Pressure Entries



Steve Oncley posted on Sep 17, 2013

Of course, I now think that many pressure spikes are now real events (e.g. dust devils). However, I've seen other spikes (mostly upwards) that aren't real. Further tracking finds that most are (only?) spikes in the Paro's temperature measurement. These spikes are always positive. During 10 Aug, most of these were with t.8b, however I also see them on 5b, 9b, 10b, 7t, and 8t. These are not exclusively on pressure2, nor are they all the channels on pressure2. Also,...

pressure



Steve Oncley posted on Aug 06, 2008

To follow-up on the leak check yesterday (which showed a slow leak), I repeated this test today: 1033 P=1004.88 (pinched off) 1034 unpinched Pref (so I could read pressure easily) P=1007.29 1037 installed tee, P=1007.32 1038 blew in, P= 1029 dropping 1039 pinched entire array, P=1025 still dropping 1041 tighten tee, P=1021.5 still dropping 1043 pinched off 11b P=1018.9, still dropping ~1100-1113 reseated both reservoir endcaps with more Teflon tape and plumbers' grease....

pressure



pressure tests

Steve Oncley posted on Aug 05, 2008

between 1440 - 1522, Khoung tried the pinch test again, removing all of the array of tubing. During this test, the overall noise in p[ref].11b was significantly less, indicating that part (but not all) of the p' problems still are tubing related. At 1525, he sucked on the reservoir and reconnected the (entire) tubing. It appears that the tubing has a leak with a time constant of about 10min. This was actually desirable(!), but indicates that we still have some sleuthing to do.

• pressure



Steve Oncley posted on Aug 05, 2008

Still trying to work several problems: P.0m is only 1Hz, only about same resolution as Pref, so not much help monitoring Pref after all. Thus, change back to monitor Pref with 11b's 202BG Data from P.0m yesterday showed Pref fluctuations. Try to damp these by removing potential leak (old capillary leak) and add more steel wool....

pressure



yet more pressure tests

Steve Oncley posted on Aug 04, 2008

At 1512, I pinched off the entire reference pressure tubing so that both Pref and P.0m measured just the reference volume. (It turned out that P.0m's RS232 connector fell off, so we didn't get data from it for any of these tests.) At 1618, I opened the above, but pinched off lines to only connect 6b. At ~1745, I opened the above connecting the entire tubing system, but pinched off Pref (after reconnecting the P.0m signal)....

• pressure



Steve Oncley posted on Aug 03, 2008

pressure1 pressure2 w302859 w302821 w302828 w302829 w302832 w302826 w302871 w302874 w302835 w302842 This is the list with viper on the top and the power supply on the bottom. Also see https://wiki.ucar.edu/display/ahatslogbook/2008/07/17/GPIO+boards+in+pressure+systems https://wiki.ucar. edu/display/ahatslogbook/2008/07/17/GPIO+boards+in+pressure+systems

pressure



Steve Oncley posted on Aug 02, 2008

I notice in the p' time series a drop of pressure at 1323 this afternoon. This looks like the signature of a dust devil to me (and I saw one earlier today near the trailer).

pressure



pressure reconfiguration (yet, yet, again)

Steve Oncley posted on Aug 02, 2008

To further diagnose the p' system, I've been wanting to set up an independent system like CHATS. Now that John has brought out another pressure sensor, we made the following changes between 1030-1200: - Installed the cal-lab field reference Paro 760 to measure Pref (in lieu of the 14th 202BG). Added it to profile:ttyS17 as P.0m. - Changed the 14th 202BG (still known as p.11b.4.8m) to measure just like CHATS, between the Bedard port through the hose and the CHATS reference....

• pressure



Steve Oncley posted on Aug 01, 2008

All of the reference line tubing was insulated between 0800-0840 this morning. Based on one spectrum, it doesn't look like this has made much of a difference. Does this mean <yet> something else is going on to cause these Pref fluctuations? Tonight we should receive another Pref sensor. Tomorrow I intend to use it as the new Pref sensor and configure my current Pref sensor (the 11b 202BG) exactly as done in CHATS.

pressure



some Pref tubes insulated

Steve Oncley posted on Jul 31, 2008

After discussions with John Wyngaard over the last 2 days (and a wake-up call this morning), we decided to try to lower at least the high frequency fluctuations in Pref by trying to add a sleeve around the tubing. John had the great idea to use foam pipe insulation. We found some in Hanford and added it to the horizontal sections of the array when it was down for sonic leveling today. Unfortunately, I had only purchased enough for a test this morning,...

