Rural Training Center – Thailand (RTC-TH)

F CUS

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

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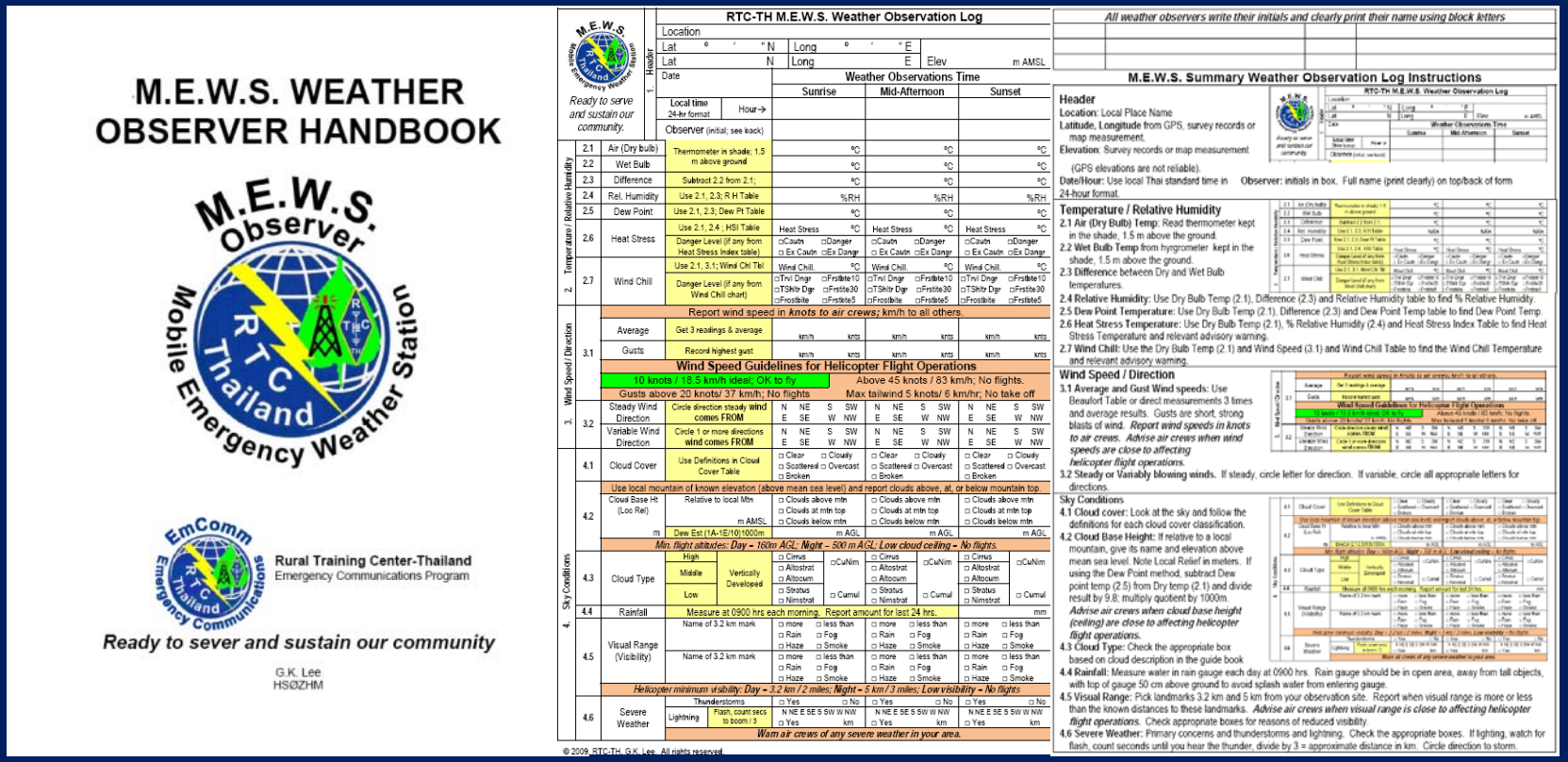
MEWS Weather Observer Handbook Orientation



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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/org/rtcth

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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.

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The Rural Training Center-Thailand (RTC-TH)

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

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MEWS adapts weather lessons from 2 existing RTC-TH programs

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The Rural Training Center-Thailand was created to honor the life and memory of Mr. Tang Suttisan, a father, farmer and former custodian of Ban Na Fa Elementary School who appreciated and valued education.

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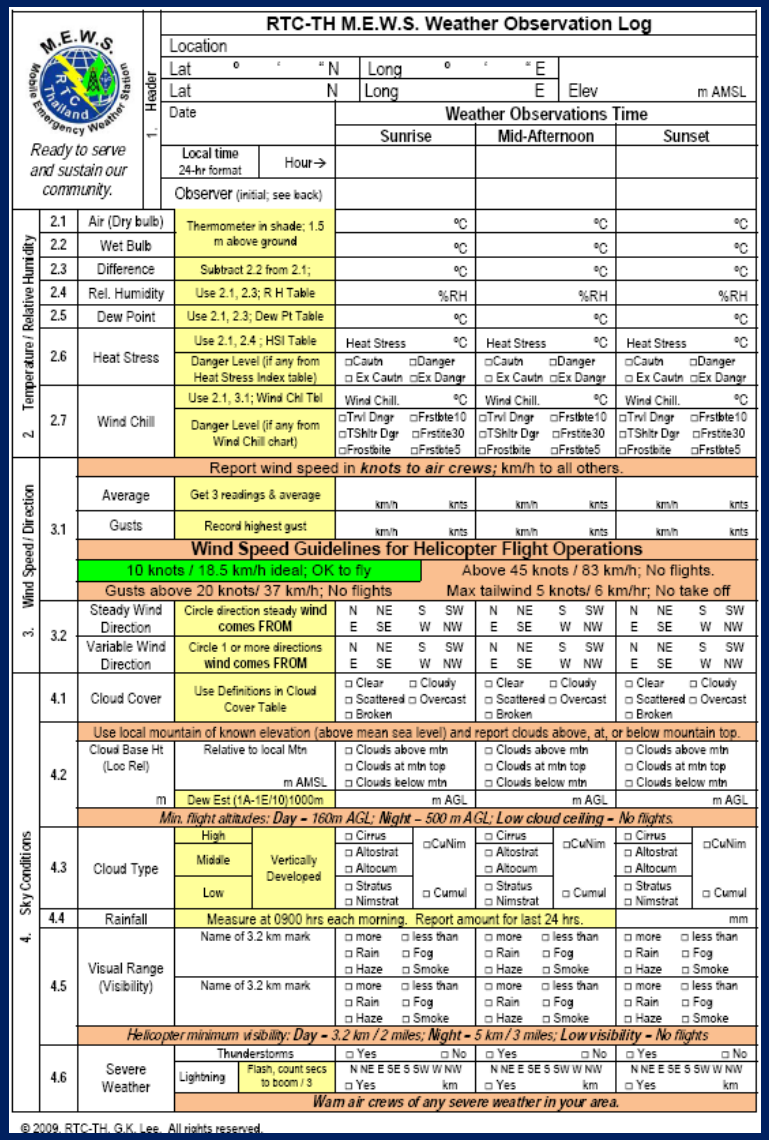
The MEWS Weather Observation Log Form



M.E.W.S. Mobile Emergency Weather Station — RTC Thailand

Ready to serve and sustain our community.

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

1. Header	Location					
	Lat ° ' " N		Long ° ' " E			
	Lat N		Long E		Elev m AMSL	
	Date		Weather Observations Time			
			Sunrise	Mid-Afternoon	Sunset	
	Local time 24-hr format	Hour→				
	Observer (initial; see back)					
2. Temperature / Relative Humidity	2.1	Air (Dry bulb)	Thermometer in shade: 1.5 m above ground	°C	°C	°C
	2.2	Wet Bulb		°C	°C	°C
	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
	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
	2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
			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
	2.7	Wind Chill	Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C
			Danger Level (if any from Wind Chill chart)	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5
3. Wind Speed / Direction	3.1	Report wind speed in *knots to air crews;* km/h to all others.				
		Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts
		Gusts	Record highest gust	km/h knts	km/h knts	km/h knts
		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.		
		Gusts above 20 knots/ 37 km/h; No flights		Max tailwind 5 knots/ 6 km/hr; No take off		
	3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
		Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
4. Sky Conditions	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	Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.				
		Cloud Base Ht (Loc Rel)	Relative to local Mtn m AMSL	□ Clouds above mtn □ Clouds at mtn top □ Clouds below mtn	□ Clouds above mtn □ Clouds at mtn top □ Clouds below mtn	□ Clouds above mtn □ Clouds at mtn top □ Clouds below mtn
		m	Dew Est (1A-1E/10)1000m	m AGL	m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling – No flights.				
	4.3	Cloud Type	High / Middle / Low — Vertically Developed	□ Cirrus □ Altostrat □ Altocum □ Stratus □ Nimstrat □CuNim □ Cumul	□ Cirrus □ Altostrat □ Altocum □ Stratus □ Nimstrat □CuNim □ Cumul	□ Cirrus □ Altostrat □ Altocum □ Stratus □ Nimstrat □CuNim □ Cumul
	4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			mm
	4.5	Visual Range (Visibility)	Name of 3.2 km mark	□ more □ less than □ Rain □ Fog □ Haze □ Smoke	□ more □ less than □ Rain □ Fog □ Haze □ Smoke	□ more □ less than □ Rain □ Fog □ Haze □ Smoke
			Name of 3.2 km mark	□ more □ less than □ Rain □ Fog □ Haze □ Smoke	□ more □ less than □ Rain □ Fog □ Haze □ Smoke	□ more □ less than □ Rain □ Fog □ Haze □ Smoke
		Helicopter minimum visibility: Day – 3.2 km / 2 miles; Night – 5 km / 3 miles; Low visibility – No flights				
	4.6	Severe Weather	Thunderstorms	□ Yes □ No	□ Yes □ No	□ Yes □ No
			Lightning — Flash, count secs to boom / 3	N NE E SE S SW W NW □ Yes km	N NE E SE S SW W NW □ Yes km	N NE E SE S SW W NW □ Yes km
		Warn air crews of any severe weather in your area.				

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was designed as a stand alone self-guided record sheet for EmComm operators to relay weather data to relief agencies and helicopter flight crews.

