	N NE	S SW	N NE	S SW	N NE	S SW	
п	eri	3.2	Directio		comes FROM		E SE	W NW	E SE	W NW	E SE	W NW	
			Variable V			more directions omes FROM	N NE E SE	S SW W NW	N NE E SE	S SW W NW	N NE S SW E SE W NW		
ŀ			Directio	ATT			□ Clear	□ Cloudy	□ Clear	□ Cloudy	□ Clear	□ Cloudy	
		4.1	Cloud Co	ver		nitions in Cloud ver Table	□ Scattered	Overcast	□ Scattered		□ Scattered □ Overcast		
			Heale	1			□ Broken	- ID 1	□ Broken	-1	□ Broken		
		+	Cloud Bas			wn elevation (ab e to local Mtn	ove mean se		report clouds □ Clouds ab		or below mou		
		4.0	(Loc Re		rverativ	e w local Min	☐ Clouds at		□ Clouds at		□ Clouds at		
		4.2				m AMSL	□ Clouds be	elow mtn	□ Clouds be	low mtn	□ Clouds be	low mtn	
				n		IA-1E/10)1000m	101 12	m AGL	m AG		M. m. c.	m AGL	
	,,			- /	<i>Min. flight altit</i> t High	udes: Day = 160	m AGL; Nigh □ Cirrus	nt - 500 m A	GL; Low clos □ Cirrus		No flights. □ Cirrus		
	tion					Martine	□ Altostrat	□CuNim	□ Altostrat	□CuNim	□ Altostrat	□CuNim	
	on di	4.3	Cloud Ty	ре	Middle	Vertically Developed	□ Altocum		□ Altocum		□ Altocum		
	Sky Conditions				Low		□ Stratus □ Nimstrat	□ Cumul	□ Stratus □ Nimstrat	□ Cumul	□ Stratus □ Nimstrat	□ Cumul	
	Š	4.4	Rainfal	II	Measi	ure at 0900 hrs e		. Report am		24 hrs.	LI HAITSUIGE	mm	
	4.				Name o	f 3.2 km mark	□ more (less than	□ more □	less than		less than	
			Vieual Pa	nac				□ Fog		Fog		Fog	
		4.5	Visual Ra (Visibilit			f 3.2 km mark		□ Smoke □ less than		Smoke less than		Smoke less than	
			(- 10 - 111	21				□ Fog		Fog	□ Rain □	Fog	
		-	- 11	E.	nto a mail from	A STATE OF THE PARTY OF THE PAR		Smoke		Smoke		Smoke	
			He	lico		visibility: Day =						,	
		4.0	Severe	9		Flash, count secs	N NE E SE	S SW W NW	N NE E SE S	□ No 5 SW W NW	□ Yes N NE E SE :	□ No 5 SW W NW	
П		4.6	Weathe		Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km	
						Wa	m air crews	of any seve	ere weather i	in your area	3.		
Į.					All sinkte soco								

Record the Wind Chill temperature in the upper part of Section 2.7





Look for Wind Chill Warning

Step 5: Look at the color code and the relevant comments.

You will feel
-7°C cooler
than the
measured
air
temperature

						Wine	d Chill						
					Me	easured	l Air Ter	nperat.	ıre (°C)	ı			
		0	5	0	-5	-10	-15	-20	-25	-30	-35	40	
		5	4	-2	-7	-13	-19	-24	-30	-36	-41	-47	
		10	3	-3	-9	-15	-21	-27	-33	-39	-45	-51	
		15	2	-4	-11	-17	-23	-29	-35	41	-48	-5 4	
		20	1	-5	-12	-18	-24	-31	-37	43	-49	-56	
	(km/h)	25	1	-8		-19	-25	-32	-38	-45	-51	-57	
	된	30	0	-1			-26	-33	-39	-46	-52	-59	
	36.	35	0		-14	722	27	-33	-40	-47	-53	-60	
2	Ď.	40	1	-7	4	-21	7	-34	-41	-48	-54	-61	
	Vel	45	-1	-8	-15	-21	-2)	-35	-42	-48	-55	-62	
		50	-1	-8	-15	-22	-29	-35	-42	-49	-56	-63	
	Wind	55	-2	-9	-15	-22	-29	-36	-43	-50	-57	-63	
	35	60	-2	-9	-16	-23	-3	-37	-43	-50	-57	-64	
		65	-2	-9	-16	-23	7 /	-37	-44	-51	-58	-65	
		70	-2	-9	-16	-23		-37	-44	-51	-59	-86	
		75	-3	-10	-17	1	A	-38	-45	-52	-59	-66	
		89	-3	-10	-17	/	-31	-38	45	-52	-60	-67	
			Travel car	n be dangero	U5		Frostbit	o within		Frestbib	e within 5	minutes	
		Usel		hicles, tempo table and dar		ers are	30 mi		Frostbit	e within '	10 minute	25	
							Start of the danger of frostbite and possible death.						



