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 A1:

Measuring Relative Humidity and Heat Stress



Advanced Temperature measurements are needed to

- Calculate Relative Humidity
- Heat Stress Index

The topics below are covered in other Advanced MEWS lessons.

- Wind Chill Temperature
- Dew Point Temperature
- Cloud Base Height





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

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MEWS adapts weather lessons from two existing RTC-TH programs







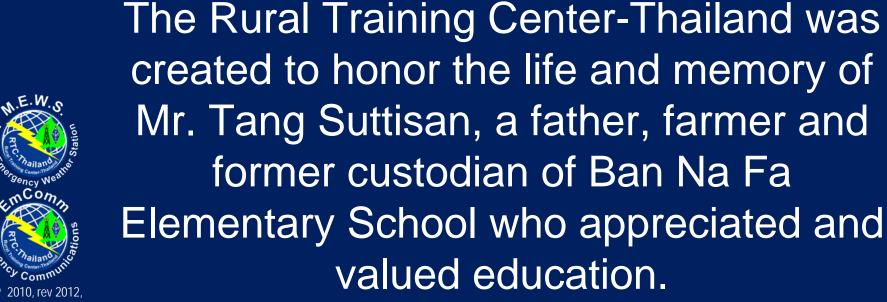
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Survivors often lack shelter. Excessive temperature makes life difficult and stressful.







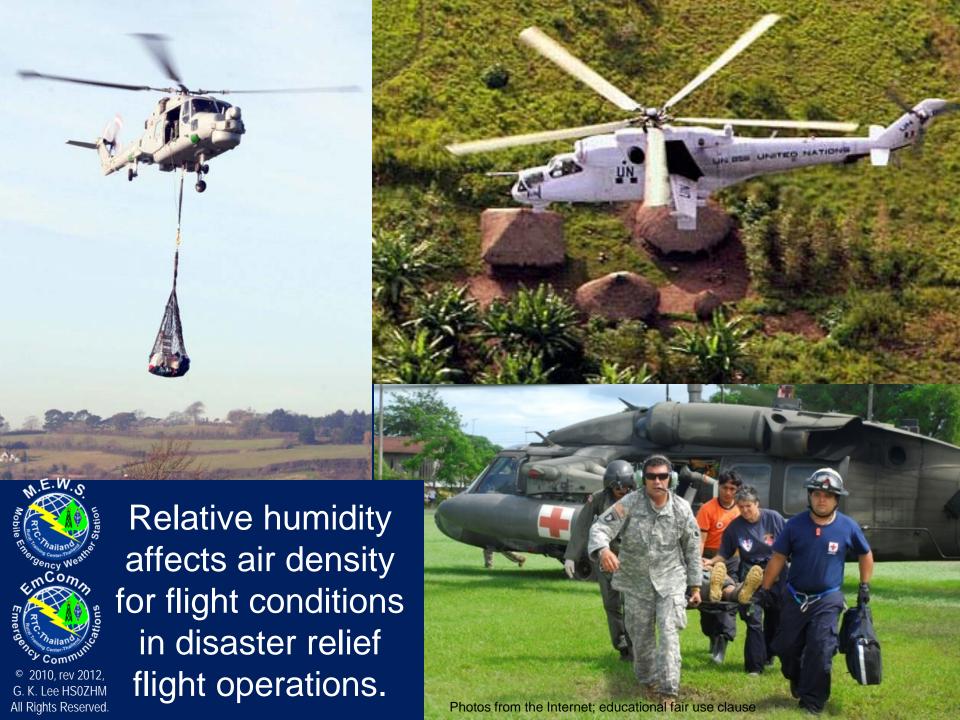


Relative humidity affects the health / well-being and food / water needs of disaster survivors. This valuable information can be obtained and reported by MEWS trained HAMs.



Photos from the Internet; educational fair use clause

© 2010, rev 2012, G. K. Lee HS0ZHM All Rights Reserved. increases the need for water and shelter.



Advanced Temperature measurements are needed to

- Calculate Relative Humidity
- Heat Stress Index

The topics below are covered in other Advanced MEWS lessons.

- Wind Chill Temperature
- Dew Point Temperature
- Calculating Cloud Base Height





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

Knowing the Relative Humidity helps relief officials

to 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 be available.

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

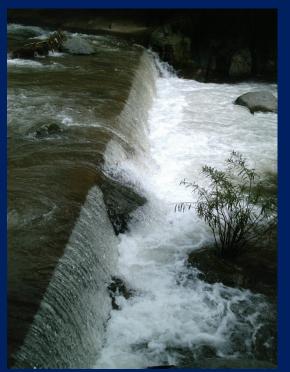
Relative Humidity

is the amount of *moisture* in the air compared to how much moisture could be in the air IF the air was holding all the moisture it could hold.



Moisture is another word for water.

Water can be a liquid, solid, or a gas.









Water

Ice

Water Vapor

Water vapor is a gas.

Water vapor is moisture in the form of a gas in the air. It can be used to make clouds.



A gas has no shape

A gas takes the shape of the container that holds it.





You cannot see a gas.

Air is a gas.





The moisture forming on the outside of this container came from the water vapor in the air.

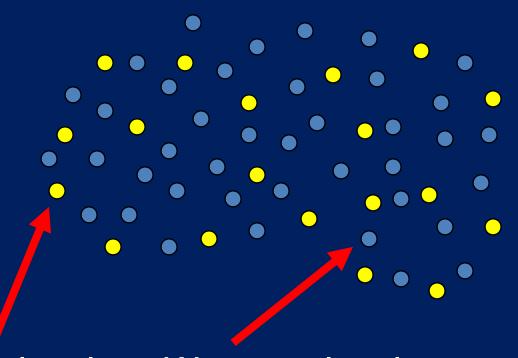






Air Temperature Affects Relative Humidity

Warm air can have a higher relative humidity



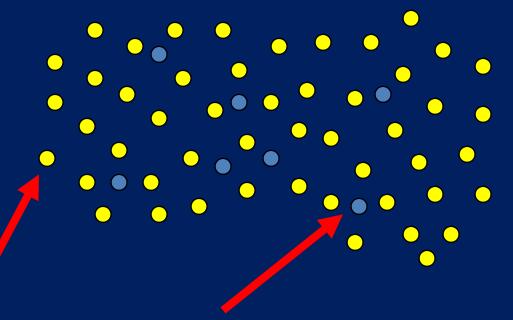
Air molecule

Water molecule



Air Temperature Affects Relative Humidity

Cool air can have a lower relative humidity

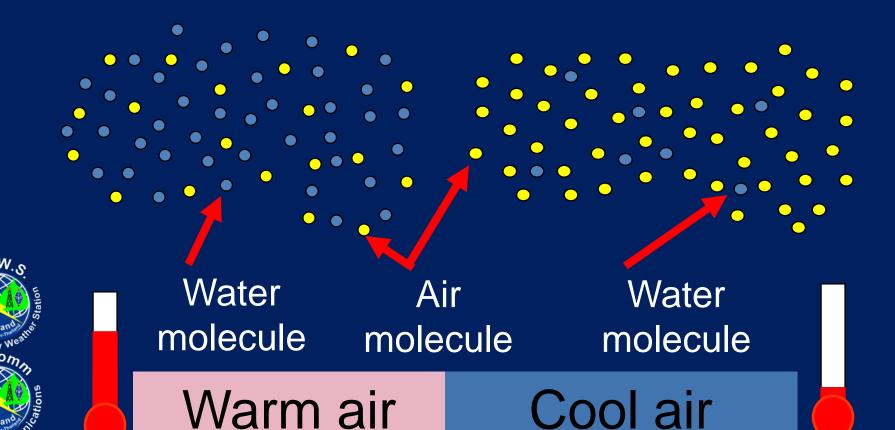


Air molecule

Water molecule



Do you know why? Can you see the difference?

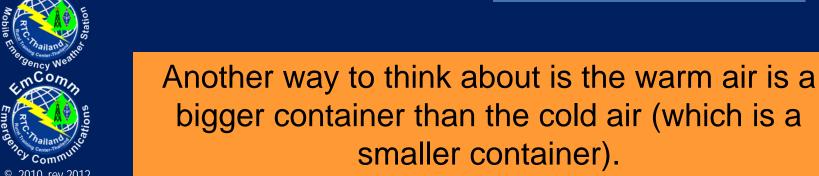


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This is why.

Warm air has more space to hold water molecules

Cool air has less space to hold water molecules

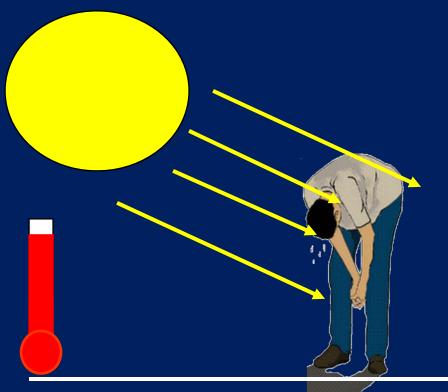








High temperatures and high relative humidity...



make it dangerous to work outside.



The amount of danger can be determined using the Heat Stress Index.

Low temperatures, high relative humidity, and high wind speed makes you feel cooler...

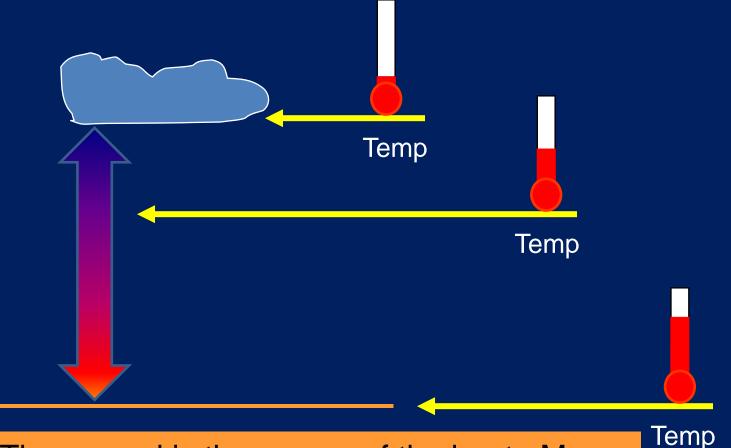
...than the measured air temperature.

Wind Chill is covered in Advanced Lesson A2





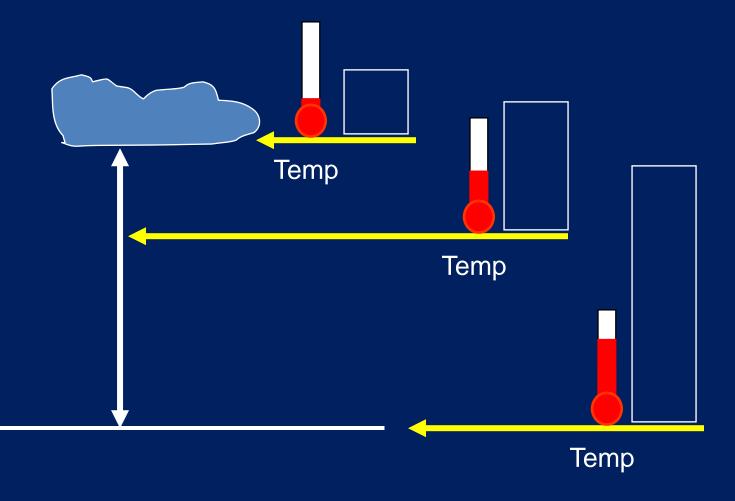
The air temperature gets lower as you go higher above the ground.