M.E.W.S. Mobile Emergency Weather Station — RTC Thailand

EmComm Emergency Communications — RTC Thailand

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Notes on the form help you make observations with minimal training

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

1. Get air temp
2. Get wet bulb temp
3. Subtract #2 from #1 and record
4. Look up % RH in table using #1 and #3; and record % RH

Brief instructions are on the back of the Log form.

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The Back of the MEWS Weather Observation Log Form

has more detailed notes to help observers in the field.

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

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

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

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 24-hour format.
Observer: initials in box. Full name (print clearly) on top/back of form

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RTC-TH M.E.W.S. Weather Observation Log			
Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time (24-hr format) / Hour->			
Observer (initial, see 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. Temperature / Relative Humidity						
2.1	Air (Dry bulb)	Thermometer in shade; 1.5 m above ground	°C	°C	°C
2.2	Wet Bulb		°C	°C	°C
2.3	Difference	Subtract 2.2 from 2.1;	°C	°C	°C
2.4	Rel. Humidity	Use 2.1, 2.3; RH Table	%RH	%RH	%RH
2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
		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
2.7	Wind Chill	Use 2.1, 3.1; Wind Chi Tbl	Wind Chill °C	Wind Chill °C	Wind Chill °C
		Danger Level (if any from Wind Chill chart)	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstbite30 □Frostbite □Frstbite5

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.*

3. Wind Speed / Direction							
		Report wind speed in *knots to air crews*; km/h to all others.					
3.1	Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts	km/h knts
	Gusts	Record highest gust	km/h knts	km/h knts	km/h knts	km/h knts
		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.			
		Gusts above 20 knots/ 37 km/h; No flights	Max tailwind 5 knots/ 8 km/hr; No take off			
3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
	Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW 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.

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 Cloud Type: Check the appropriate box based on cloud description in the guide book

4. Sky Conditions							
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
		Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.			
4.2	Cloud Base Ht (Loc Ref)	Relative to local Mtn	□Clouds above mtn □Clouds at mtn top □Clouds below mtn	□Clouds above mtn □Clouds at mtn top □Clouds below mtn	□Clouds above mtn □Clouds at mtn top □Clouds below mtn
		m in AMSL	m AGL	m AGL	m AGL
		DewCal (2.1-2.5)/9.8x1000m			
		Min flight altitudes: Day = 761m AGL; Night – 500 m AGL; Low cloud ceiling = No flights.			
4.3	Cloud Type	High: □Cirrus □Altostrat □Altocum	□Cirrus □Altostrat □Altocum	□Cirrus □Altostrat □Altocum
		Middle: □Cumulnim			
		Vertically Developed			
		Low: □Stratus □Nimbstrat □Cumul	□Stratus □Nimbstrat □Cumul	□Stratus □Nimbstrat □Cumul
4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			mm
4.5	Visual Range (Visibility)	Name of 3.2 km mark	□more □less than □Rain □Fog □Haze □Smoke	□more □less than □Rain □Fog □Haze □Smoke	□more □less than □Rain □Fog □Haze □Smoke
		Name of 3.2 km mark	□more □less than □Rain □Fog □Haze □Smoke	□more □less than □Rain □Fog □Haze □Smoke	□more □less than □Rain □Fog □Haze □Smoke
		Helicopter minimum visibility: Day = 3.2 km / 2 miles; Night = 5 km / 3 miles; Low visibility = No flights.			
4.6	Severe Weather	Thunderstorms	□Yes □No	□Yes □No	□Yes □No
		Lightning: Flash, count secs to boom / 3	N NE E SE S SW W NW □Yes km	N NE E SE S SW W NW □Yes km	N NE E SE S SW W NW □Yes km
		Warn all crews of any severe weather in your area.			

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.

Back of the MEWS Weather Observation Log

2 Temperature / Relative Humidity	2.1	Air (Dry bulb)	Thermometer in shade; 1.5 m above ground	°C	°C	°C
	2.2	Wet Bulb		°C	°C	°C
	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
	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
	2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
			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
	2.7	Wind Chill	Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C
			Danger Level (if any from Wind Chill chart)	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstite30 □Frostbite □Frstbite5	□Trvl Dngr □Frstbite10 □TShltr Dgr □Frstite30 □Frostbite □Frstbite5

The back of form has expanded notes for brief reminders on the front of the form. The entire form (front and back) has ready guide notes to help you make observations in the field.

The full detailed instructions are in the MEWS manual.

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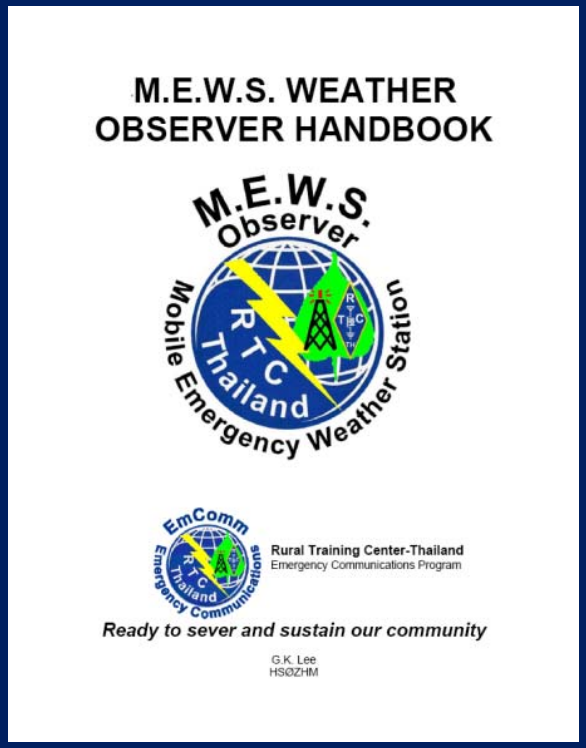
The MEWS Weather Observer Handbook

contains detailed instructions to complete the form and reference tables to speed calculations and math conversions.



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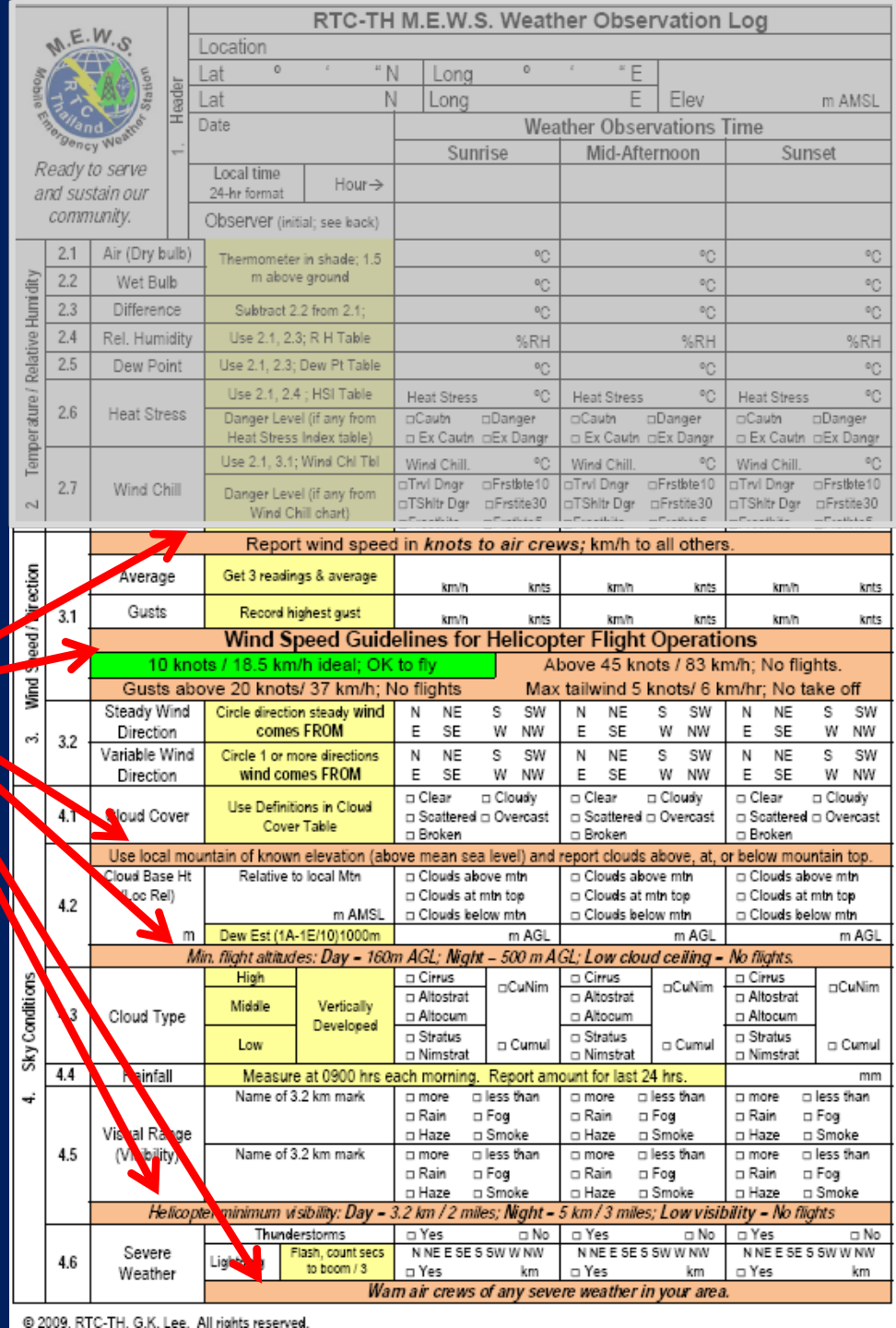
The MEWS Weather Observation Log

has highlighted guidelines important to helicopter flight operations.