Record the Wind Chill Danger Level advisory (if any) in the lower part of Section 2.7

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	.0	°C	°C	
dity	2.2	Wet Bulb	m above ground	•€	°C	.0	
Ē	2.3	Difference	Subtract 2.2 from 2.1;	.€	°C	°C	
ive	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH	%RH	%RH	
Relative Humidity	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C	
			Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C	
Temperature/	2.6	Heat Stress	Danger Level (if any from Heat Stress Index table)	□Cautn □Danger □ Ex Cautn □Ex Dangr	□Cautn □Danger □ Ex Cautn □Ex Dangr	□Cauth □Danger □ Ex Cauth □Ex Dangr	
em			Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C	
2	2.7	Wind Chill	Danger Level (if any from Wind Chill chart)	□Trvl Dngr □Frstbte10 □TShltr Dgr □Frstite30 □Frostbite □Frstbte5	□TShltrDgr □Frstite30	rvi Dngr □Frstbte10 □TShltr Dgr □Frstite30 □Frostbite □Frstbte5	



Check the appropriate box as needed. If no Danger Level exists, cross out this section

	_	la.	П		RTC-TH	M.E.V	V.S	. Weath	ner Obs	ervati	on	Log	
	M.E.	W.S.	[Location									
3		- A 5	_[Lat °	· "N	V Lor	ng	0	" " E				
bile	77	E (EVE	Header	Lat	1	l Lon	q		Е	Ele	V		m AMSL
4	Silan C	0 35	ᄩ	Date		<u> </u>	_	Wea	ther Obs	ervatio	ns 1	Time	
	"Senc	y Weather	-			S	unri			ternoon		Sun	iset
R	eady i	to serve	十	Local time	Haus S				1111071			- Cui	
a		itain our		24-hr forma	t Hour→								
	comn	runity.	Ш	Observer (initial; see back)								
	2.1	Air (Dry b	ulb)	Thormomy	eter in shade; 1.5			°C			°C		°C
≥	2.2	Wet Bu			ove ground			°C	°C				°C
ni Pi	2.3	Differen		Sukhan	t 2.2 from 2.1;			°C	°C				°C
로	2.4				2.3; R H Table						_		
Relative Humidity	2.5	Rel. Hum			.3; Dew Pt Table			%RH		761	RH		%RH
8	2.5	Dew Po	int					°C			°C		°C
erature /	2.6	Heat Str	900		2.4 ; HSI Table	Heat Str □Cauth		°C	Heat Stres: □Cautn		°C	Heat Stress □Cautn	°C
ar at	2.0	Tiout ou	000	Danger Level (if any from Host Street Index table)				Danger	- Ev Caude	□Dange □E× Da		- Ev Cauda	Danger
Temp						Wind Ch		°C	Wind Chill.		°C	Wind Chill.	•€
-	2.7	Wind C	hill	Danner	evel (if any from	Trvl Dng	r c	Frstbte10	□ It.d Drigr	oFrsthte		□Trvl Dngr	□Frstbte10
2					Chill cha	□TShitr D		□Frstite30 □Frstbte5	□TShltr De □Frostbite	riFrstite	30		□Frstite30
				Rep	ort and speed	Frostbite			vs; km/h t	□Frswii	hers		□Frstbte5
g		A							roj mini	o an ou	1010		
Wind Speed / Direction		Averag	je	Get 2	dings & average	kre		knts	km/h knts			km/h	knts
ě	3.1	Gusts		Record	l highest gust	km	/h	knts	km/h	,	knts	km/h	knts
/pa	i			Wind	Speed G	elines 1	or	Helicop	ter Fligh	t Oper	ati	ons	
Š	10) kn	ots / 18.5 k	m/h al; OK							m/h; No flig	hts.
