

CHAPTER 3

COMMANDER'S WEATHER INFORMATION REQUIREMENTS

Here we address the commander's weather requirements. And while the unit's weather needs flow from the commander, it is your job to articulate and convey these needs to the SWO. You do this either through your G2 or directly, depending upon local custom.

But before you can be totally effective, you need to understand how the SWO works and what kind of support he can provide. Plus, there are other factors you must consider before asking the SWO for forecast support.

FORECASTS, OUTLOOKS, AND REPORTS

Every commander views his battlefield as having two distinct areas that can be expressed in terms of distance and time. These are the AO and the AI. It is impossible to be specific about distances here because different types of units will travel at different speeds. And while distances may vary, time stays relatively constant. Examples of time applied to both the AO and AI are shown in Table 3-1.

Table 3-1. Areas of operations and interest.

LEVEL OF COMMAND	TIME OF AO	TIME OF AI
BATTALION	Up to 3 hours	Up to 12 hours
BRIGADE	Up to 12 hours	Up to 24 hours
DIVISION	Up to 24 hours	Up to 72 hours
CORPS	Up to 72 hours	Up to 96 hours
EAC	Up to 96 hours	More than 96 hours

The AO is an area of conflict necessary for military operations. It is a geographical area assigned to a commander for which he has responsibility and in which he has authority to conduct military operations. Commanders are assigned an AO based on the mission, enemy, terrain, troops, and the time available (METT-T).

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The action of the threat forces, the trafficability, and the weather conditions in the AI are also of great concern to the commander. The AI includes the AO plus adjacent friendly areas and areas occupied by threat forces that could jeopardize the mission. The AI time span may be significantly increased over that of the AO because of possible threat ground and air operations. Since the battlefield is fluid, the land mass encompassing the AO and AI should be measured by the times shown in Table 3-1. This is important because the SWO will satisfy your weather support requirement by time sequencing weather forecasts for the geographical AO and AI.

ESTABLISHING REQUIREMENTS FOR FORECASTING SUPPORT

Weather forecasts, like any other intelligence information, must be keyed to those areas that encompass the commander's AO and AI planning horizons. The geographic area covered by the forecast is directly related to the military operations at each tactical level. For example: At battalion level, the commander's concern revolves around how far his soldiers can travel or shoot in 12 hours. Table 3-1 can be used to determine the geographic coverage required for any forecast and each echelon by factoring in distance.

PERIODS OF FORECAST AND OUTLOOKS

While it is critical for the commander to have a weather forecast covering current operations, it is not the only weather requirement he has. He must also be aware of tomorrow's weather and how it may affect his unit's continuing operations.

Therefore, instead of thinking only about current and forecasted weather for the next 3 to 12 hours, his weather concern envelope may extend out several days. This approach expands as you go up the tactical chain of command.

An EAC commander must be concerned with a 7- to 10-day weather outlook. Table 3-2 summarizes this concept. In every instance, the degree of detail varies, and you must tell the SWO the forecast length required and, in turn, put this information into the unit's tactical standing operating procedures (SOPs).

Generally, the commander needs detailed forecasts of selected weather elements for the first 24 hours, in increments as short as 6 hours. Forecast intervals beyond the first 24 hours are going to be longer.

Table 3-2. Determining lengths of forecasts and outlooks.

LEVEL OF COMMAND	LENGTH OF FORECAST/OUTLOOK OF PRIMARY INTENT	LENGTH OF FORECAST/OUTLOOK FOR PLANNING
BATTALION	12 to 24 hours	48 hours
BRIGADE	24 hours	48 hours
DIVISION	24 to 36 hours	3 to 5 days
CORPS	1 to 3 days	5 to 7 days
EAC	2 to 4 days	7 to 10 days

FREQUENCY OF UPDATE

After deciding the geographic coverage and length of the forecast period, you can then consider the frequency of forecast updates. Generally, an update every 6 to 12 hours is sufficient for the first 24-hour period. Asking for forecast updates more frequently than every 6 hours is counterproductive because the only new data available would be unevaluated observations.

Forecasts extending beyond 24 hours should be revised daily. These forecasts are based on hemispheric computer models that run every 12 to 18 hours. Table 3-3 summarizes the recommended frequency for weather forecast updates.