M.E.W.S. Mobile Emergency Weather Station — RTC Thailand

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

1. Header

Location				
Lat ° ' " N	Long ° ' " E			
Lat N	Long E	Elev m AMSL		
Date	Weather Observations Time			
		Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format	Hour→			
Observer (initial; see back)				

2. Temperature / Relative Humidity

2.1	Air (Dry bulb)	Thermometer in shade; 1.5 m above ground	°C	°C	°C
2.2	Wet Bulb		°C	°C	°C
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
2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
		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
2.7	Wind Chill	Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C
		Danger Level (if any from Wind Chill chart)	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30

3. Wind Speed / Direction

		Report wind speed in *knots to air crews;* km/h to all others.			
3.1	Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts
	Gusts	Record highest gust	km/h knts	km/h knts	km/h knts
		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.		
		Gusts above 20 knots/ 37 km/h; No flights	Max tailwind 5 knots/ 6 km/hr; No take off		
3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
	Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW

4. Sky Conditions

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
		Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.			
4.2	Cloud Base Ht (Loc Rel)	Relative to local Mtn m AMSL	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn
	m	Dew Est (1A-1E/10)1000m	m AGL	m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling – No flights.			
4.3	Cloud Type	High / Middle / Low — Vertically Developed	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul
4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			mm
4.5	Visual Range (Visibility)	Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
		Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
		Helicopter minimum visibility: Day – 3.2 km / 2 miles; Night – 5 km / 3 miles; Low visibility – No flights			
4.6	Severe Weather	Thunderstorms	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
		Lightning — Flash, count secs to boom / 3	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km
		Warn air crews of any severe weather in your area.			

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Section 1.0 Header: Location Name

M.E.W.S. Mobile Emergency Weather Station — RTC Thailand

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour→			
Observer (initial; see back)			

Location name: Use common name or tactical name as used by local emergency authorities.

Common place names may be used for more than one geographical location. Some names may sound alike. Latitude/Longitude/Elevation coordinates are unique.

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Location Name Information Source

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour→			
Observer (initial; see back)			

Get the name from local emergency authorities, local maps or local HAMs or area residents.

It is a good idea to write the name in both Thai and English in case information is being transmitted internationally.

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Section 1.0 Header Latitude/Longitude/Elevation

Ready to serve and sustain our community.

1. Header

RTC-TH M.E.W.S. Weather Observation Log				
Location				
Lat ° ' " N		Long ° ' " E		
Lat N		Long E	Elev m AMSL	
Date		Weather Observations Time		
		Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format	Hour →			
Observer (initial; see back)				

- Latitude and longitude in degrees, minutes, seconds and in decimal degrees
- Elevation in meters above mean sea level (amsl)

Decimal degrees for Latitute/Longitude are often used in modern aircraft digital electronic navigation systems.

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Latitude/Longitude/Elevation Sources

Ready to serve and sustain our community.

1. Header

RTC-TH M.E.W.S. Weather Observation Log					
Location					
Lat ° ' " N		Long ° ' " E			
Lat N		Long E		Elev m AMSL	
Date		Weather Observations Time			
		Sunrise	Mid-Afternoon	Sunset	
Local time 24-hr format	Hour →				
Observer (initial; see back)					

- Topographic maps
- Local authorities
- Internet sources

It is best to scout out your local area and research these data BEFORE an emergency.

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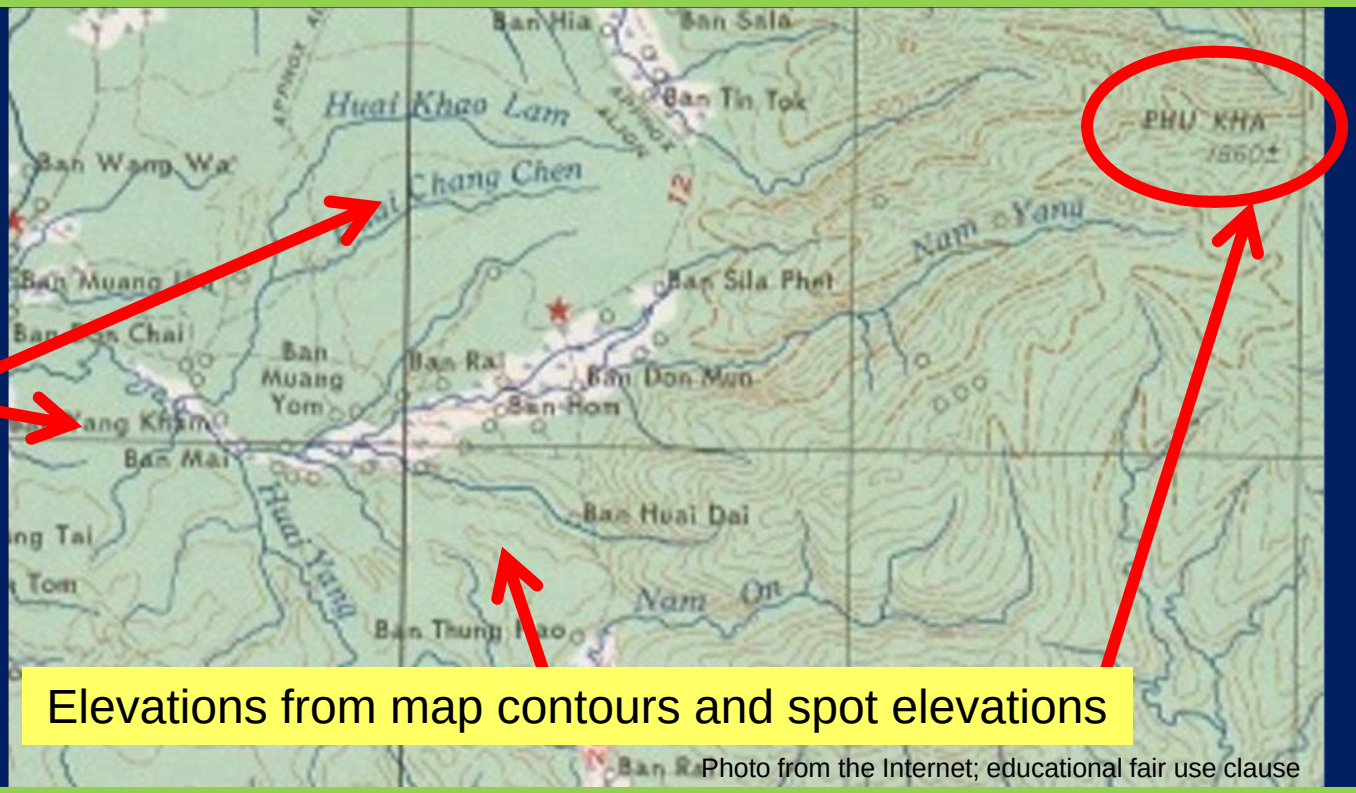
Latitude/Longitude/Elevation Topographic Maps & Local Authorities

Latitude and Longitude from map grid and map margins



Elevations from map contours and spot elevations

Photo from the Internet; educational fair use clause

Royal Thai Survey Department www.rtsd.mi.th/service or DK Bookstores sell maps. Local authorities may have maps you can look at to get data.

Get this information BEFORE an emergency.

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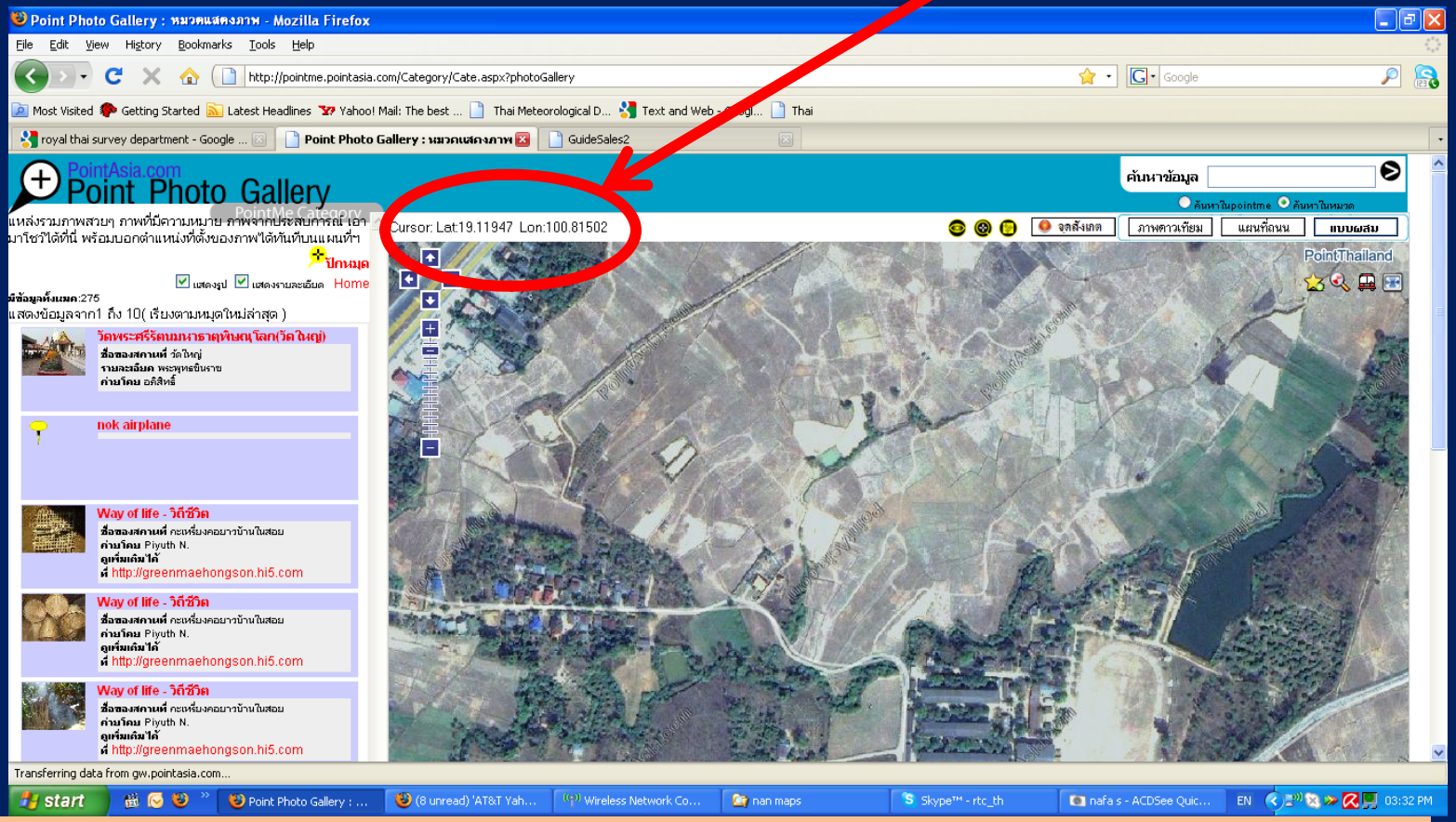
Latitude/Longitude/Elevation Internet Sources: www.pointasia.com

Point cursor to your location; Latitude / Longitude coordinates are at upper left corner of image frame.



