

Tornado in a Box Lab!



Background:

Have you ever observed a very small circulating pressure system (called a dust devil) moving across a flat dusty area or a littered parking lot, twirling dust or debris that defined it and its movement? If so, what time of day and time of year was it observed? How long did it last? Did you notice anything in particular interfering with its duration or movement? Today we will be recreating these small circulating pressure systems in a tornado box!

Essential Question:

Is there a relationship between surface heating (temperature) and the formation of a tornado?

Procedure:



- 1. Fill the beaker up with 500 milliliters of water.
- 2. Place the beaker on the hot plate and put the thermometer in the beaker.
- 3. Reference the data table below to determine what temperature the water needs to be before pouring it in the bowl, inside the tornado box.

- 4. When water has reached the correct temperature, use your heat-protective gloves to pour the water into the bowl inside the tornado box.
- 5. Shut the door and make sure it is latched.
- 6. Start a timer as soon as you see a swirling cloud inside the tornado box.
- 7. Stop the timer when the swirling cloud has completely disappeared.
- 8. Record your times in the table below

Temperature	Time Tornado Lasted	Other Observations
50° C		
75° C		
100° C		

Draw what is going on inside the tornado box. Think about air flow

and heat!



Name_____

Analysis Questions!

- 1. During your experiment, where is the pressure the lowest?
- 2. What causes the air to rise?
- 3. What causes the air to rotate?
- 4. Which trial had the longest lasting tornado?
- 5. How does surface heat affect severe storms?

6. One effect of global warming is a summer season that lasts longer and days that are hotter. What effect would this have on the frequency and intensity of storms in Indiana?