॥ नमस्ते ॥

ICE & RAIN PROTECTION

Why Ice & Rain Protection Required

- Rain, snow, and ice, are longtime enemies of transportation
- Aircraft airfoils must be completely smooth and free of any irregularities or contamination in the form of ice, snow or frost.
- Even a small amount of surface contamination can reduce lift and raise the stall speed.
- Accidents have occurred due to airfoil surface roughness caused by frost.
- The additional weight caused by ice accumulation is also problematic.

FROST

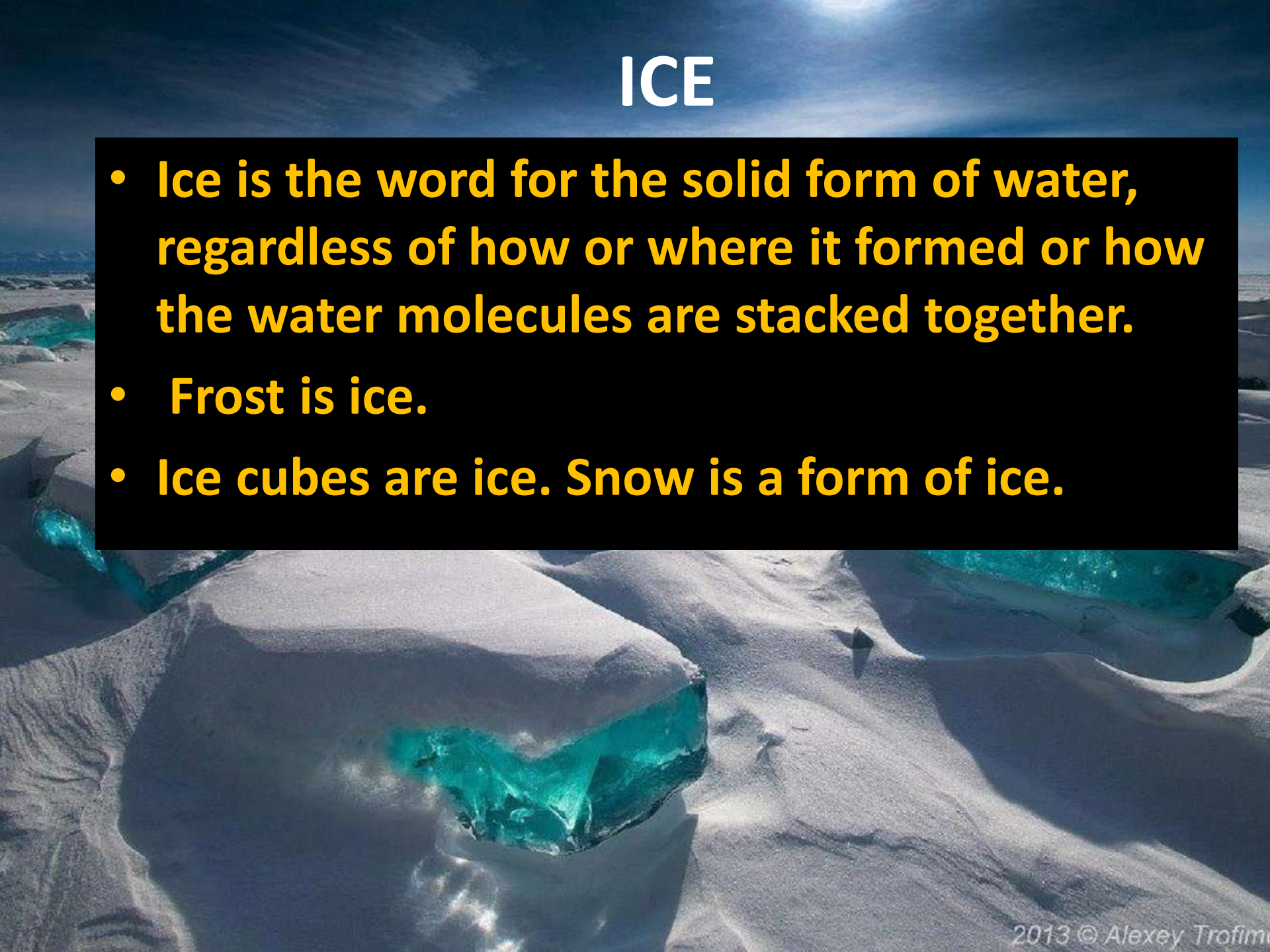
- **Frost is a coating or deposit of ice that may form in humid air in cold conditions, usually overnight.**

SNOW

- Snow is a precipitation in the form of flakes of crystalline water ice.

ICE

- Ice is the word for the solid form of water, regardless of how or where it formed or how the water molecules are stacked together.
- Frost is ice.
- Ice cubes are ice. Snow is a form of ice.



TYPES OF ICE

1. Clear Ice
2. Rime Ice
3. Mixed Ice

1.Clear Ice

- Clear ice forms when the remaining liquid portion of the water drop flows out over the aircraft surface, gradually freezing as a smooth sheet of solid ice.
- Formation occurs when droplets are large, such as in rain or in cumuliform clouds.
- Clear ice is hard, heavy, and tenacious. Its removal by de-icing equipment is especially difficult.

