

**Kimberly Stedner-Clayton - Atmosphere 2**

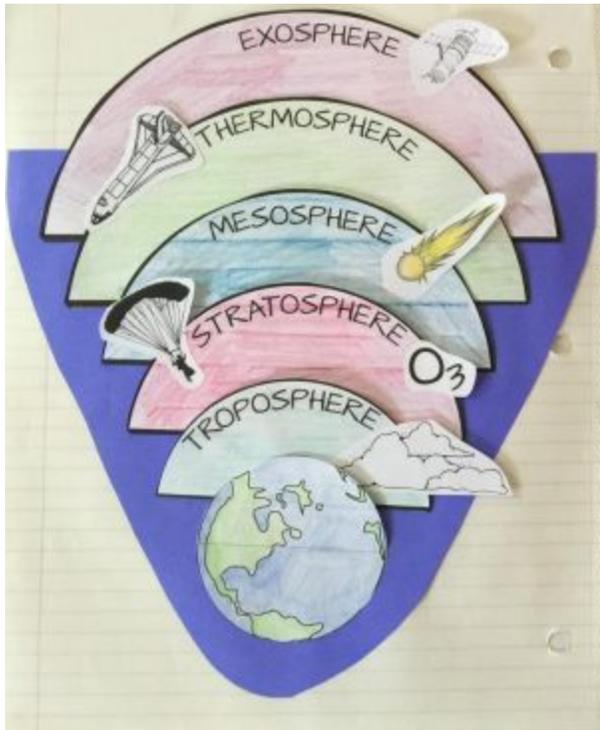
**This is part of a unit lesson, this lesson should take about 2 class periods**

<b>Teacher: Kimberly Stedner-Clayton</b>	<b>Grade Level: 9 - Science</b>
<b>Teacher Preparation</b>	
<b>NC Essential Standard and Clarifying Objectives:</b>  EEn.2.5.1 Summarize the structure and composition of our atmosphere.  HS.TT.1.1 Use appropriate technology tools and other resources to access information HS.TT.2.1 Use appropriate technology tools and other resources to organize information	
<b>Materials:</b> <i>Provide a comprehensive list.</i> Lab Stations, foldable for INB, internet, Chromebooks, INB for notes	
<b>Essential Question:</b> What is air made up of? What are some properties of air? Is our air homogeneous or does it change with elevation?  <b>Lesson Objective:</b> <i>What do you want the students to understand and to be able to do?</i>  Understand and explain the importance of our atmosphere.	
<b>Misconceptions:</b> <i>What misconceptions did you identify through your research and your interviews with students?</i> Air has no mass Air is the same no matter where you go.	
<b>Learning Experiences</b>	
<b>ENGAGE</b> <i>How will you elicit prior knowledge? How will you “hook” students?</i>  Students will watch the following video (“What would happen if the Earth’s atmosphere disappeared”: <a href="https://www.youtube.com/watch?v=d5pMOyPiOaM">https://www.youtube.com/watch?v=d5pMOyPiOaM</a> ) While watching the video, students will write down things that may surprise them or shocked them. After jotting these things down, students will share their surprises and we will discuss them as a class. I want students to think about how the atmosphere protects us, if our atmosphere was to disappear, what effects would it have for life as we know it.	
<b>EXPLORE</b> <i>What “hands-on” activities will you include that require students to be involved in scientific practices? Specify the science practices they will engage in. What “minds-on” activities will you include that require students to think critically? How will students demonstrate evidence of their learning through their explorations?</i>	

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Students will be given cutouts to make the following foldable in their INB.



Students, while researching the order of the layers in the atmosphere, will also write a description of each layer.

Students should note the following information when researching the layers in the atmosphere; Most abundant gas in the atmosphere, what forms when lightning interacts with oxygen in the air, which layer protects the earth most from being hit with meteoroids, what happens to air pressure when altitude increases, how are the main layers classified (by changes in), which layer helps protect the earth from too much ultraviolet radiation, and the types of clouds at each level (if any).

