Tornado Machine

Indonesia Team

The Problem

- *Build a machine to produce an indoor air tornado.*
- *Investigate the properties and stability of the tornado.*
- *Is the machine portative enough to be demonstrated at a Science Fight room of the 5th IYNT?*

What is a Tornado

- *a rapidly rotating column of air that is in contact with both the surface of the Earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud*

How Tornadoes Spin

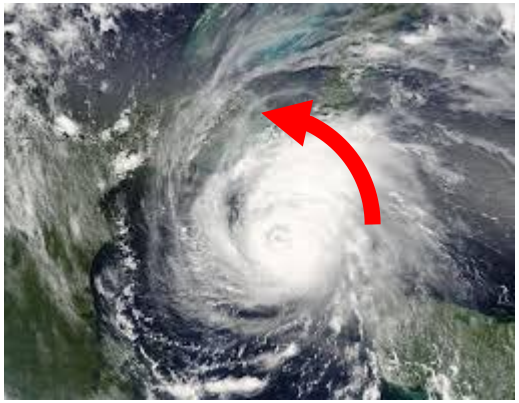
Coriolis Effect of The Earth

*The result of **Earth's** rotation on weather patterns and ocean currents.*

How Tornadoes Spin

Coriolis Effect of The Earth

- Northern Hemisphere
  - Air moves counter clock wise to the center

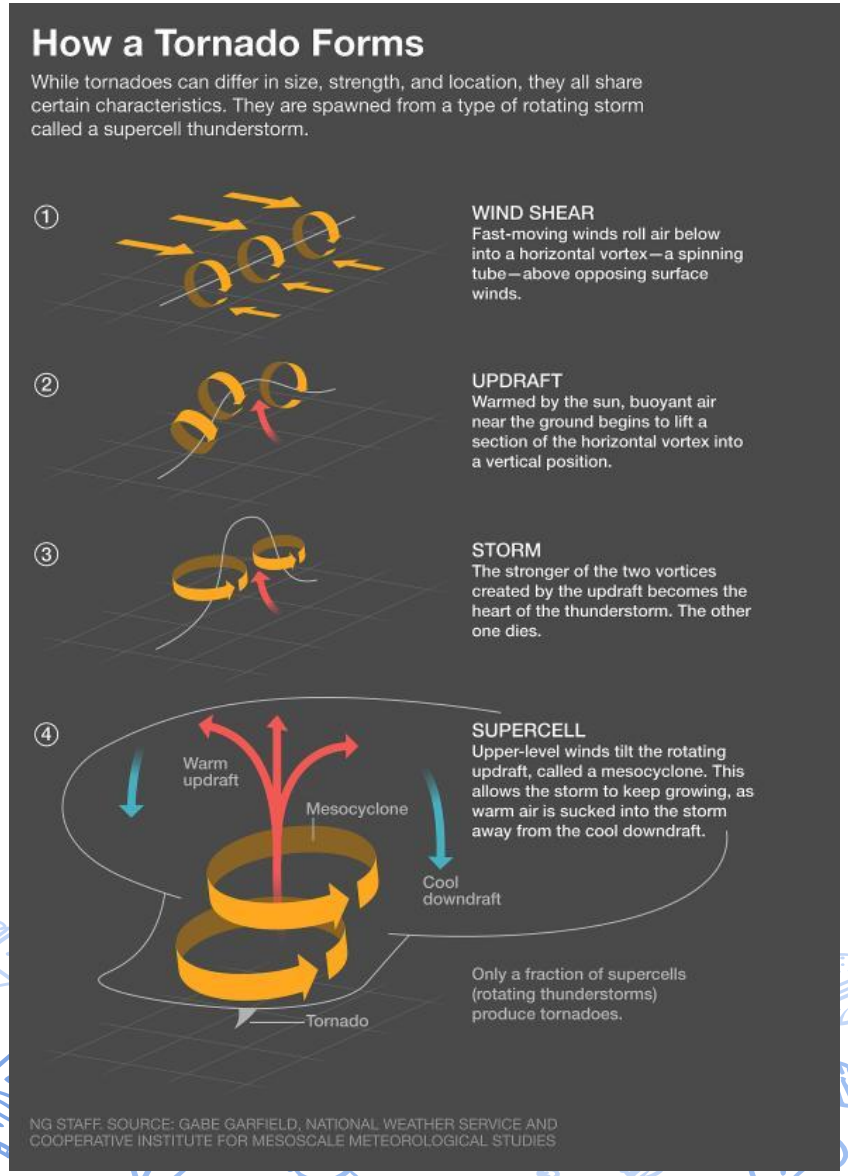


- Southern Hemisphere
  - Air moves clock wise to the center

How Tornado Forms

4 Phases of Tornado

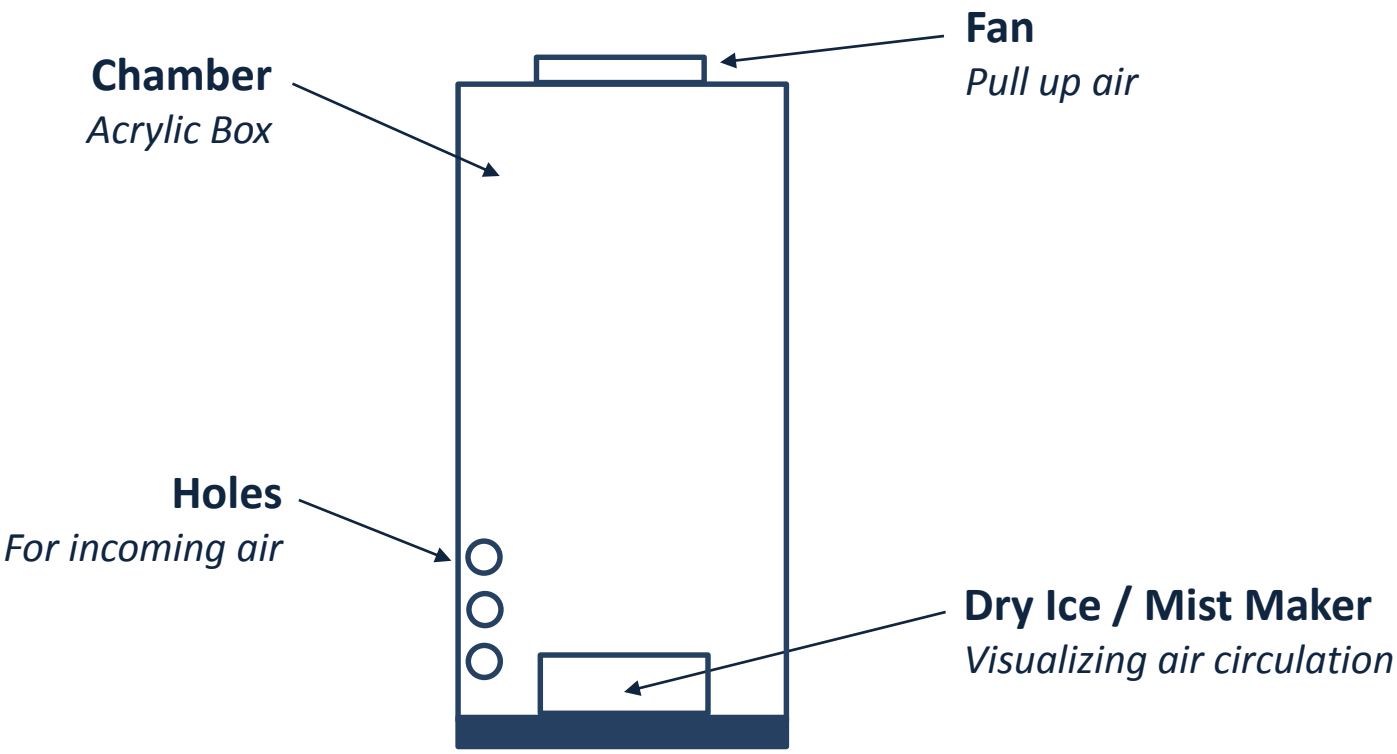
- Wind Shear
- Updraft
- Storm
- Supercell