Pug				ove 20 kp	37 km/h; N	lo flights	,	Max	tailwind 5	knots/	6 k	m/hr; No ta	ake off
		Steady V			ction steady Wind nes FROM	N NE E SE		S SW W NW	N NE E SE		W	N NE E SE	S SW W NW
33	3.2	Direction Variable	_		more directions	N NE		S SW	N NE		W	N NE	S SW
		Poli			omes FROM	E SE		W NW	E SE		W	E SE W NW	
				Use Defi	nitions in Cloud	🗆 Clear		Cloudy	□ Clear	□ Cloud		□ Clear □ Cloudy	
		Cloud Co	over		ver Table	☐ Scatte ☐ Broker		Overcast	□ Scattered □ Overcast □ Broken			□ Scattered □ Broken	□ Overcast
		Use loca	al mo	untain of kno	wn elevation (ab			level) and		s above.	at. c		ntain top.
		Cloud Bas	e Ht		e to local Mtn	□ Clouds	abo	ve mtn	□ Clouds a	ove mtn		□ Clouds ab	ove mtn
	4.2	(Loc Re	el)		m AMSL	☐ Clouds			□ Clouds a □ Clouds b			□ Clouds at a	
			m	Dew Est (1A-1E/10)1000m	LI CIDAGS	ber	m AGL	- Clonds b	m A	GL	□ Clouds be	m AGL
	i				udes: Day - 160	m AGL; N	ight		GL; Low clo			No flights.	
SIIS				High		□ Cirrus		□CuNim	□ Cirrus	CuN		□ Cirrus	□CuNim
Ĭĕ	4.3	Cloud Ty	ma	Middle	Vertically	☐ Altostr			☐ Altostrat ☐ Altocum			☐ Altostrat ☐ Altocum	
8	4.3	Cloud I	ype		Developed	□ Stratus	_		□ Stratus	۱.		□ Stratus	1
Sky Conditions				Low		□ Nimstr		□ Cumul	□ Nimstrat	□ Cur	nul	□ Nimstrat	Cumul
,	4.4	Rainfa	ill		ure at 0900 hrs e of 3.2 km mark							D MALE	mm
4				Name o	n 3.2 km mark	□ more □ Rain		less than Fog		□ less tha □ Fog	171		less than Fog
		Visual Ra				□ Haze		Smoke	□ Haze	□ Smoke		□ Haze □	Smoke
	4.5	(Visibili	ty)	Name o	f 3.2 km mark	□ more		less than		less tha	ın		less than
						□ Rain □ Haze		Fog Smoke		□ Fog □ Smoke			Fog Smoke
		He	licoj	oter minimum	visibility: Day						visit		
					nderstorms	□ Yes		□ No	□ Yes	0	No	□ Yes	□ No
	4.6	Seven		Lightning	Flash, count secs to boom / 3	N NE E	5E 5	SW W NW km	N NE E SE	5 SW W N kr		N NE E SE S □ Yes	5 SW W NW km
		Weath	er				ws o		ere weather		_		KIII
					****			,		year.			

Knowing the Wind Chill helps relief officials...

...better plan water, food, shelter, clothing and supplies needed for the emergency relief effort.

However, in most cases, weather information for the local disaster site may NOT available.

You can help fill the gap by learning about weather observing and/or becoming a licensed amateur radio operator.



You have completed the Advanced MEWS Lesson A2: Measuring Wind Speed & Windchill



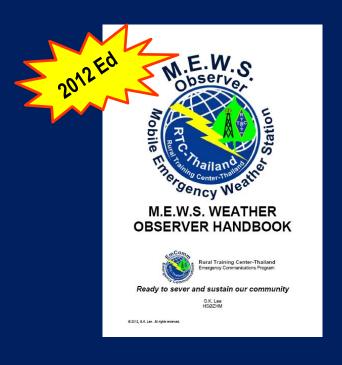




You are now ready for Advanced MEWS Lesson A3: Using Dew Point Temperature to Calculate Cloud Base Height

Questions or Comments

Refer to the MEWS
Weather Observer
Handbook for more
details on any of the
procedures in this lesson.