There is no elevation data that I could find.

Photo from the Internet; educational fair use clause

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Latitude/Longitude/Elevation Internet Sources: Google Earth

The map image is not as sharp as Point Asia, but it gives elevation data and a link to Google maps for a topographic map.

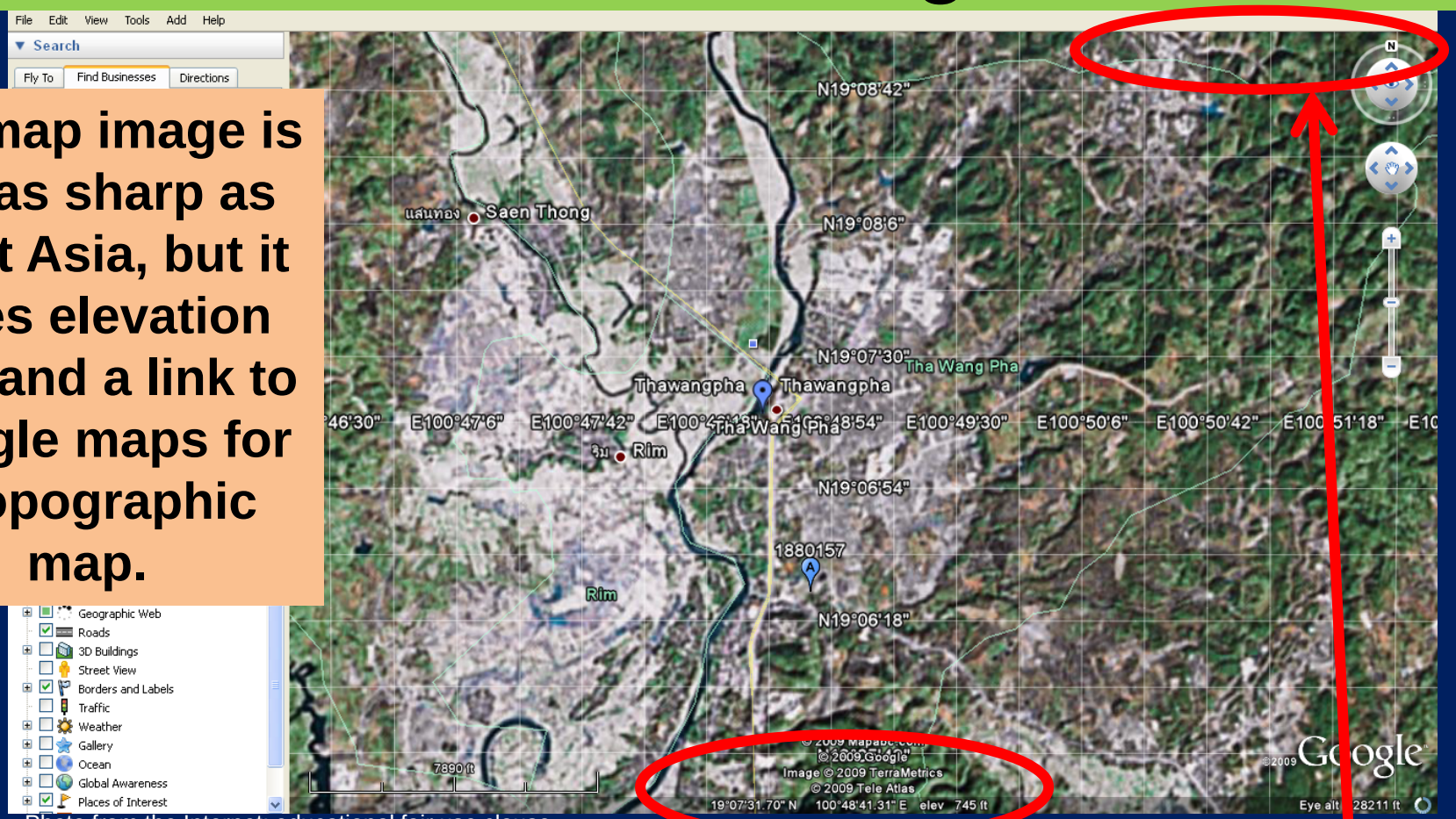

Photo from the Internet; educational fair use clause

Point cursor to your location; Latitude / Longitude, elevation are at bottom center of image frame. Click on the option to view the area in Google Maps.

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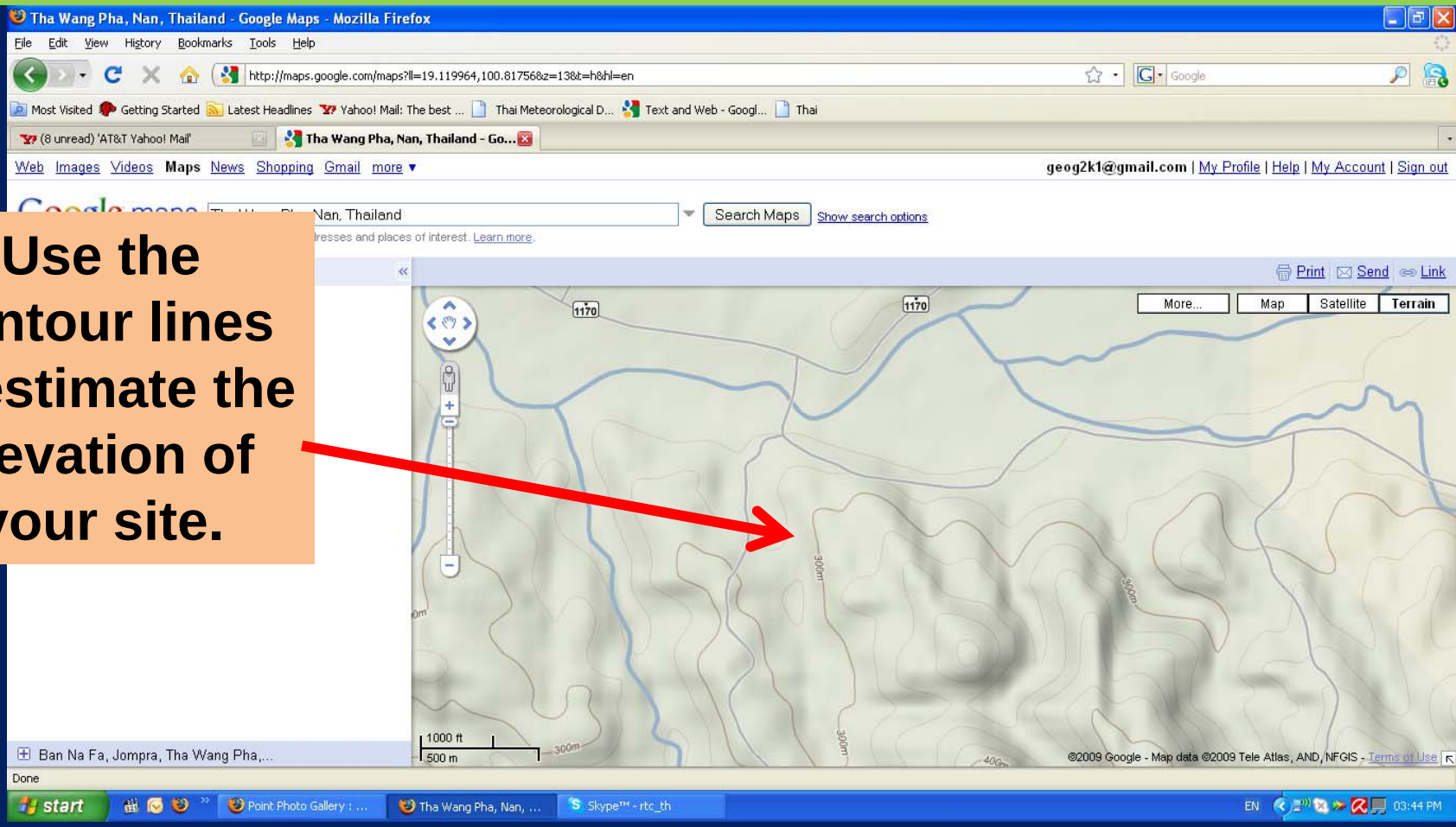
Latitude/Longitude/Elevation Internet Sources: Google Maps



Use the contour lines to estimate the elevation of your site.

Photo from the Internet; educational fair use clause

In Google Earth, click on the option to see the area in Google Maps. This is gives you a map with contours.

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Section 1.0 Header: Date/Time

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour →			
Observer (initial; see back)			

Use Local Thai Standard Time.
Report time using 24-hour format.

RTC-TH uses local time as most local/regional emergencies will involve Thai agencies only.

Use UTC Date/Time (24-hr format) when reporting to contacts OUTSIDE of Thailand.

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Date / Time Data Sources

Ready to serve and sustain our community.

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

Header 1.

Location		
Lat ° ' " N	Long ° ' " E	
Lat N	Long E	Elev m AMSL

Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour →			
Observer (initial; see back)			

Keep a calendar and clock set to local time at your operating position.

RTC-TH uses local time as most local/regional emergencies will involve Thai agencies only.

BASIC level operators should not convert local time to UTC if unsure how to do this.

