Glenda Project – Active Payloads - Application

June 13th , 2015 – Weather Balloon Launch

On June 13th, 2015, the Glenda Project launched its latest iteration weather balloon system deploying a Vaisala RS-92 SGP radiosonde payload, combined with our updated antenna and receiver ground station.

The June 13th flight featured a 100 gram balloon filled with 27 cubic feet of helium. Projected flight altitude was approximately 45,000 feet. The RS-92 payload contained a GPS positioning system plus a weather sensor suite telemetry package. Ground wind speed was calm with temperatures in the 80's.

The ground station featured our existing Sirio WY400-10N Yagi antenna combined with our new Uniden BC-125AT Narrow Band FM (NFM) receiver. We were able to replicate the failure to calibrate created by the ICOM IC-R2 receiver, and the new Uniden receiver achieved calibration immediately.

Flight performance was impressive and we achieved a viable data set from launch to balloon burst at 34,000 feet, continuing on under parachute until loss of signal at 20,500 feet due to earth curvature and local terrain.

The following slides display the data collected from the flight.

Uniden BC-125AT Receiver

Sirio WY400-10N Yagi Antenna

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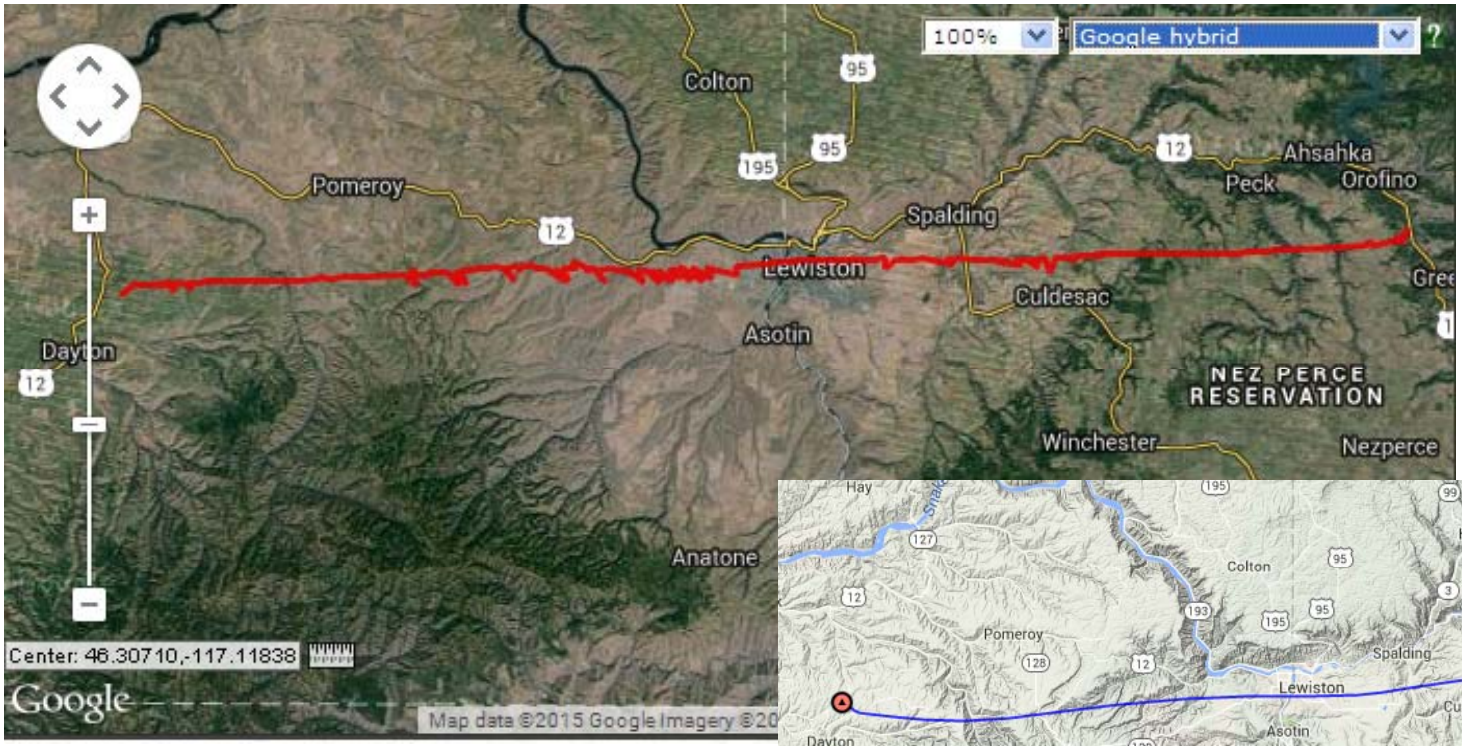
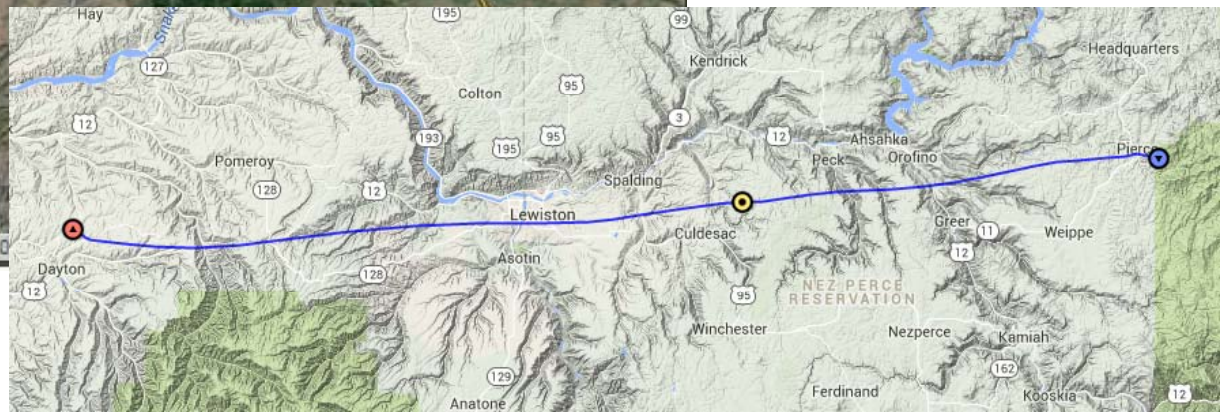
June 13th, 2015 – Balloon Launch – Ground Track



