

**Walking in the Yorkshire Dales  
and northern Pennines**

*The potential impact of the weather  
and how to manage the associated risks*

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## **Scope and Introduction**

### **Scope**

This document focusses on the potential impact of (and the risks associated with) the weather for urban and rural walks in the Yorkshire Dales and the northern Pennines. It covers group and solo walking during all four seasons and takes account of a wide-range of ‘typical’ weather conditions.

The information and advice contained in this document will be relevant for walks in other areas of northern England (and beyond), although additional issues and precautions may need to be considered for walks in the more remote / mountainous terrain found in the Lake District, Wales and Scotland.

Additional issues and precautions may also need to be considered for walks that involve scrambling, climbing, caving and / or pot-holing – all of which are beyond the scope of this document.

In various places throughout this document, reference is made to ‘groups’ and to ‘walk-leaders’. However, the information and advice apply equally to solo-walkers, even if this is not stated within the text.

### **Introduction**

The weather before and during a walk will have a massive impact on both the safety and enjoyability of that walk. The United Kingdom experiences an enormous variation in national, regional, and local weather conditions – usually on a day-by-day basis, often on an hour-by-hour basis and sometimes on a minute-by-minute basis. Also, the weather can differ significantly between locations that are just a kilometre or two apart horizontally and / or just a few hundred metres apart vertically. This variability is particularly significant in the Yorkshire Dales and northern Pennines, where:

- **Pleasant weather conditions** will add to the enjoyment of any walk.
- **Challenging weather conditions** can turn an otherwise easy walk into an exhilarating battle against the elements. Safely overcoming these challenging conditions can imbue the walker with an intense feeling of satisfaction and accomplishment, whereas
- **adverse weather conditions** tend to be thoroughly unpleasant and can be dangerous, perhaps even fatal.

In some cases, the difference between ‘*challenging*’ and ‘*adverse*’ conditions has little to do with the conditions themselves, but almost everything to do with the individual(s) concerned, in particular:

- The attitude and expectations of the individual(s).
- The nature of the clothing & equipment worn / carried by the individual(s).
- The level of skill, experience and fitness of the individual(s).

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- The support, assistance and / or encouragement given to any less experienced members of the group.

For a group walk, the skill, knowledge and timely intervention of the leader(s) may be all that is required to turn the adverse (and potentially dangerous) into the challenging (i.e. exhilarating but safe). However, there are circumstances where the conditions will be adverse for most, if not all members of the group. On these occasions, the potential level of risk increases significantly and both enjoyment and safety may be threatened. This is the point where timely, appropriate and confident decision-making by the leader(s) can make all the difference between a bit of discomfort, and a potentially life-threatening situation.

The purpose of this document is to outline some of the challenging and adverse weather conditions that will commonly be encountered during a walk in the Yorkshire Dales / northern Pennines and to consider how solo walkers and walk-leaders can manage these conditions to ensure that all involved have a safe and enjoyable day-out, despite the prevailing weather conditions.

As with most things in life, good preparation provides the firm foundation on which everything else is built. The preparatory steps that are relevant to managing weather-related risks are:

- route-planning,
- risk assessment and scenario planning,
- the choice and use of equipment and
- weather forecasting / monitoring.

The first three of these have their own dedicated briefing documents in the “*Walking in the Yorkshire Dales and northern Pennines*” series, while the latter is the primary focus of this document. However, the weather can and does have a fundamental impact on the first three topics and that impact is explored in detail in this document.