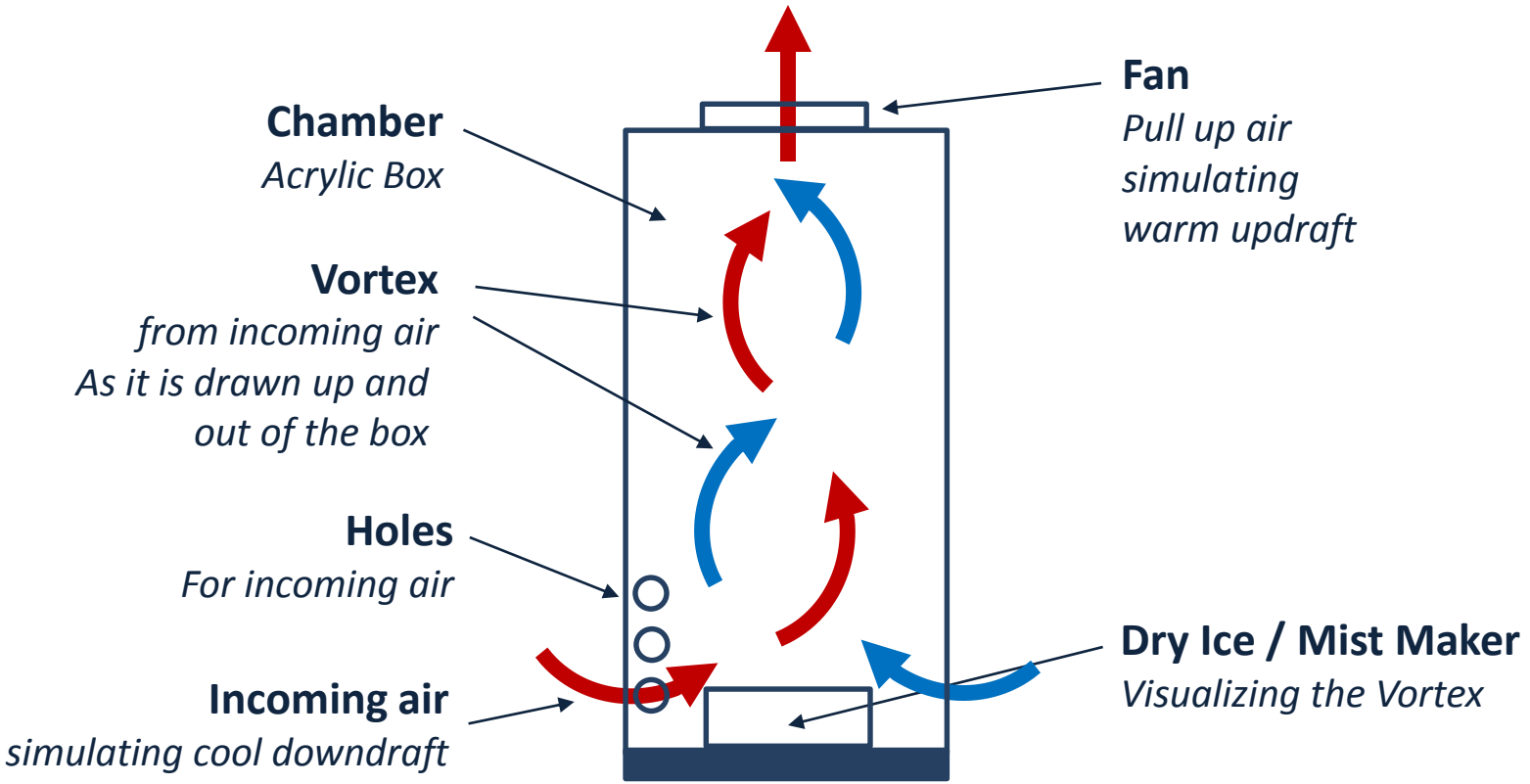
What is a Tornado Machine

A machine that visualize how a tornado looks and how it spins

Model


Fan
Pull up air
Chamber
Acrylic Box
Holes
For incoming air
Dry Ice / Mist Maker
Visualizing air circulation

How does it work



Video

Conclusion

Factors of Stability

- There must be air from outside the machine, yet not that much so it wouldn't disturb the already stabile vortex
- The slots/holes on the sides of the machine must be arranged in a specific pattern, so it will create a vortex

Conclusion

Factors of Visibility

- Fog
  - Dry Ice
    - Creates highly visible tornado
    - Best fog source, small piece of dry ice required
  - Mist Maker
    - Require high volume Mist Maker to create visible tornado
    - Need bigger Tornado Machine to place suitable Mist Maker
- Fan
  - Low speed fan
    - Slow air circulation, more visible vortex

Conclusion

Is the machine Portative?

Yes

Source

- "How Tornadoes Form and Why They're so Unpredictable." *National Geographic*. National Geographic Society, 14 June 2017. Web.
- "Tornadoes." *Tornado Facts and Information*. N.p., 13 June 2017. Web.
- "BUILD YOUR OWN PERSONAL FOG TORNADO!" *ScienceBob.com*. N.p., 20 Apr. 2015. Web.


Thank
you