Actual Flight Trajectory

Simulated Flight Trajectory



The actual flight trajectory ground track measured just over 80 miles before loss of signal and aligned very well with the pre-flight simulation. After transition from the calm launch conditions, the balloon measured an average 40 mile per hour wind speed as it travelled from west to east.

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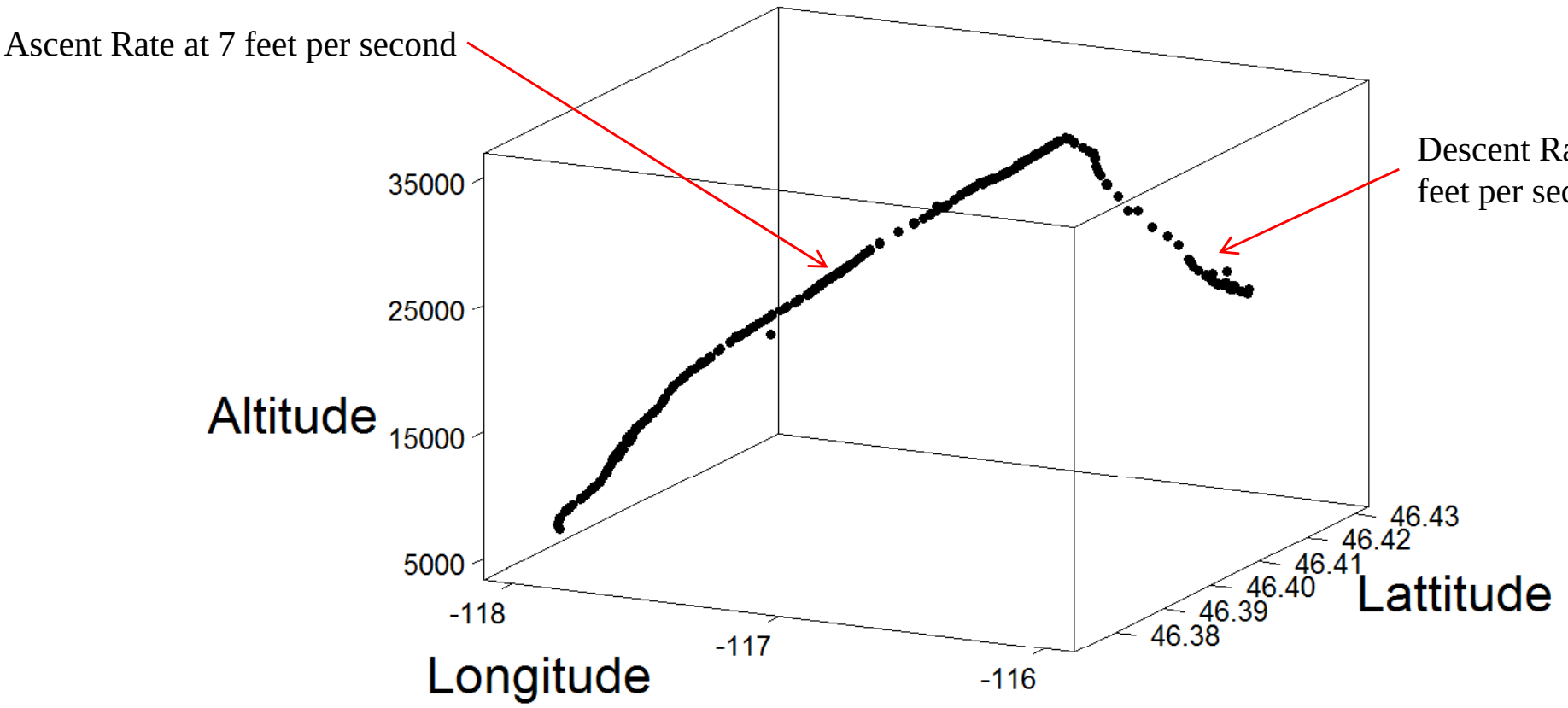
June 13th, 2015 – Balloon Launch – Altitude Track



While the balloon burst 10,000 feet under its projected altitude, we were able to capture balloon burst and the payloads descent under parachute. We were targeting a 10 feet per second (fps) ascent and achieved a 7 fps actual. The projected descent rate was unknown until the results of this flight.