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## **Weather forecasting / monitoring**

- It is **STRONGLY RECOMMENDED** that solo-walkers / walk-leaders check the national and regional weather forecasts for several days leading-up to the day of the walk. This will allow the walker / leader to ‘get a feel for’ the pattern of weather – i.e. how it is currently changing, and how it is likely to change before and during the walk. For those with internet access, the following links may be useful (correct as of 30<sup>th</sup> July 2015):
  - The current Met Office Mountain Area forecast for the Yorkshire Dales:  
[http://www.metoffice.gov.uk/public/weather/mountain-forecasts/yorkshire-  
dales#?tab=mountainWarnings](http://www.metoffice.gov.uk/public/weather/mountain-forecasts/yorkshire-dales#?tab=mountainWarnings)
  - The Met Office five-day forecast for a specific user-entered location (the link below is for Settle, but you can easily change the location):  
<http://www.metoffice.gov.uk/public/weather/forecast/gcw7s4y98>
  - The Met Office surface pressure charts for the next three days:  
[http://www.metoffice.gov.uk/public/weather/surface-  
pressure/#?tab=surfacePressureColour](http://www.metoffice.gov.uk/public/weather/surface-pressure/#?tab=surfacePressureColour)
  - The main BBC page for weather forecasts:  
<http://www.bbc.co.uk/weather/>
- It is **ESSENTIAL** that solo-walkers / walk-leaders check the local forecast (i.e. local to the area to be covered by the walk) the evening before the walk and / or on the morning of the walk. When doing this, it is important to note that:
  - Specialised mountain / walkers’ forecasts are invariably more detailed (and usually more accurate) than the regional forecasts shown on the television or read on the radio.
  - Both the forecasted weather and the actual weather can change significantly in the space of just a few hours.
  - The key weather-related factors that can affect comfort and safety during a walk are:
    - Ice & snow
    - Wind speed & direction
    - Visibility
    - Temperature (actual plus ‘feels-like’)
    - Humidity
    - Precipitation (type, intensity & duration)
    - Lightning (thunderstorms)
    - Changeability- especially the speed of change
- It is **ESSENTIAL** that solo-walkers / walk-leaders compare the weather conditions that were **forecast** with the **actual** weather conditions encountered during the journey to - and upon arrival at - the walk’s start-point. This will allow the accuracy (or otherwise) of the forecast to be assessed.
- Immediately prior to commencing a walk, solo-walkers / walk-leaders will need to use a combination of recent weather forecasts, actual weather conditions, local knowledge and personal experience to:
  - a) identify the likely weather-related hazards;
  - b) assess the abilities, experience, clothing and equipment of all members of the party;

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- c) assess the level of risk that each potential hazard poses to each individual (and, where appropriate, to the group as a whole);
- d) decide what risk management action is appropriate / necessary immediately, and then (on an ongoing basis)
- e) decide what risk management action may be appropriate / necessary as the walk progresses.

This weather-related scenario planning and dynamic risk management is the focus of the next chapter.

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## Weather-related scenario planning and dynamic risk management

### Introduction

This chapter reviews the weather conditions that may be encountered during a walk in the Yorkshire Dales and the northern Pennines, identifies the key hazards that are likely to accompany those conditions, and considers steps that can be taken to minimise and manage the associated risks – both initially and on an ongoing basis during the walk.

In most cases, the risk-management strategy will involve one or more of the following:

- Double-checking the clothing & equipment worn / carried by members of the group.
- Managing the expectations of the group.
- Providing information, advice and / or support - to specific individuals within the group, or to the group as a whole.
- Modifying the route – either from the start, or at some other point during the walk.

In all cases, leader will need to:

- Monitor the weather and ground conditions on an ongoing basis in order to identify the nature, probability and potential impact of any actual or likely change(s).
- Observe each group-member at regular intervals to identify anyone who is struggling (or who looks as if they may struggle later) and to respond accordingly.

At all times, the leader must **remember that the objective of the walk is for everyone to have a safe and enjoyable day-out.**

### Ice & snow

Ice & snow can make underfoot conditions treacherous and, if walking into the sun, the glare can make route- / path-finding difficult and, in extreme circumstances, could cause snow-blindness.

Ice may cause the walker's boots to lose grip unexpectedly at a key moment, resulting in a slip and / or fall.

Lying snow will often completely obscure the true nature of the ground-surface, making the crossing of any rough terrain potentially hazardous. Limestone areas can be particularly dangerous in such circumstances as the lying snow may completely fill clints & grikes, shake-holes and even potholes.

