Weather Balloon Encyclopedia Article

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Weather Balloon

Stratospheric balloon being inflated. National Center for Atmospheric Research/University. Corporation for Atmospheric Research/National Science Foundation 221. ***Reproduced by permission.***

The invention of the **weather** balloon inaugurated the age of **remote sensing**, the ability to collect information from unmanned sources. Use of weather balloons is now common in advanced atmospheric research. High altitude weather balloons have also been used by astronomers and cosmologists seeking to take readings of certain particle frequencies or gather light readings free of excessive disturbance from Earth's relatively thick lower atmosphere (**troposphere**).

The first observation balloon was launched immediately before the first manned balloon flight by Frenchmen Jean-François de Rozier and the Marquis d'Aalandes on November 21, 1783, for a pre-flight **wind** reading. Later, French meteorologist Leon Teisserenc de Bort (1855-1913) pioneered the use of weather balloons, handily proving their utility. With balloon-acquired data, he determined the existence of a lower level of the atmosphere, which he termed the troposphere or "sphere of change," where weather takes place. Since the 1930s, when radio tracking systems were invented, balloons have been used as complete floating weather stations, employing such instruments as thermometers, barometers, hygrometers, cameras, and telescopes.

A variety of agencies use weather balloon flights to model the atmosphere and to make more accurate weather predictions. Weather balloons are used widely to collect such atmospheric information as **temperature**, pressure, and **humidity** that can then be plotted on weather maps. Three-dimensional atmospheric modeling is also possible using weather balloons because the instruments they carry are able to provide meteorologists and other atmospheric scientists data collected from a number of altitude points. Since their inception, the elongated bags of helium, a lighter than air element that provides the balloon lift, have been carrying aloft increasingly sophisticated observation devices, taking the science of weather observation literally to the edges of outer **space**.

See Also

Air Masses and Fronts; Atmospheric Composition and Structure; Atmospheric Pressure; Atomic Mass and Weight; History of Exploration Iii (Modern Era); History of Manned Space Exploration; International Council of Scientific Unions' World Data Center System; Jet Stream; Stratosphere and Stratopause; Weather Forecasting Methods