

HASP 2014
UND-UNF Payload
Monthly Status Report for September 2014

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UND-UNF team did the following work during September 2014:

- (1) HASP 2014 balloon flight was launched on Saturday, August 8, 2014. The payload was recovered after the flight. The payload was found in good shape. After applying power to recovered payload, we found that all sensors and circuits are in good working condition. There was no visual and circuit damage on the payload body.

- (2) During flight, data generated from total 24 gas sensors and 3 light sensors mounted on 3 sensor boxes were measured. Temperature on the sensors, atmospheric pressure and altitude were also recorded. All sensors and data communication program were worked well during entire flight period. Fig. 1 to 11

shows some of our plots which shows that our payload worked well during the flight and measured data.

- (3) Most of ozone sensors worked well and measured ozone profile in stratosphere. The measured ozone profile by most of ozone sensors have peak from altitude about 20,000 to 34,000 km. The light sensors also have peak similar to the ozone gas sensors. This prove one of our science objectives that in the presence of UV light oxygen converted into ozone gas and hence concentration of ozone gas increased.
- (4) Data analysis of all data files are going on. We are highlighting some of our plots here. Rest of results and plots will be submitted in the next month or so.

Power budget:

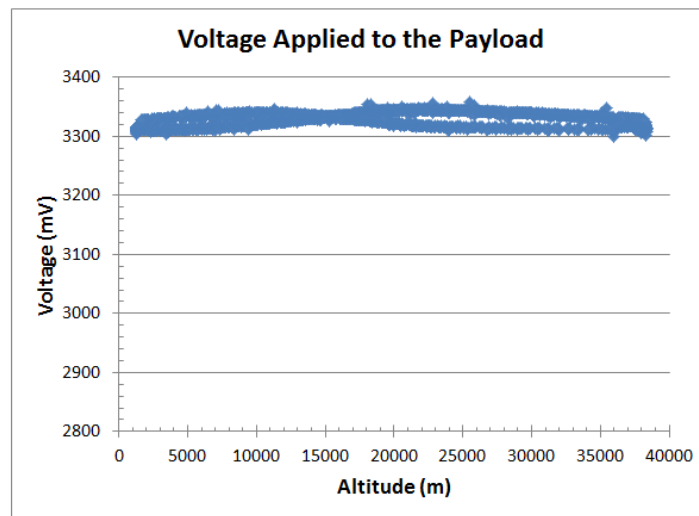


Fig.1. Voltage applied to the payload during the flight.

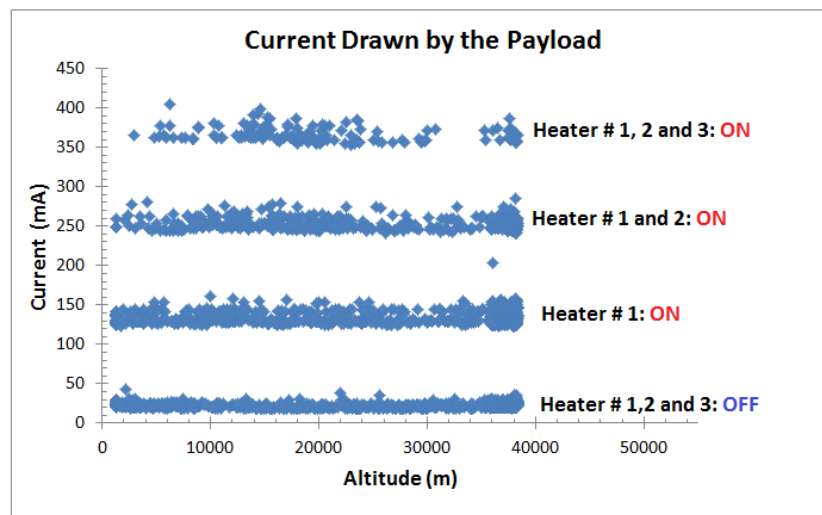


Fig.2. Current consumed by the payload during the flight.

