Altimeter Errors

Adobe (formerly Macromedia) Flash Requirements

Thank you for using the Altimeter Errors Simulator from luizmonteiro.com. Please note that this tutorial is designed to help you understand how to use the simulator. Note that the results are only approximations and should never be used in real flight.

Before you begin using the simulator, please make sure that your browser has Adobe (formerly Macromedia) Flash version 8 or higher. If you do not have this you may go to the Adobe website at: http://www.adobe.com and go to the downloads section where you will be able to download and install the latest version.

The Altimeter Errors Simulator web page will also run a test (Flash Version Detector) to check which version is installed in your browser. If you have at least version 8 installed the following message will appear on the page right before the simulator section:

If this happens, you must download the latest flash plug-in in order for the simulation to work properly. The download should not cause any problems to your computer, however, it is at your own risk and luizmonteiro.com shall not be held liable for any damages caused by this download.

Altimeter Errors Simulator Application Parts

Flash Version Detector

Aircraft’s Relative Vertical Position

Initial Conditions

New Conditions

Preferences Menu

Aircraft Altimeter

Reset Button
Altimeter Errors Simulator Application Parts (cont.)

**Flash Version Detector**
Used to check which version of Macromedia Flash is installed in your browser. If you have Version 8, the Altimeter Errors Simulator will operate correctly. If you have a previous version you must upgrade to the latest version in order for the simulator to function properly.

**Aircraft’s Relative Vertical Position**
Displays the aircraft’s vertical position relative to its initial position from point 1 to 2.

**Aircraft Altimeter**
Displays the reading that the altimeter would have in the aircraft. The pilot uses this as the reference to maintain altitude.

**Initial Conditions**
Altimeter setting and indicated altitude at point 1 (initial part of the flight)

**New Conditions**
During the flight, atmospheric conditions may have changed. A change in barometric pressure causes the altimeter setting to change. This section is also where the temperature change is entered.

**Reset Button**
Causes all values to return to their original settings.

**Preferences Menu**
In this menu the units can be changed from feet to meters and different aircraft icons can be selected.

**Available Aircraft Icons**

- **747**
- **Plane silhouette**
- **Twin Engine**
- **Robinson R22**
- **Balloon**
Imagine the following scenario:

A pilot is flying at an altitude of $A_1$ and at the current and correct altimeter setting of $S_1$ that he/she obtained from an appropriate source, such as an ATIS, AWOS, air traffic control, etc. Assume that this ($A_1$) is the true altitude for simplification purposes at this point in time.

While flying, the atmospheric conditions change, perhaps from passing through a cold or warm front or for other reasons. As the conditions (temperature and/or pressure) gradually change the pilot continues to fly the altitude ($A_1$) indicated on the altimeter. The unaware pilot continues to fly this indicated altitude, even though the aircraft is actually either descending or ascending depending on how the atmospheric conditions are changing.

The new pressure (barometric) conditions are reflected on a new altimeter setting ($S_2$) that a pilot has not entered in the altimeter. The change in temperature is $\Delta T$. Therefore, there will be a new true altitude ($A_2$) in which the aircraft is actually flying in even though the indicated altitude is still the same. The simulator will show this altitude.
Example 1

A pilot is flying at an altitude of 5500 ft and at the current and correct altimeter setting of 30.12 inHg that he/she obtained from an appropriate source, such as an ATIS, AWOS, air traffic control, etc. Assume that this (5500 ft) is the true altitude for simplification purposes at this point in time.

While flying, the atmospheric conditions change, perhaps from passing through a cold or warm front or for other reasons. As the conditions (temperature and/or pressure) gradually change the pilot continues to fly the altitude (5500 ft) indicated on the altimeter. The unaware pilot continues to fly this indicated altitude, even though the aircraft is actually either descending or ascending depending on how the atmospheric conditions are changing.

The new pressure (barometric) conditions are reflected on a new altimeter setting (30.84 inHg) that a pilot Has Not entered in the altimeter. The change in temperature is: +8°C.

1) What is the actual (true) altitude that the aircraft is at point 2? Answer: 6286 ft

2) What is the altitude that the pilot thinks he/she is at point 2? Answer: 5500 ft
Example 1 part II (use data from previous page)

Now let's assume that the pilot inputs the correct altimeter setting (30.84 InHg) so that only the change in temperature of +8°C is responsible for the Altimeter error.

1) What is the actual (true) altitude that the aircraft is at point 2? Answer: 5656 ft

2) What is the altitude that the pilot thinks he/she is at point 2? Answer: still 5500 ft

Note that in practice, the pilot can only correct for the change in pressure by setting the correct altimeter setting. To estimate the effect of a temperature change, the pilot must use a flight computer and calculate the true altitude based on the temperature outside the aircraft.