Table 3-3. Update frequency.

LENGTH OF FORECAST/OUTLOOK	FREQUENCY OF UPDATE
0 to 12 hours	Every 6 hours
0 to 24 hours	Every 6 to 12 hours
24 to 72 hours	Every 24 hours
More than 72 hours	Every 24 to 72 hours

SELECTING WEATHER ELEMENTS

Each weather forecast contains the standard weather elements observation the battlefield. You must identify those elements that are most important to you. Table 3-4 identifies several common battlefield applications and those weather elements that play a role in their operations.

Using a table like this, and discussions with your SWO, you can determine the precise weather elements that are most important to your unit. Based on your operation, systems, and personnel, there will be several weather effects threshold values that you will want the SWO to be aware of. He records your needs as standing requirements and will automatically report conditions that meet the criteria.

For example: The height above ground level (AGL) of the base of clouds that form a ceiling is important to the COPPERHEAD missile. If 600 meters is the critical threshold value, you must tell the SWO so the WETM will spend extra time trying to determine when, or if, that value will be reached.

Gusting surface winds over 35 knots are critical to air assault operations, and parachutists require at least 1,000 feet of visibility AGL to visually see and aim for a specific landing site within the drop zone (DZ). You must make sure the SWO is informed of these values so he can concentrate his forecasting capabilities on those thresholds that are critical to your unit.

CRITERIA FOR CHANGE

You have told the SWO when and how often you need a forecast. But what happens if conditions change (weather forecasters change forecasts occasionally)? What do you tell him about being notified? You will know, if you can answer this question: What weather elements with specific thresholds are important to my mission?

For example: In support of aviation your commander may specify that for cloud ceilings under 500 feet he wants to receive a new updated forecast whenever the ceiling changes (deteriorates or improves) by 100 feet from the original forecast.

Since precipitation is important for ground maneuvers, a commander may want to know when the forecast changes from no precipitation to rain or rain showers.

Table 3-4. Weather applications and criteria for changes.

WEATHER EFFECTS BATTLEFIELD APPLICATION	CLOUD DATA	FOG	HUMIDITY (1),(2)	LIGHT DATA	PRECIPITATION (2)	PRESSURE	SEVERE WEATHER	SNOW/ICE COVER	SURFACE WINDS	STATE OF GROUND	TEMPERATURE	VISIBILITY
	OBSERVATION and FIELD OF FIRE	X	X		X	X		X	X			
ARTILLERY FIRES	X	X	X	X	X	X	X	X	X	X	X	
CONCEALMENT	X	X		X	X		X	X	X	X		X
CAMOUFLAGE	X	X	X	X	X		X	X	X	X	X	X
GROUND AVENUES OF APPROACH		X		X	X		X	X		X	X	X
AIR AVENUES OF APPROACH	X	X	X	X	X	X	X	X	X	X	X	X
CROSS-COUNTRY MOVEMENT		X		X	X		X	X	X	X	X	X
FORDING SITES		X		X	X		X	X	X	X	X	X
AIR DROP ZONES	X	X		X	X	X	X	X	X	X	X	X
HELIMOBILE LZ/PZ	X	X	X	X	X	X	X	X	X	X	X	X
LOC AND MSR's		X		X	X		X	X		X	X	X
NBC OPERATIONS	X	X	X	X	X	X	X	X	X	X	X	X
RADIO/RADAR					X		X		X			
REMBASS EMPLACEMENT					X		X	X	X	X	X	
INFILTRATION ROUTES	X	X		X	X	X	X	X	X	X	X	X

LEGEND: (1) Density altitude quality affects aircraft lift capability.
 (2) For laser-guided weapons.

SEVERE OR HAZARDOUS WEATHER

In addition to your continuous need for forecast updates for general weather elements, you need non-forecasted or unanticipated severe or hazardous weather warnings. These weather phenomena adversely impact your operational capability. WETMs normally issue severe weather warnings and advisories. Check for the values at which each weather element becomes known as severe. Severe weather conditions are listed below. (As a working aid you might add the exact critical values for your unit's operations, systems, and personnel in place of the X in Table 3-4.) When forecast (and especially when not forecasted), you will be concerned with such conditions as--

- Tornadoes.
- Thunderstorms producing winds in excess of 45 knots and hail greater than 3/4 of an inch.
- Hurricanes and typhoons.
- Precipitation (rain or snow) when X inches fall in Y hours.
- Surface winds in excess of X knots.
- Maximum and minimum temperatures; when a forecast value misses the actual temperature by X degrees.