• pressure



Steve Oncley posted on Jul 30, 2008

Here is an example from yesterday (1700-1730) of spectra (top panel) and cospsectra (bottom). The black line in the top panel is the spectrum of just the reference pressure (not connected to the atmosphere in any way). The red lines are all the sensors at 5m. Low frequencies in the reference pressure are due to drift in the CHATS reference volume due to changing soil temperature. Note that the signal-to-noise ratio from 0.01 to 1 Hz is on the order of one. (Actually,...

pressure



Steve Oncley posted on Jul 27, 2008

At my request, Steve just pinched closed the leak I added yesterday to the AHATS pressure reference system. I hadn't seen much reduction of the high frequency temperature fluctuations in the Pref signal since this leak was introduced. (Though it definitely had an affect on the low frequencies, where P and Pref were perfectly correlated. This was done about 10:11am.



Steve Oncley posted on Jul 26, 2008

From about 1635-1735 I reconfigured pressure yet again. (See 11b signal for exact times.) - 11b transducer removed and inserted into the CHATS system (which was buried yet again) to monitor Pref (in parallel with the Vaisala PTB220). - a leak installed into the far end of the AHATS reservoir (black tube). About 4m of the 1/16" line is attached, mostly coiled up in the ground, but the open end is exposed. We'll see what <this> looks like...

pressure



Steve Oncley posted on Jul 25, 2008

We built a 26-liter volume out of 2 5' lengths of 4" ABS pipe, stuffed it with steel wool and buried it in the ground (after checking that there were no leaks). We disinterred the N2 cylinder. After the usual 2 hours, Pref has settled down. I <do> think the signal is better behaved than for any of the other volumes, however there still are fluctuations that are larger than the static pressure signal (by about an order of magnitude in the power spectra between 0.01 and 1.0 Hz).</do>...

pressure



yet another p' system configuration

Steve Oncley posted on Jul 24, 2008

The results of this morning's tests indicate that the "medium frequency" signals we've been seeing in the pressure spectra are from the reference! This may be caused by convection in the cylinder that Jim Wilczak warned us about. Since we don't have a perfect alternative at the moment, we've just plumbed all the references to the CHATS reference. Unfortunately, we had to disinter and rebury this reference in order to connect to it. 6b and 6t are now returned to their original configurations....

pressure



p' system in test mode Steve Oncley posted on Jul 24, 2008

To diagnose our strange p' spectra problem, I've made 2 changes: 6b - the + side is now plumbed through the CHATS garden hose to the Bedard quaddisk-probe, which I've lashed to the top of the tripod in the middle pitchfork position. Good winds at this location are bit restricted due to the config#3 towers that Steve has erected, but should give us some idea. Changes done 0915-0930....

• pressure



pressure puzzles Steve Oncley posted on Jul 22, 2008

Okay, I've been looking at pressure data and I can't figure out some things: 1. The reference pressure is slowly ramping away from P. My best guess is that the soil surrounding the reservoir is actually cooling now that it has the space blanket on top of it, thus making the pressure go down. I believe that this is consistent with the sequence of operations (from Khuong) when the cylinder was reburied (hole dug Fri AM, old hold dug up Fri AM, cylinder moved to new hole Fri AM,...

pressure



pressure port orientation Gordon Maclean posted on Jul 21, 2008

Tom said to note that, upon tear-down of configuration #1 (wide array), the pressure ports appeared to swivel a bit on the 1/4" bolt securing them to the booms. Thus, the separation vector between the ports and sonic arrays could be different. The bolts were tightened by inserting a washer in configuration #2. (comment entered by Steve Oncley, but page was logged in as Gordon -- now I know better...)

pressure



Gordon Maclean posted on Jul 17, 2008

These are the serial numbers of the Diamond GPIO-MM-12 cards used in each pressure system, along with the clock rates that were determined for each card. Following the tables is a discussion of the clock rate calibration procedure. Plots of the clock calibrations are viewable as attachments, under the Tools menu. Pressure1 board SN corrected clock rate (Hz) 0 302859 20,000,292.73 1 302828 20,000,450.67 2 302832 20,000,284.66 3 302871 20,000,072.66 4 302835 20,000,242....

- pressure
- . data-system



Steven Semmer posted on Jul 13, 2008

The output message from the ambient pressure was changed to 3 decimal places like the pressure reference. This occurred at 15:20 local time.

pressure



The output format of the pressure sensor attached to the pressure reference tank was changed to 1/1000. Also the running average was changed to 30 seconds to provide better resolution. The output rate was left at 1 second. UPDATE: The averaging was set back to 1 second since we can average the data in post processing.

