Comments/changes, Referee #1:
The referee will see that his/her suggestions have been incorporated in this revised version of the manuscript, as described below.

- Metric equivalents were inserted on pp. 7, 8, lines 181 and 197, respectively.
- The MAX-DOAS acronym was defined on p. 7 line 188.
- The ozone monitor underwent a one-time pre-deployment calibration as described on p. 10, line 253 of the revision, with more detail added regarding the calibration stability added on p. 11 lines 268-275.
- The CO_2 instrument's standard gas cylinders were compressed to ~120atm, thereby providing a significantly longer lifetime. This information has been added, with further elucidation on pp. 11 and 14, lines 285-289 and 339-340, respectively.
- It is true that the prototype buoy deployment used fully detached solar panels and detached external lead-acid batteries. This same buoy is now deployed at approximately 140 degrees west longitude, 75.5 degrees north latitude on a free floating ice floe. As can be seen in the accompanying image (figure 6 in the text), the solar cells are integrated on the upper structure of the buoy. The floe is approximately 2 meters in thickness, which should be more than sufficient to support the external battery pack through a 12 to 24 month deployment at this latitude. Future buoys will have a larger floatation collar with compartments that will hold the lead acid packs.
- The selection of the processor must be seen in context. The PIs various needs necessitated a chip set that would support an operating system and programming environment that is capable of producing applications that can perform multi-

threaded computation. In practical terms, this narrowed the choice to Linux (OS) and C++ (programming language). The Technologic Systems SBC was the lowest power off-the-shelf SBC available that met this requirement in 2008. This SBC had an additional advantage of being specified for operation to -40^{o}C . We have explored various power-saving strategies with this SBC. We are now operating the SBC at a lower clock rate. The nominal clock frequency is 200 MHz. Operation at 42 MHz reduces power consumption by 25% with a corresponding slowdown in computation time. We can further reduce the clock rate to 14 MHz for "house-keeping" operations. We observe a reduction in power consumption by 60% at this clock rate. Alternately, the SBC can be operated at 42 MHz with its Ethernet port, USB port and PC104 bus turned off. A similar power savings will result. This later configuration requires significant modification of the system software and expansion of the capabilities of the Campbell data logger to monitor meteorological other data. We have not yet deployed a buoy operated on either basis. We will provide a supplemental report describing this and other innovations as we accumulate field experience in polar follow-on deployments.