

Cloud one: Above the Skies



The first cloud assignment picture

Context and Purpose

This photograph captures an aerial view of cloud formations somewhere over Washington and Oregon, taken on September 17, 2024, during a commercial flight. The objective was to study the intricate patterns of clouds and how sunlight interacts with them from above instead of taking a picture from the ground, providing insight into the atmospheric flows that shape these formations. I have identified the clouds as stratocumulus clouds, the picture emphasizes the beauty of natural fluid dynamics in the atmosphere on high altitude and the sun reflection on the clouds.

Flow Apparatus and Phenomenon

The observed flow represents the look of stratocumulus Clouds. Clouds form when rising moist air cools, causing water vapor to condense into visible water droplets or ice crystals. The image showcases two main types of clouds: dense stratocumulus clouds with edges and cirrus clouds seen at higher altitudes. The interaction between atmospheric layers creates turbulence, visible in the cloud boundaries. These formations are governed by factors such as temperature change, altitude changes, and air currents. While precise calculations of Reynolds numbers are almost impossible without wind speed data, the large-scale turbulence suggests high Reynolds numbers typical of developed turbulent flows in the upper atmosphere.

Visualization Technique

The cloud patterns were illuminated by natural sunlight, which enhanced the contrast between different cloud types. The interplay of light and shadow added depth, allowing for a detailed study of cloud structures and densities. The image was captured through the airplane's window, offering a broad view of the cloudscape. Favorable weather conditions ensure clear visibility, making it possible to observe fine details of the cloud formations.

Photographic Technique

- **Camera:** iPhone 12 Pro
- **Lens:** Built-in wide-angle lens
- **Field of View:** Covered several kilometers of cloud formations
- **Distance from Object:** 30,000 ft
- **Resolution:** [2710 × 1965] pixels
- **Exposure Settings:** Shutter Speed 1/60s. Aperture F1.6, ISO 200

Post-capture adjustments were minimal, consisting of cropping to focus on the sections of the clouds. The natural colors and lighting were left unaltered to preserve the authenticity of the scene, the picture might look filtered due to the filter on the airplane window.



Image Analysis and Reflection

The photograph effectively captures the layered complexity of atmospheric clouds. Dense cumulus clouds, with their textured surfaces, contrast beautifully with the cirrus clouds above.

The light and shadow interactions highlight the varying altitudes and cloud densities, giving the image a 3D quality.

Overall, the result exceeded expectations in showcasing the clouds fluid dynamics. In the future I might choose different times or angles to capture how light can change the appearance of the picture, even though this was the view of an airplane, changes like that might not be feasible due to fixed Airlines schedules.

References

- 1- National Oceanic and Atmospheric Administration (NOAA). (n.d.). *The four core types of clouds*. November 12th, 2024, from <https://www.noaa.gov/jetstream/clouds/four-core-types-of-clouds>
- 2- National Aeronautics and Space Administration (NASA). (n.d.). *The types of clouds and what they mean*. November 12th, 2024, from: <https://www.jpl.nasa.gov/edu/resources/project/the-types-of-clouds-and-what-they-mean-2/>