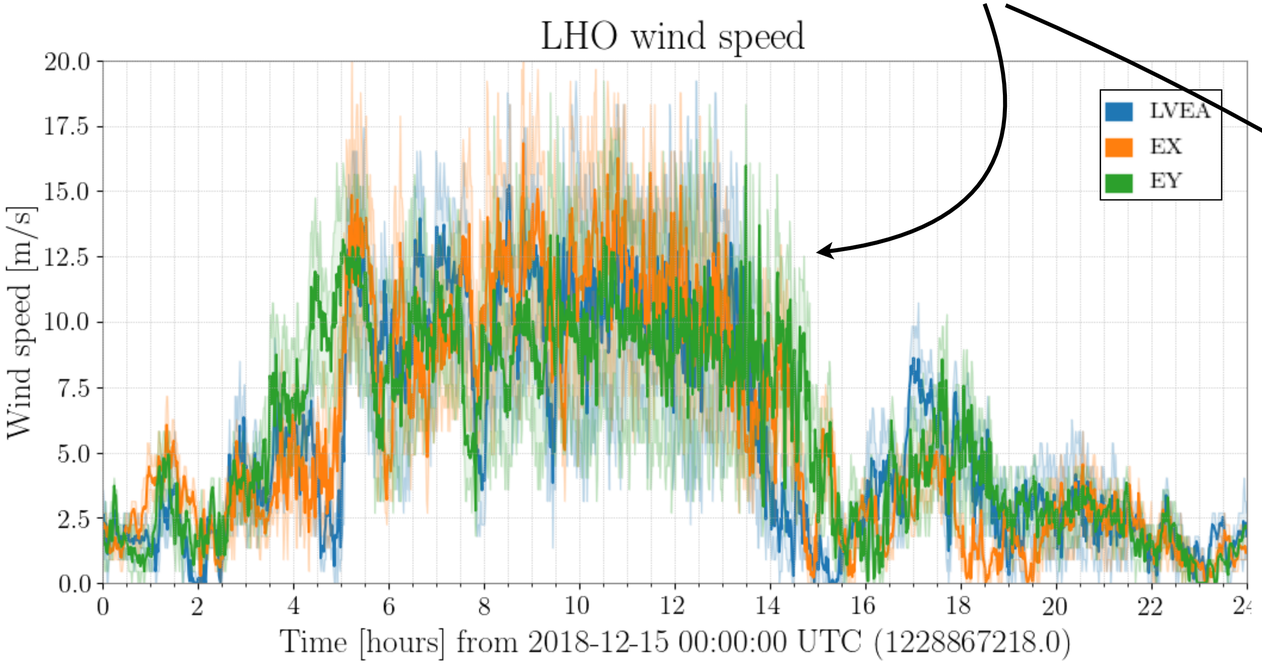
Impact of the Wind Fences

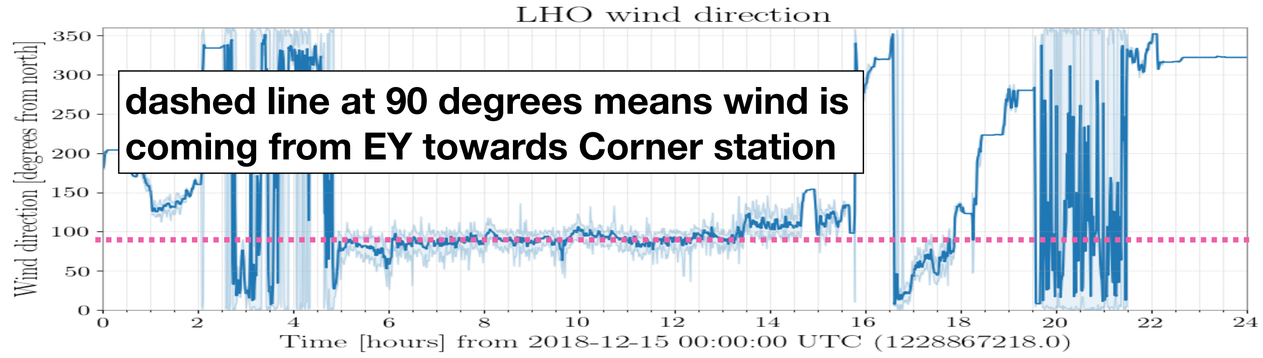
Brian Lantz, for SEI team, Jan 22, 2020

- Take a look through the DetChar Summary pages, to see what we can see.
- There was a free-stream anemometer installed at EndX,
  but it came down during the fence installation, and has not yet been reinstalled
  (it needs to be relocated because the real fence is much longer than the test fence was)
- However - We can see useful qualitative impacts by
  comparing the roof-top sensors at the end to the one at the corner
- Before the fence, these 3 sensors show similar wind speeds
- After the fence, the wind speed at the building top for EndX and EndY are lower than the speed at the corner
  - flip between slides 4 & 5 -
  but only when the wind is blowing from EndY - ie from the protected direction (see slide 8).
- There are several plots from several days with high wind shown for comparison.
- We NEED some quantitative analysis, but this shows that things have changed for the better,
  and may give an impression of interesting questions to ask.
- Seems that wind speeds and building tilts have decreased (recall that the load scales like speed^2).
- Detector is still glitchy during high wind.
- Nature is cruel - the first windstorm after fence installation was from the unprotected direction. Most of the rest of the high winds are from the protected direction (statistics are expected, timing is just mean).

