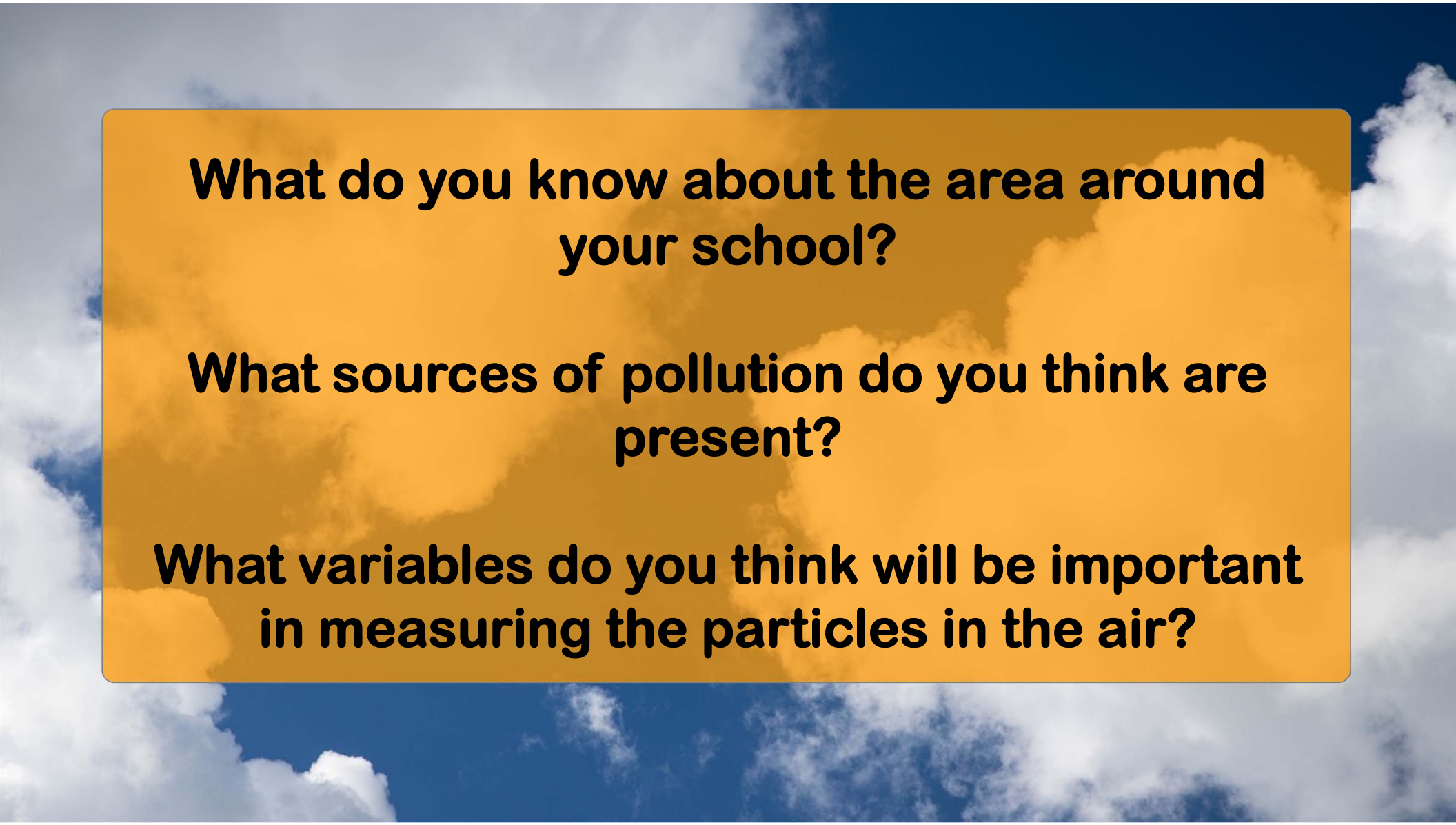

WHAM
Why Healthy Air Matters
Air Quality Education by South Coast AQMD
South Coast
AQMD

# AirBeam 2

- Low-cost sensor
- Measures particulate matter (PM10, PM2.5 and PM1), relative humidity & temperature
- Uses a light-scattering method to detect particles
- Takes a reading every 1.5 seconds