When snow lies over ice, slipping & falling becomes more a probability than a possibility, even on a flat, level surface such as a road or track. Adding a slight slope into the mix makes the slip and fall almost inevitable.

All walkers (and walk-leaders) need to be mindful that every slip could lead to an injury, and that every injury could be minor, major or fatal, depending on the exact circumstances. Bearing in mind the blame & sue culture that pervades modern society, it would be all too easy to continue this section by stating that all walks should be cancelled if there is so much as a single snowflake or ice-crystal on the ground. However, a wintry walk through snow and ice can

provide the experienced walker (and even the carefully supervised and appropriately supported newcomer) with an exhilarating and thoroughly enjoyable day-out.

**It is (and it must be) the responsibility of each individual walker to consider and assess the level of risk** posed by the prevailing conditions, and to decide for him or herself whether or not that risk is too high to outweigh the potential benefits of continuing with the walk. **However, the LEADER'S role in such circumstances is to ensure that EVERY member of the group has sufficient information and experience to enable him or her to make an informed choice.**

The required exchange of information and provision of appropriate and timely advice must be an ongoing process:

- a) It must start during the briefing at the beginning of the walk, when at least one of the leaders must ask if there is anyone who has not walked in similar conditions before. (If anyone indicates that they have not done so, the leader must carefully explain the potential hazards and associated risks, along with the level of support that can be provided, then ask if the individual concerned still wishes to join the walk.)
- b) It must then continue throughout the walk, with the leaders observing each member of the group on a regular basis to see if they are coping well, or if they are showing signs of struggling. This is especially important during the early stages of the walk and / or when negotiating any particularly tricky and / or potentially treacherous sections of the route. If someone does appear to be struggling, a bit of timely and appropriate advice and / or appropriate assistance may be sufficient to enable the individual concerned to continue the walk relatively comfortably and safely. However, if the individual concerned continues to struggle, it may be necessary to call a halt and consider splitting the group so that the individual(s) concerned can be accompanied back to safety via the shortest reasonable route.

## **High (strong) winds**

High (strong) winds can make walking at high levels or in other exposed areas unpleasant, tiring, and potentially dangerous. The risk is highest in gusty conditions, when the direction and / or speed / strength of the wind tends to vary significantly in a very short space of time. In these conditions, it is all too easy to over-balance and fall. The level of risk increases even further if the route involves walking over uneven, slippery, and / or boggy terrain and further still when walking close to a precipitous drop.

If the group is caught in exposed areas during high winds, the best defensive techniques are to use the terrain to provide shelter wherever possible and for all members of the group to adopt a low posture. In some cases, just bending forward may reduce body resistance sufficiently to allow relatively safe progress to be made. In extreme cases, it may be necessary for the group to crawl, or even to adopt a snake-like wriggle on their stomachs. (Note: Roping-up is an additional defensive technique, but this will only be possible if the leaders have sufficient rope, plus the necessary knowledge & skills to use that rope safely and effectively. This technique is well beyond the scope of this document.)

While these defensive techniques can be useful for a short period of time, they will quickly become both uncomfortable and tiring, then painful and exhausting. Walking defensively in high winds is also likely to slow-down progress significantly, which may mean there is insufficient time to complete the walk in time for the planned return journey.

**In all cases, a less exposed lower level route will be safer and far less unpleasant** as wind speeds are almost always significantly lower at lower levels. Also, if the planned route involves walking into a headwind for an extended period of time, the leader is **STRONGLY ADVISED** to find and use an alternative route that will place the wind behind the group for all or most of the walk.

**In all cases, the LEADER must decide the most appropriate course of action, bearing in mind all relevant factors.** High (strong) winds alone need not be sufficient cause to modify the route. Much will depend on the strength, variability and direction of the wind, the degree of wind-chill, the presence or absence of other hazards (weather-related or otherwise), the nature of the terrain (including underfoot conditions), the level of experience of the walkers, the level of experience of the leaders, and the amount of time available to complete the walk.

