# Sonic at LC site

Over the last ~7 days we've noticed that the sonic at LC has been intermittent during the overnight hours. During these periods we're seeing an ldiag=1, although the sonic does still report values sporadically. As it turns out, the pattern of ldiag=1 from roughly 8 pm to 9 am has been consistent throughout the project, however the missing data started just within the last week or so.
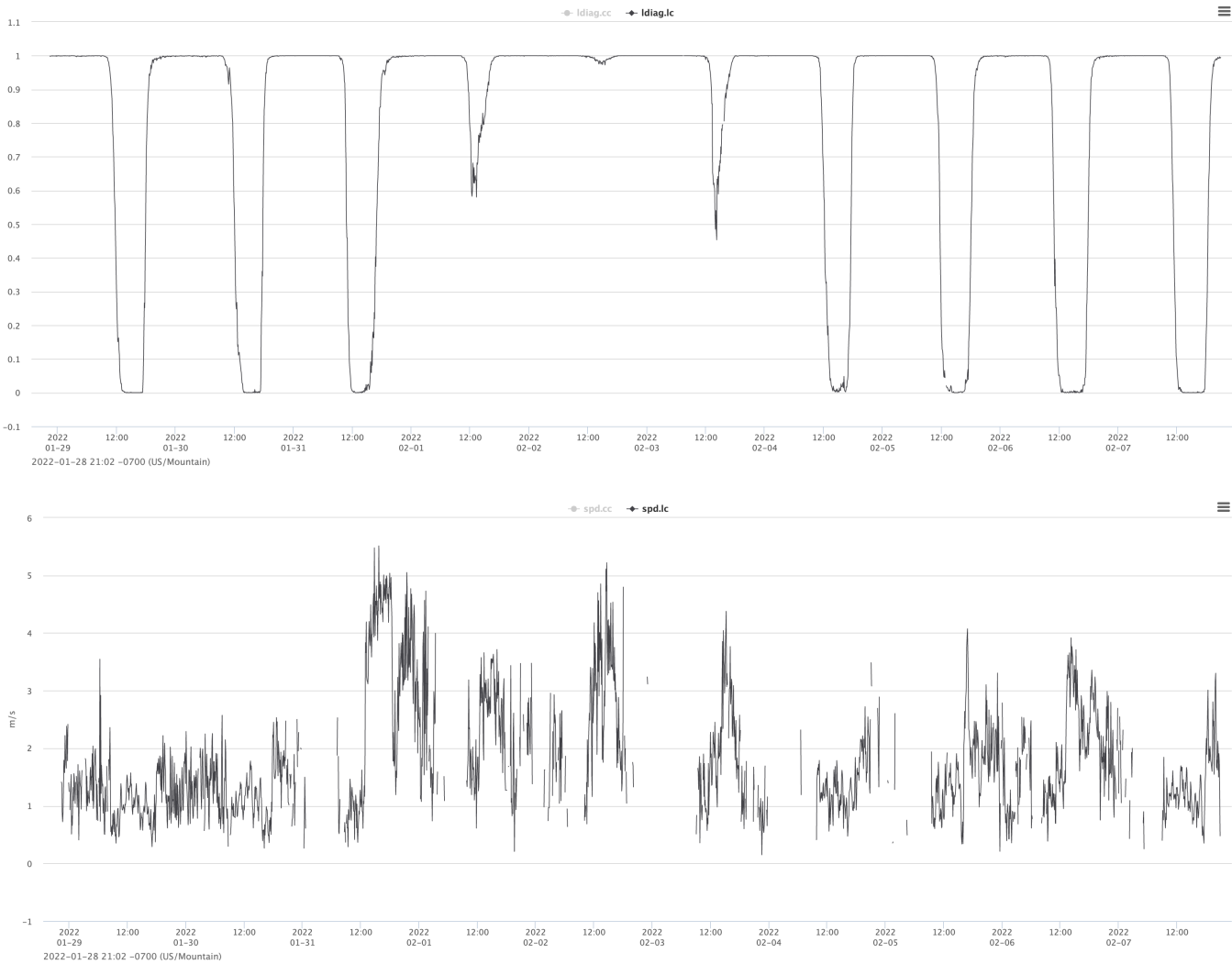
In looking at the DSM dashboard today, I found diagbits=0, 1 and 5 at various times while ldiag=1. I haven't looked at past data to see if this pattern has been consistent. According to the EC-100 manual these represent "amplitude is too low", "amplitude is too high", and "sonic head calibration signature error", respectively.

As shown in TABLE 10-1, all output modes give two diagnostic values: **Sonic Diagnostic Flag** and **Gas Diagnostic Flag**. The values contain a bit field with each bit representing a monitored condition. When a certain condition is detected, the corresponding bit is set. The value remains set until the event that caused the condition is no longer present. TABLE 10-2 and TABLE 10-3 describe the bits in the **Sonic Diagnostic Flag** and the **Gas Diagnostic Flag**, respectively.

			TABLE 10-2. Bits in the Sonic Diagnostic Flag	
bit	hex value	decimal	Name	Function
0	0x1	1	Low Amp	Amplitude is too low
1	0x2	2	High Amp	Amplitude is too high
2	0x4	4	Tracking	Poor signal lock
3	0x8	8	Hi 3 Axis DC	Delta temperature exceeds limits
4	0x10	16	Acquiring	Acquiring ultrasonic signals
5	0x20	32	Cal Mem Err	Sonic head calibration signature error

It's pretty clear that this is not an icing/obstruction issue, so the best course of action may be swapping out the sonic. Since we do not have a spare, Steve has suggested swapping out the EC-100 box to see if that helps. John and Jacquie will try this in the next couple of days.