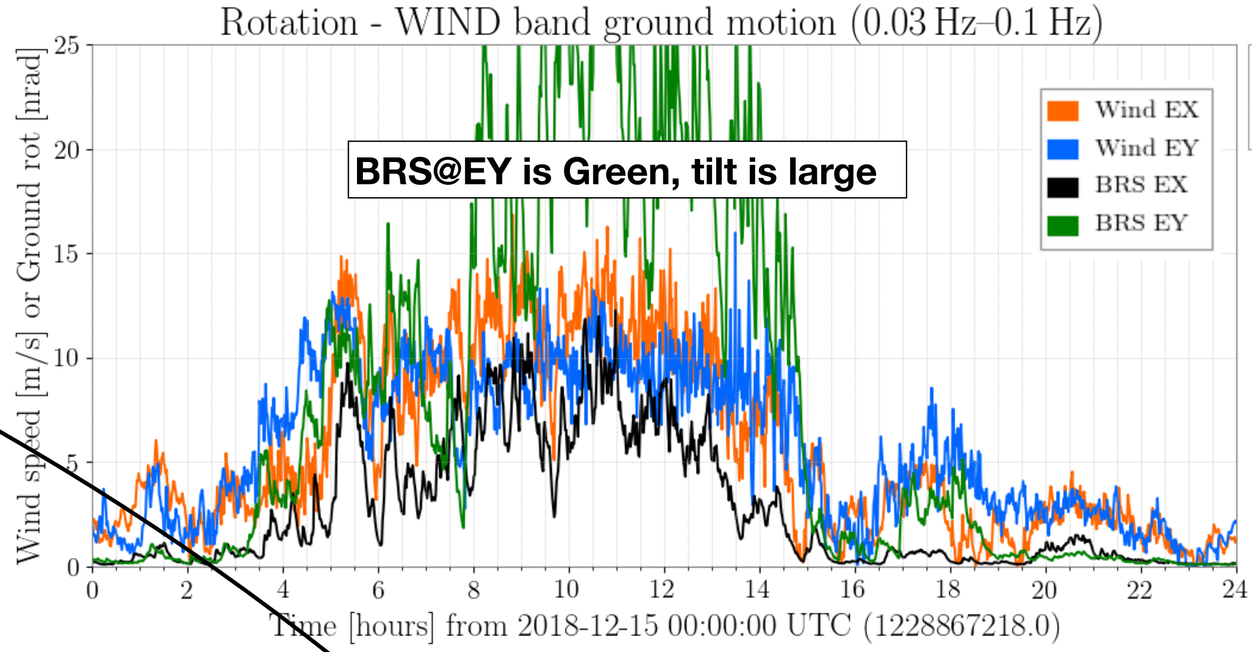
No Fence, Dec 15, 2018

Wind speeds high,
speed at the 3 buildings are similar

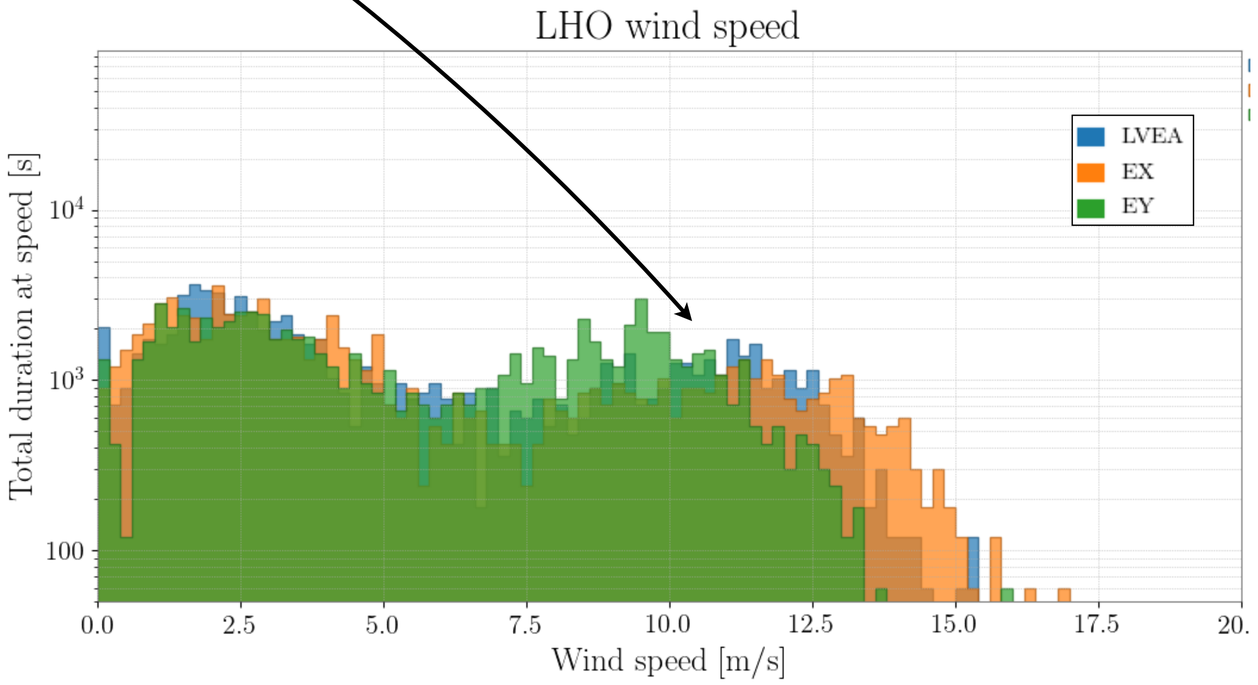