### **Poor visibility**

Poor visibility can significantly increase the risk of navigational errors, especially in open areas with few visible references to aid path- and route-finding. Extremely poor visibility can also significantly increase the risk of one or more members of the party become detached from the main group. For these reasons, a low-level alternative should always be considered as it will generally offer a safer alternative while also providing more interesting views.

However, if the leaders are highly experienced, with the knowledge, skill and confidence to use advanced navigational techniques, poor visibility alone does not automatically require the adoption of an alternative route. This is especially the case if the poor visibility is only likely to be encountered for a relatively short period of time. A common example of this is when the poor visibility is caused solely by low cloud covering only the summit of a hill, and where the planned route involves climbing up and over that summit before descending swiftly back down again. In these circumstances, adopting the following defensive tactics should be sufficient to ensure the safety of the group:

- The leader must stop the group, then brief them on the potential dangers posed by the conditions, and the defensive measures that must be adopted to ensure group safety.
- The leader must adopt defensive positioning within the group – i.e. one leader must remain at the extreme front, the other at the extreme rear, and all walkers must be instructed to remain in between the two.
- The leader must get-out, then appropriately use, a map and compass (in conjunction along with the route-card, if one has been prepared).
- The entire group must remain tightly grouped together, preferably to the extent that the leader at the front can both see and hear the person at the back (and vice-versa) at all times.
- Headcounts must be taken far more frequently than normal to ensure that no-one has gone astray.
- If visibility becomes so poor that the leader cannot see the entire group, the leader must stop the group every one, two or three hundred metres (depending on the size of the group and the severity of the visibility problem). This will allow the group to close-up sufficiently to allow a head-count to be taken. While this technique significantly slows-down progress, it is infinitely preferable to losing someone.



- In cases of extremely poor visibility, it may be necessary for the group to adopt the ‘*leap-frogging*’ technique and / or the ‘*aiming-off*’ technique. **These are advanced navigation techniques and a description of them is beyond the scope of this document. If the leader does not know how to use them, or does not have the confidence to do so safely and within the time available, an alternate, low-level route MUST be taken at the first sign of poor or deteriorating visibility – even if this means retracing the route back towards the start-point or heading towards the nearest point of relative safety.**

In cases where the planned route will involve walking in poor visibility for an extended period of time (for example, a ridge-walk, or a long section across open moorland), a lower-level alternative route will almost certainly be the better (and wiser) choice. It will certainly be safer and less unpleasant for all concerned. **The leaders must decide the most appropriate course of action bearing in mind all relevant factors. In all cases, if the walk encounters poor visibility, the leaders MUST adopt the defensive tactics outlined above.**

### Driving rain / heavy snowfall

Driving rain / heavy snowfall can make walking uncomfortable, unpleasant, and in extreme cases, dangerous. A low-level alternative will offer a safer alternative while also providing better visibility and more interesting views. However, **the leader must decide the most appropriate course of action bearing in mind all relevant factors.** Much will depend on the strength, variability and direction of the wind, the intensity and expected duration of the rainfall / snowfall, the nature of the terrain and underfoot conditions, the level of experience of the walkers, and the level of experience of the leader. Walking into driving rain or through a prolonged heavy snowfall for hours on end is not an enjoyable way to spend one’s time. In such circumstances, the leader will almost certainly find that the majority of the group are only too happy to accept a decision to alter the walk to use a safer and more pleasant alternative route.

### Cloudbursts and periods of prolonged heavy rain (and associated flooding)

The most significant hazards associated with both cloudbursts and periods of prolonged heavy rain are:

- flooding (on flood-plains, in valley-bottoms, and in other low-lying areas);
- numerous swollen, extremely fast-flowing rivers & streams (including many in places where there is usually no surface water); and
- saturated (and therefore extremely muddy / boggy) ground.

