We have created a guide to get you started. This is designed to be a starting point that can be tweaked to your individual style/needs. Included in the general plan are the standards/access points, vocabulary, key questions and links to a variety of resources including tutorials, informational text, videos, experiments and sample activities. All of the links in this file are live and clicking on the standard will take you directly to C-Palms.

PowerPoints for Atmosphere and Weather:

Visual Vocabulary [Click here](http://accesstoflsresources.weebly.com/uploads/2/3/7/3/23739164/5.__atmosphere_and_weather_visual_vocab.pptx)

Key Questions [Click here](http://accesstoflsresources.weebly.com/uploads/2/3/7/3/23739164/5._atmosphere_and_weather.essential_questions.pptx)

*Drafted by Sarasota County Teachers Dawn Byrne, Jeremy Johnson and Elizabeth Lewis, piloted 2016-17 in 5 classes and general education content review by Betsy Summerlee.*

|  | Atmosphere and Weather |
| --- | --- |
| **Unit/Topic Standard** | [SC.912.E.7.5:](http://www.cpalms.org/Public/PreviewStandard/Preview/1897) Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions[SC.912.E.7.6:](http://www.cpalms.org/Public/PreviewStandard/Preview/1898) Relate the formation of severe weather to the various physical factors. |
| **Access Points** | [SC.912.E.7.In.5:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8245) Identify weather conditions using weather data and weather maps. [SC.912.E.7.Su.5:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8246) Identify weather conditions, including temperature, wind speed, and humidity. [SC.912.E.7.Pa.5:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8247) Recognize the weather conditions, including severe weather, in Florida. [SC.912.E.7.In.6:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8248) Compare weather conditions in different types of severe storms, including hurricanes, tornadoes, and thunderstorms. [SC.912.E.7.Su.6:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8249) Recognize conditions in severe storms, such as hurricanes, tornadoes, and thunderstorms. [SC.912.E.7.Pa.5:](http://www.cpalms.org/Public/PreviewAccessPoint/Preview/8247) Recognize the weather conditions, including severe weather, in Florida.  |
| **Vocabulary** | Atmosphere, gases of the atmosphere, layers of the atmosphere, Troposphere, Stratosphere, ozone layer, Mesosphere, Thermosphere, Ionosphere, Aurora Borealis, exosphere, magnetosphere, Jetstream, weather, meteorology, climate, forecast, prediction, air temperature, air pressure, wind, wind speed, humidity, clouds, precipitation, water cycle, weather map, warm front, cold front, thunderstorm, tornado, hurricanes, storm warnings, storm preparedness |
| **Key Concepts** | * What Are the Layers of the Earth’s Atmosphere?
* What is the Ozone Layer and Why is it Important?
* What Causes the Aurora Borealis?
* What are Wind Systems and What are the Factors that Affect Them?
* What is the Difference Between Climate and Weather?
* What are Jet Streams and How Do They Affect Weather?
* What are Air Masses and How Do They Create Fronts?
* How do Clouds Form?
* What is Precipitation?
* How Does Lightning Form?
* How Do Severe Thunderstorms Generate Tornadoes?
* How do Hurricanes Form?
* What is the Structure of a Hurricane?
* What is Meteorology?
* What do the Symbols on a Weather Map Mean?
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| **References** | * Earth’s atmosphere, interactive and a quiz at the end: [Click Here](http://studyjams.scholastic.com/studyjams/jams/science/weather-and-climate/earths-atmosphere.htm)
* Ozzy Ozone video 10 minutes: [Click Here](https://www.youtube.com/watch?v=WKrPd-8CJBM)
* Aurora Borealis video 10 minutes: [Click Here](https://vimeo.com/25811412)
* Interactive and quiz on Air Pressure and Wind: [Click Here](http://studyjams.scholastic.com/studyjams/jams/science/weather-and-climate/air-pressure-and-wind.htm)
