

EDUCATOR'S GUIDE

Clouds

Preparation

Overview and Objectives

This lesson is geared toward families.

Participants will learn about the basic types of clouds and how they affect our weather and climate and why it is so important for sailors and naval aviators, such as those who served on board the USS *Intrepid* to predict the weather. It was very important for sailors aboard *Intrepid* to accurately predict the weather, as naval and air operations depended upon it.

This lesson includes a [slideshow](#) in which an instructor can lead participants through various activities.

Standards

Common Core Anchor Standards

CCSS.ELA-LITERACY.CCRA.R.7

National Core Arts Standards

Creating Anchor Standard #1

Methods of Instruction

This activity was designed for both small groups in a public setting such as a library or community center, as well as in a private home in a family setting.

For **Public Settings**, we recommend a space that allows both for whole group discussion and for participants to interact in small groups with easy access to the outdoors or to windows in the case of bad weather.

For **Home Settings**, we recommend one adult member control the presentation and guide participants through the lesson providing support where necessary while allowing for participants to share their work with each other and full group discussion.

Materials

- [Clouds slideshow](#)
- [Activity Worksheet \(pg 5\)](#)

Lesson**1. Introductory Activity**

- Participants will go through the [slideshow](#) and answer these questions:
 - **Why would the crew of an aircraft carrier want to predict the weather?**
 - **What is a cloud?**
 - **What are the different types of clouds?**
 - **How do clouds affect our weather and climate?**
- Begin the lesson by using the slideshow to introduce why accurately predicting the weather is important to navy ships like the *Intrepid*. Then Ask participants to share a bit about the clouds they have seen recently. Then share different types of clouds with participants by using the slideshow and what each cloud might indicate about the weather".
- **Guiding questions**
 - **Were there any clouds today?**
 - **Did the clouds look like any that we just learned about?**
 - **What was/is the weather like today? Etc**
- Discuss the responses with the group:
 - **Was there/ is there any precipitation?**
 - **How do you think weather might have affected *Intrepid* and the aviators on board? Imagine you were a naval aviator on board *Intrepid* when it was in service, would you fly in bad weather?**
- Participants should then play the “Fly No-fly” activity. Instructor may wish to reiterate what clouds may indicate about the weather both current and in the near future.
 - **What was challenging about determining when one should fly or not?**
- Keep in mind that some of the questions may not have a clear answer since aviators, especially naval aviators, often fly in weather that commercial aviators may consider too dangerous. Discuss this.

2. Core Activity

- Explain to participants that they should observe the clouds and the weather currently outside. Participants should sketch the clouds they see on the Aerographer’s [report form below](#).
 - **Go outside or look out your window. Are there any clouds? What type are they?”**

- Have participants write a report for a pilot that shares their observations about the current weather on the form below. Once completed, share their reports with a peer.
 - **Do you recommend flying today? What are potential weather issues that may pop up like precipitation, limited visibility, or anything else you think the pilot should know?**
 - **Which type of cloud poses the greatest risk to aviators?**

Extension Activities

To deepen participant engagement with this content, you may choose to add the following activities :

Globe cloud observer

<https://observer.globe.gov/about/get-the-app>

Additional Resources/ References

A cloud is a mass of tiny water drops or ice crystals that floats in the air above Earth. Enough of these droplets make a cloud

Water vapor is always in the sky in some amount but is invisible. Clouds form when an area of air becomes cooler until the water vapor there condenses to liquid form.

Clouds create rain and snow which are very important. At night, clouds reflect heat rising up from the Earth and keep the ground warmer. During the day, clouds make shade that can keep us cooler.

When the water droplets in clouds become heavy enough, gravity causes them to fall to Earth. We call the falling water drops "rain." When the air is colder, the water may form snowflakes instead. Freezing rain, sleet or even hail can fall from clouds. These are all forms of precipitation.

Studying clouds helps us to predict the weather, from extreme events, such as tornadoes and hurricanes, to simply telling us whether we need to take an umbrella or sunscreen on our afternoon picnic.

Low, thick clouds reflect sunlight and cool the surface of the Earth. High, thin clouds allow sunlight to pass through, but at the same time, they trap some of the outgoing heat emitted by the Earth and radiate it back downward, thereby warming the surface of the Earth.

There are 3 basic types of clouds: cirrus Clouds, cumulus Clouds, and stratus Clouds. Cirrus clouds are thin and wispy and often curve with the wind. Cirrus clouds are High level clouds which usually do not lead to precipitation or severe weather. Cumulus clouds tend to be big and fluffy. These clouds look like giant cotton balls with flat bottoms. They can also form parallel stripes of clouds. Cumulus clouds are middle-level clouds and can carry a lot of water leading to rain. If there are many of them, severe weather can occur such as thunderstorms.

Stratus clouds form sheets of clouds that cover the sky. Stratus clouds are low level clouds which can severely limit visibility and can even touch the ground. This is called fog! Stratus clouds often produce light rain or snow.

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Today's flight report

Aerographer's Name _____

Today's date _____ Time _____

Draw a picture of any clouds you see below

Current Weather conditions and cloud cover _____

Recommendations to aviators _____