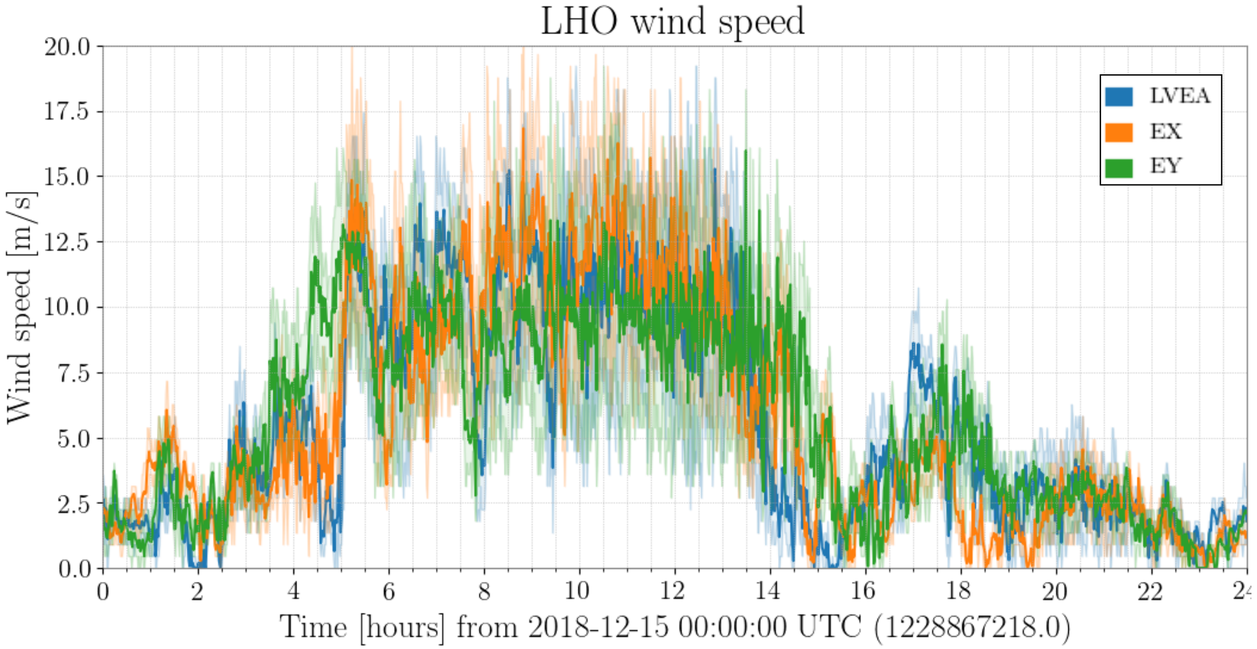
dashed line at 90 degrees means wind is coming from EY towards Corner station