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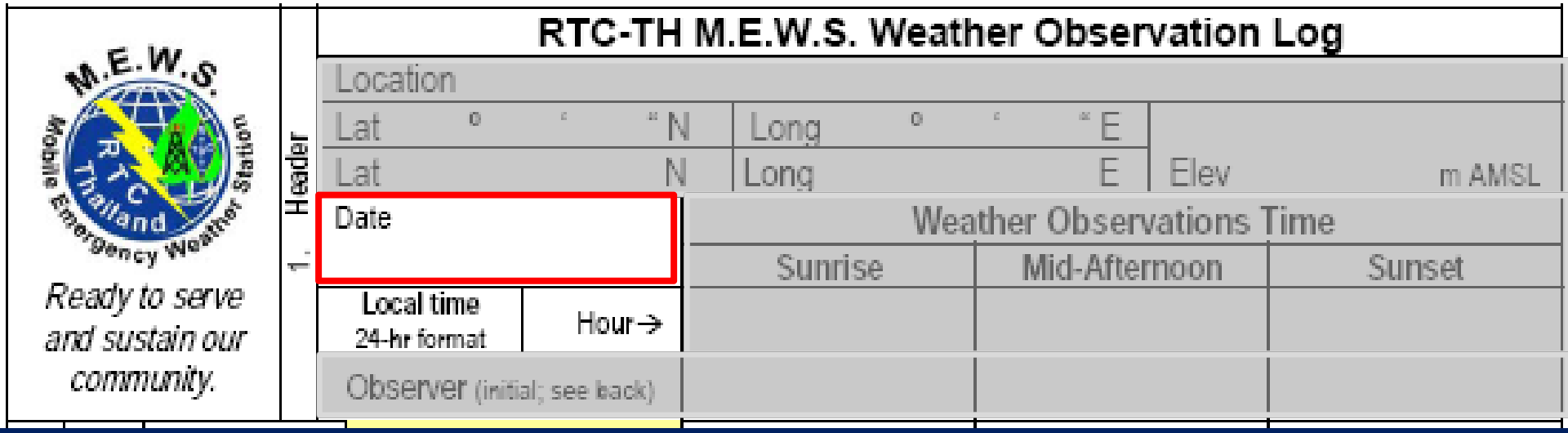
Date Format



Ready to serve and sustain our community.	1. Header	RTC-TH M.E.W.S. Weather Observation Log		
		Location		
		Lat ° ' " N	Long ° ' " E	
		Lat N	Long E	Elev m AMSL
		Date	Weather Observations Time	
			Sunrise	Mid-Afternoon	Sunset
		Local time 24-hr format	Hour →			
		Observer (initial; see back)			

YYYY, MMM, DD (4 digits for the year, first 3 letters of the name of the month, 2 digits for the date. So May 9, 2009 would be written 2009 May 09.

If reporting to international contacts, use UTC date/time. Add the letter "Z" at the end (e.g. 2009 May 9 Z) to indicate Zulu or UTC time format.

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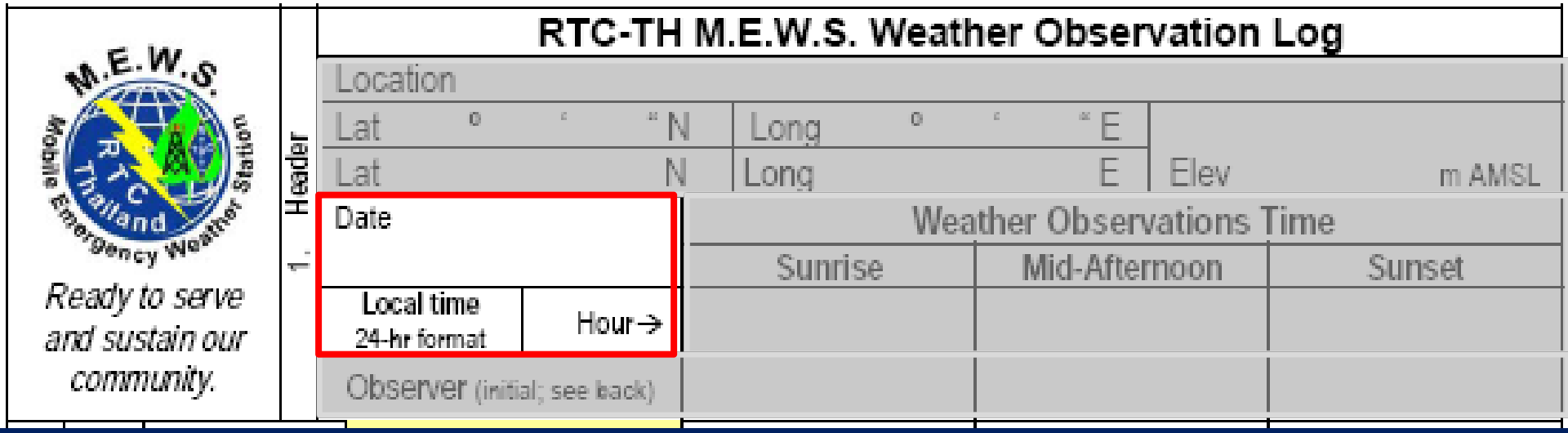
Time Format



Ready to serve and sustain our community.	1. Header	RTC-TH M.E.W.S. Weather Observation Log		
		Location		
		Lat ° ' " N	Long ° ' " E	
		Lat N	Long E	Elev m AMSL
		Date	Weather Observations Time	
			Sunrise	Mid-Afternoon	Sunset
		Local time 24-hr format / Hour →		
		Observer (initial; see back)		

Use Local Thai Standard Time.
Report time using 24-hour format.

RTC-TH uses local time as most local/regional emergencies will involve Thai agencies only.

Use UTC Date/Time (24-hr format) when reporting to contacts OUTSIDE of Thailand.

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24-hr Time Format

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour →			
Observer (initial; see back)			

To go from AM/PM format to 24-hr format:
If 1- 11 AM, make 4 digit form 1 AM = 0100 hr;
then 12 noon (12 PM) = 1200 hr;
Then 1 PM = 1300 hr; 2 PM = 1400 hrs and so on until 12 midnight (12 AM) = 2400 hrs

If reporting to international contacts, use UTC date/time. Add the letter "Z" at the end (e.g. 2330Z) to indicate Zulu or UTC time format.

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Section 1.0 Header: Observation times

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour →			
Observer (initial; see back)			

Make weather observations 3 times/day (the same time each day).

- Sunrise ~0500-0600 hrs
- Mid afternoon ~ 1400-1500 hrs
- Sunset ~ 1800-1900 hrs

The Basic Temperature lesson gives the scientific basis for using these time periods.

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Section 1.0 Header: Observation times and general weather variable patterns

	Sunrise	Mid-Afternoon	Sunset
Temp	Lowest	Highest	-----
Wind / turbulence	Low	Higher	Low
Visibility	Increasing	Good	Decreasing
Fog	Maybe	None	Maybe

Local terrain and condition may cause different patterns and trends.

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

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

	Weather Observations Time		
	~~Sunrise~~	~~Mid-Afternoon~~	~~Sunset~~
Hour			
l; see back			
n shade; 1.5	°C	°C	°C
ground	°C	°C	°C
from 2.1	°C	°C	°C

Record the specific local time of your observations

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

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

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Section 1.0 Header: Observer ID

Ready to serve and sustain our community.

1. Header

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

Location			
Lat ° ' " N	Long ° ' " E		
Lat N	Long E	Elev m AMSL	
Date	Weather Observations Time		
	Sunrise	Mid-Afternoon	Sunset
Local time 24-hr format / Hour →			
Observer (initial; see back)			

If a HAM, print your call sign for the observations you make.
If not a HAM, print your name.

Print clearly. Observer ID is needed in case writing is not clear or when clarification is needed. If needed, write more ID information on back of the form.

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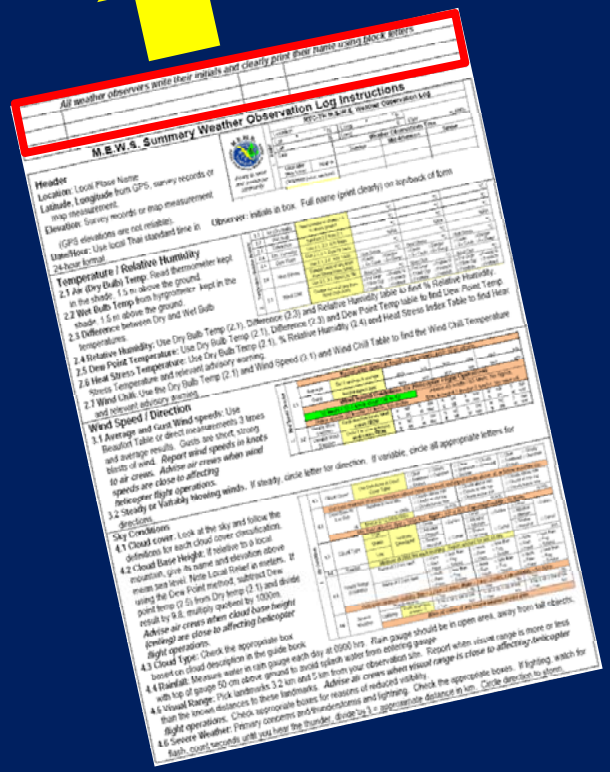
Additional space for observer ID is on the back of the form, top of the page

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

Observation time; observer ID



Print clearly. Observer ID is needed in case writing is not clear or when clarification is needed.

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You do not have to be a HAM to learn MEWS

It is an advantage to have HAMs learn MEWS. Then one person can do both EmComm and weather observing.

However, in an emergency having a MEWS observer assist HAMs in making weather observations is better than NO weather observations at all.