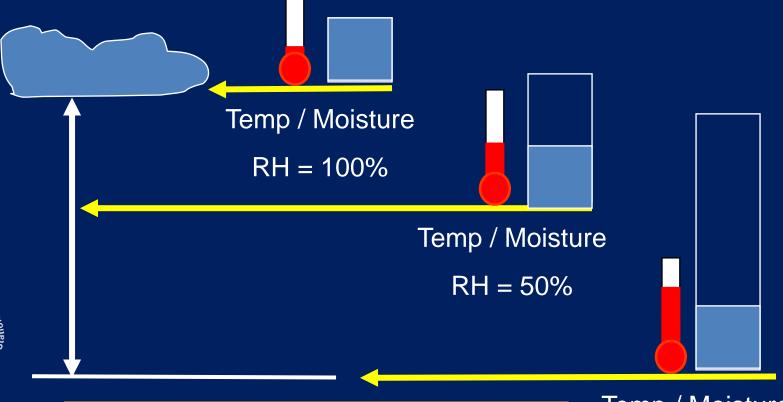
The ground is the source of the heat. Move away from the heat source and it is cooler.

Air Temp affect "size of container" to hold the moisture





So as you go higher above the ground the temperature gets lower and the relative humidity gets higher.



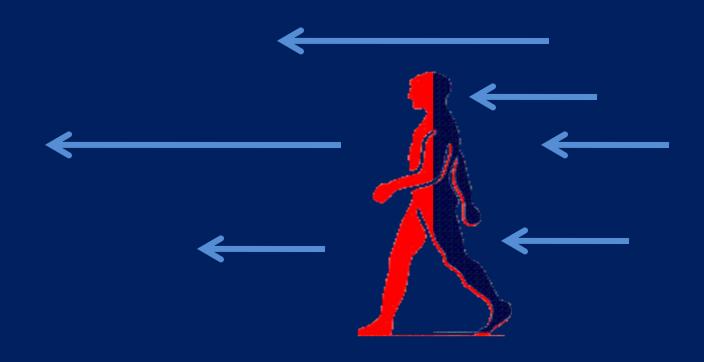
The amount of water vapor is the same, but the size of the container gets smaller making the container seem to fill up.

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Temp / Moisture

RH = 25%

Also, as you go higher above the ground the wind speeds get higher.





Wind moves cooler air molecules to take heat away from you making you feel less warm (colder).

Section 2.4 is for Relative Humidity

Brief notes are on the form to help remind you how to calculate Relative Humidity

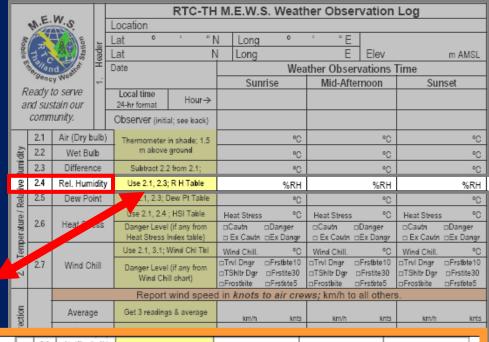
Temperature /	Relative Humidity
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- 2.1 Air (Dry Bulb) Temp: Read thermometer kept in the shade, 1.5 m above the ground.
- 2.2 Wet Bulb Temp from hyrgrometer kept in the shade, 1.5 m above the ground.
- 2.3 Difference between Dry and Wet Bulb temperatures.
- 2.4 Relative Humidity: Use Dry Bulb Temp (2.1), Difference (2.3) and Relative Humidity table to find % Relative Humidity.

More detailed notes are on the back of the form to help remind you what to do.

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See Handbook Section 2, pp 9-10



2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C	*℃	*C	
2.2	Wet Bulb	m above ground	°C	*C	*C	
2.3	Difference	Subtract 2.2 from 2.1;	°C	°C	*C	
	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH	%RH	%RH	
2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	*C	*C	
	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress *C	Heat Stress °C	
2.6		Denger Level (if any from Heat Stress Index table)	o'Caute o'Banger o Ex Caute o'Ex Dengr	o Cauth □ Denger □ Ex Cauth □ Ex Dangr	oCauth oBenger o Ex Cauth oEx Dangr	
		Use 2.1, 3.1; Wind Chi Tbi	Wind Chill. °C	Wind Chill. *G	Wind Chill. °C	
2.7	Wind Chill	Danger Level (if any from Wind Chill chart)		oTShitr Dgr oFratile30	oTryl Drigr oFretbte10 oTShitr Dgr oFretbte30 oFretbte5	
	2.2 2.3 2.4 2.5 2.6	Wet Bulb Ofference A Rel. Humidity Dew Point Heat Stress Wind Chill	2.2 Wet Bulb m above ground	2.2 Wet Bulb	2.2 Wet Bulb	

		Severe Weather	Warn air crews of any severe weather in your area.							
	4.6		Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km
			Thunderstorms Elightning Flash, count secs		N NE E SE S SW W NW		N NE E SE S SW W NW		N NE E SE S SW W NW	
					□ Yes	□ No	□ Yes	□ No	□ Yes	□ No
		Helicopt	licopter minimum vi sibility: Day = 3.2 km / 2 miles; Night = 5 km / 3 miles; Low visibility = No flights							
					□ Haze	□ Smoke	□ Haze	□ Smoke	□ Haze	□ Smoke
		Visual Range (Visibility)			□ Rain	□ Fog	□ Rain	□ Fog	□ Rain	□ Fog
	4.5		Name o	of 3.2 km mark	□ more	🗆 less than	□ more	□ less than	□ more	□ less than
					□ Haze	□ Smoke	□ Haze	□ Smoke	□ Haze	□ Smoke
					□ Rain	□ Fog	□ Rain	□ Fog	□ Rain	□ Fog
4	<i>‡</i>		Name of 3.2 km mark		□ more	□ less than	□ more	□ less than	□ more	□ less than

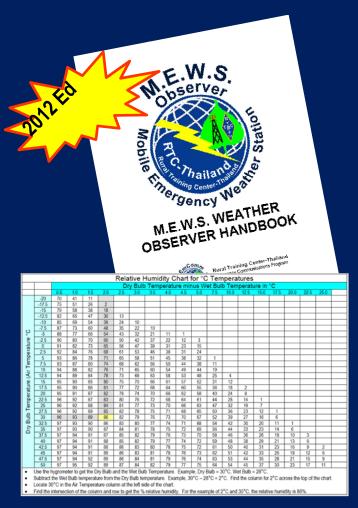
To measure relative humidity you need

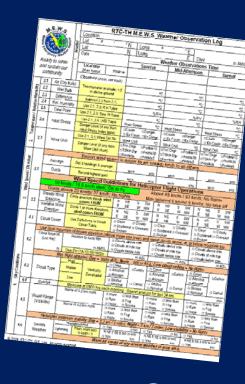


Calculator









MEWS Log Form



Relative Humidity Reference Table

Many English words in science come from Latin or Greek language.

hygro = water meter = to measure



A hygrometer is a tool to measure water in the air.

A hygrometer...

...is a tool to measure relative humidity



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Before starting, be sure the water bottle is full and the cloth wick on the wet bulb thermometer is soaking wet.



The Parts of a Hygrometer

Dry Bulb Thermometer

A hygrometer may cost about 230 THB.



See addendum after this lesson on how you can make your own hygrometer.



Wet Bulb Thermometer

Temperature Scales

Water Bottle

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MEWS weather data





...may be used for many purposes in relief operations. If possible, it should meet weather service standards.

These guidelines are for official weather stations



EmComm situations will probably be less than ideal.

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Standard Weather Instrument Shelter



Ideally, the thermometer should be shaded and ventilated about 1.5 m above the ground.

This is the international standard for weather measurements.

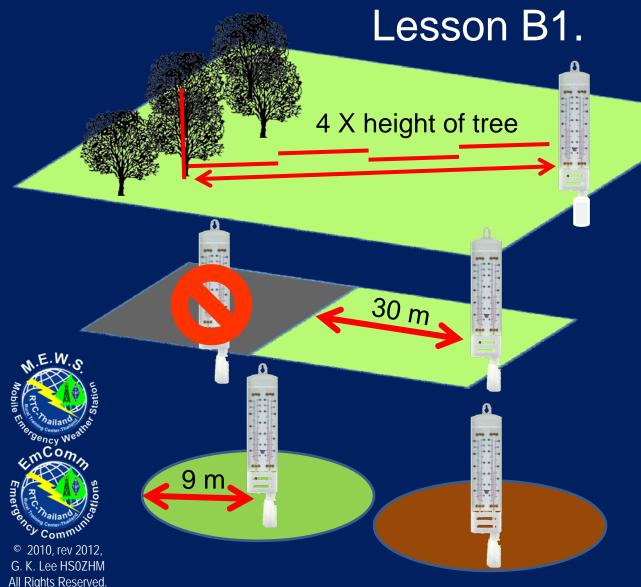
Hygrometer Placement



Ideally, the hygrometer should be located in an open area, 30m from large paved areas, etc. similar to a thermometer.

Hygrometer Placement

Follow same guidelines as for Temperature in



Avoid to tall obstructions

Avoid large paved areas

Best over short grass or bare soil (~9 m radius)



Temperature is a measure of the amount of heat.

You can use a thermometer or the dry bulb thermometer on a hygrometer to measure air temperature for weather observations.



However, a hygrometer is needed to measure relative humidity.



The hygrometer can be installed in the MEWS **PWIS** (Portable Weather **Instrument Shelter)**



Set up and using the MEWS PWIS is shown in Basic MEWS Lesson B1.



More notes are on the back of the form to help remind you how to calculate Relative Humidity

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.

ı		2.1	Air (Dry balb)	Thermometer in shade; 1.5	*6	*6	*6
ı	6	2.2	Wet Bulb	m above ground	*6	*6	*6
ı	5	2.3	Difference	Subtract 2.2 from 2.1;	*C	*C	*C
ı	2	2.4	Rel. Humidity	Use 2.1, 2.3; R.H.Table	988	NRH.	NRH
ı	중	2.5	Dew Point	Use 2.1, 2.3; Dow Pt Table	*0	*0	*0
ı	5			Use 2.1, 2.4; HSI Table	Heat Stress *C	Heat Stress *C	Heat Stress °C
ı	Temporoture / Relative Hamishy	3.5	Heat Stress	Danger Level (if any from Heat Stress Index table)	o Ceuth — o Denger o Ex Ceuth o Ex Dengr	o Cauth — o Danger o Ex Cauth o Ex Dangr	o Cauth o Danger o Ex Cauth o Ex Dangr
ı	5			Use 2.1, 3.1; Wind Chi Tbi	Wied Chil. *C	Wied CNIL *C	Wed CNIL *C
l	,	2.3	Wind Chill	Energer Level (if any from lifting Chill shart)			oTryl Drige of Freible 10 oTShifty Dgr of Freible 50 of Freible of Freible 5

- 2.4 Relative Humidity: Use Dry Bulb Temp (2.1), Difference (2.3) and Relative Humidity table to find % Relative Humidity.
- 2.5 L Point Temperature: Use Dry Build 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 Vind 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.

