LIGHTNING HAZARD

Online Training

Introduction

Most people are aware of the dangers that can be associated with thunderstorms. In addition to the potential damage to homes and structures caused by heavy rain and forceful winds, lightning strikes can cause serious injury or even death. People involved in activities such working outdoors, need to take the appropriate actions in a timely manner when thunderstorms approach. Those involve in outdoor activities should develop and follow a plan to keep participants and spectators safe from lightning. While most people are usually able to safely weather a thunderstorm from the safety of their home or another building, there are other scenarios that can leave people seriously vulnerable to lightning.

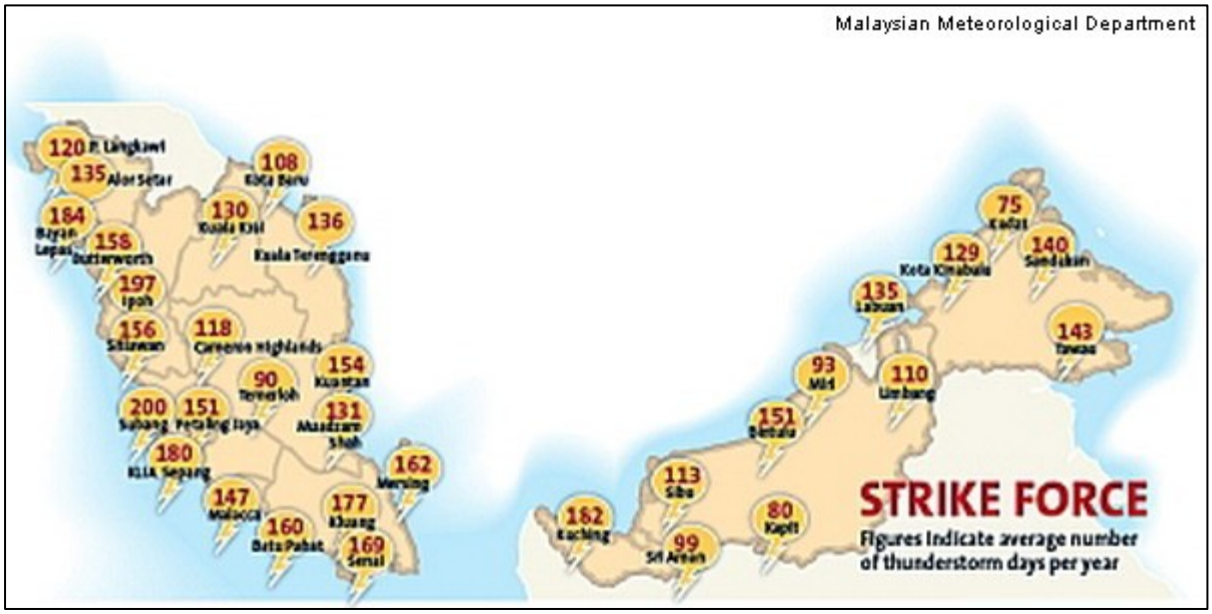
While flying in an airplane or helicopter, thunderstorms become serious threats that can have tragic implications. Even though being struck by lightning while you are on the ground is an incredibly unlikely scenario, the risk of lightning strikes affecting aircrafts is much greater. In fact, an aircraft that is passing through a harsh storm can promote the development of lightning. This is because aircraft generate negative electrical charges which ignite into lightning when the craft encounters an area of clouds that carry a positive charge.

Because unforeseen lightning storms are an occurrence that many helicopter pilots will have to contend with at one point or another, it is common for helicopters to be constructed with thunderstorm safety in mind. In many cases, aircraft designed to withstand a variety of extreme weather conditions can still land safely after being struck by lightning. Although many crews and passengers will be able to achieve a safe return to the ground, the aircraft itself may sustain costly damage that must be repaired before it can take flight again. Some lightning-related damage to major helicopter components can run into the millions of dollars in replacement and repair costs.

LIGHTNING DENSITY IN MALAYSIA

Monthly trends in Malaysia

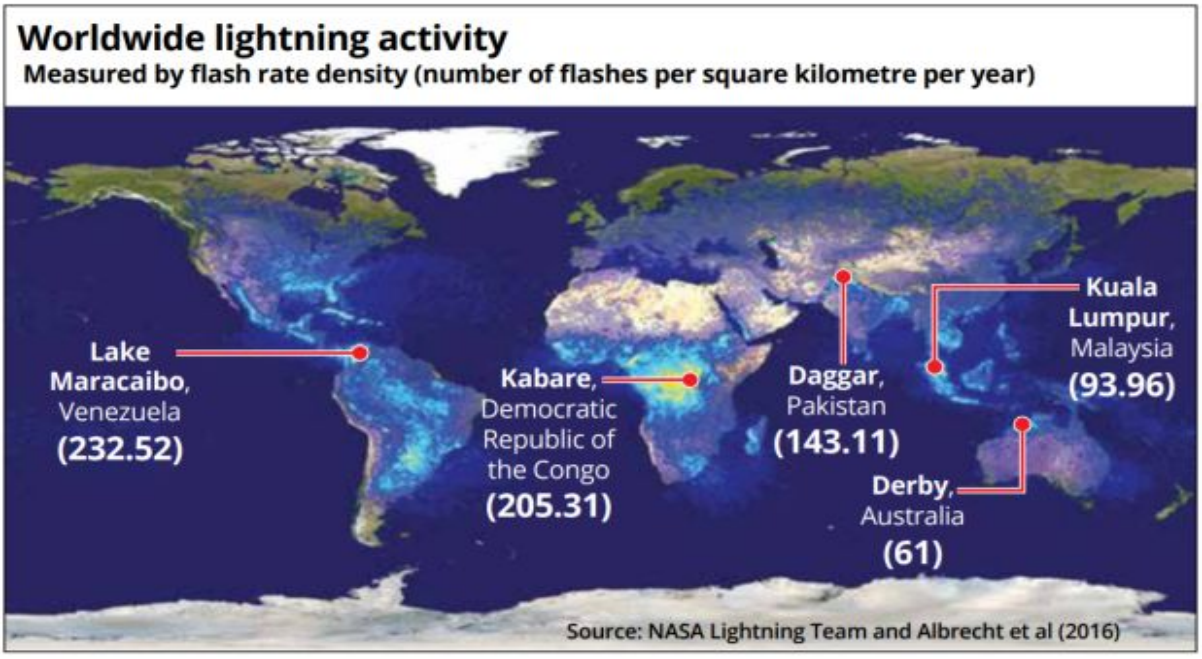
- ***Hight*** – During inter-monsoon (April to May)
- ***Moderate*** – During southwest monsoon (May to September)
- ***Low*** – During Northeast monsoon (December to March)