While a close examination of the map may be sufficient to identify areas that will be susceptible to these hazards, this is no substitute for extensive local knowledge. **After heavy rain, the wise leader will anticipate, and be prepared for, the worst.**

- **Flooding: Do NOT walk through (or lead a walk through) extensive floodwater, or along routes where extensive floodwater may become a hazard.** Doing so is EXTREMELY dangerous. Find and use an alternative route (or cancel the walk).
- **Swollen, extremely fast-flowing rivers & streams:** After cloudbursts and periods of prolonged heavy rain, valley floors will contain swollen rivers (and possibly flooded fields – see previous paragraph). Routes that parallel the course of a river, whether it be immediately beside the river, or part-way up the valley sides, will probably be intersected

by a seemingly endless progression of fast-flowing streams – often in places where there is normally nothing but dry-ground or a tiny trickle of water. **Attempting to ford deep or fast-flowing rivers & streams is not only unpleasant, it can be extremely dangerous.** Even a few inches of fast-flowing water can be sufficient to knock a walker off his or her feet, especially if the underfoot conditions are slippery. Also, unless the water is crystal clear, boulders, holes, vegetation and other underwater hazards may remain undetected until the unwary walker trips-over them, falls-down them, or becomes trapped by them. Anyone who does trip (or who is knocked over) can all too easily sustain an injury. On top of this, drowning becomes a real possibility. **Only very fool-hardy walkers attempt to ford rivers or streams under such circumstances. Walk-leaders have a duty of care to both themselves and to the other walkers in the group, so they MUST put safety first and find an alternative route.** The prepared walker / walk-leader will have identified and assessed the potential risk in advance and will have either cancelled the walk, or modified the route at an early stage (to avoid likely problem areas), or identified alternative (diversionary) routes that can be used at short notice – even if the latter means resorting to large sections of road-walking.

- Saturated (and therefore extremely muddy / boggy) ground: Provided there is no significant standing water on this ground (and bearing in mind the notes contained in the two previous paragraphs), muddy / boggy footpaths are usually more an inconvenience than a major hazard for the experienced and well-shod walker. However, walking across (through) muddy / boggy ground can be very hard work **and there is a significantly increased level of risk associated with both:**

- **slipping & falling; and**
- **becoming stuck in deeper than anticipated mud / bog.**

**The leader must assess the conditions on the day and decide upon the most appropriate course of action bearing in mind all relevant factors.** Local knowledge will come to the fore in these circumstances because much will depend on the underlying geology of the area covered by the walk. For example, areas where limestone is at or close to the surface will usually be less-badly affected than areas of gritstone, peat, or glacial till (clay). The reconnaissance walk(s) should have helped the leader to assess the likelihood and extent of any adverse underfoot conditions, as well as the availability and suitability of alternative routes, and the likely impact of such conditions on walk-timings.

### **Extremely high temperatures and / or high humidity**

Extremely high temperatures and / or high humidity can sap the energy of even the strongest walkers. Prolonged exposure to either will cause dehydration and may lead to sunstroke and / or heat exhaustion, especially during very strenuous walks and / or walks in exposed terrain. **Walk-leaders are strongly advised to choose an alternative low-level route** where some shade and / or cooler air may be found (look for sections of woodland, shade offered by buildings, etc.). A bit of shade, even if it is just for a few minutes, will come as a welcome relief to all members of the party. **In extreme circumstances, it may be advisable to cut the walk short.**

## **Lightning (thunderstorms)**

According to the TORnado & storm Research Organization (TORRO):

*“about 30-60 people are struck by lightning each year in Britain of whom, on average, three may be killed”.*

There are three types of lightning strike:

- 1) A *direct strike*: where the lightning hits an object, then travels to ground via (i.e. through or around) that object.
- 2) An *indirect strike or side-flash*: where the lightning hits one object, then arcs across to one or more additional objects (this may be repeated several times before the electrical charge is fully dissipated).
- 3) A *ground strike*: where the lightning hits the ground, then travels outwards in all directions, sending a pulse of electricity through everything or everyone in, on, or close-to the adjacent ground.