Relative Humidity: Use Dry Bulb (2.1), Difference (2.3) and Relative Humidity Table to find % Relative Humidity.



See MEWS Handbook, Section 2 pp. 9-12

Taking the Measurements



Before starting, be sure the water bottle is full and the cloth wick on the wet bulb thermometer is soaking wet.

Step 1: Read and write down the dry bulb temperature in Line 2.1

 $(31^{\circ}C)$

See MEWS Handbook, p. 10





You can record the Dry Bulb Temperature in Line 2.1 if you haven't already measured the Air temperature.

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	
,	2.2	Wet Bulb	m above ground	
	2.3	Difference	Subtract 2.2 from 2.1;	
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%



See MEWS Handbook, Section 2 pp. 9-12

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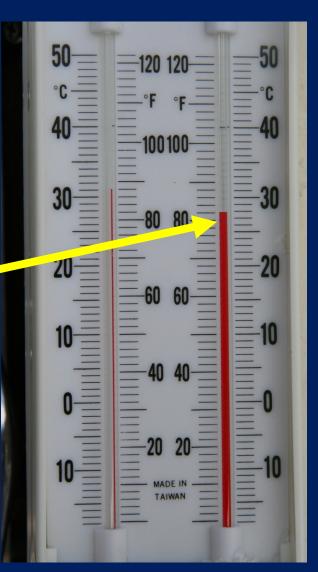
Taking the Measurements

Step 2: Read and write down the wet bulb temperature in Line 2.2

 $(28^{\circ}C)$



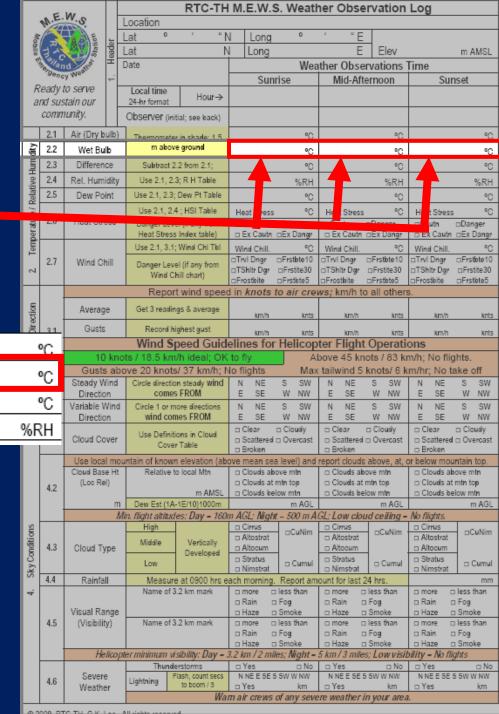
See MEWS Handbook, Section 2.2 p. 9



You can record the Wet Bulb temperature data in Line 2.2

				[5]
	2.1	Air (Drv bulb)	Thermometer in shade: 1.5	0
dity	2.2	Wet Bulb	m above ground	0
m l	2.3	Difference	Subtract 2.2 from 2.1;	0
We	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%R
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Do some arithmetic.

Step 3: Subtract the wet bulb temperature (Line 2.2) from the dry bulb temperature (Line 2.1). Write it down the result in Line 2.3.

31°C Dry

-28°C Wet

3°C Difference



See MEWS Handbook, Section 2.3 p. 10

Record the difference between the Dry and Wet Bulb Temperatures in Section #2.3



See MEWS Handbook, Section 2.3 p. 10

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п	,	M.E.	W.S.	ΙL	Location							
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п	E	allar	d Sep	뻐	Date		<u> </u>	Wea	ther Obser	vations	Time	
п		"genc	y Weather	- -			Su	nrise	Mid-Afte		Sur	nset
п	R	eady i	to serve	╽┟	Local time	House						
ı	aı	nd sus	stain our	╽┟	24-hr forma	t Hour→						
ı		comn	runity.		Observer (initial; see back)						
ı		2.1	Air (Dry b	ulb)	Th	day in abaday 4 E		°C		°C		°C
ı	dity	2.2	Wet Bu			eter in shade; 1.5 ove ground		°C		°C		°C
ľ	in F	2.3	Differen			t 2.2 from 2.1;		°C		°C		°C
k		2.4	Rel, Humi			2.3; R H Table						
ı	Relative	2.5	Dew Po		_	.3; Dew Pt Table		%RH		%RH		%RH
ı		2.0	Dew Fo	irit				°C		°C		°C
ı	alle	2.6	Heat Stre	229	-	2.4 ; HSI Table	Heat: es □Cau		Heat Sess	°C	He Stress	
	emperature/		Tious out	-50		evel (if any from ess Index table)		□Danger n □Ex Dangr		Danger Ex Danss	utn Cautn	□Danger □Ex Dangr
	dua				Hen 2 4 0			-0	Wind Chill.	°C	Wind Chill.	°C
	_	4.1	Wind Chill Danger Level (if any from Wind Chill chart) Report wind specific				□Trvl Dngr	□Frstbte10		Frstbte10	□Trvl Dngr	□Frstkte10
п	7		111112 01				□TShltr Dgr			Frstite30	□TShltr Dgr	□Frstite30
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ı	irection		Averag	je	Get 3 rea	dings & average	km/h	knts	km/h	knts	km/h	knts
	ë	31	Gusts		Record	l highest gust	km/h	knts	km/h	knts	km/h	knts
		00			Wind	Speed Guid						
		Count) kn	ots / 18.5 k	m/h ideal; OK	to fly	A	bove 45 knd	ts / 83 ki	m/h; No flig	ghts.
		o∩ Gus		s ab	ove 20 knd	ots/ 37 km/h; t	No flights	Max	tailwind 5 k	nots/ 6 k	m/hr; No ta	ake off
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ı	S	4.4							ount for last 24	hrs.		mm
	4.				Name o	of 3.2 km mark	□ more	less than		ess than		less than
			Visual Ra	nge			□ Rain □ Haze	□ Fog □ Smoke		Fog Smoke		n Fog n Smoke
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			110	HO)		nderstorms	□ Yes	es, rwgrn = □ No	□ Yes	□ No	□ Yes	griko □ No
		4.6	Severe	е	Lightning	Flash, count secs	N NE E SE	S SW W NW	N NE E SE S	5W W NW	N NE E SE	5 SW W NW
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						Wa	m air crew	s or any seve	ere weather in	your area	I.	
		200 00										

Relative Humidity Chart

To use this chart, you need to know:

- the dry bulb (air) temperature (Line 2.1)
- the wet bulb temperature (Line 2.2)
- the difference between the dry and the wet bulb temperatures (Line 2.3)



The chart can be found in the MEWS Weather Observer Handbook p 11.

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						Dr	y Bulb	Tem	peratu	ire mir		et Bul	b Tem		ure in	°C				
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	-20	70	41	11																
	-17.5	75	51	26	2															
	-15	79	58	38	18															
	-12.5	82	65	47	30	13														
	-10	85	69	54	39	24	10													
	-7.5	87	73	60	48	35	22	10												
ပ္	-5	88	77	66	54	43	32	21	11	1										
(Air Temperature	-2.5	90	80	70	60	50	42	37	22	12	3									
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9	2.5	92	84	76	68	61	53	46	38	31	24									
윤	5	93	86	78	71	65	58	51	45	38	32	1								
ē,	7.5	93	87	80	74	68	62	56	50	44	38	11								
<u> </u>	10	94	88	82	76	71	65	60	54	49	44	19								
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go.	15	95	90	85	80	75	70	66	61	57	52	31	12							
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<u> </u>	27.5	96	92	89	85	82	78	75	71	68	65	50	36	23	12	1				
를	30	96	93	89	86	82	79	76	73	70	67	52	39	27	16	6				
ω	32.5	97	93	90	86	83	80	77	74	71	68	54	42	30	20	11	- 1			
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	45	97	94	91	89	86	83	81	78	76	73	62	51	42	33	26	18	12	6	
	47.5	97	94	92	89	86	84	81	79	76	74	63	53	44	35	28	21	15	9	
	50	97	96	92	89	87	84	82	79	77	75	64	54	45	37	30	23	17	11	
•	Use the I	hygrome	eter to g	et the D	ry Bulb	and the	Wet Bul	b Temp	erature.	Examp	le. Dry l	Bulb = 3	0°C, W	et Bulb :	= 28°C.					
	Subtract															2°C ac	ross the	top of t	he chart	
	Locate 3									, , ,						_ ,			211000	
	Find the									v. Fort	he exan	nple of 2	2°C and	30°C. ti	he relati	ve humi	ditv is 8	6%.		

Using the Relative Humidity Chart

Step 1: Get the dry bulb temperature from Line 2.1 of the Observation log (e.g. 30°C).

Step 2. Look in the left column (Air Temp) of the table

> In the table, 30°C is the closest value to 31°C.

> > See MEWS Handbook, Section 2.4 pp. 10-12

						Rela	ıtive I	lumi	dity C	:hart	for °C	:Tem	npera	tures						
						Dr	y Bulk	Tem	peratu	ire mir	nus W	et Bul	b Tem	perati	ure in	°C				
		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	
	-20	70	41	11																
	-17.5	75	51	26	2															
	-15	79	58	38	18															
	-12.5	82	65	47	30	13														
	-10	85	69	54	39	24	10													
	-7.5	87	73	60	48	35	22	10												
ွ	-5	88	77	66	54	43	32	21	11	1										
9	-2.5	90	80	70	60	50	42	37	22	12	3									
Temperature	0	91	82	73	65	56	47	39	31	23	15									
ē	2.5	92	84	76	68	61	53	46	38	31	24									
ď	5	93	86	78	71	65	58	51	45	38	32	1								
ē	7.5	93	87	80	74	68	62	56	50	44	38	11								
Air.	10	94	88	82	76	71	65	60	54	49	44	19								
	12.5	94	89	84	78	73	68	63	58	53	48	25	4							
№	15	95	90	85	80	75	70	66	61	57	52	31	12							
atr	17.5	95	90	86	81	77	72	68	64	60	55	36	18	2						
Temperature	20	95	91	87	82	78	74	70	66	62	58	40	24	8						
ď	22.5	96	92	87	83	80	76	72	68	64	61	44	28	14	1					
ē	25	96	92	88	84	81	77	73	70	66	63	47	32	19	7					
		96	92	89	85	82	78	75	71	68	65	50	36	23	12	1				
T A	30		93	89	86	82	79	76	73	70	67	52	39	27	16	6				
	32.0	97	93	90	86	83	80	77	74	71	68	54	42	30	20	11	1			
Dry	35	97	93	90	87	84	81	78	75	72	69	56	44	33	23	14	6			
	37.5	97	94	91	87	85	82	79	76	73	70	58	46	36	26	18	10	3		
	40	97	94	91 91	88	85	82	79	77 78	74 75	72	59 61	48 50	38	29 31	21	13 16	6	_	-
	42.5	97	94			86	83	80 81			72			40		23	18	9	2	
	45 47.5	97 97	94 94	91 92	89 89	86 86	83 84	81	78 79	76 76	73 74	62 63	51 53	42 44	33 35	26 28	21	12 15	6 9	_
	50	97	94	92	89	87	84	81	79	77	75	64	53	44	37	30	23	17	11	
	Use the I															30	23	17	17	

- Subtract the Wet Bulb temperature from the Dry Bulb temperature. Example, 30°C 28°C = 2°C. Find the column for 2°C.
- Locate 30°C in the Air Temperature column at the left side of the chart. Find the intersection of the column and row to get the % relative humidity. For the example of 2°C and 30°



Using the Relative Humidity Chart

Step 3: Get the difference between the dry and wet bulb temperature from Line 2.3 on the weather observation log (e.g. 3°C) Step 4. Find 3°C in the row at the top of the

chart.

