**Adopt-A-City Weather Unit**

**How to Use:**

For every day of the unit there are different tasks listed. Each student will begin all of the tasks, but might not proceed in the order listed. For days that have “Journal Questions”, please answer them on the same paper. Be sure to date the entry. Each entry should be informative and descriptive. **Homework, if any,** in this unit comes from any unfinished tasks. All homework is due the next class day.

**Key Objectives**

Upon completion of this unit, you will be able to:

● Define weather, and identify the atmospheric characteristics used to describe it.

● Describe the relationships between important atmospheric characteristics.

● Explain how clouds and precipitation form.

● Construct weather maps, given weather information at numerous locations, and identify the positions of air masses and fronts.

● Predict weather and the movement of weather systems based on current weather maps.

● Describe the weather conditions associated with the various types of frontal boundaries.

● Explain how weather information can be used to make forecasts.

● Identify the conditions that typically lead to various weather such as hurricanes and tornadoes.

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| **Day 1**   * Record Today's Weather * Finding Your City * Learn About Weather * Start Recording Astronomy Data   **Journal Question –** Weather, How can weather be described? | **Day 2**   * Record Today's Weather * Start Recording Your City's Weather * Start Recording Astronomy Data   **Journal Question –** How can weather be described? Air Humidity, What are the relationships among several atmospheric variables? | **Day 3**   * Record Today's Weather * Record Your City's Weather * Start Recording Astronomy Data * State Facts |
| **Day 4**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Writing: Weather Report   **Journal Question –** What information is shown by weather maps? How can we forecast the weather? | **Day 5**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Interactive Tutorial for Drawing Isotherms | **Day 6**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Worksheet: Air Masses   **Journal Question –** How can weather information be used to make forecasts? |
| **Day 7**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Informal Lab: Winter Weather   **Journal Question –** How do clouds and precipitation form? | **Day 8**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Winds and Fronts   **Journal Question –**How can weather information be used to make forecasts? Fronts & Cyclones | **Day 9**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Extreme Weather   **Journal Question –** When and how are the most hazardous weather situations likely to occur? |
| **Day 10**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Cloud Identification * Presentation of Collected Data for Your City | **Day 11**   * Record Today's Weather * Record Your City's Weather * Record Astronomy Data * Plot Your City's Weather * Presentation of Collected Data for Your City   **Review –** Finish up pamphlet and study for test. Study guide questions on | **Day 12**   * Presentation of Collected Data for Your City |

Record Today's Weather

Record today's weather, using our weather station and Weather Underground, in your “Raleigh, NC Weather Log” handout. You will be given a specific weather variable to research and provide.

Weather Underground -

<http://www.wunderground.com/US/NC/Raleigh.html>

Finding Your City

1. What city did you get? Circle the name of your city on your handout.

2. Find and color your state on your black map of the US.

3. Look at a map of your state, can you find your city?

USA Atlas -

<http://www.infoplease.com/atlas/usa.html>

4. Plot your city on the Blank USA map.

Learn About Weather

1. Watch the BrainPOP move on weather.

BrainPOP What is Weather - <http://tinyurl.com/yek82r>

2. Take the BrainPOP quiz on weather on your own sheet of paper. Submit your answers.

Start Recording Your City’s Weather

1. What is your city’s zip code?

US Zip Codes-

<http://www.usps.com/zip4/citytown_zip.html>

1. Using the zip code and Weather Underground, find the current weather conditions and record in your “Adopted City Weather Log” handout.
2. What is the latitude and longitude of your city? (You can find this on the Weather Underground website in the top right corner, after you put in your zip code?

Record Today's Weather

Using the zip code and Weather Underground, find the current weather conditions and record in your “Adopted City Weather Log” handout.

Weather Underground -

<http://www.wunderground.com/US/NC/Raleigh.html>

Record Astronomy Data

On Weather Underground, scroll down to “Astronomy Data” and record the Sunrise, Sunset, Day Length and Moon Rise Data for Raleigh NC & “Your Adopted City.”

State Facts

Find the information requested on the “States Information Sheet.” Resources for information include books, atlases, US Flash Cards and 50 States (<http://www.50states.com>).

Plot Your City’s Weather Data

Using proper station model symbols (found in this packet), plot the data you have gathered for today about your adopted city.

Weather Report (Groups of Three)

1. Using your Raleigh, NC weather data, compile this to create a full weather report that covers all of the variables recorded. You may use data from the other cities around the US if that helps you in your reporting/ forecasting.
2. Write out your script. No groups may present or begin their report without an approved script.
3. Reports must be pre-recorded for presentation. Present this report as if you are newscasters.
4. Create and use visualizations to support your presentation. Props are strongly encouraged.

What Is An Isotherm?

An isotherm is a line connecting locations with equal temperature. Isotherm maps show where temperatures are relatively high and low, and also where temperature changes are gradual or dramatic over a distance

What do they look like? Isotherms for current weather

<http://ww2010.atmos.uiuc.edu/(Gh)/wx/surface.rxml>

(click on “Surface Temperatures”)

What Is An Air Mass?

An air mass is a large body of air that has similar temperature and moisture properties throughout.

Complete the following assignment and submit. [Air Masses.](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/af/arms/home.rxml)

Informal Lab: Winter Weather

Complete [lab](TASK%207%20cont.docx) on Winter Weather. Complete the activity and submit it in the folder.

Winds and Fronts

An air mass is a large body of air that has similar temperature and moisture properties throughout.

1. Fill out the remainder of the [“Winds and Fronts”](Fronts.pdf) worksheet.
2. Types of Fronts -<http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/af/frnts/home.rxml>
3. Current Weather Map with Fronts -<http://www.weather.com/maps/maptype/currentweatherusnational/index_large.html>

Severe Storms

Complete the activity on Severe Storms. Complete the online activity to identify severe storms for your Adopted City and Raleigh, NC, place correct information on a document to submit.

Cloud Identification

Complete [worksheet](Cloud%20Worksheet.docx) on Clouds. Complete the online activity to identify clouds and place correct information on the worksheet to submit.

1. Watch the BrainPOP move on Clouds.

BrainPOP Clouds - <http://tinyurl.com/yek82r>

2. Take the BrainPOP quiz on Clouds on your own sheet of paper. Submit your answers.

Presentation of Collected Data

for Your City

Compile a travel brochure for your city including climate information based on weather data collected through research. The travel brochure must have the following:

1. The name of your adopted city.
2. Information about the state in which your city resides. (State Facts)
3. Information about the climate this time of year including average temperatures and average conditions.
4. Information about which air mass dominates the weather system of your city.
5. At least two color images related to your city.
6. Your name, the date, and the period on the back of the brochure.
7. Well written, complete sentence text trying to convince me to vacation in your city.
8. Remember, if I book a hotel room in your city, you get paid. Make me want to do just that.
9. Must be typed.
10. Brochure must have information on both sides of the paper.
11. Attach your “Adopted City Weather Log” to your brochure when turning it in.

Final Submission

All contents of the Project, should be submitted in the provided folder. Video presentations, should be emailed, with the subject “Adopt-A-City Project: (Name) (Class Period)”.