You want to know that an earlier forecast for light snow was amended to a forecast of a 16 inch accumulation within the next 12 hours. We cannot over emphasize that you need to work with your next higher headquarters S2 or G2 and the SWO so that your needs are realistically stated and can be supported. All of your weather support needs should be reviewed every 6 months in garrison and as required in the field.

LIGHT DATA

Another weather-related element that your commander needs is light data. The introduction of NVD and night vision goggles (NVG) have made many night operations feasible. Your SWO provides official times for sunrise and sunset, beginning and ending of civil twilight (BMCT and EECT), beginning and ending of nautical twilight (BMNT and EENT), length of absolute darkness, moonrise, moonset, lunar phase in percent, and time periods for using NVD and NVG. Light data to support NVD is needed because there are times when there is not enough moon or star light to use them.

Civil twilight is sufficient for conduct of combat operations while nautical twilight permits most ground movements without difficulty. Nautical twilight allows a general visibility of up to 400 meters (1,320 ft) and lets you distinguish silhouettes from the background.

The actual duration of light varies considerably with latitude and time of year. For example, in the vicinity of 35 to 40 degrees north latitude, civil twilight generally occurs 30 to 45 minutes before sunrise and after sunset. In the tropics, twilight is much shorter.

Once light requirements are determined, relay them to your next higher SIO and SWO. This information is important for your commander because he needs to know not only when he can begin friendly military operations (day or night), but also when threat operations could begin.

OTHER CONSIDERATIONS

Although high frequency (HF) radio wave propagation forecasts are not normally available to the SWO, he can make arrangements before he deploys to receive these forecasts. When available, they should be given to every signal and intelligence organization. The signal officer should know that when HF is not effective, it may be because of solar activity rather than enemy jamming.

The USAF Global Weather Central can routinely provide solar forecast products to the SWO even in the field. Other data, such as tidal information and sea state conditions, can be obtained from the SWO but are normally only provided to specific Army units, and then upon special request.

RECEIPT OF FORECASTS

Every tactical echelon should receive the weather forecast prepared and briefed to the commander at the next higher echelon. With no SWO at a maneuver brigade, you receive both the forecast briefed at division covering the division AO and the forecast made by the division SWO specifically for your brigade. Each forecast message received should be worked by you to discover the direct weather impacts on your unit.

A commander wants the weather forecast. He also needs the effects and impacts of the forecasted weather interpreted for his specific operations, systems, and personnel. Table 3-5 provides a matrix of the kind of data and weather forecasts that Army units might need. Remember to schedule your forecasts so they arrive in time for you to prepare your commander's briefing.

Table 3-5. Typical support requirements.

USERS WEATHER DATA	AIR DEFENSE	ARTILLERY	CAB/AIRBORNE	CHEMICAL	COSCOM	ENGINEER	HQ STAFF	MEDICAL	PORT HANDLERS	REAR/ALT CP	SIGNAL	S2	TERRAIN ANALYSTS
	FORECAST (0 to 48 HOURS)	X	X	X	X	X	X	X	X	X	X	X	X
EXTENDED FORECAST (3 to 7 DAYS)	X	X	X	X	X	X	X	X	X	X			X
AVIATION FORECAST	X	X	X	X	X		X	X		X		X	X
LIGHT DATA	X	X	X	X	X	X	X		X	X		X	X
SEA STATE DATA						X			X				X
LOW-LEVEL WINDS	X	X	X	X	X		X	X		X			X
UPPER-LEVEL WINDS	X	X	X	X	X		X	X		X			X
DEEP ATTACK WEATHER	X	X					X			X			X
PRECIPITATION FORECAST	X	X	X	X	X	X	X			X	X	X	X
SEVERE WEATHER	X	X	X	X	X	X	X	X	X	X	X	X	X
HF PROPAGATION	X		X				X			X	X		
E-O DATA	X	X	X				X			X		X	
INVERSIONS			X	X							X		
VISIBILITY	X	X	X			X	X			X		X	X