						Rela	tive I	lumic	dity C	hart	for °C	Ten	npera	tures						
						Dr							b Tem			°C				
		0.5	1.0				3.0	3.	4.U	4.5			70.0				20.0	ZZ_5	Z5.U	
	-20	70	41	11																
	-17.5	75	51	26	2															
	-15	79	58	38	18															
	-12.5	82	65	47	30	13														
	-10	85	69	54	39	24	10													
	-7.5	87	73	60	48	35	22	10												
ပ္	-5	88	77	66	54	43	32	21	11	1										
₽	-2.5	90	80	70	60	50	42	37	22	12	3									
릁	0	91	82	73	65	56	47	39	31	23	15									
ē	-2.5 90 80 70 60 50 42 37 22 12 3																			
윤	5	93	86	78	71	65	58	51	45	38	32	1								
ē	7.5	93	87	80	74	68	62	56	50	44	38	11								
I	10	94	88	82	76	71	65	60	54	49	44	19								
\leq	12.5	94	89	84	78	73	68	63	58	53	48	25	4							
உ	15	95	90	85	80	75	70	66	61	57	52	31	12							
믍	17.5	95	90	86	81	77	72	68	64	60	55	36	18	2						
50	20	95	91	87	82	78	74	70	66	62	58	40	24	8						
Bulb Temperature	22.5	96	92	87	83	80	76	72	68	64	61	44	28	14	1					
<u>.</u> =	25	96	92	88	84	81	77	73	70	66	63	47	32	19	7					
	27.5	96	92	89	85	82	78	75	71	68	65	50	36	23	12	1				
3	30	96	93	89	86	82	79	76	73	70	67	52	39	27	16	6				
<u>m</u>	32.5	97	93	90	86	83	80	77	74	71	68	54	42	30	20	11	1			
D _Z	35	97	93	90	87	84	81	78	75	72	69	56	44	33	23	14	6			
_	37.5	97	94	91	87	85	82	79	76	73	70	58	46	36	26	18	10	3		
	40	97	94	91	88	85	82	79	77	74	72	59	48	38	29	21	13	6		ĺ
	42.5	97	94	91	88	86	83	80	78	75	72	61	50	40	31	23	16	9	2	
	45	97	94	91	89	86	83	81	78	76	73	62	51	42	33	26	18	12	6	
	47.5	97	94	92	89	86	84	81	79	76	74	63	53	44	35	28	21	15	9	
	50	97	95	92	89	87	84	82	79	77	75	64	54	45	37	30	23	17	11	
•	Use the I	nygrome	eter to ge	et the D	ry Bulb a	and the	Wet Bul	b Temp	erature.	Examp	le, Dry I	Bulb = 3	0°C, W	et Bulb :	= 28°C.					



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Subtract the Wet Bulb temperature from the Dry Bulb temperature. Example 30°C - 28°C = 2°C. Find the column for 2°C across the top of the chart

Locate 30°C in the Air Temperature column at the left side of the chart.

Find the intersection of the column and row to get the % relative humidity. For the example of 2°C and 30°C

Using the Relative Humidity Chart

Step 5: Read across the row and down the column to find the % relative humidity.

(79%)

						Rela		Humi												
						Dr	<u>v I u</u> l	b Tem	peratu	ıre mir	านร W	et Bul	b Tem	perati	ure in	°C				
		0.5	1.0	1.5	2.0	2.5		3.5	4.0	4.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	
	-20	70	41	11																
	-17.5	75	51	26	2															
	-15	79	58	38	18															
	2,5	82	65	47	30	13														
	-1	85	69	54	39	24	10													
	-7.5	87	73	60	48	35	22	10												
ပ္	-5	38	77	66	54	43	32	21	11	1										
<u>e</u>	-2.5	9	80	70	60	50	42	37	22	12	3									
둁	0	91	82	73	65	56	47	39	31	23	15									
(Air Temperature	2.5	92	94	76	68	61	53	46	38	31	24									
윤	5	93	8	78	71	65	58	51	45	38	32	1								
<u>_</u> _	7.5	93	87	80	74	68	62	56	50	44	38	11								
	10	94	88	92	76	71	65	60	54	49	44	19								
Æ	12.5	94	89	8	78	73	68	63	58	53	48	25	4							
	15	95	90	85	80	75	70	66	61	57	52	31	12							
Ę	17.5	95	90	86	81	77	72	68	64	60	55	36	18	2						
a a	20	95	91	87	-	78	74	70	66	62	58	40	24	8						
ğ	22.5	96	92	87	83	80	76	72	68	64	61	44	28	14	1					
e.	25	96	92	88	84	81	77	73	70	66	63	47	32	19	7					
lb Temperature	27.5	96	92	89	85	82	70	75	71	68	65	50	36	23	12	1				
2	30	96	93	89	86	82	79	76	73	70	67	52	39	27	16	6				
<u> </u>	32.5	97	93	90	86	83		77	74	71	68	54	42	30	20	11	1			
٥ry	35	97	93	90	87	84	81	78	75	72	69	56	44	33	23	14	6			
	37.5	97	94	91	87	85	82	79	76	73	70	58	46	36	26	18	10	3		
	40	97	94	91	88	85	82	79	77	74	72	59	48	38	29	21	13	6		
	42.5	97	94	91	88	86	83	80	78	75	72	61	50	40	31	23	16	9	2	
	45	97	94	91	89	86	83	81	78	76	73	62	51	42	33	26	18	12	6	
	47.5	97	94	92	89	86	84	81	79	76	74	63	53	44	35	28	21	15	9	
	50	97	95	92	89	87	84	82	79	77	75	64	54	45	37	30	23	17	11	
_	l lea tha l	h	stanta a	of the D	n. Dulla	and tha	Wat D.	ıllı Tanası	aratura	Fyame	Ja Davil	Dulls 2	NOO W	of Death	2000					

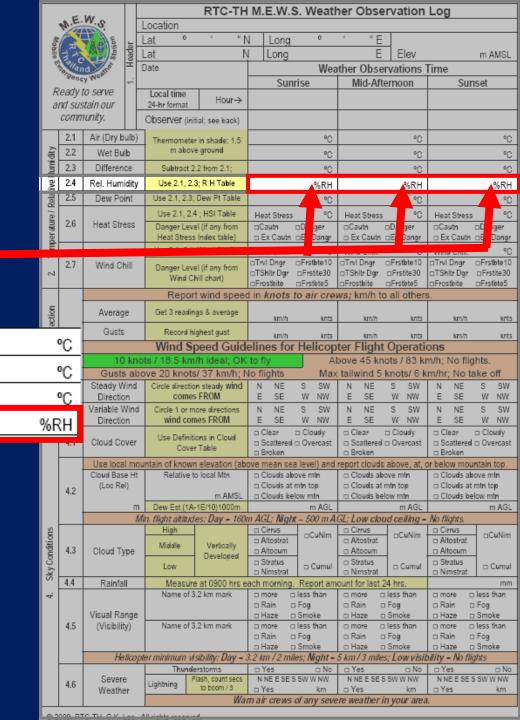


- Use the hygrometer to get the Dry Bulb and the Wet Bulb Temperature. Example. Dry Bulb = 30°C. Wet Bulb = 28°C.
- Subtract the Wet Bulb temperature from the Dry Bulb temperature. Example, 30°C 28°C = 2°C. Find the column for 2°C across the top of the chart.
- Locate 30°C in the Air Temperature column at the left side of the chart.
 Find the intersection of the column and row to get the % relative humidity. For the example of 2°C and 30°C, the relative humidity is 86%

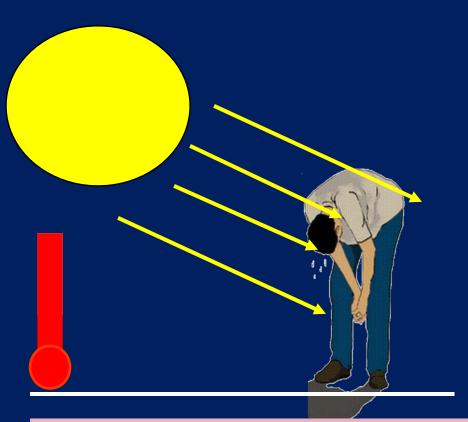
Record the %
Relative Humidity (%
RH) in the space
provided in Section
#2.4

	2.1	Air (Dry bulb)	Thermometer in shade; 1.s	
midity	2.2	Wet Bulb	m above ground	
m	2.3	Difference	Subtract 2.2 from 2.1;	
ive	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	





High temperatures and high relative humidity...



make it dangerous to work outside.



The amount of danger can be determined using the Heat Stress Index.

Record the Heat Stress Index in Section 2.6

Guide notes are on the front of the form

The form

| Second 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 warming.