### **ALL THREE TYPES OF LIGHTNING HAVE THE POTENTIAL TO KILL.**

Lightning can strike at any time during the passage of a storm, even before it starts to rain or after it has stopped raining. This probably accounts for the somewhat worrying statistic that the majority of lightning-related deaths and injuries occur:

- a) before the storm arrives directly overhead, and
- b) after the ‘worst’ of the storm has passed.

When monitoring the passage of a storm, it is therefore essential to assume that lightning could strike sooner than expected and that it may continue to strike for longer than expected.

Lightning generally seeks-out and follows the most direct and / or the easiest path to ground. This usually means it will strike the tallest and / or most conductive object in the immediate vicinity. Note the ‘usually’: there is no guarantee that this will be the case.

Bearing in mind all of the above, the goals for the walker / walk-leader is are (in order of preference):

- 1) To **completely avoid** areas where thunderstorms are predicted or otherwise likely; OR
- 2) To be safely **inside a structurally sound building** well before the storm arrives and to remain there until well after it has passed; OR
- 3) To be safely **inside a train, bus, car or other fully enclosed metal vehicle** well before the storm arrives, and to remain there until well after it has passed. (NB: ensure that everyone remains completely inside the vehicle and avoids contact with metal parts of the vehicle.)

It should be possible for walkers and walk-leaders to achieve one of these three goals in almost all cases simply by paying attention to weather forecasts, by closely observing changes in the actual weather during the walk, and where necessary, by cancelling the walk or adjusting the route / and or the duration of the walk. **To minimise the SEVERE risk associated with lightning, walk-leaders MUST take reasonable steps to achieve one of the three goals listed above.** When thunderstorms are forecast (or otherwise likely – e.g. on hot, humid afternoons /

evenings), it is **HIGHLY ADVISABLE** to avoid routes that cross or follow areas of high and / or open ground. Walking on high-ground or in open country during a thunderstorm is not only unpleasant, it could prove fatal. It will be much safer to select an alternative lower-lying route where the level of exposure will be significantly reduced and sources of shelter / protection will be more plentiful.

As *most* British thunderstorms occur in the afternoon and / or early evening (especially during Summer & Autumn), it may be sufficient to move the group down to lower levels for the afternoon, and / or to cut the walk short by a few hours. The most appropriate course of action will depend on the exact circumstances. Note the use of the word ‘most’: there **ARE** exceptions - i.e. lightning storms can (and do) occur at any time of the day or night.

**When thunderstorms have been forecast (or when they are otherwise considered likely), the leader must inform the group of this at the earliest possible opportunity - preferably during the briefing at the start of the walk.** This will enable the participants to consider alternatives to the proposed walk, and by managing expectations, it will make it much easier for the leader to alter the route and / or cut the walk short, should the need arise later in the day.

If, despite the above, you are on high-ground or in otherwise exposed terrain when you:

- spot storm-clouds forming in the distance; and / or
- hear a distant rumble of thunder; and / or
- see a distant flash of lightning

**assume the worst and:**

- 1) **Gather the group together and advise them** that there is a storm close-by that may form a serious hazard to the safety of the group. Tell them that the group must stay close together at all times and be ready to obey your instructions immediately.
- 2) **Identify the nearest point of *relative* safety** (do this from local knowledge and / or the map and / or what you can see). Places of *relative* safety in these circumstances include (in order of preference):
  - A group of structurally-sound buildings (preferably inhabited buildings or barns or similar where there is a chance you will be able to obtain permission to shelter inside. Even if you are unable to shelter inside, the relatively high-level chimneys and / or roofs may attract any lightning away from the group. Also, one of the walls may offer some protection from the worst of the wind & rain. However, **warn the group NOT to stand too close to the walls** (in case of falling masonry – resulting from wind damage or a lightning strike).
  - An isolated structurally-sound building (notes as above).
  - A high structurally-sound wall (notes as above).
  - A low structurally-sound wall or a large, stable boulder (notes as above).
  - A patch of woodland containing dozens (preferably hundreds) of trees. **Do NOT seek shelter beneath or close to isolated trees or small groups of trees:** the relative height of the tree(s) may attract lightning, some of which may arc across to nearby objects (i.e. you). Furthermore, if lightning does strike a tree, the tree will often explode, sending chunks / splinters of wood flying through the air like shrapnel. **If you are forced to seek shelter in woodland, try to identify the tallest trees / structures, then ensure that you remain as far away from them as possible.**