You may also contact us by e-mail: hsØzhm@gmail.com
We are always trying to improve our lessons. Your comments and suggestions are welcomed.

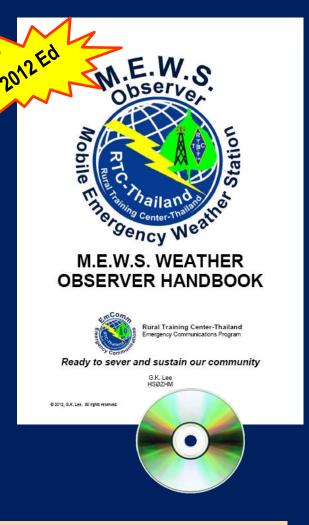
Free Self-Study Materials by Internet

RTC-TH Weather Observer manual

Illustrated PDF topical lessons

All of the lessons have been classroom and field proven.

Send e-mail to hsØzhm@gmail.com to request free training materials for non-commercial use only.





These materials are in English. Volunteer assistance for Thai translation to is welcome and will be acknowledged and cited.

Advanced MEWS PDF Lessons

- A 1: Measuring Relative Humidity and Heat Stress
- A 2: Measuring Wind Speed and Wind Chill
- A 3: Using Dew Point Temperature to Calculate Cloud Base Height
- A 4: Measuring Rainfall
- A 5: Reporting Severe Weather
- A 6: Weather Forecasting



Advanced MEWS PDF Lessons





Six slide show lessons;
Some show how to build your own weather equipment

The EP Lesson Series





www.neighborhoodlink.com/RTC-TH_Tech/pages

For More Information about M.E.W.S.



Contact Greg, HSØZHM MEWS Creator / Mentor







Via E-mail hsØzhm@gmail.com



Via Skype video conference call: rtc_th

Community-based Environmental Education for





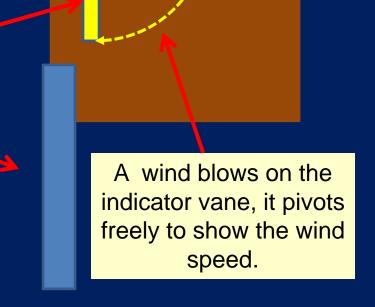


Continue to learn how to make your own wind speed meter.

Making a Wind Speed Meter

Parts:

- Wood back board
- Wood Indicator vane
- PVC handle
- a nail
- 2-3 screws





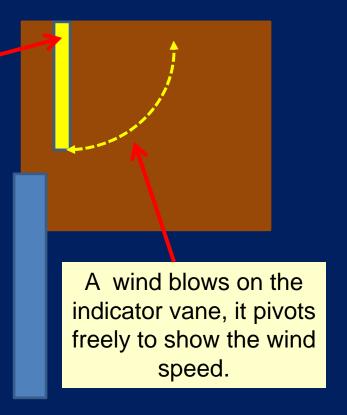
Use the nail for the indicator vane pivot.
Use the screws to attach the PVC handle to the back board.

The indicator vane pivot must swing freely.

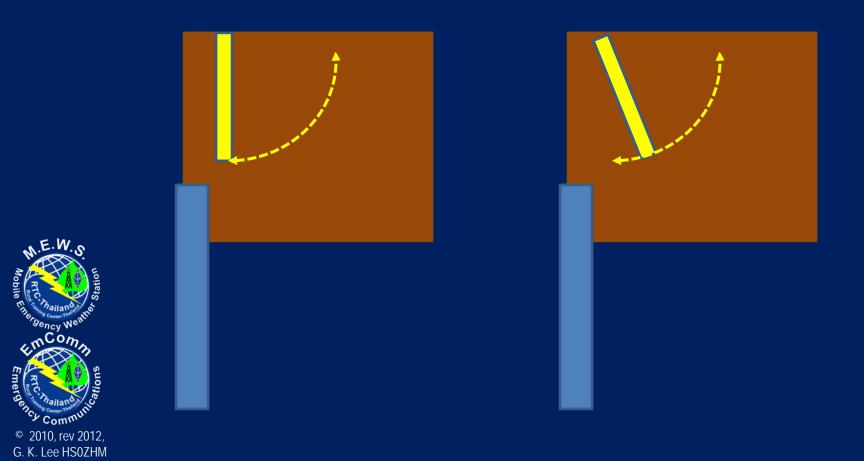
To make this happen:

 Drill a hole in the vane that is larger than the diameter of the nail.