Hour→

Location Lat

Local time

24-hr format

Observer (initial; see back)

Thermometer in shade; 1.5 m above ground

Subtract 2.2 from 2.1:

Use 2.1. 2.3: R.H.Table

Use 2.1, 2.3; Dew Pt Table

Danger Level (if any from

Lat

Air (Dry bulb)

Wet Bulb Difference

Rel. Humidity

Dew Point

Brief notes on the back of the form give more details



See Handbook Section 2.6, pp. 14-15

				9						
	4.1	Cloud Cover		itions in Cloud rer Table	□ Scattered □ Broken	Overcast	□ Scattered □ Broken	I □ Overcast	□ Scattere □ Broken	ed 🗆 Overcast
		Use local mou	ntain of know	wn elevation (ab	ove mean se	a level) and	report cloud	s above, at, o	or below mo	ountain top.
	Ī	Cloud Base Ht	Relative	to local Mtn	☐ Clouds al	ove mtn	□ Clouds al	bove mtn	□ Clouds	above mtn
	4.2	(Loc Rel)			☐ Clouds at	mtn top	□ Clouds at	mtn top	□ Clouds a	
	4.2			m AMSL	☐ Clouds be	elow mtn	□ Clouds be	elow mtn	□ Clouds	below mtn
		m		A-1E/10)1000m		m AGL		m AGL		m AGL
		Mi	n. flight altit.	ides: Day = 160i	m AGL; Nigh	nt - 500 m A	GL; Low clo	ud ceiling =	No flights.	
IIS			High		☐ Cirrus	□ CuNim	□ Cirrus	CuNim -	□ Cirrus	CuNim
I.≗ I			Middle	Vertically	□ Altostrat	Dogramii	□ Altostrat	LICON VIIII	☐ Altostrat	LI CONTRIBITION
핗	4.3	Cloud Type	Minute	Developed	☐ Altocum		☐ Altocum	_ .	☐ Altocum	_
Sky Conditions			Low	Developes	□ Stratus	□ Cumul	□ Stratus	□ Cumul	□ Stratus	. □ Cumul
8					□ Nimstrat		□ Nimstrat		□ Nimstrat	
	4.4	Rainfall		ıre at 0900 hrs e						mm
4.			Name of	f 3.2 km mark		less than		🗆 less than	□ more	□ less than
						□ Fog		□ Fog	□ Rain	□ Fog
		Visual Range				□ Smoke		□ Smoke	□ Haze	□ Smoke
	4.5	(Visibility)	Name of	f 3.2 km mark		less than		🗆 less than	□ more	□ less than
						□ Fog		□ Fog	□ Rain	□ Fog
	- 1	44 -				Smoke		□ Smoke	□ Haze	□ Smoke
Helicopter minimum visibility: Day = 3.2 km / 2 miles; Night = 5 km / 3 miles; Low visit										9
		_	Thun	derstorms	□ Yes	□ No	□ Yes	□ No	□ Yes	□ No
4.6 Severe Lightning Flash, count secs N NE E SE S SW W NW N NE E SE S SW W NW N NE										
		Weather	- 3	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km
				Wai	m air crews	or any seve	ere weather	in your area	ì.	
0.00	no DT	CTU CK Inn A	II siahta saaa	und						

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

Elev

%RH

Danger

Weather Observations Time

Mid-Afternoon

Heat Stress

m AMSL

°C.

%RH

Sunset

Heat Stress

Long

Sunrise

Lona

Heat Stress

□Danger

Close-up of the Heat Stress Index Instructions on the Log form

Front

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C	°C	°C
dity	2.2	Wet Bulb	m above ground	°C	°C	°C
Humidity	2.3	Difference	Subtract 2.2 from 2.1;	°C	°C	°C
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH	%RH	%RH
Relative	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
erature	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	□Cautn □Danger □ Ex Cautn □Ex Dangr

Back

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.

	2.1	Air (Dry balb)	Thermometer in shade; 1.5	*C	*C	*C
1 6	2.2	Wet Bulb	m above ground	*6	*6	*C
13	2.3	Difference	Subtract 2.2 from 2.1;	*C	*C	*C
1 8	2.4	Rel. Humidity	Use 2.1, 2.3; R.H.Table	988	NRH.	NRH.
1 8	2.5	Dew Point	Use 2.1, 2.3; Dow Pt Table	*0	*6	*6
15			Use 2.1, 2.4; HSI Table	Heat Stress *C	Heat Stress °C	
18	2.5	Heat Stress	Danger Level (if any from Heat Stress Index table)	o Ceuth — o Denger o Ex Ceuth o Ex Dengr	o Cauth o Danger o Ex Cauth o Ex Dangr	o Cauth - o Danger o Ex Cauth o Ex Dangr
2			Use 2.1, 3.1; Wind Chi Tbi	Wied Chil. *C	Wied Chil. *C	Wed Ovil. *C
~	2.3	Wind Chill	Danger Level (Fary from Itlind Chill short)		oTSMtr.Dpr oFvette30	oTryl Drige of Prelitie 10 oTSkity Dyr oFrest te 30 of rootbile of rathles

- 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.

wobile extraorder with the community of the community of

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

To determine the Heat Stress Index

		2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C
14.5		2.2	Wet Bulb	m above ground	°C
		2.3	Difference	Subtract 2.2 from 2.1;	°C
	Ne l	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH
4					

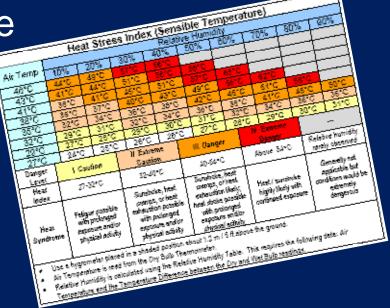
You need:

 The air temperature and relative humidity from the log form

 the Heat Stress Index table

The chart is in the MEWS Weather Observer Handbook on p. 16





Step 1. Get the air temperature from Line 2.1

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C
dity	2.2	Wet Bulb	m above ground	°C
Humidity	2.3	Difference	Subtract 2.2 from 2.1;	°C
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH
e / Relative	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C
			Use 2.1, 2.4 ; HSI Table	Heat Stress °C
eratur	2.6	Heat Stress	Danger Level (if any from Heat Stress Index table)	□Cautn □Danger □ Ex Cautn □Ex Dangr



Let's use 31°C from the Relative Humidity example.

П	RTC-TH M.E.W.S. Weather Observation Log									
	W.E.	vv.s	Location							
3	A ST	1 3 m	Lat °	" " "	l Long	0	" E			
bile bile	77	Statio	Lat	1	Long		Е	Elev		m AMSL
T.	Silan C	±	Date			Wea	ther Obse	ervations	Time	
	"Denc	Meatro T			Sur	rise		ternoon		nset
R		o serve	Local time	Haus S	Out	1100	Wild 7 ti		- Out	1000
a		tain our	24-hr format	Hour→						
	comm	unity.	Observer (in	itial; see back)						
	2.1	Air (Dry bulb)		r in shade: 15		°C		°C		°C
dity	2.2	Wet Bulb	m abov	re ground		°C		°C		°C
ļa ļ	2.3	Difference	Subb	_ rom 2.1;		°C		°C		°C
Ne	2.4	Rel. Humidi	use 2.1, 2.	3; R H Table		%RH		%RH		%RH
Relative Humi dity	2.5	ow 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
atri	2.6	Heat Stress		el (if any from	::Cauth	□Danger	□Cautn	□Danger	□Cautn	□Danger
Temperature				s Index table)		□Ex Dangr		□Ex Dangr	□ Ex Cautn	□Ex Dangr
Ten			Use 2.1, 3.1	; Wind Chl Tbl	Wind Chill.	°C	Wind Chill.	°C	Wind Chill.	°C
2	2.7	Wind Chill		el (if any from	□Trvl Dngr □TShitr Dgr	□Frstbte10 □Frstite30	□Trvl Dngr □TShltr Dar	□Frstbte10 □Frstite30	□Trvl Dngr □TShltr Dar	□Frstkte10 □Frstite30
			Wind C	hill chart)	□Frostbite	□Frstbte5	□Frostkite	□Frstbte5	□Frostbite	□Frstbte5
			Repor	rt wind speed	d in <i>knot</i> s	to air cre	ws; km/h t	o all other	S.	
.e		Average	Get 3 readir	ngs & average	lana la		hara fa	bata	hara fin	l-at-
Wind Speed / Direction		Gusts	Parauli	ishaet evet	km/h	knts	km/h	knts	km/h	knts
I/ Di	3.1	Gusts		ighest gust	km/h	knts	km/h	knts	km/h	knts
9660	10 kp/			peed Guid						ulata
S P	-	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 5 knots/ 6 km/hr; No take of							-	
Min		Steady Wind		on steady Wind	N NE	S SW	N NE	S SW	N NE	S SW
63	3.2	Direction		s FROM	E SE	W NW	E SE	W NW	E SE	W NW
	3.2	Variable Wind		nore directions	N NE	S SW	N NE	S SW	N NE	S SW
		Direction	wind cor	mes FROM	E SE	W NW	E SE	W NW	E SE	W NW
	4.1	Cloud Cover		ions in Cloud	□ Clear □ Scattered	□ Cloudy □ Overcast	□ Clear □ Scattered	☐ Cloudy	□ Clear □ Scattered	□ Cloudy □ Overcast
				r Table	□ Broken		□ Broken		□ Broken	
				n elevation (ab						
		Cloud Base Ht (Loc Rel)	Relative	to local Mtn	☐ Clouds at		□ Clouds at		□ Clouds at	
	4.2	(222710)		m AMSL	□ Clouds be		□ Clouds be		□ Clouds be	
		m		-1E/10)1000m	401 40	m AGL	01.1	m AGL	M m	m AGL
in.			flin. flight altitud High	ies: Day = 160i	m AGL; Nigh □ Cirrus		GL; Low clo		No flights.	
tionis				Martinelli	□ Altostrat	□CuNim	□ Altostrat	□ CuNim	□ Altostrat	□CuNim
ibu	4.3	Cloud Type	Middle	Vertically Developed	□ Altocum	_	□ Altocum	_	□ Altocum	
Sky Conditions			Low		□ Stratus □ Nimstrat	□ Cumul	□ Stratus □ Nimstrat	□ Cumul	□ Stratus □ Nimstrat	□ Cumul
S	4.4	4 Rainfall Measure at 0900 hrs e Name of 3.2 km mark		e at 0900 hrs e		. Report am		24 hrs.		mm
4				□ more (less than	□ more	less than		less than	
		Visual Range				⊐ Fog ⊐ Smoke		□ Fog □ Smoke		⊐ Fog ⊐ Smoke
	4.5	(Visibility)	Name of 3	Name of 3.2 km mark		less than		less than		less than
						Fog		Fog		Fog
		Helivor	der minimum u			Smoke		□ Smoke □ Smoke		Smoke
		riciioj	Helicopter minimum visibility: Day = 3. Thunderstorms		□ Yes	□ No	□ Yes	□ No	□ Yes	griks □ No
	4.6	Severe		Flash, count secs		S SW W NW	N NE E SE	S SW W NW		5 SW W NW
	4.0	Weather	Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km
				Wai	m air crews	of any seve	ere weather	in your area	7.	
	Warn air crews of any severe weather in your area.									

Using the Heat Stress Index Table

Step 2. Find the air temperature in the left column.

The air temp from Line 2.1 was 31°C use 32°C.

Use 32°C.
It is the closest to 31°C on the table





See MEWS Handbook, p. 16

Heat Stress Index (Sensible Temperature)											
Air Temp					Rela	tive Hum	iidii	ty			
	10%	20%	6 30%	40	1%	50%	- 6	10%	70%	80%	90%
46°C	44°C	49"(57°C	66	rc.						
43°C	41°C	44"	51°C	58	rc.	56°C					
41°C	38°C	41"	C 45°C	51	"C	57°C	6	5°C			
38°C	35°C	37"(G 40°C	43	rc.	49°C	90	6°C	62°C		
2500	32°C	34"			rc	42°C	-	6°C	51°C	58°C	
32°C	29°C 31°C				inc.	36°C	_	8°C	41°C	45°C	50°C
Table 1	27°C 28°					31°C	32°C		34°C	36°C	36°C
27°C	24°C	25"			"C	27°C	2	8°C	29°C	30°C	31 ° C
Danger Level	I Cautie	on	II Extreme Caution		ı	II Danger			Extreme Janger		_
Heat Index	27-32*	С	32-40*0	ı. F	40-54°C		Abo	we 54°C		e humidity observed	
Heat Syndrome	Fatigue possible with prolonged exposure and/or physical activity		cremps, or it exhaustion po with prolon; exposure an	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity		instroke, hea emps, or hea neustion likely stroke possi ith prolonged posure and/o ysical activity	b Side	hight	/ sunstroke y likely with ued exposure	applic condition extr	relly not able but is would be emely gerous

- Use a hygrometer placed in a shaded position about 1.2 m / 5 ft above the ground.
- Air Temperature is read from the Dry Bulb Thermometer.
- Relative Humidity is calculated using the Relative Humidity Table. This requires the following data: Air Temperature and the Temperature Difference between the Dry and Wet Bulb readings.