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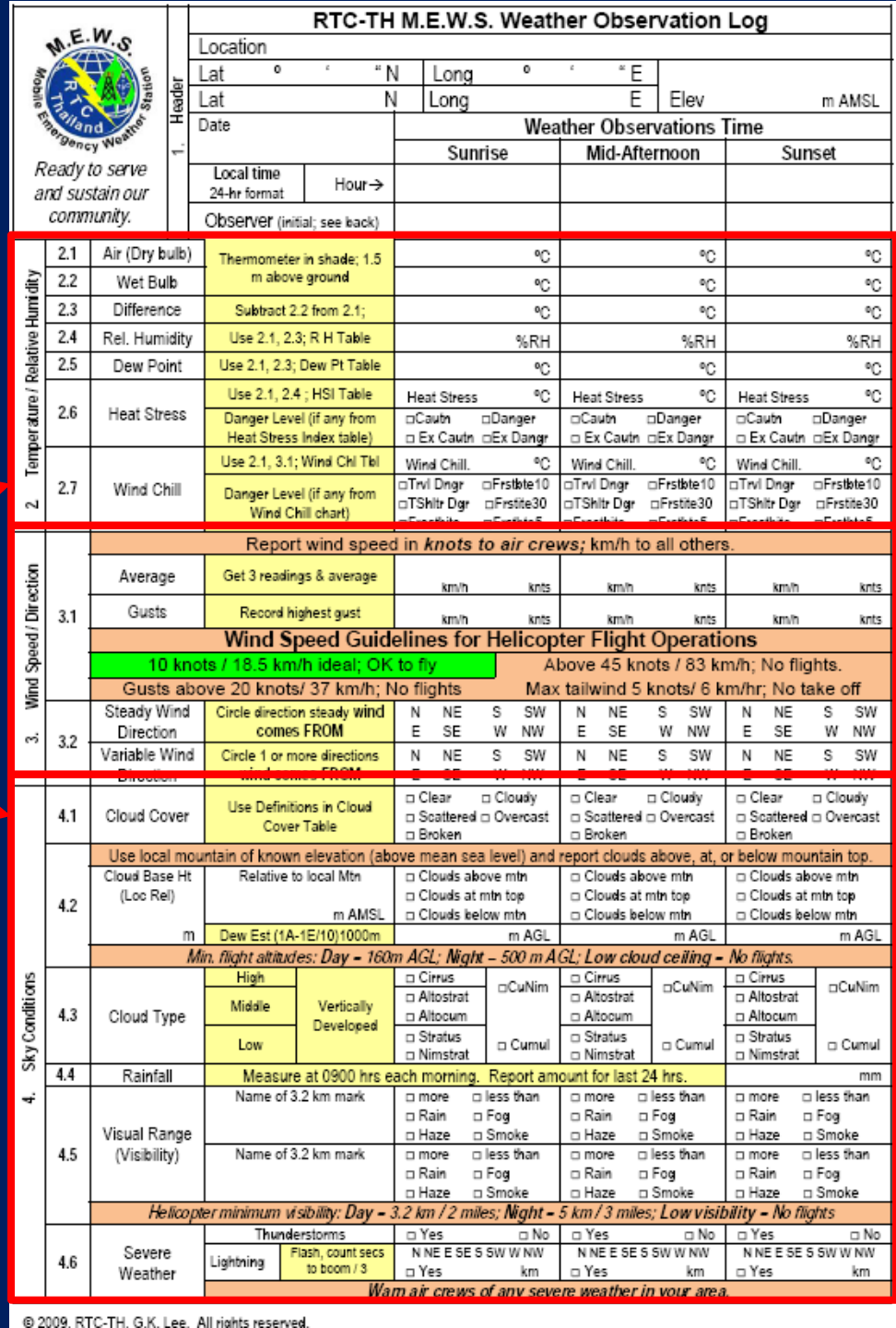
Other Sections of the Form

2.0 Temperature / Relative Humidity

3.0 Wind Speed / Direction

4.0 Sky Conditions

Lessons for these sections will be presented separately at Basic and Advanced levels



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

1. Header	Location				
	Lat ° ' " N	Long ° ' " E			
	Lat N	Long E	Elev m AMSL		
	Date	Weather Observations Time			
		Sunrise	Mid-Afternoon	Sunset	
	Local time 24-hr format / Hour→				
	Observer (initial; see back)				

2. Temperature / Relative Humidity	2.1	Air (Dry bulb)	Thermometer in shade; 1.5 m above ground	°C	°C	°C
	2.2	Wet Bulb		°C	°C	°C
	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
	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
	2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
			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
	2.7	Wind Chill	Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C
			Danger Level (if any from Wind Chill chart)	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30

3. Wind Speed / Direction		Report wind speed in *knots to air crews;* km/h to all others.				
	3.1	Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts
		Gusts	Record highest gust	km/h knts	km/h knts	km/h knts
		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.		
		Gusts above 20 knots/ 37 km/h; No flights		Max tailwind 5 knots/ 6 km/hr; No take off		
	3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
		Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW

4. Sky Conditions	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	Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.				
		Cloud Base Ht (Loc Rel)	Relative to local Mtn m AMSL	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn
		m	Dew Est (1A-1E/10)1000m	m AGL	m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling – No flights.				
	4.3	Cloud Type	High / Middle / Low — Vertically Developed	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul	☐ Cirrus ☐ Altostrat ☐ Altocum ☐ Stratus ☐ Nimstrat ☐CuNim ☐ Cumul
	4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			mm
	4.5	Visual Range (Visibility)	Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
			Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
		Helicopter minimum visibility: Day – 3.2 km / 2 miles; Night – 5 km / 3 miles; Low visibility – No flights				
	4.6	Severe Weather	Thunderstorms	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
			Lightning — Flash, count secs to boom / 3	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km
		Warn air crews of any severe weather in your area.				

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Basic vs Advanced

Start with the Basic lessons even if you have studied weather science before. It will be a good review.

Advanced lessons build on the skills / methods taught in the Basic lessons

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MEWS Lesson Sequence

The lessons follow the sequence on the Weather Observation Form.

Do all of the Basic lessons before starting the Advanced lessons.

The idea is to quickly become a capable Basic MEWS observer to provide critical weather data to emergency relief agencies.

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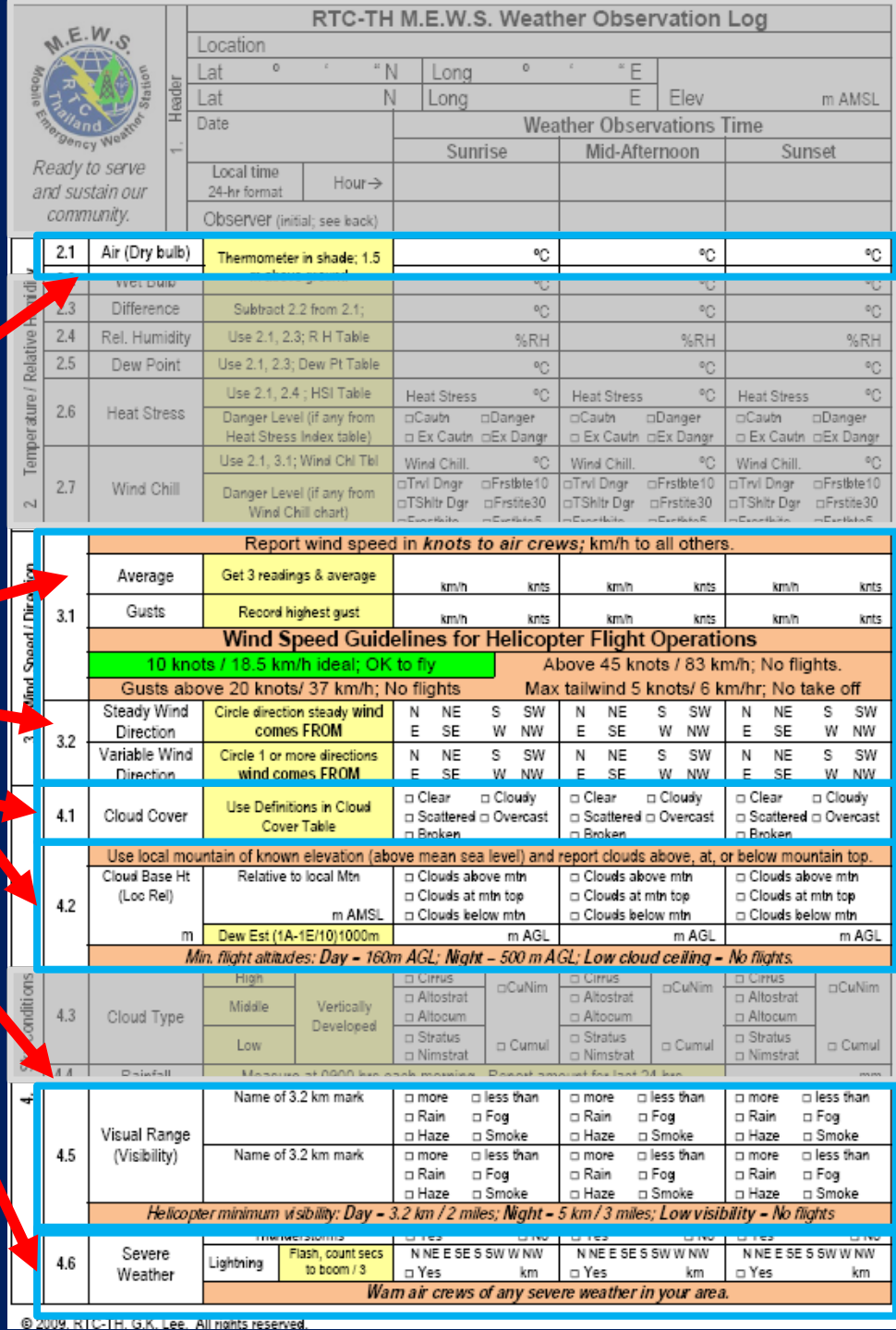
Basic MEWS Observations are recorded here on the Log Form

- Temperature
- Estimate Wind Speed
- Wind direction
- Cloud cover
- Estimate cloud height
- Visibility
- Thunder / Lightning