Thermal stability of payload

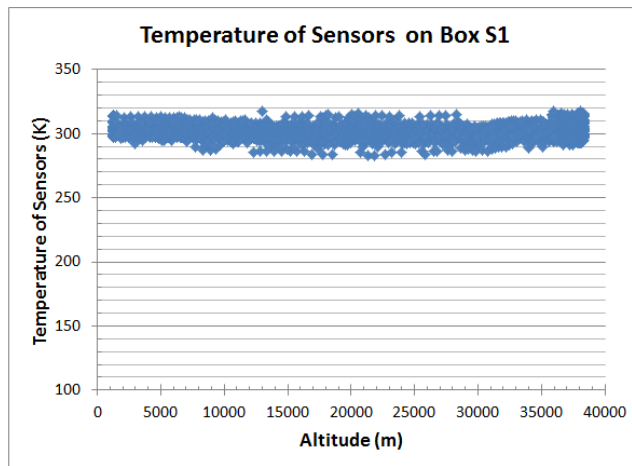


Fig.3. Temperature of sensors on box #1 during flight

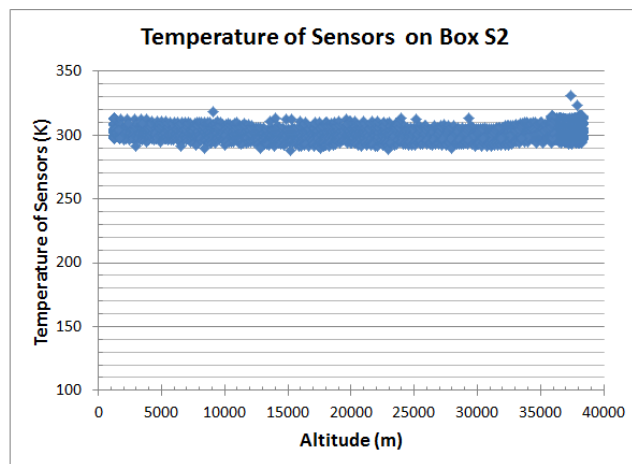


Fig.4. Temperature of sensors on box #2 during flight.

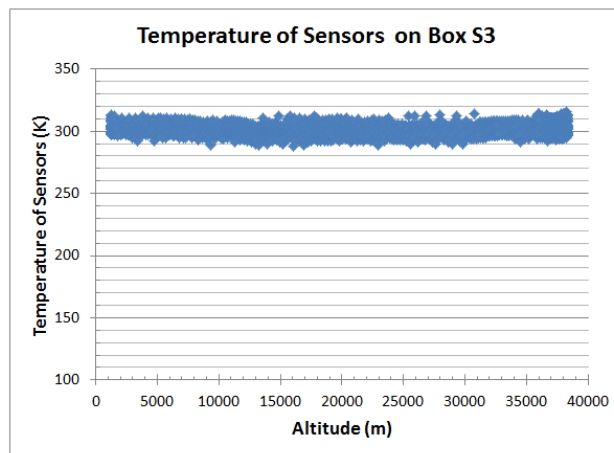


Fig.5. Temperature of sensors on box #3 during flight

Sensors Box #	1	2	3
Average Temperature (K)	302.1	302.0	301.8
Standard Deviation (K)	5.7	5.7	5.3
Standard Error (K)	0.1	0.1	0.1

Table1. Average temperature and standard deviation of temperature of sensors on box #1, 2 and 3 during the flight

Fig. 3, 4 and 45 shows temperature of sensors was remain constant in the range of 302 ± 6 K during the flight. Temperature was maintained constant by digital temperature on-off controller circuit.