Step 3. Get the relative humidity from Line 2.4

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C
dity	2.2	Wet Bulb	m above ground	°C
Humidity	2.3	Difference	Subtract 2.2 from 2.1:	°C
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH
telati	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	•€
.e/F			Use 2.1, 2.4 ; HSI Table	Heat Stress °C
oerature / Relative	2.6	Heat Stress	Danger Level (if any from Heat Stress Index table)	□Cautn □Danger □ Ex Cautn □Ex Dangr



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Let's use 79% from the Relative Humidity example.

П	_	144	П		RTC-TH	M.E.W.S	S. Weath	ner Obse	rvation	Log		
	M.E.	W.S.		Location								
3	A T	B AL		Lat °	· " N	Long	0	" E				
99	37	i (PA)	Header	Lat	N			Е	Elev		m AMSL	
4	Pallan C	d See	뿔	Date			Wea	ther Obser	vations	Time		
	Senc	y Weather	<u>-</u> -			Sun		Mid-Afte		Sun	iset	
	leady i	o serve		Local time	Haun N	Juli	1100	WHAT-7-HOU	IIIOOII	Jui	1301	
a	nd sus	tain our		24-hr format	Hour→							
	comn	unity.		Observer (in	itial; see back)							
	2.1	Air (Dry b	ulb)	Thermomete	er in shade; 1.5		°C		°C		°C	
Ę.	2.2	Wet Bu	_		r in Shade, 1.5 re ground		°C		°C		°C	
lumidity	2.3	Differen		Suktonet 2	2.2 from 2.1;		°C		°C		°C	
ive	2.4	Rel. Humi			3; R H Table		%RH					
	2.5	Dew Po			; Dew Pt Table				%RH		%RH	
/ Rela	2.0	Dew Fo	ini				°C		°C		°C	
all	2.6	Heat Stre	229	Use 2.1, 2.		Heat Stress	°C	Heat Stress	°C	Heat Stress □Cautn	°C	
erat		11001 011	Heat Heat		any from s Index table)	□ Ex Cautn	□Danger □Ex Dangr	□ Ex Cautn	Danger Ex Dangr	□ Ex Cautn	□Danger □Ex Dangr	
Temperature /					; Wind Chl Tbl	Wind Chill.	°C	Wind Chill.	°C	Wind Chill.	°C	
	2.7	Wind C		Danage Lou	el (if any from	□Trvl Dngr	□Frstbte10		Frstbte10	□Trvl Dngr	□Frstbte10	
7					hill chart)		□Frstite30		Frstite30	□TShltr Dgr	□Frstite30	
				Renor	rt wind speed	Frostbite	□Frstkte5		all other	□Frostbite	□Frstlote5	
						ill Kilota	o an crei	wa, Kilimi to	an outer	J.		
1	Averag					km/h	knts	km/h	knts	km/h	knts	
Wind Speed / Directiv	3.1			Record h	ighest gust	km/h	knts	km/h	knts	km/h	knts	
/pa				Wind S	peed Guid	elines for						
්	l			ots / 18.5 km				bove 45 knd			hts.	
Di g		Gusts	ab	ove 20 knot	s/ 37 km/h; N	lo flights	Max	tailwind 5 k	nots/ 6 k	m/hr; No ta	ake off	
=		Steady W			on steady Wind	N NE	S SW	N NE	S SW	N NE	S SW	
ಣೆ	3.2	Directio			s FROM	E SE	W NW	E SE	W NW	E SE	W NW	
		Variable V Direction			nore directions mes FROM	N NE E SE	S SW W NW	N NE E SE	S SW W NW	N NE E SE	S SW W NW	
		Direction	AL I				□ Cloudy		Cloudy		□ Cloudy	
	4.1	Cloud Co	ver		ions in Cloud r Table	□ Scattered	□ Overcast	□ Scattered c		t Scattered Overcast		
		Han lana	Lose			□ Broken	harr /lough	□ Broken	ahous at a	□ Broken	ntain ton	
		Cloud Bas		untain of know Relative	to local Mtn	□ Clouds ab		□ Clouds abo		□ Clouds ab		
	4.2	(Loc Re				□ Clouds at		□ Clouds at n	ntn top	□ Clouds at	mtn top	
	4.2				m AMSL	□ Clouds be		□ Clouds belo		□ Clouds be		
			n	Nin. flight altitud	-1E/10)1000m	n ACI - Niceh	m AGL	Cl · Low class	m AGL	No flights	m AGL	
2			,	High	165. Day - 1001	□ Cirrus		□ Cirrus		□ Cirrus	-0.45	
iti				Middle	Vertically	□ Altostrat	□CuNim	□ Altostrat	□CuNim	□ Altostrat	□CuNim	
Dilo	4.3	Cloud Ty	/pe		Developed	☐ Altocum ☐ Stratus	-	□ Altocum □ Stratus		□ Altocum □ Stratus	-	
Sky Conditions				Low		□ Nimstrat	□ Cumul	□ Nimstrat	□ Cumul	□ Nimstrat	□ Cumul	
S	4.4	Rainfa	II		e at 0900 hrs e			ount for last 2			mm	
4.				Name of 3	3.2 km mark		less than		less than		less than	
		Visual Ra	nge				Fog Smoke		Fog Smoke		Fog Smoke	
	4.5	(Visibilit	-	Name of 3	3.2 km mark	□ more □	less than	□ more □	less than	□ more □	less than	
							Fog		Fog		Fog	
		He	lico	oter minimum v	isibility: Day = :		Smoke es: Niaht =		Smoke : Low visil		Smoke	
					erstorms	□ Yes	□ No	□ Yes	□ No	□ Yes	□ No	
	4.6	Severe			Flash, count secs	N NE E SE S		N NE E SE S		N NE E SE S	5WWNW	
	4.6	Weath	er		to boom / 3	□ Yes m air cnews	km of any seve	□ Yes ere weather in	km www.anea	□ Yes	km	
					WW 281	THE GIT LICENS	OF CITTY SEVE	TO WEATHER II	YOUR OFFE	d.		

Using the Heat Stress Index Table

Step 4. Find the relative humidity across the top of the table

The % RH from Line 2.4 was 79%.

Use 80%.
It is the closest to 79% on the table

	Heat Stress Index (Sensible Temperature)										
Air Temp	4007	- Alexandria				tive Hum	nen	y	700	A B B B	20.00 A
-	10.76	209			3%	50%	- 0	10%	70%	80%	90%
46°C	44°C	49*0	571	C 66	i"C						
43°C	41°C	44"	51"	C 58	rc.	2 42					
41°C	38°C	41%	, J. P.	51		57°C	- 6	5°C			
38°C	3515	37"(3 40"	C 43	rc	49°C	W	6°C	62°C		
33 G	32°C	34"	36"	C 38	3°C	42°C	4	6°C	51°C	58°C	
32°C	29°C	31"	32"	C 34	i.c	36°C	3	8°C	41°C	45°C	50°C
29°C	27°C	27°C 28°C		C 30)°C	31°C			34°C	36°C	36°C
27°C	24°C			C 26	i'C	27°C	2	8°C	29°C	30°C	31°C
Danger Level	I Cautie	on	II Extreme Caution			II Danger			Extreme Janger		_
Heat Index	27-32**	27-32°C		32-40°C		40-54°C		Albe	we 54°C		e humidity observed
Heat Syndrome	with protor exposure a	Fatigue possible with prolonged exposure and/or physical activity		te, heat or heat o possible longed and/or activity	ext ext heat w ex	instrake, hea emps, or hea neustion likely strake possi ith prolonged posure and/o ysical activity	b Side	high	/ sunstroke y likely with red exposure	applic condition exti	relly not reble but ns would be remely gerous

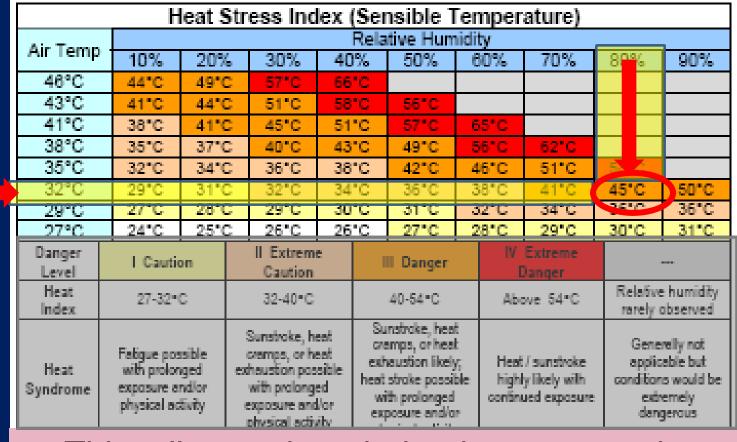


- Use a hygrometer placed in a shaded position about 1.2 m / 5 ft above the ground.
- Air Temperature is read from the Dry Bulb Thermometer.
- Relative Humidity is calculated using the Relative Humidity Table. This requires the following data: Air Temperature and the Temperature Difference between the Dry and Wet Bulb readings.

Determining the Heat Stress Index

Step 5. Read across the row and down the column into the chart. Look at the table temperature.

Record 45°C on Line 2.6 on the log form





This tells you though the thermometer is showing 31°C, you feel as though it were 45°C!