**EXPLAIN** *What data will students share prior to your explanations? How will you help them draw connections and use their data to explain the science concepts? What specific questions will you ask them that will require higher order thinking skills? What specific science content (tied to standard) do you want students to understand? Include a detailed explanation of the science concepts you desire students to understand.*

We will discuss the information students researched as a class to create a page of notes for their input page in INB. The information will include (if they do not have it, I will gear them towards it) 1. Importance of the atmosphere: support life on earth and protect us, creates and controls weather and climate. 2. Composition of the air in the atmosphere: 78% nitrogen, 21% oxygen, .9% argon, .03% carbon dioxide, .17% other gases (Neon, methane, Kyrpton, and hydrogen). 3. How each of the gases are important to life on earth. 4. How atmospheric pressure changes. 5. How the atmosphere is warmed. 6. Layers of the atmosphere, importance key points of each layer.

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**ELABORATE** *How will your Elaborate phase have students apply these science concepts to new situations? How will they make connections between these concepts and other disciplines (literacy, math, etc...?)*

Students will work through 8 stations regarding the earth's atmosphere, these are stations that are from Kesler Science, they consists of Read It! Write It! Assess It! Research It! Illustrate It! Explore It! Watch It! Organize It!

### Kesler Science Station Lab – Atmosphere – Teacher Directions

**Explore It!** – You will need to cut the included cards into two sets of 5. The students will first put the blank layers in order using the "extends from Earth" measurements on the card. They will then read the additional 5 cards and try to place them in the correct layer. I would consider printing out an answer document to quick check their work.

**Illustrate It!** – Students should be encouraged to do the Research and Explore station before attempting this one. Make sure to include colored pencils or crayons at this station.

**Read It!** – Print several different copies (I use 6) of the reading passage so that multiple students can read at different paces.

**Watch It!** – The video is on YouTube and my Google drive. Use YouTube unless your school is blocked. The original link is <https://www.youtube.com/watch?v=5sg9sCOXFIk>  
Note that URL's are case-sensitive.

**Organize It!** – All of the cards are included for this station. Students will have to do the Research station before attempting this one. I like to label the backs with set numbers because they will get mixed up. Place this one next to the Explore It! Station.

**Write It!** – Students should be encouraged to do the Research and Explore station before attempting this one.

**Research It!** – The goo.gl link on the task card is case-sensitive. The original link is Video - <https://scied.ucar.edu/cloud-types>  
Game - <https://scied.ucar.edu/webweather/clouds/cloud-matching-game>

**Assess It!** – Students should be encouraged to do the Research and explore station before attempting this one. If I grade anything I usually take a close look at the answers from this station.

Students really enjoy this activity and it reinforces what they are learning.

**EVALUATE** *How will student learning be assessed? By what criteria will student work be judged? Include a detailed rubric.*

This assignment will be due at the end of the unit of study. Students will be given this information ahead of time to help them look for specific information while learning this unit. Since we are studying how the structures of Earth's atmosphere and the weather found here, students will choose from the list below, a topic to research. After students complete their research, they will design a presentation that we will be able to view through a gallery walk. The presentation design is of their choice; PowerPoint, Slides, game, model, video, etc. Students are to have fun with this and remember that it must show how the structures and processes within our atmosphere.

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Weather in the Troposphere and compare/contrast to 2 other layers of the atmosphere, Winds, local and global, in the Troposphere (they need to compare our location, Goldsboro, NC and at least two other locations in the world, one being in the Southern Hemisphere), Density of the atmosphere (they need to look at two different seasons), and water vapor in the atmosphere and technology (they will be given the article NASA, Scripps Institution of Oceanography Shake-up Earthquake Warning Systems, R. Garner, to help guide them.)

**This will be a group assignment, 2 to 3 people per group.**

**Kesler Science for the lab stations, purchased from Teacher Pay Teacher.**