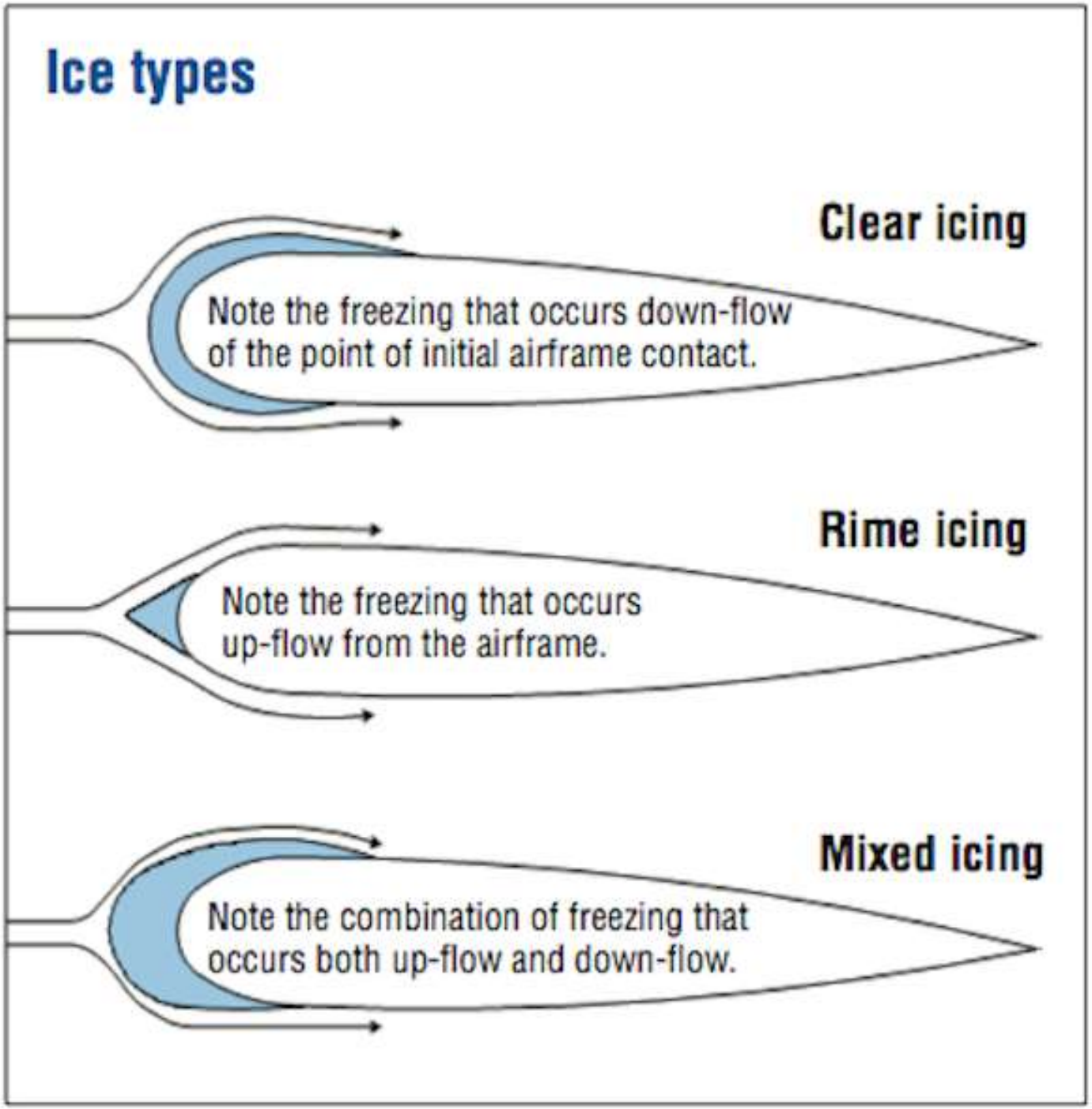
Rime ice

- Rime ice forms when water drops are small, such as those in stratified clouds or light drizzle.
- The liquid portion remaining after initial impact freezes rapidly before the drop has time to spread over the aircraft surface.
- The small frozen droplets trap air giving the ice a white appearance.
- Rime ice is lighter in weight than clear ice, however its weight is of little significance.
- The irregular shape and rough surface of rime ice decrease the effectiveness and efficiency of the aerodynamic airfoils.
- This reduces lift and increases drag.
- Rime ice is brittle and more easily removed than clear ice.

Mixed Ice

- Mixed clear and rime icing can form rapidly when water drops vary in size or when liquid drops intermingle with snow or ice particles.
- Ice particles become embedded in clear ice, building a very rough accumulation sometimes in a mushroom shape on leading edges.
- Ice may be expected to form whenever there is visible moisture in the air and temperature is near or below freezing.
- An exception is carburetor icing, which can occur during warm weather with no visible moisture present.

"Ice Storm" by David Fielding on Flickr


Ice types
Clear icing
Note the freezing that occurs down-flow of the point of initial airframe contact.
Rime icing
Note the freezing that occurs up-flow from the airframe.
Mixed icing
Note the combination of freezing that occurs both up-flow and down-flow.

Today's Amazing Fact???????

SNOW IS TRANSLUCENT, NOT WHITE


ANY QUESTIONS?????

धन्यवाद

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