200	Subang, Selangor	**151**	Petaling Jaya	**118**	Cameron Highland, Pahang
197	Ipoh, Perak	**151**	Bintulu, Sarawak	**113**	Sibu, Sarawak
184	Bayan lepas, Penang	**147**	Melaka	**110**	Limbang, Sarawak
182	Kuching, Sarawak	**143**	Tawau, Sabah	**99**	Sri Aman, Sarawak
180	KLIA Sepang	**140**	Sandakan, Sabah	**93**	Miri, Sarawak
177	Kluang, Johor	**136**	Kuala Terengganu	**90**	Temerloh, Pahang
169	Senai, Johor	**135**	Alor Setar, Kedah	**80**	Kapit, Sarawak
162	Mersing, Johor	**135**	Labuan	**75**	Kudat, Sabah
160	Batu Pahat, Johor	**131**	Muadzam, Pahang		
158	Butterworth, Penang	**130**	Kuala Krai, Kelantan		
156	Sitiawan, Perak	**129**	Kota Kinabalu, Sabah		
154	Kuantan, Pahang	**120**	Langkawi, Kedah		

SUBANG TOPS WORLD FOR LIGHTNING ACTIVITY

According to the climate data provided on the Malaysian Meteorological Department (MMD) website, the Subang weather station recorded 362 days with lightning in 1987. This means that the meteorologists manning the station had observed lightning occurring somewhere in the sky for almost every day of that year. Another measure of lightning activity which is recognised by the World Meteorological Organisation (WMO) is the thunderstorm day. This is defined as a day where thunder is heard at the station which signifies the presence of a nearby thunderstorm. The WMO also has a formula to translate the annual thunderstorm day information into the lightning ground flash density figure. According to MMD records, Subang has an average of 190 thunderstorm days per year which is translated to between 25 and 40 lightning ground flashes per square km per year.



LIGHTNING SAFETY TIPS

Outdoor Safety Tips

The best defence is to avoid lightning that can help you avoid being struck:

1. Check the weather forecast before participating in outdoor activities. If the forecast calls for thunderstorms, postpone your trip or activity, or make sure adequate safe shelter is readily available.
2. Go indoor, remember the phrase, "*When thunder roars, go indoors*." Find a safe, enclosed shelter when you hear thunder. Safe shelters include homes, offices, shopping centers, and hard-top vehicles with the windows rolled up.

3. Seek shelter immediately even if caught out in the open**,** if you are caught in an open area, act quickly to find adequate shelter. The most important action is to remove yourself from danger. Crouching or getting low to the ground can reduce your chances of being struck but does not remove you from danger.
4. If you are caught outside with no safe shelter nearby, the following actions may reduce your risk:
    - Immediately get off elevated areas such as hills, mountain ridges, or peaks.
    - Never lie flat on the ground. Crouch down in a ball-like position with your head tucked and hands over your ears so that you are down low with minimal contact with the ground.
    - Never shelter under an isolated tree.
    - Never use a cliff or rocky overhang for shelter.
    - Immediately get out of and away from ponds, lakes, and other bodies of water.
    - Stay away from objects that conduct electricity (wire fences, power lines, windmills, etc.).

5. Separate If you are in a group during a thunderstorm, separate from each other. This will reduce the number of injuries if lightning strikes the ground.
6. Do not lie on concrete floors during the thunderstorm. Also, avoid leaning on concrete walls. Lightning can travel through any metal wires or bars in concrete walls or flooring.

Indoor Safety Tips

1. Even though your home is a safe shelter during a lightning storm, you may still be at risk. About one-third of lightning-strike injuries occur indoors. Here are some tips to keep safe and reduce your risk of being struck by lightning while indoors.
2. **Avoid water**, Do NOT bathe, shower, wash dishes, or have any other contact with water during a thunderstorm because lightning can travel through a building's plumbing.
3. **Avoid electronic equipment**, Do NOT use your computers, laptops, game systems, washers, dryers, stoves, or anything connected to an electrical outlet. Lightning can travel through electrical systems, radio and television reception systems, and any metal wires or bars in concrete walls or flooring. Equip your home with whole-house surge protectors to protect your appliances.
4. **Avoid corded phones**, Corded phones are NOT safe to use during a thunderstorm. Do NOT use them. However, it is safe to use cordless or cellular phones during a storm.
5. **Avoid windows, doors, porches, and concrete**, Do NOT lie on concrete floors during a thunderstorm. Also, avoid leaning on concrete walls. Lightning can travel through any metal wires or bars in concrete walls or flooring.

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