The jet stream is a high level band of wind which flows around the earth. It is strongest in wintertime, when the pressure/temperature gradient is greatest between the equator and the poles. In the northern hemisphere, in summer incoming solar radiation is more uniform from the equator to the poles; hence the gradients are not as strong.

Attached are two images. One is the morning weather balloon observation taken at Dulles. Red line is temperature, green is dew point, going up in height. Where the temperature begins to increase is the tropopause, the transition between the stratosphere and the higher troposphere. This height varies daily. Today the height of the tropopause is 36,000 feet.

What I want to talk about are the yellow wind barbs on the right of the balloon sounding. Between 30,000 and 36,000 feet the winds are at or above 140 knots (from the west-southwest). This is at least 168 mph.

On the second slide I have a model depiction of the jet stream. The pinkish color from Missouri to New England is all above 140 knots, peaking near Cleveland with a forecast of 153 knots (184 mph).

One of our jobs is support aviation. My question for you to ask your students – how could knowing the position of the jet stream be of importance to aviation? Fuel cost is obviously a big concern – if you can get your eastbound planes in the jet stream you have the potential to save fuel, and hence money for the company, as well as get passengers in ahead of schedule. If your planes are headed westbound you want to do your best to avoid the jet stream.

There are several online programs where aircraft traffic can be monitored.