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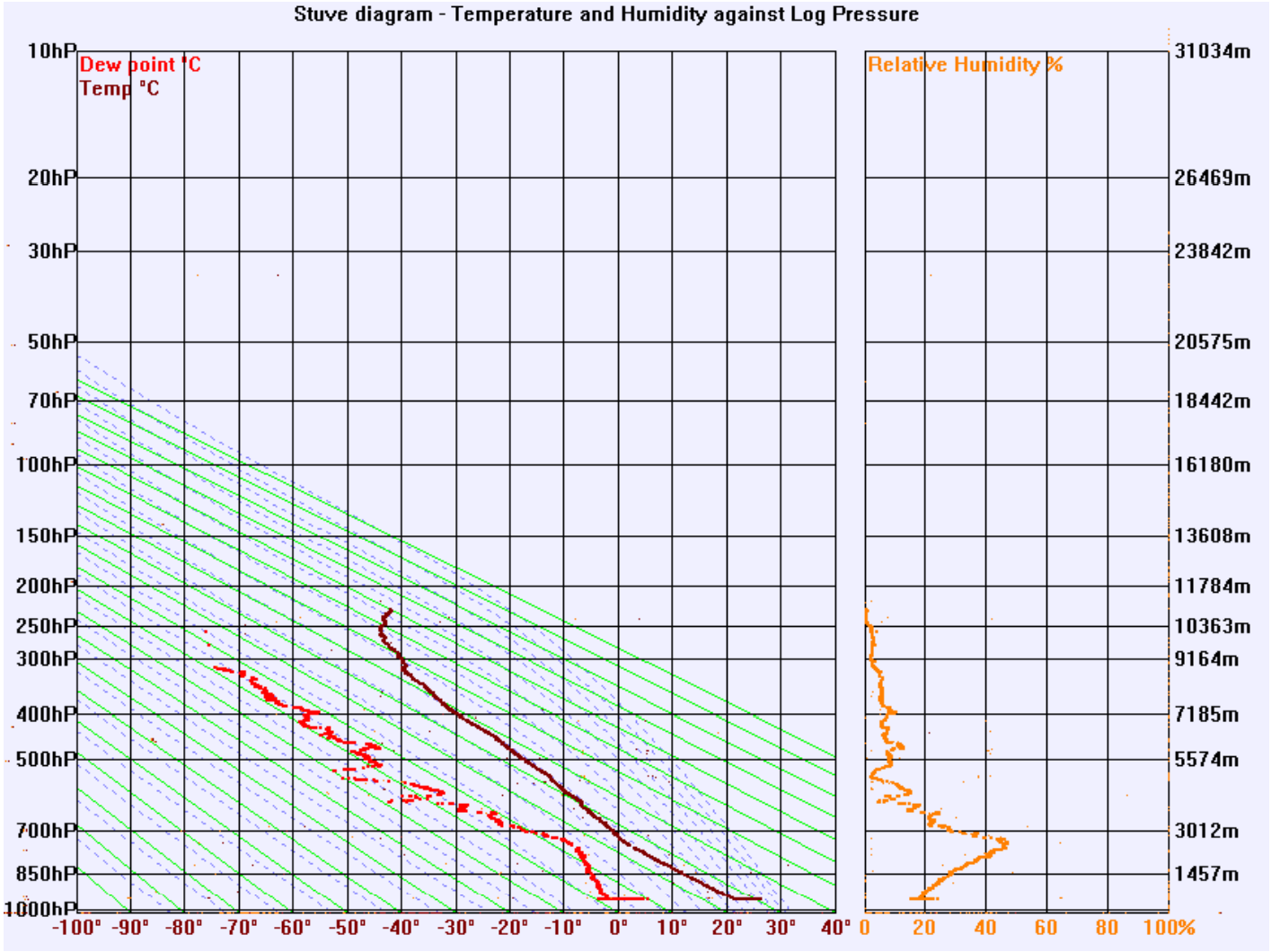
June 13th, 2015 – Balloon Launch – Weather Sensor Data



Temperature, Relative Humidity, and Dew Point data fell along projected norms. Two notable points in that the payload reached close to 10,000 feet before the air temperature fell below freezing. Lowest temperature recorded was -43 Degrees C which converts to -45 Degrees F. Now, this is significant as we were flying a six cell AA Alkaline battery pack which provides us evidence on the effectiveness of the radiosonde insulation.

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June 13th, 2015 – Balloon Launch – Next Steps

The results of this flight established the capability of the Glenda Project to launch balloon deployed payloads into thunderstorms, and tornadic systems.

The flight was an operational success, as it verified our solution that it was the ICOM receiver which was preventing us from receiving signals from above 10,000 feet. The Uniden BC125AT combined with the Sirio Yagi is an efficient and effective combination. A side effect of this receiver / antenna combination, is that we no longer need the additional omni-directional antenna.

Now that we have system operability, our September, 2015 balloon launch will make the attempt to maximize altitude. Presently, we're targeting on deploying another RS-92 SGP radiosonde coupled with an 800 gram balloon filled with 55 cubic feet of helium resulting in a targeted altitude of 107,000 feet. This altitude is well within our antenna range as 80 miles is over 400,000 feet. The flight will feature AA Lithium cells to mitigate any power pack freezing problem at altitude combined with a longer life cycle. A 300 gram balloon filled with 34 cubic feet of helium will serve as our backup and has a targeted altitude of 88,000 feet.

The success of this launch culminates over 15 years of development and operational maturity. Additional launches are planned as our systems continue to grow and evolve.