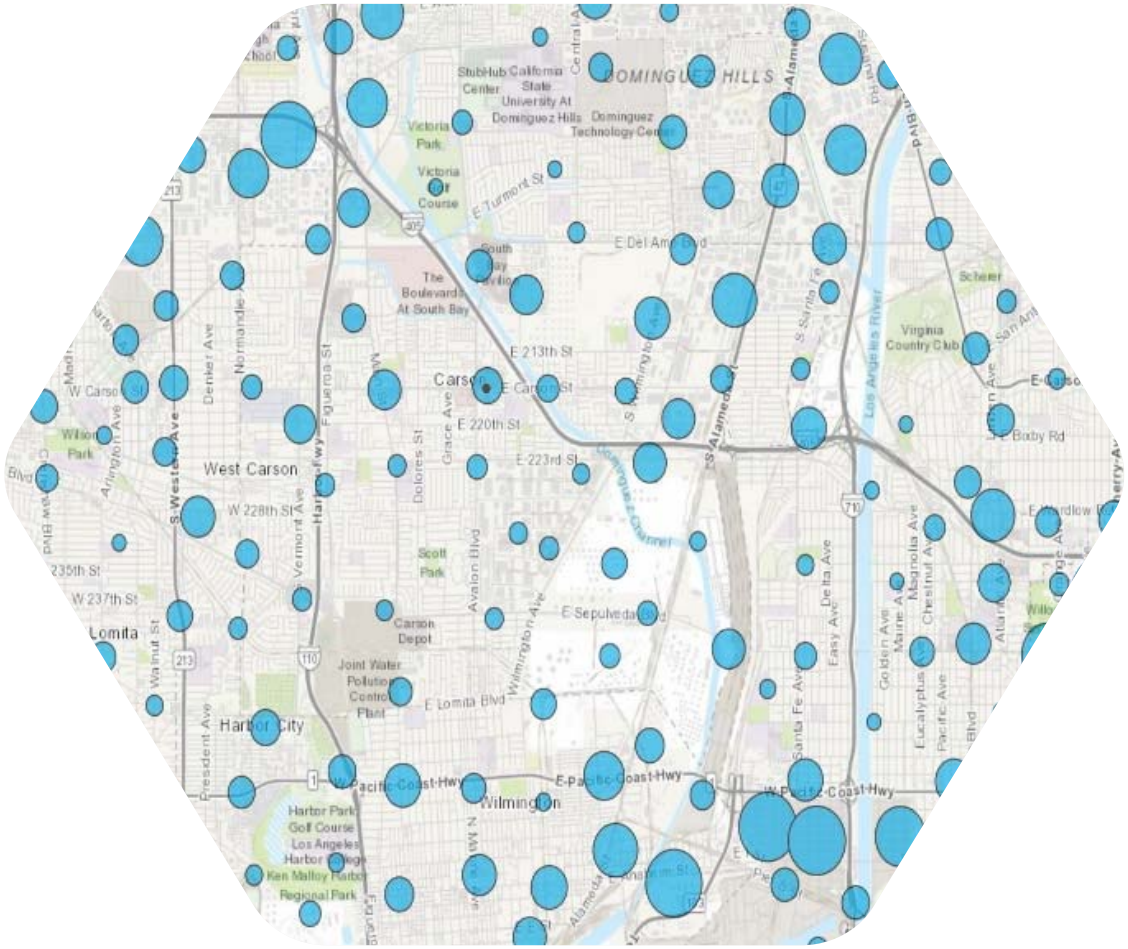

What do you know about the area around your school?
What sources of pollution do you think are present?
What variables do you think will be important in measuring the particles in the air?

# Mapping Sources of Pollution

- Using the map you've been provided, we will look at the area around the high school.
- Try to locate where you think particle pollution will be high and where it will be low and mark those places on the map.

# Facility INformation Detail (F.I.N.D.)

- Go to: www.aqmd.gov/FIND.
  - Type in city, and find the facilities around the high school.
  - You can also go to: https://www.aqmd.gov/nav/FIND/facility-information-detail and click on “Click Here to Search the Facility Map,” and type in your school’s address in the search bar.



# Weather Factors

## Temperature

### Warm temperatures

- Can cause liquid chemicals such as paints, solvents, gasoline, and diesel fuel to evaporate into gases more quickly.
- These gases then react with each other in the air to form ozone and PM.
- Warm temperatures also speed up the chemical reactions that form ozone.

### Cold temperatures

- can create conditions that trap wood smoke near ground level.
- Wood smoke contains many particles, so when it gets trapped like this, it can cause high PM concentrations.

# Weather Factors

## Wind

- Blows emissions from sources in one area to other areas
- When winds are calm (or stagnant), emissions that form ozone or PM remain in the local area and build up, resulting in higher pollution levels.
- When winds are strong, pollutants are dispersed and their concentrations decrease.

# Weather Factors

## Inversions

- A layer of cool air trapped near the ground by a layer of warm air that lies above it.
- Can be created in coastal areas, for example, by cold sea air being pushed onto the land by the sea breeze.
- Can last all day or for several days.
- When pollution is emitted into the cool air near the earth's surface, it is trapped by the inversion and can build up, leading to higher levels of both ozone and PM.

# Weather Factors

**Relative Humidity**

- A measure of how close the air is to forming fog or clouds.
- High relative humidity increases particle formation.
- High relative humidity also means that there is more moisture in the air, and this moisture gets absorbed by particles that swell and reduce visibility.
- When humidity is high, the PM sensor may over-report the concentration of particles in the air.

# Weather Factors

## Clouds

- Sunlight drives the chemical reactions that form ozone.
- Clouds reduce sunlight and slow these reactions, reducing ozone concentrations.

# Weather Factors

## Rain

- Can remove large particles from the air
- Not very effective at removing small particles

# Weather Factors

**Atmospheric Pressure**

- Provides us with a good indicator of other weather conditions
- If there is high pressure in an area, it usually means warm temperatures, sunny skies, light winds, and temperature inversions—typical conditions for high pollution concentrations.
- If there is low pressure in an area, it generally means cool temperatures, cloudy skies, no temperature inversion, and sometimes rain and strong winds—typical conditions for low pollution concentrations.

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## Questions?