The following items are required for the DISCOVER-AQ (Deriving Information on Surface Conditions from Column and Vertically Resolved Observations Relevant to Air Quality) project. To meet project requirements specifications for each item are detailed. All components (ozonesondes, radiosondes, balloons, parachutes, and balloon launch reels) must be compatible and provide for 150 ozonesonde launches. All items must be received by 07/31/2012.

150 ECC ozonesondes

Specifications:

At 1000 hPa: ±5% accuracy, ±4% precision, 0.3 km resolution
At 200 hPa: ±12% accuracy, ±12% precision, 0.3 km resolution
At 100 hPa: ±5% accuracy, ±3% precision, 0.3 km resolution
At 10 hPa: ±5% accuracy, ±3% precision, 0.4 km resolution
At 4 hPa: ±10% accuracy, ±10% precision, 0.4 km resolution

Resolution figures correspond to approximately a 90% step change in ozone in one minute.

Additional specifications:

Technique	Electrochemical process that generates electrical current in proportion to ozone concentrations
Measured Parameters	Ozone partial pressure, voltage of internal temperature of ozonesonde box, pump current
Operating Pressure	1050-4 hPa
Operating Temperature	0 – 40 °C
Power Requirements	12 – 18 VDC, 120 mA
Weight (including battery)	~0.7 kg
Instrument Dimensions	7.6 cm x 7.6 cm x 13.3 cm
Flight Box Dimensions	19.1 cm x 19.1 cm x 25.4 cm

150 radiosondes

The radiosonde must be compatible with SkySonde Client 1.0.4.8 and SkySonde Server 1.0.0.2 software.

System Overview
Operating Principle: GPS
Frequency: 403MHz
Range: > 250 km w/ telemetry receiver system

Altitude:	> 42 km w/ telemetry receiver system
Battery:	Alkaline Dry Cell
Operating Time:	> 2 Hours
Weight:	260 Grams
Sampling Rate:	1 / Second
Case:	Expanded Polystyrene

Transmitter

Tuning Range:	400.15 – 406 MHz
Output Power:	300 mW
Transmission:	2400 baud, FM
Bandwidth:	20 kHz
Stability:	Crystal Controlled

GPS Receiver

Type:	C/A code, 12 Channel
Tracking:	Continuous
Update Rate:	1 Hz
Acquisition Time:	50 sec (cold start)
Position Accuracy:	10 m
Wind Velocity Accuracy:	1.0 m/s
Altitude Accuracy:	15 m

Meteorological Sensors

Pressure

Type:	Piezoresistive
Range:	2 to 1070 hPa
Accuracy:	0.5 hPa < 400 hPa, 0.5 hPa > 400hPa
Resolution:	< 0.01 hPa
Response Time:	< 1.0 Sec

Temperature

Type:	Bead Thermistor
Range:	- 95 to + 50 Deg
Accuracy:	0.2 Deg C
Resolution:	< 0.01 Deg
Response Time:	2.0 Sec @ 1000 hPa

Humidity

Type:	Capacitive
Range:	0 to 100% RH
Accuracy:	5% RH
Resolution:	< 0.1% RH
Response Time:	2 Sec @ 25 Deg C, 60 Sec @ - 35 Deg

150 balloons

Material:	Totex rubber
Color:	uncolored/natural
Weight:	1200 grams
Neck diameter:	3 cm
Neck length:	12 cm
Flaccid body length:	226 cm
Barely inflated diameter:	144 cm
Payload:	1050 grams
Recommended free lift:	1190 grams
Nozzle lift:	2240 grams
Gross lift:	3440 grams
Diameter at release:	179 cm
Volume at release:	2.99 m^3
Rate of ascent:	320 m/min
Diameter at burst:	863 cm
Bursting altitude:	33.2 km
Bursting pressure:	7.3 hPa

150 parachutes

A parachute consists of three major components: canopy made of orange/red colored polyethylene film, cotton shroud lines and white colored plastic spreader hoop.

Specifications:

Payload:	300 grams
Descent rate:	3.6-3.8 m/sec
Weight:	70 grams

150 Balloon Launch Reels

Balloon launch reel (ratchet system) containing 120ft of string.

Weight:	~.25 lbs
Dimensions:	2.25 inches by 2.5 inches by 5 inches