Detailed instructions are in the MEWS manual



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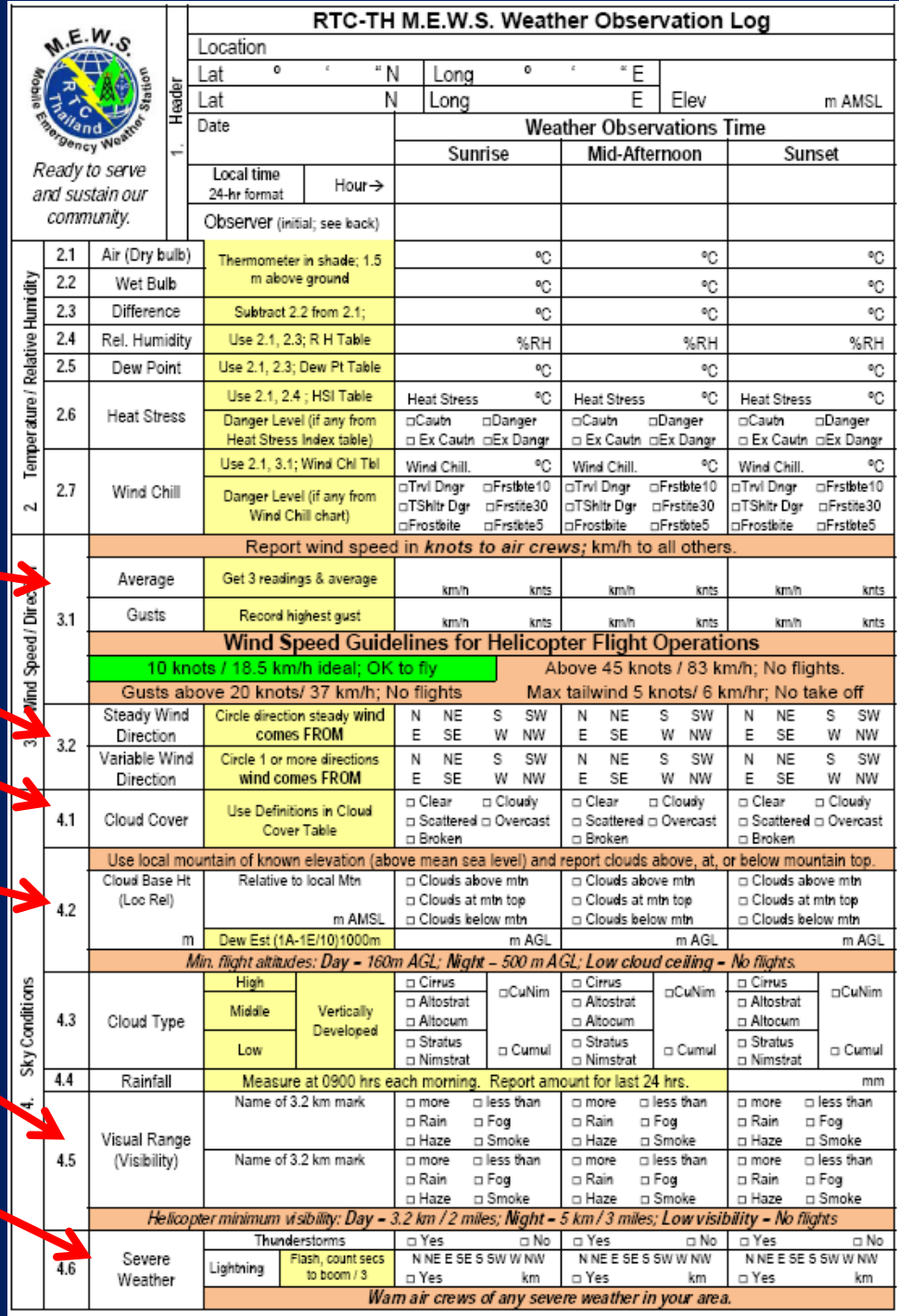
Basic MEWS Observers can provide critical flight weather reports

- Wind Speed
- Wind direction
- Cloud cover
- Estimate cloud height
- Visibility
- Thunder / Lightning



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

1. Header	Location				
	Lat ° ' " N	Long ° ' " E			
	Lat N	Long E	Elev m AMSL		
	Date	Weather Observations Time	Sunrise	Mid-Afternoon	Sunset
	Local time 24-hr format	Hour→			
	Observer (initial; see back)				

2. Temperature / Relative Humidity	2.1	Air (Dry bulb)	Thermometer in shade; 1.5 m above ground	°C	°C	°C
	2.2	Wet Bulb		°C	°C	°C
	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
	2.5	Dew Point	Use 2.1, 2.3; Dew Pt Table	°C	°C	°C
	2.6	Heat Stress	Use 2.1, 2.4 ; HSI Table	Heat Stress °C	Heat Stress °C	Heat Stress °C
			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
	2.7	Wind Chill	Use 2.1, 3.1; Wind Chl Tbl	Wind Chill. °C	Wind Chill. °C	Wind Chill. °C
			Danger Level (if any from Wind Chill chart)	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30 ☐Frostbite ☐Frstbite5	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30 ☐Frostbite ☐Frstbite5	☐Trvl Dngr ☐Frstbite10 ☐TShltr Dgr ☐Frstite30 ☐Frostbite ☐Frstbite5
3. Wind Speed / Direction	3.1	Report wind speed in *knots to air crews;* km/h to all others.				
		Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts
		Gusts	Record highest gust	km/h knts	km/h knts	km/h knts
		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.		
		Gusts above 20 knots/ 37 km/h; No flights		Max tailwind 5 knots/ 6 km/hr; No take off		
	3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
		Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW	N NE S SW E SE W NW
4. Sky Conditions	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	Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.				
		Cloud Base Ht (Loc Rel)	Relative to local Mtn m AMSL	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn
		m	Dew Est (1A-1E/10)1000m	m AGL	m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling – No flights.				
	4.3	Cloud Type	High / Vertically Developed	☐ Cirrus ☐ Altostrat ☐ Altocum ☐CuNim	☐ Cirrus ☐ Altostrat ☐ Altocum ☐CuNim	☐ Cirrus ☐ Altostrat ☐ Altocum ☐CuNim
			Middle / Vertically Developed	☐ Altostrat ☐ Altocum ☐CuNim	☐ Altostrat ☐ Altocum ☐CuNim	☐ Altostrat ☐ Altocum ☐CuNim
			Low / Vertically Developed	☐ Stratus ☐ Nimstrat ☐ Cumul	☐ Stratus ☐ Nimstrat ☐ Cumul	☐ Stratus ☐ Nimstrat ☐ Cumul
	4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			mm
	4.5	Visual Range (Visibility)	Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
			Name of 3.2 km mark	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
		Helicopter minimum visibility: Day – 3.2 km / 2 miles; Night – 5 km / 3 miles; Low visibility – No flights				
	4.6	Severe Weather	Thunderstorms	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
			Lightning / Flash, count secs to boom / 3	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km
		Warn air crews of any severe weather in your area.				

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Wind Advisory Notes for Helicopters

Wind Speed / Direction	3.1	Report wind speed in *knots to air crews;* km/h to all others.				
		Average	Get 3 readings & average	km/h knts	km/h knts	km/h knts
		Gusts	Record highest gust	km/h knts	km/h knts	km/h knts
		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.		
		Gusts above 20 knots/ 37 km/h; No flights		Max tailwind 5 knots/ 6 km/hr; No take off		

- Wind 10 Knts/18.5 km/h = **OK**
- Wind above 45 knts/83 km/h = **No Flights**
- Gusts more than 20 knts/37 km/h = **No Flights**
- Max tailwind 5 knots/6 km/h; more = **No Take off**

Report a Flight Advisory any time conditions are near ***to, at, or greater than*** the warning limits listed on the Log Form.

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Altitude Advisory Notes for Helicopters

	4.2	Use local mountain of known elevation (above mean sea level) and report clouds above, at, or below mountain top.			
		Cloud Base Ht (Loc Rel) m	Relative to local Mtn m AMSL	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn
			Dew Est (1A-1E/10)1000m	m AGL	m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling – No flights.				

- Day time 160 m AGL (above ground level)
- Night time 500 m AGL
- Low cloud ceilings (less than 160 m Day; 500 m Night) = No Flights

Report a Flight Advisory any time conditions are ***near to, at, or less than*** the warning limits listed on the Log Form.

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Visual Range Advisory Notes for Helicopters

4.	4.5	Visual Range (Visibility)	Name of 3.2 km mark	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke
			Name of 3.2 km mark	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke	□ more □ Rain □ Haze	□ less than □ Fog □ Smoke
		*Helicopter minimum visibility: **Day** = 3.2 km / 2 miles; **Night** = 5 km / 3 miles; **Low visibility** = No flights*							

- Day time 3.2 km/2 miles
- Night time 5 km/3 miles
- Low visibility (less than 3.2 km Day; 5 km Night) = No Flights

Report a Flight Advisory any time conditions are ***near to, at, or less than*** the warning limits listed on the Log Form.

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Severe Weather Advisory Notes for Helicopters

	4.6	Severe Weather	Thunderstorms		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
			Lightning	Flash, count secs to boom / 3	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km
			Warn air crews of any severe weather in your area.				

Advisory notice to flight crew should give type of severe weather, direction and distance from your location or the landing zone (if you are not at the LZ)

Warn flight crews of any severe weather conditions (high winds, turbulence, rain, fog, etc. that could affect flight safety in the area and nearby landing zones.

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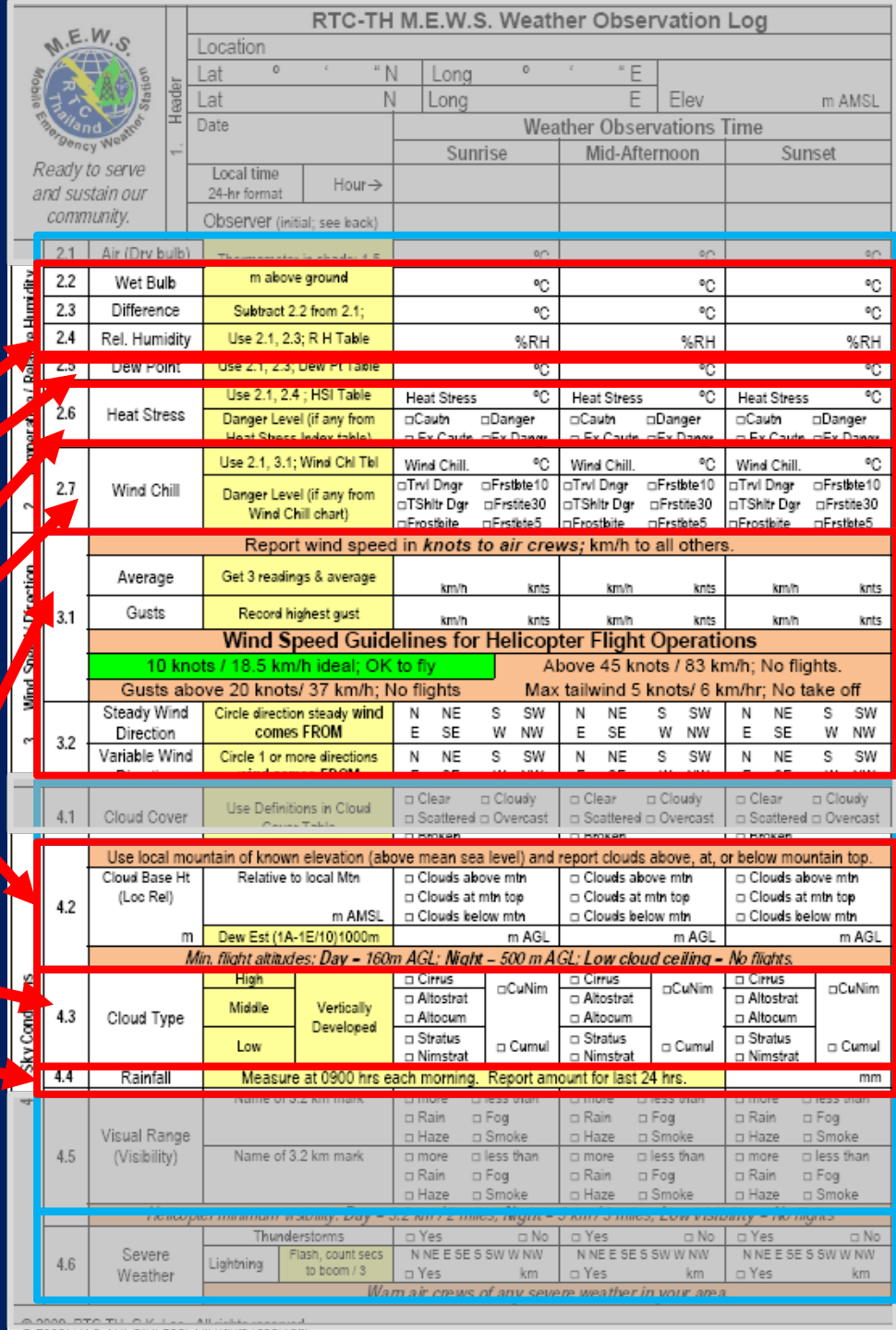
Advanced MEWS Observations are recorded here on the Log Form