- The base of a crag or cliff. If you are forced to shelter near the base of a crag or cliff, **keep well away from the face of the crag or cliff**. If lightning hits the top or face, it may shatter the rock and / or dislodge loose rocks or boulders and these could then cause injury or death.
- 3) **Lead the group towards the selected location** at a pace that is brisk, but safe and maintainable for all members of the group. Advise all members of the group NOT to run (the last thing you need at this point is a slip, trip or fall).
- 4) **Keep an eye on the approaching storm** as you are walking: try to assess:
- how far away it is;
  - the direction in which it is heading; and
  - how fast it is moving.

A useful technique to help you assess the proximity of a thunderstorm is to **count the number seconds between a given flash of lightning and the rumble of thunder associated with that flash. Dividing the number of seconds by 3 will give you the approximate distance to the storm in kilometres.** (To count the seconds, either use a watch, or count slowly by saying one-thousand-and-two-thousand-and-three-thousand-and-four-thousand- etc.) If you do this for successive flashes & rumbles of thunder, you may be able to tell if the storm is getting closer or moving away. However, please bear in mind that some storms can be huge (several tens, possibly even hundreds of kilometres across, and that the lightning you are seeing, may be coming from different parts of the storm. This technique can, therefore, only ever be a very approximate guide.

- 5) **If the storm comes closer than about 10 kilometres** (i.e. there is just thirty seconds or less between the flash and the bang), the risk of a lightning strike should be considered to be extremely high. If you are still some distance from one of the places of relative safety listed above, **the following EMERGENCY PRECAUTIONS must be taken IMMEDIATELY.**
- a) **Keep well-away from large metal objects** such as pylons, overhead wires, metal pipes, metal fencing, metal bridges, railway tracks, vehicles & machinery, etc. as these may attract lightning.
  - b) **Keep well-away from trees** (for the reasons explained earlier).
  - c) **Seek-out the nearest SAFE and relatively dry hollow, ditch, or other low-point in the ground** (because lightning will generally seek-out the highest point(s) in any given area).
  - d) If there is time, **remove all large metal objects** from clothing and rucksacks (especially trekking poles, umbrellas, and metal vacuum flasks, then store these objects in a single location, well-away away from the group. (Large metal objects can attract lightning and, if they do so, it is preferable for them to attract that lightning away from you rather than towards you. That said, this phenomenon is believed to be extremely rare with objects as small as those listed here.)
  - e) Advise everyone in the group to **quickly put-on additional layers of clothing** (to help them keep warm) **along with waterproof trousers & jackets** if these are not already being worn. Plastic or textile survival bags / shelters should also be used to provide some protection from the heavy rain that normally accompanies a thunderstorm, but **do NOT use the silver foil versions** as they may attract the lightning.

- f) Instruct the group to:
- **sit on their rucksacks** (which will help to insulate them from the ground);
  - **in the base of the ditch / hollow** (which will help them remain as low as possible relative to the surroundings – but be wary of channels that could suffer from flash flooding);
  - **with their limbs close to their bodies** preferably with knees drawn-up close to the chest and arms wrapped around the knees; and to
  - **keep their heads down** (i.e. rest heads on knees).
- g) Instruct the group to **remain in this location and position until the storm has passed well away and you advise them that it is safe to move.**
- h) Be aware that the group may now be at risk from surface-water accumulation: i.e. the ditch or hollow may become flooded, which may force you to move.

**Besides being potentially fatal, this experience will be extremely unpleasant for everyone in the group. As stated before, the best policy is to AVOID being caught out in a thunderstorm.**

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