• pressure



Sealed pressure lines Tom Horst posted on Jul 11, 2008

Steve completed sealing the fast pressure lines July 11 at 10:30 am PDT. He used teeny cable ties on all the junctions. The system passed an overpressure leakdown test by maintaining a constant pressure. A separate test was done on the reference tank. It also had a leak at the junction to the tank. This was fixed at 12:00 noon.

pressure



Steven Semmer posted on Jul 10, 2008

A pressure check was done after modifying 4 sensors. There was improvement but the leak still existed. Decided to go back to square one by checking the Vaisala line. It was ok. Leakage started as soon as we added the first "T" junction. Further tests showed that the leak could be stopped by adding panduit ties at each junction (3 ties per T). This requires very small ties so an order to Digikey was placed. Should have the ties by tomorrow noon.

pressure



Steven Semmer posted on Jul 10, 2008

After getting the wireless link from downwind2 and profile going this morning we did not realize that pressure1 was also down. It was restarted late this afternoon. Note by Gordon: this system was still configured to use dhcp - and it lost its lease when the etherants were down. Fixed.

pressure



Leak found in Pressure line Steven Semmer posted on Jul 09, 2008

A variety of pressure tests were conducted on the pressure lines. Th first was a check of the reference cell. There appeared to be a very slow leak. The main line was tested a major leak was found. It was at the end of the line where a tee was instead of a straight coupler. This was fixed around 2:30 pm.; We will see what happens over the next few hours.

pressure



Pressure 11B back on line Steven Semmer posted on Jul 09, 2008

The interface board being used for 11B had a bad RJ45 connector. This was fixed and the board was installed at Pressure2. PARO 11B was attached and data looks good. This occurred around 10:00am local.

pressure



Paro 11B back up

Steven Semmer posted on Jul 09, 2008 A modified interface board for 11B, Pressure2, was added this

A modified interface board for 11B, Pressure2, was added this morning. Based on Gordon's data_dump function the pressure and temperature data looked good with little noise.

pressure

barometer connected to reference ta

Gordon Maclean posted on Jul 09, 2008

In order to investigate whether the reference pressure system is working correctly, the Vaisala barometer was removed from the profile tower and installed next to the reference pressure tank. It is connected to the reference tube via a 1/16 inch T connector near where the line goes underground to the tank. The barometer data cable is connnected to ttyS17 on downwind2. The pressure variable is called Pref. The data appears at 18:22 PDT, Jul 8. So, ...

- ahats
- pressure



installed altered pressure interface cards

Gordon Maclean posted on Jul 07, 2008

Yesterday, July 6, in the afternoon we installed the pressure1 system, with the altered interface cards, and mounted the Paroscientific units on the masts. Data from pressure1 appears at 15:30 PDT. All frequency counts look good. The units serviced by pressure1 are 3b,4b,5b,5t,6b,6t and 7t.

- ahats
- pressure

Data dropout at pressure2

Gordon Maclean posted on Jul 01, 2008

No data was being sent from pressure2, and local storage was not being written to. System was up, could log in over the network, and the dsm process was running. data quit at 12:26 UTC, Jul 1. Restarted it with adn/aup at 13:26 UTC.

- ahats
- pressure



Time periods working on the pressure measurement system near sonics

Chenning Tong posted on Jun 29, 2008

Chenning and Khuong working on the pressure measurement system at these times: June 27, 2008: Morning. Hung the horizontal pressure reference line. 4:45-5:15 PM. Working on the 1/4 in tubing, connecting them to the pressure transducers. June 28, 2008 9:00-11:00am. Put 1/16 in couplers to the transducers on the lower array. The tubing on the transducer is hard and the coupler cannot be inserted directly, a heat gun was used to melt the tubing in order to insert the coupler....

- pressure
- sonic



Sonic Locations at Setup for Wide Array

John Militzer posted on Jun 26, 2008

Specific Sonic Locations; Wide Array: Note: Sensors shown in table organized from Southwest end of array to the Northeast end of the array. UpWind Array of PAM tripods (spacing nominally 4m, array line parallel to and 16m NW from 'downwind'). SW NE horiz index 11 10 9 8 7 6 5 4 3 3.2m sonic s/n 1122 1123 1121 673 1119 674 677 536 539 upwind serial port 11 10 9 8 7 6 5 2 1 DownWind Array of PAM tripods (spacing nominally 4m)....

- ahats
- sonic
- pressure