- Relative Humidity
- Dew Point
- Heat Stress Index
- Wind Chill Factor
- Measured wind speed
- Calculate cloud height
- Cloud type
- Rainfall

Detailed instructions are in the MEWS manual



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Advanced MEWS Observers provide additional data for emergency relief planners

Data are only numbers and facts. They become valuable as ***information*** only if used to solve a problem. We strive to provide useful data for emergency relief planners. We don't know if it will be used.

We provide the data to help save lives.

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Preview of Basic vs Advanced Lessons

Section 2.0 Temperature/Relative Humidity

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

Advanced MEWS observations include all Basic observations.

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Preview of Basic vs Advanced Lessons

Section 3.0 Wind Speed / Direction

				Basic	Advanced
3. Wind Speed / Direction	3.1	Report wind speed in ***knots to air crews;*** km/h to all others			
		Average	Get 3 readings & average	km/h knts	km/h knts
		Gusts	Record highest gust	km/h knts	km/h knts
		Wind Speed Guidelines for Helicopter Flight Operatio			
		10 knots / 18.5 km/h ideal; OK to fly			Above 45 knots / 83 kn
		Gusts above 20 knots/ 37 km/h; No flights			Max tailwind 5 knots/ 6 kn
	3.2	Steady Wind Direction	Circle direction steady wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW
		Variable Wind Direction	Circle 1 or more directions wind comes FROM	N NE S SW E SE W NW	N NE S SW E SE W NW

Advanced MEWS observations include all Basic observations. In the case of wind speed, Basic observers estimate the wind speed using a reference chart. Advanced observers use wind speed measuring devices to get a more accurate wind speed.

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Preview of Basic vs Advanced Lessons

Section 4.0 Sky Conditions

Advanced MEWS observations include all Basic observations. Advanced observers calculate cloud base height, ID cloud types, measure rainfall, and may have lightning detection equipment.

					Basic	Advanced
4. Sky Conditions	4.1	Cloud Cover	Use Definitions in Cloud Cover Table		☐ Clear ☐ Cloudy ☐ Scattered ☐ Overcast ☐ Broken	☐ Clear ☐ Cloudy ☐ Scattered ☐ Overcast ☐ Broken
	4.2	Use local mountain of known elevation (above mean sea level) and report clouds above, at,				
		Cloud Base Ht (Loc Rel)	Relative to local Mtn m AMSL		☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn	☐ Clouds above mtn ☐ Clouds at mtn top ☐ Clouds below mtn
		m	Dew Est (1A-1E/10)1000m		m AGL	m AGL
		Min. flight altitudes: Day – 160m AGL; Night – 500 m AGL; Low cloud ceiling –				
	4.3	Cloud Type	High	Vertically Developed	☐ Cirrus ☐ Altostrat ☐ Altocum	☐ Cirrus ☐ Altostrat ☐ Altocum
			Middle		☐ CuNim	☐ CuNim
			Low		☐ Stratus ☐ Nimstrat ☐ Cumul	☐ Stratus ☐ Nimstrat ☐ Cumul
	4.4	Rainfall	Measure at 0900 hrs each morning. Report amount for last 24 hrs.			
	4.5	Visual Range (Visibility)	Name of 3.2 km mark		☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
			Name of 3.2 km mark		☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke	☐ more ☐ less than ☐ Rain ☐ Fog ☐ Haze ☐ Smoke
		Helicopter minimum visibility: Day – 3.2 km / 2 miles; Night – 5 km / 3 miles; Low visi				
	4.6	Severe Weather	Thunderstorms		☐ Yes ☐ No	☐ Yes ☐ No
			Lightning	Flash, count secs to boom / 3	N NE E SE S SW W NW ☐ Yes km	N NE E SE S SW W NW ☐ Yes km
		Warn air crews of any severe weather in your area				

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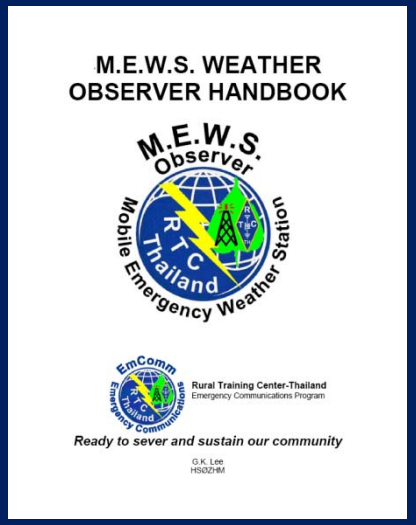
Free Self-Study Materials by Internet

- 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.

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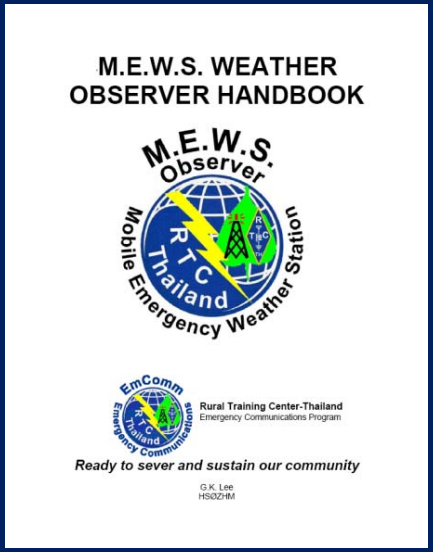
These materials are in English. Volunteer assistance for Thai translation to is welcome and will be acknowledged and cited.

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:
rtc2k5@gmail.com
We are always trying to improve our lessons. Your comments and suggestions are welcomed.

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Basic MEWS PDF Lessons

B 1: Measuring Temperature
B 2: Estimating wind speed
B 3: Measuring Wind Direction
B 4: Estimating Cloud Cover
B 5: Estimating Cloud Base Height
B 6: Identifying Cloud Types
B 7: Estimating Visual Range
B 8: Severe Weather Conditions

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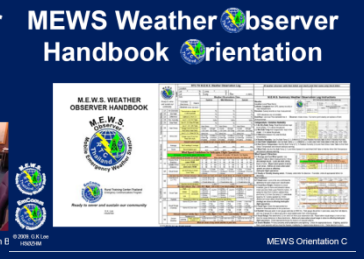
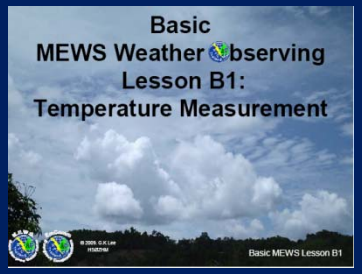
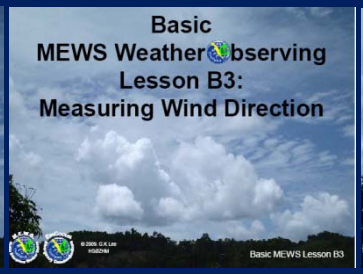
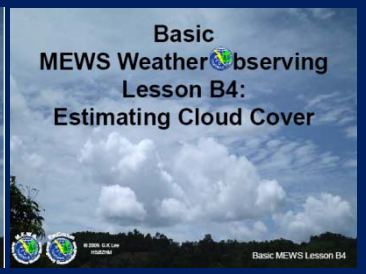
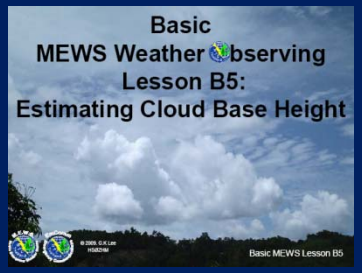
Basic MEWS PDF Lessons

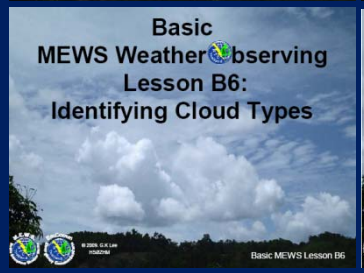


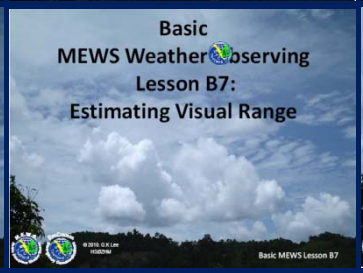












3 Orientation and 8 Basic lessons.
Some show how to build your own weather equipment.

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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

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Advanced MEWS PDF Lessons

Six slide show lessons

Some show how to build your own weather equipment

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

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Future RTC-TH EmComm Lessons

- Identifying local Geo-Hazards
- Finding safe EmComm operating sites
- Identifying main supply routes and alternate routes
- Finding Helicopter Landing Zones
- Helicopter landing zone hand signals
- Ground to air communication without radios

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Expand Your Horizons

Set out to sea on a course less taken.
Try to learn something new each day.
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Community-based Environmental Education for

Self-sufficiency and Sustainability for Small Rural Family Farms

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The End

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EmComm
Emergency Communications
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