* Interactive and quiz: [Click Here](http://studyjams.scholastic.com/studyjams/jams/science/weather-and-climate/weather-and-climate.htm)
* 6 4 9 Global Winds and Jet Streams video 5 minutes: [Click Here](https://www.youtube.com/watch?v=GvXPtQuQtiU)
* Interactive and quiz, Air Masses and Fronts: [Click Here](http://studyjams.scholastic.com/studyjams/jams/science/weather-and-climate/air-masses-and-fronts.htm)
* Video how clouds form and the various types of clouds: [Click Here](https://www.youtube.com/watch?v=DjByja9ejTQ)
* Video 6 minutes, What is Precipitation: [Click Here](https://www.youtube.com/watch?v=SesRrocIFtc)
* How Lightening Works, video 5 minutes: [Click Here](https://www.youtube.com/watch?v=Q3Awp-3CxSU)
* How do tornadoes form? 5 minute video: [Click Here](https://www.youtube.com/watch?v=lmWh9jV_1ac)
* How do hurricane forms video 3 minutes: [Click Here](https://www.youtube.com/watch?v=Wk_FVXVnE2I)
* Anatomy of a Hurricane video 6 minutes: [Click Here](https://www.youtube.com/watch?v=HJydFJORWf4)
* History of Meteorology, video 6 minutes: [Click Here](https://www.youtube.com/watch?v=776JZI2xuQQ)
* How to read a weather map, video 2 minutes: [Click Here](https://www.youtube.com/watch?v=GkE3F5AuWBQ)
* Web Mapping Portal A web mapping portal with real-time observations, use tools to generate maps, establish relationships between maps and databases: [Click Here](http://www.cpalms.org/Public/PreviewResourceUrl/Preview/974)
* Weather Factors, surface weather data, real time weather data: [Click Here](http://www.cpalms.org/Public/PreviewResourceUrl/Preview/379)
* What's Up? Weather Balloons and Forecasting, video 4 minutes: [Click Here](http://www.cpalms.org/Public/PreviewStandard/Preview/1897)
* Hurricane Dennis & Failed Math Models, video 6 minutes: [Click Here](http://www.cpalms.org/Public/PreviewStandard/Preview/1897)
* 9 Perspectives Video: Expert: [Click Here](http://www.cpalms.org/Public/PreviewStandard/Preview/1897)
	+ Global Weather Modeling for Military Applications: Major Paul Homan describes the needs and capabilities of the United States Air Force with regard to global weather prediction and modeling.
	+ How Math Models Help Insurance Companies After a Hurricane Hits: Hurricanes can hit at any time! How do insurance companies use math and weather data to help to restore the community?
	+ Hurricane Forecasting: Mark Powell discusses the models used for hurricane predictions and the limitations that exist.
	+ Improving Hurricane Modeling by Reducing Systematic Errors: limitations and need for improvement to models used to forecast hurricanes.
	+ Improving Hurricane Scales: Meteorologist, Michael Kozar, limitations to existing hurricane scales and how he is helping to develop an improved scale.
	+ Mathematical Modeling of El Niño : Hear how mathematics helped shape Dr. James O'Brien's groundbreaking research in ocean modeling of El Niño.
	+ Mathematically Modeling Hurricanes: Entrepreneur and meteorologist Mark Powell discusses the need for statistics in his mathematical modeling program to help better understand hurricanes.
	+ Probabilistic Weather Modeling: Meteorologist from Risk Management discusses the use of probability in predicting hurricane tracks.
	+ Weather, Climate, and Forecasting: Jon Ahlquist discusses the various factors in weather predictions and why they are so important to our lives.
* Article the life and times of a hurricane: [Click Here](http://www.cpalms.org/Public/PreviewStandard/Preview/1898)
* Tower of tempest, 5 minutes video on how hurricanes intensify: [Click Here](http://www.cpalms.org/Public/PreviewResourceUrl/Preview/10491)
* How do Hurricanes Form - NASA Space place, article: [Click Here](http://www.cpalms.org/Public/PreviewResourceUrl/Preview/10703)
* Rock 'n Roll Weather, intro to severe types of weather: [Click Here](http://www.cpalms.org/Public/PreviewResourceUrl/Preview/81088)
* Severe Weather Demo video, 5 minutes: [Click Here](http://www.cpalms.org/Public/PreviewStandard/Preview/1898)
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