Step 6. Record the Heat Stress Index in upper Line of 2.6

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C
dity	2.2	Wet Bulb	m above ground	°C
Humidity	2.3	Difference	Subtract 2.2 from 2.1;	°C
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH
telat	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C.
e/F			Use 2.1, 2.4 ; HSI Table	Heat Stress °C
perature / Relative	2.6	Heat Stress	Danger Level (if any from Heat Stress Index table)	□Cautn □Danger □ Ex Cautn □Ex Dangr



This is the temperature people "feel". It is not the temperature recorded in Line 2.1

П	_	lar	П		RTC-TH	M.E.W.	S. Weat	her Obse	rvation	Log	
	M.E.	W.S.		Location							
8		AA 5	-	Lat °	" "N	N Long	0	" E			
bile	37	Stat	Header	Lat	1	Long		Е	Elev		m AMSL
12	Man	y Weather	ᄪ	Date			Wea	ther Obse	rvations	Time	
Ι.	Senc	y Mer	-			Su	nrise	Mid-Afte	ernoon	Sun	set
	~	to serve		Local time	Hour→						
di	comm	tain our	╽┟	24-hr format							
Щ,	COTTE	unity.	Ш	Observer (in	itial; see back)						
	2.1	Air (Dry b	ulb)		er in shade; 1.5		°C		°C		°C
ij.	2.2	Wet Bu	lb	m abov	ve ground		°C		°C		°C
	2.3	Differen	ce	Subtract :	2.2 from 2.1;		°C		°C		°C
ive	2.4	Rel. Hum	idity	Use 2.1, 2	.3; R H Table		%RH		%RH		%RH
Relative Humidity	2.5	Dew Po	int	Use 2.1, 2.3	; Dew Pt Table		°C		°C		°C
				Use 2.1, 2	4 ; HSI Table	Heat Stres	s °C	Heat Stress	°C	Heat Stress	°C
erature/	2.6	Heat Str	ess	Danger Lev	vel (if any 6	Cauth	□Danger	□Cautn	□Danger	□Cautn	□Danger
Tempe				Heat Shee	vVind Chl Tbl	H EV C SUM	DEV Dawne	o Ev Caute	DEV Dance	o Ev Caute	GEV Dawns
르	2.7	WC1-01	. ****			Wind Chill.	°C □Frstlote10	Wind Chill.	°C □Frstbte10	Wind Chill.	°C □Frstbte10
7	2.7	Wind Cl	niii		rel (if any from Chill chart)	□TShitr Dgr	□Frstite30		□Frstite30	□TShltr Dgr	□Frstite30
ш						□Frostbite	□Frstbte5		□Frstbte5	□Frostbite	□Frstbte5
				Repo	rt wind speed	d in <i>knot</i> s	to air cre	ws; km/h to	all other	S.	
8		Averag	e	Get 3 readi	ngs & average	km/h	knts	km/h	knts	km/h	knts
ig I	3.1	Gusts	;	Record h	nighest gust	km/h	knts	km/h	knts	km/h	knts
 				Wind S	peed Guid						NIILO
Wind Speed / Dire		10) kn	nots / 18.5 km/h ideal; OK to				bove 45 km			hts.
Ę.		Gusts	s ab	ove 20 knot	s/ 37 km/h; N	lo flights	Max	tailwind 5	knots/ 6 k	m/hr; No ta	ake off
=		Steady V			on steady Wind	N NE	S SW	N NE	S SW	N NE	S SW
r,	3.2	Direction Variable V			s FROM	E SE N NE	W NW	E SE N NE	W NW	E SE	W NW S SW
		Direction			nore directions mes FROM	E SE	S SW W NW	E SE	W NW	N NE E SE	S SW W NW
		Direction			tions in Cloud	□ Clear	□ Cloudy		□ Cloudy	□ Clear	□ Cloudy
	4.1	Cloud Co	ver		er Table		d 🗆 Overcast	□ Scattered □ Overcast □ Scattered □ Over □ Broken □ Broken			□ Overcast
		Use loca	l mo	untain of know	n elevation (ab	□ Broken ove mean si	ea level) and		above at o		ntain top
		Cloud Bas	e Ht		to local Mtn	□ Clouds a		Clouds alor		□ Clouds ab	
	4.2	(Loc Re	el)		m AMSL	□ Clouds a		□ Clouds at r		□ Clouds at □ Clouds be	
			m	Dew Est (1A	N-1E/10)1000m	□ Clouds b	m AGL	□ Clouds bel	m AGL	- Clouds be	m AGL
					tes: Day - 160	n AGL; Nig		GL; Low clou			
SIIO				High		☐ Cirrus ☐ Altostrat	□CuNim	□ Cirrus □ Altostrat	□CuNim	☐ Cirrus ☐ Altostrat	□CuNim
Sky Conditions	4.3	Cloud Ty	me	Middle	Vertically	☐ Altocum		□ Altocum		☐ Altocum	
S		0.000	, 100	Low	Developed	□ Stratus	□ Cumul	□ Stratus	Cumul	□ Stratus	Cumul
l Š	4.4	D-1-6-				□ Nimstrat		□ Nimstrat		□ Nimstrat	
4.	4.4	Rainfa	11		e at 0900 hrs e 3.2 km mark		g. Keport am less than	ount for last 2	4 nrs. less than	_ more _	mm less than
						□ Rain	□ Fog	□ Rain □	Fog	□ Rain □	Fog
	4.5	Visual Range (Visibility)		Name of	2.2 km mask	□ Haze □ more	□ Smoke □ less than		Smoke less than		Smoke less than
	4.5	(VISIDIIII	lity) Name of 3.2 km mark		□ Rain	□ Fog		Fog		Fog	
						□ Haze	□ Smoke	□ Haze □	Smoke	n Haze	Smoke
		He	licoj		<i>i sīb īlīty: Day = :</i> Ierstorms	3.2 km / 2 m □ Yes		5 km/3 miles □ Yes			
	4.0	Seven	е		Flash, count secs		S SW W NW	N NE E SE S	SW W NW	N NE E SE S	□ No SWWNW
	4.6	Weath		Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km
Ш					Wai	m air crews	s of any seve	ere weather i	n your area	î.	

Look at the Danger Level Warning

Step 7. Look at the color code and read the notation.

Heat Stress Index (Sensible Temperature)											
Air Trans					Rela	tive Hu	midi	ty			1
Air Temp	10%	20%	30%	40%		50%	6	30%	70%	80%	90%
46°C	44°C	49°C	57°C	661	C						
43°C	41°C	44°C	51°C	58	Ċ.	56°C					
41°C	38°C	41°C	45°C	51	Ö.	57°C	- 6	5			
38°C			40°C	43	Ö.	49°C		6"C	62°C		
35°C			36°C	38	Ö.	42°C	4	16°C	51°C		
32°C	29°C	31°C	32.6	32°C 34				881C	41°C	45°C	50°C
29°C			29°C	30,		311	3	32°C	34°C	36°C	36°C
27°C	24°C	25°C			'C	27	2	28°C	29°C	30°C	31°C
Danger	I Cauti	on	II Extreme			II Dange	-		Extreme		
Level	1 00000	OII.	Caution		3)anger			
Heat	27-32*	С	32-40°C		40-54°C			Abo	we 54°C		humidity
Index	21-02-0									rarely	observed
Heat Syndrome			exh exh heat wi exp	nstrake, hy smps, or hy saustion like strake pass th prolong- posure and project actions	eat ely; cible ed Var	hight	/ sunstroke y likely with sed exposure	applic condition extr	relly not able but is would be emely gerous		



In this case, it is Danger Level III (3) Danger. Heat or sunstroke are highly likely.

Step 8. Record the Heat Stress Index Danger Level notation in lower part of Line 2.6

	2.1	Air (Dry bulb)	Thermometer in shade; 1.5	°C		
dity	2.2	Wet Bulb	m above ground	°C		
Humidit	2.3	Difference	Subtract 2.2 from 2.1;	°C		
	2.4	Rel. Humidity	Use 2.1, 2.3; R H Table	%RH		
e lat	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C		
.e/F			Use 2.1, 2.4 ; HSI Table	Heat Stress ▶ °C		
erature / Relative	2.6	Heat Stress	Danger Level (if any from Heat Stress Index table)	□Cautn ☑Danger □ Ex Cautn □Ex Dangr		



For this example, check the box for "Danger". If no Danger Level exists, cross out this section to show the Stress Warning is not applicable.

1		= 141			RTC-TH M.E.W.S. Weather Observation Log							
1	M.E.W.o		Ш	Location								
1			JAA 5	<u>_</u>	Lat °	" " N	l Long	0	" E			
1	bile	Tangand St		Header	Lat	N	Long		Е	Elev		m AMSL
1	E.			드	Date			Wea	ther Obser	vations	Time	
1	Ready to serve			-			Sun	ise	Mid-Afte	rnoon	Sur	nset
1					Local time	Hour→						
1				Н	24-hr format							
1		community.			Observer (initial; see back)							
1		2.1	Air (Dry bu Wet Bulk		Thermometer in shade; 1.5 m above ground			°C		°C		°C
1	dity	2.2						°C		°C	°C .	
1	Relative Hunidity	2.3	Differen	ice	Subtract 2.2 from 2.1;		°C		°C		°C	
1	Ne F	2.4	Rel. Humidity		Use 2.1, 2.	3; R H Table		%RH	%RH		%RH	
1	elati	2.5 Dew Po		int	Use 2.1, 2.3; Dew Pt Table		°C					°C
Į					Hen 2 f. 2 f USI Table							
	eratur _i /	2.6	Heat Str	ess	Danger Level (if any from			□Danger	GCaste (Danger	□Cautn	□Danger
						s Index table)	n Ev Caute	DEV Dange	D.F. Hills	TEV TOWN	o Ex Caute	DEV Dance
	Tenņ				Use 2.1, 3.1	; Wind Chl Tbl	Vind Chill.	°C	Wina	°C	Wind Chill.	°C
1	2	2.7	Wind Chill		Danger Lev			□Frstbte10 □Frstite30		□Frstbte10 □Frstite30	□Trvl Dngr □TShltr Dgr	□Frstbte10 □Frstite30
1					Wind Chill art)			□Frstbte5		=Frstbte5	□Frostbite	□Frstbte5
П					Regard wind speed in knots to air of ws; km/h to all others.						S.	
П	io		Average Gusts		. 3 readin	ngs & average	km/h	knts	km/h	knts	km/h	bate
П	irec				Panaud b	ighest gust						knts
4	Q/p	3.1	Ousi				elines or Helicopter Flight Operations			knts		
П	bee		10) kn	Wind Speed Guidelines or Helicopter Flight Operations Above 45 knots / 83 km/h; No flights.							
П	Vind Speed / Direction				pove 20 knots/ 37 km/h; Mights Max tailwind 5 knots/ 6 km/hr; No take off							
┫	Γ.	4	Steady V		Circle direction	on steady Wir	N NE	S SW	N NE	S SW	N NE	S SW
	vi.	3.2 Direction			comes FROM Circle 1 or more discions wind comes ROM		E SE	W NW	E SE	W NW	E SE	W NW
1			Variable Wind Direction				N NE E SE	S SW W NW	N NE E SE	S SW W NW	N NE E SE	S SW W NW
П			Cloud Cover Use local mo		Llea Daffe one in Claud		□ Clear □ Cloudy		□ Clear □ Cloudy		□ Clear □ Cloudy	
П		4.1					□ Scattered □ Overcast □ Broken		□ Scattered □ Overcast		□ Scattered □ Overcast □ Broken	
П					nuntair know	n elevation (ah	ove mean sea level) and		= Broken	ahove at o		
1		·	Cloud Base Ht (Loc Rel)			to local Mtn	☐ Clouds above mtn		Clouds about 1		□ Clouds above mtn	
1		4.2			m AMSL Dew Est (1A-1E/10)1000m		☐ Clouds at mtn top ☐ Clouds below mtn		□ Clouds at mtn top □ Clouds below mtn		□ Clouds at mtn top □ Clouds below mtn	
1							□ Clouds be	m AGL				m AGL
1			I I		Min. flight altitud		m AGL; Night		GL; Low clou		No flights.	
	SUO		Cloud Type		High		☐ Cirrus ☐ Altostrat	□CuNim	□ Cirrus □ Altostrat	CuNim	☐ Cirrus ☐ Altostrat	CuNim
1	ky Conditions	4.3		Туре	Middle	Vertically Developed	☐ Altostrat ☐ Altocum		☐ Altostrat		☐ Altostrat	
1	Co				Low		□ Stratus □ Nimstrat	□ Cumul	□ Stratus	□ Cumul	□ Stratus	□ Cumul
1	P	4.4							□ Nimstrat		□ Nimstrat	
	4.	4.4	Rainfa	11		e at 0900 hrs e 3.2 km mark		less than	ount for last 2	4 hrs. less than	□ more □	mm less than
1	7	4.5	Visual Range (Visibility)		Name of 3.2 km mark		□ Rain □ Fog		□ Rain □ Fog		□ Rain □	Fog
							☐ Haze ☐ Smoke		□ Haze □ Smoke			Smoke less than
								Fog		Fog		Fog
							□ Haze □	Haze 🗆 Smoke 🗆 Haze 🗆 Smoke 🗀 Haze 🗆 S			Smoke	
			Helicop		pter minimum vi sibility: Day = . Thunderstorms		3.2 km / 2 miles; Night = 5 km / 3 miles; Low visibility = No flights					
		4.0	Severe Weather			erstorms Flash, count secs	N NE E SE S	□ No SW W NW	N NE E SE S	SW W NW	N NE E SE	□ No 5 SW W NW
J		4.6	Weath	er	Lightning	to boom / 3	□ Yes	km	□ Yes ere weather in	km	□ Yes	km

Knowing the Relative Humidity and Heat Stress Index helps relief officials

to 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 be available.
You can help fill the gap by learning about weather observing and becoming a licensed HAM (amateur radio operator).



