



Topic/Objective CHAPTER:

NAME:

Tornadoes Pt 1

Pd: 1 2 4 5 other

DATE

Essential Question

How do tornadoes form?

Cue: Review:
Thoughts: Main Idea
video

NOTE Taking AREA:

How do tornadoes form? by TED-Ed

People who
Chase Storms

- Storm chaser
- track down tornadoes

Tornado

- Tornadoes are rapidly ^{Violent} rotating whirling columns of air that form inside storms
- connect w/ground via a funnel of cloud

How they
Form

- Posing a huge threat to life and property
- mostly in **Spring** time b/c temp Δ b/t **cP** & **cT** air
- form from powerful, towering **T_s** called: **SUPERCCELLS**
↳ extremely powerful **T_s**

Supercells

- can reach over 50,000 ft
- bring high force winds
- hailstones (giant)
- Flooding
- great flashes of lightning
- Breed Tornadoes but only under specific conditions are in place.
- are associated w/sever **T_s**

hailstone

- **ball of ice** that is caught in the convection current until gravity pulls it down to the surface; OR

CONVECTION CURRENT WEAKENS

Hail forms - Partly because the presence of supercooled H₂O drops



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NOTE Taking AREA:

Ingredient
for a tornado
to form

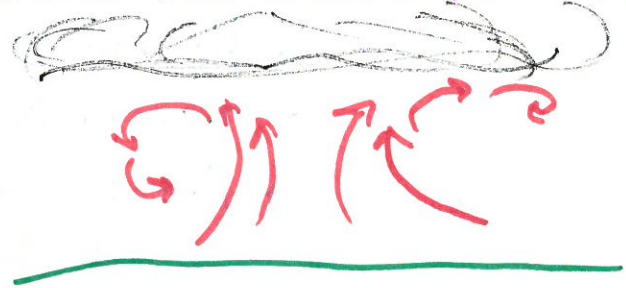
- 1) **rising air**
- any storm is formed when
Condensation occurs,

Condensation: - by products of the clouds which
release heat

- Heat is the energy that drives
huge upward drafts of Air.

- more condensation the more powerful
the updrafts.

- as air climbs
it can change
direction.



- at the BASE of cloud... lots of moisture
will allow storm to feed off later.

Why Air rotates horizontally

**Wind
Shear**

- Thus the Sudden Δ in wind speed and
direction is the cause of why air rotates
horizontally. this is known as: **Wind Shear**

SUMMARY:

microbursts is a **powerful** downdraft that
affect an area **less than 3 km**

Downburst are violent downdrafts of air that
are concentrated in 1 local area



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Tornadoes pt 2

Essential Question

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NOTE Taking AREA:

Ingredient
for a tornado
to form
Vortex

- 2) a **Vortex** can develop which air is pulled upwards.

- wide, tall, tube of spinning air.

- a tornado's characteristic

↳ spinning



Mesocyclone

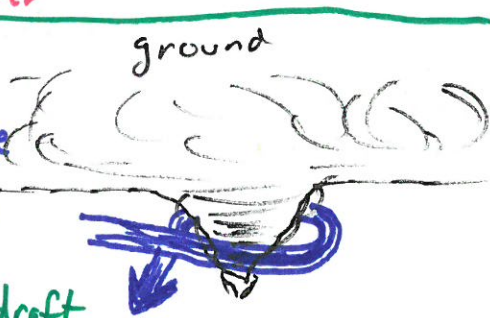
- Low Pressure spinning

cloud from the sky →

- Air is removed from center

Rear flank
downdraft

- wrapping around on the back side is cool, dry, sinking air, which creates "Rear Flank downdraft"



Downbursts

- Violent downdrafts that are local to the area

- This created a temperature difference b/t air inside mesocyclone & air outside which creates level of instability that allows a tornado to thrive.

- Lower part of mesocyclone becomes tighter, increasing the speed of wind and if it lowers toward the ground, it sucks it in & turns it into a rotating

wall of cloud. this is Extreme Pressure Gradient

- the center ~~area~~ of air is **Low Pressure**

NOTES CONTINUE ON OTHER SIDE

due to downdraft



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NOTE Taking AREA:

- the second the tube touches the ground, it is called a: **Tornado**

- you see tornado b/c of the dust & debris in the air.

- Small in size

- Short lived (usually)

- wind speed between 65 to 110mph

- Some can go ~~200 miles~~ ^{over an hour} long with wind speed up to 200mph

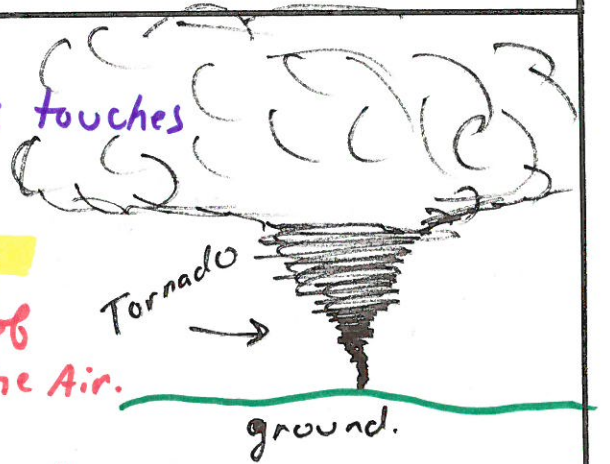
- 200 mile path unbroken ^{~ 4 hours}

- 73 mph (at 1pt) and over 1 mile wide

- Tornado ends when the temperature differences disappears & conditions grow more stable, or the moisture in the air dries up, its momentum is lost and draws up inside

most occur in the Central (**great plains**) a.k.a. **Tornado Alley** b/c **CP** air collides

w/ **mT** air



See it?

Tornado

Tri-state
tornado

Tornado
ends

SUMMARY:

Tornadoes form when wind speed & direction shift suddenly w/height. This horizontal rotation can be shifted to vertical w/updraft.

EF Scale (enhanced Fv)