

Auburn's Climatology Field Trip to the Weather Station

By: Seth Greer and Benjamin Swan



Our group was briefed in the airport lobby.

Auburn University Climatology Class of 2016 taught by Dr. Chandana Mitra (Geosciences) had a wonderful and productive trip to Auburn University Regional Airport's weather station. They were able to examine active weather monitoring equipment and were able to ask question of experts in the field. Some of the more modern instruments they saw and learned about were the barometer, wind vane and anemometer, continuous-recording rain gauge, transmissometer, and their newest instrument, a laser ceilometer.

A barometer is a weather instrument that measures air pressure. They learned that, while the pressure reading it provides is only applicable for a small area, it is still an important instrument for pilots, who will know from a rising air pressure that the weather conditions will be sunny



Laser ceilometer

and dry whereas a falling air pressure usually indicates cooler and wetter conditions.

The laser ceilometer works by firing a laser beam up into the sky that is reflected back by any clouds. Although the ceilometer can only “see” what is directly above it, this can still give information about height of the cloud base over a large area, as many of the clouds in the area will have the same variables controlling their height and thickness.

They also looked at the transmissometer, a device that measures visibility by firing a laser beam across a gap to a receiver. Because the initial intensity of the beam is known, the receiver can calculate the visibility on the runway, from clear to foggy, by measuring how much of the beam's light was absorbed by water vapor. This plays an important role for pilots looking to land, especially at night or in low-light settings, when visibility needs to be above a certain threshold in order for them to be able to land safely. Pilots will ultimately need to make a decision as to whether the conditions on the ground will be suitable and safe enough for landing

The wind vane and the anemometer give information about the speed and direction of the wind. These instruments play an important role for weather prediction because winds near the surface can reflect regional weather conditions, such as when different air masses flow towards a developing storm system.



Wind vane and anemometer

These were located higher in the air than the other instruments so that they are above the level where the ground surface can cause turbulence in the air, which would interfere with getting a good measurement. These are few of the many considerations that have to be taken into account when placing weather instruments. The continuous rain gauge records information about rain fall and precipitation levels over a period of time.



Transmissometer. The instrument on the left fires an infra-red beam to the receiver on the right.

The students got to know the inside story of how a weather station is run and data transmitted to Birmingham, where all statewide weather data is collected. Todd Storey (Airport Assistant Director) and Leon Fike (FAA technician) made this tour possible and catered to every question the students had.

Overall, it was a very fun and educational experience where the students were able, as a group, to see state-of-the-art weather technology and the way the weather is read and interpreted in real life. The students felt that they were able to bring to life in an applied way, what they had learned in class.