Response of pressure sensor

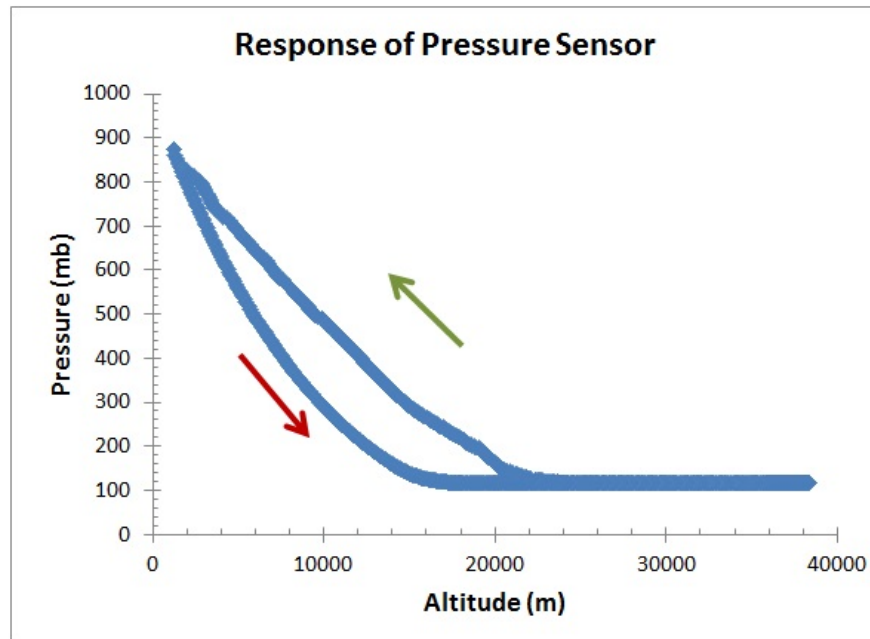


Fig.6. Variation of pressure with altitude. Pressure sensor was saturated at pressure about 100 mbar due to its technical limit. The red color arrow shows data generated during ascending of the balloon, while green arrow shows the data generated during descending of the HASP after termination of balloon.

Response of photo sensors

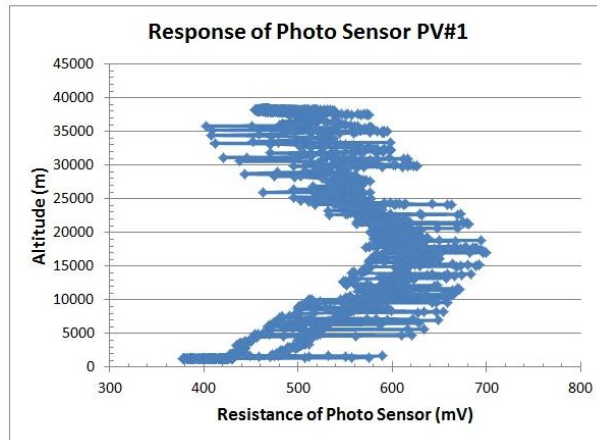


Fig.7. Response of photo sensor (PV#1) with altitude to detect the presence of sunlight.

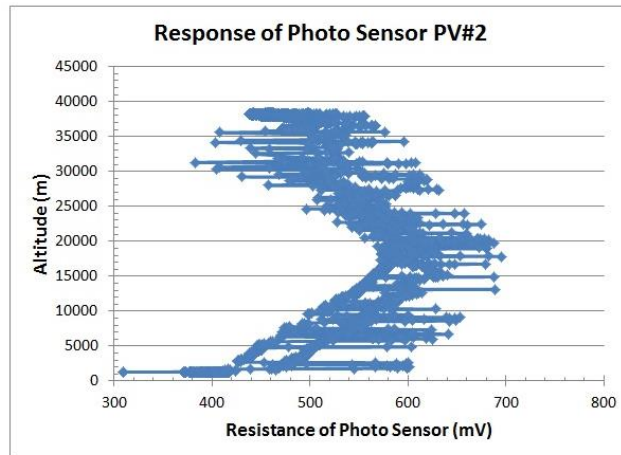


Fig.8. Response of photo sensor (PV#2) with altitude to detect the presence of sunlight.