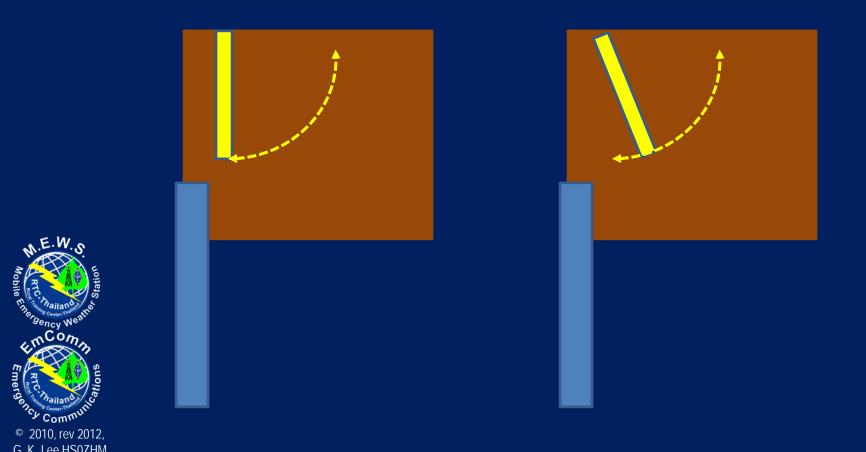
Put the nail through the vane, then pound the nail into the back board.



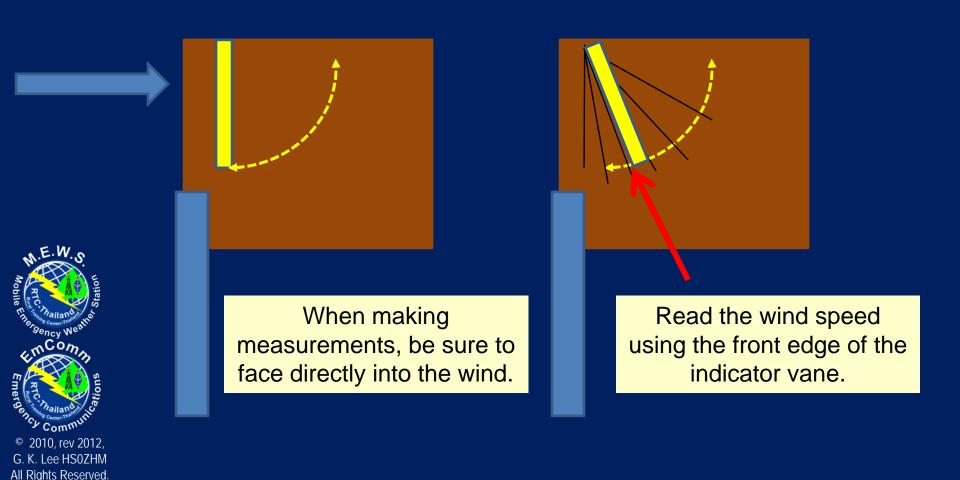
Ride in a car. Hold the wind speed gauge out the window open. Have the driver go at 5 km/h. Mark the location of front edge of the indicator vane. Repeat this to get a good reading for 5 km/h.



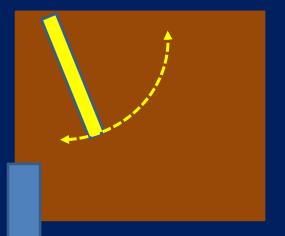
Repeat this process but increase the car speed by 5 km/h to at least 75 km/h. Get 3 readings at each speed to be sure of the reference mark.



When you are done, carefully use a permanent marker to draw the wind speed scale on the back board. The label the lines.



Caution: Protect Your Wind Speed Gauge



Your wind speed gauge may be fragile. Consider the geohazards in your area. Make a protective case for it. You need to be sure it will survive with



Community-based Environmental Education for





www.neighborhoodlink.com/org/rtcth

E-mail: rtc2k5@gmail.com