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 updates prior to landings and take-offs for flight safety.



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

Sunset
Garroot
°C
°C
°C



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

Record temperature in Section 2.1 and relative humidity in Section 2.4

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

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.

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

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



	=	W.,s	П	RTC-TH M.E.W.S. Weather Observation Log								
	M.E.	S.		Location								
100	7	A A S	10	Lat °		l Long	0	" E				
offe	量な	et s	Header	Lat	1	Long		E	Elev		m AMSL	
- 15	Man	ANDP	듸	Date			Woo	thar Ohse	rvations	Timo		
Ready to serve						Sur	mse	IVIIQ-AII	ernoon	Sur	iset	
			H	24-hr forma	>		,					
di	and sustain our community.											
L.,	COMMI	unity.		Observer (initial ee back)							
idity	2.1	Air (Dry bulb)		Thermon	er in shade; 1.5		%		°C		°C	
	2.2	Wet Bulb			ove ground		°C		°C		°C	
	2.3	Difference		Jubtrac	t 2.2 from 2.1;		°C		°C		°C	
ive	2.4	Rel. Humidity		Use 2.1,	2.3; R H Tal		%RH		%RH		%RH	
Temperature / Relative Humidity	2.5	Dew Poi		Use 2.1, 2	.3; Dew 7 Table		°C		°C		°C	
		H . Stress		Use 2.1,	2.4 al Table	Heat Stress		Heat Stress		Heat Stress		
ature	2.6			Danger L	e (if any from	::Cauth	Danger	Cauth	□Danger	Cauth	□Danger	
per				Heat St	s Index table)	□ Ex Cautn	□Ex Dangr	□ Ex Cautn		□ Ex Cautn		
Tell		Wind Chill		Use 7 , 3	3.1; Wind Chl Tbl	Wind Chill.	°C	Wind Chill.	°C	Wind Chill.	°C	
	1			7 .iger L	evel (if any from	□Trvl Dngr □TShltr Dar	□Frstbte10	□Trvl Dngr □TShltr Dar	□Frstbte10	□Trvl Dngr	□Frstbte10	
					Chill chart)	□ Frostbite	□Frstite30 □Frstbte5	□ Frostbite	□Frstite30 □Frstbte5	□TShltr Dgr □Frostbite	□Frstite30 □Frstbte5	
				Rep	ort wind speed							
8	Ī	Avera		Get 3 rea	dings & average							
ecti	1					km/h	knts	km/h	knts	km/h	knts	
j	3.1	sts			l highest gust	km/h	knts	km/h	knts	km/h	knts	
pee					Speed Guid							
Wind Speed / Direction					m/h ideal; OK		_			m/h; No flig		
Ĭ,		Gusts above 20 ki						tailwind 5 knots/ 6 ki				
		Steady Wind Direction			ction steady Wind nes FROM	N NE E SE	S SW W NW	N NE E SE	S SW W NW	N NE E SE	S SW W NW	
	3.2	Variable Wind			more directions	N NE	S SW	N NE	S SW	N NE	S SW	
		Direction		wind comes FROM		E SE W NW		E SE W NW		E SE W NW		
	4.1	Cloud Cover		Use Definitions in Cloud Cover Table		□ Clear □ Cloudy □ Scattered □ Overcast □ Broken		□ Clear □ Cloudy □ Scattered □ Overcast □ Broken		□ Clear □ Cloudy □ Scattered □ Overcast □ Broken		
	4.2			ountain of known elevation (abo		ove mean sea level) and		report clouds above, at, o				
		Cloud Bas		m AMSL Dew Est (1A-1E/10)1000m		□ Clouds al		Clouds above mtn		□ Clouds above mtn		
		(Loc Re	1)			☐ Clouds at			□ Clouds at mtn top □ Clouds below mtn		□ Clouds at mtn top □ Clouds below mtn	
							m AGL		m AGL	m AGL		
			- /	Min. flight altitudes: Day - 16			nt - 500 m A		ud ceiling =			
ons				High	-	☐ Cirrus ☐ Altostrat	□CuNim	☐ Cirrus ☐ Altostrat	CuNim	☐ Cirrus ☐ Altostrat	□CuNim	
Sky Conditions	4.3	Cloud Ty	d Type	Middle	Vertically	☐ Altostrat		□ Altocum		☐ Altostrat		
S				Low	Developed	□ Stratus	□ Cumul	□ Stratus	□ Cumul	□ Stratus	□ Cumul	
Sky	4.4					□ Nimstrat		□ Nimstrat		□ Nimstrat		
	4.4	Rainfall		Measure at 0900 hrs e Name of 3.2 km mark			. Keport am a less than		24 nrs. I less than	_ more _	mm less than	
4		Visual Range (Visibility)		1		□ Rain (Fog	□ Rain 0	Fog	□ Rain □	Fog	
				Name of 3.2 km mark		□ Haze □ Smoke □ more □ less than		□ Haze □ Smoke □ more □ less than		□ Haze □ Smoke □ more □ less than		
							pless than prog		oless than oFog		Fog	
						□ Haze (Smoke	□ Haze 0	Smoke	n Haze	Smoke	
		Не	lico	oter minimum vi sibility: Day = 3 Thunderstorms								
		Severe	e		nderstorms Flash, count secs	□ Yes N NE E SE:	5 SW W NW	□ Yes N NE E SE:	S SW W NW	N NE E SE	□ No 5 SW W NW	
	4.6	Weather		Lightning	to boom / 3	□ Yes	km	□ Yes	km	□ Yes	km	
					Warn air crews of any severe weather in your area.							
	6 2000 DTC TU CV Lan All sinhin account											

Relative Humidity can also help to determine the cloud base height





Calculating the cloud base height is covered in Advanced MEWS lesson A3

You have completed the Advanced MEWS Lesson A1: Measuring Relative Humidity & Heat Stress



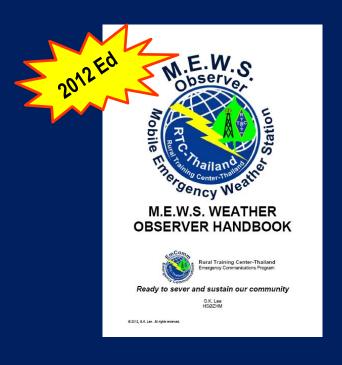




You are now ready for Advanced MEWS Lesson A2: Measuring Wind Speed & Windchill

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.

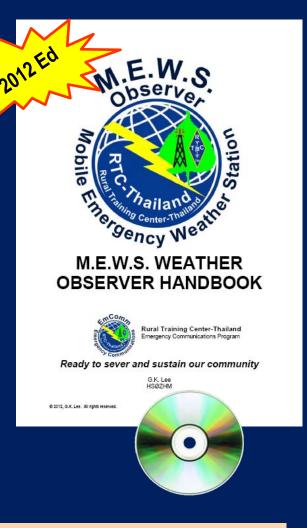
Free Self-Study Materials by Internet

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



Be sure to check <u>www.neighborhoodlink.com/RTC-TH_Tech/pages</u> for the latest updated editions of MEWS lessons

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







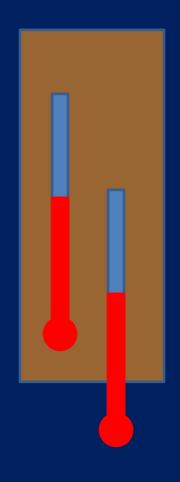
Continue this slide show and learn how to make your own hygrometer.

Depending on your budget, you can buy a basic hygrometer for about 230 THB.



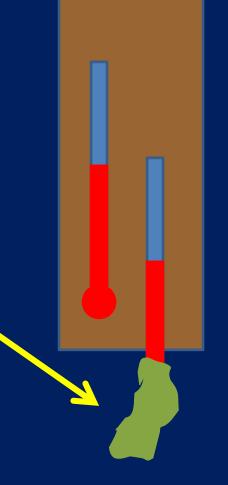
You can make a hygrometer with basic parts: 2 thermometers, a board, some cloth, and a small empty pill bottle, and a hot glue gun.

Step 1. Glue the 2 thermometers to the board. One should extend about 5 cm below the bottom edge of the board.





Step 2. Tie the cloth to the end of the "wet" bulb thermometer.





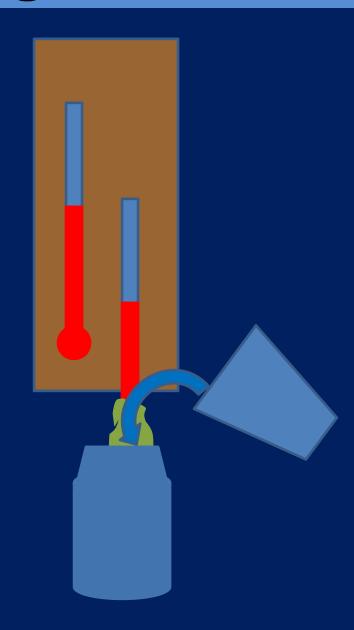
Step 3. Attach the pill bottle to the board so encloses the cloth covered end of the wet bulb thermometer.



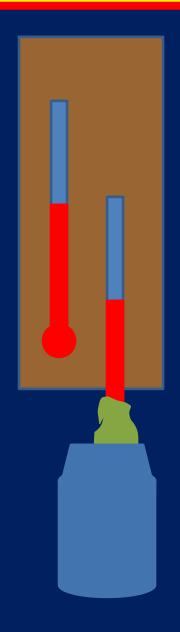
Step 4. Fill the pill bottle with water so the cloth on the end of the wet bulb thermometer is soaking wet.



Let the hygrometer sit for a few minutes to stabilize. You can watch the wet bulb temperature decrease as water evaporates from the cloth wick. When the wet bulb temperature no longer changes, you are ready to go.



Caution: Protect Your Hygrometer



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The thermometers on the hygrometer are fragile. Consider the geo-hazards in your area. Make a protective case for the hygrometer. You need to be sure it will survive with you.

Community-based Environmental Education for





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