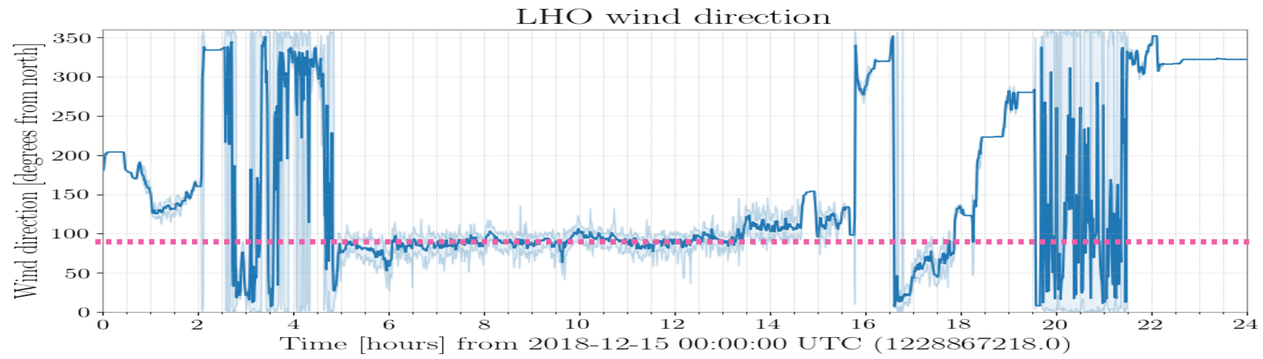


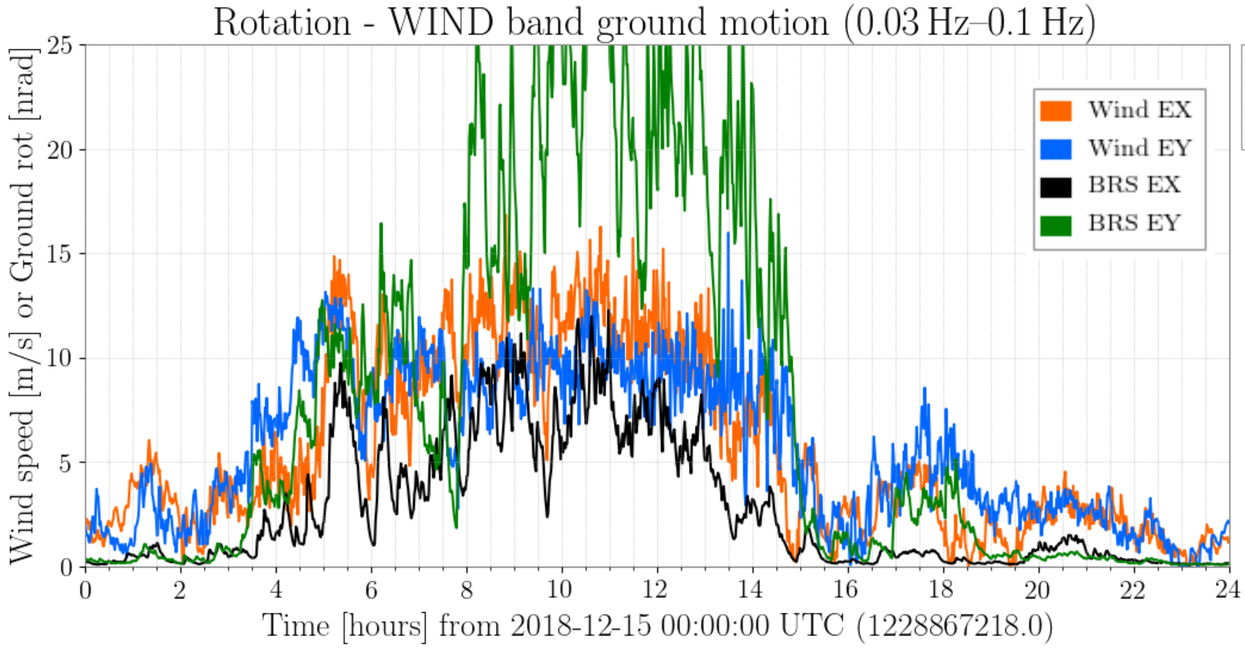
BRS@EY is Green, tilt is large

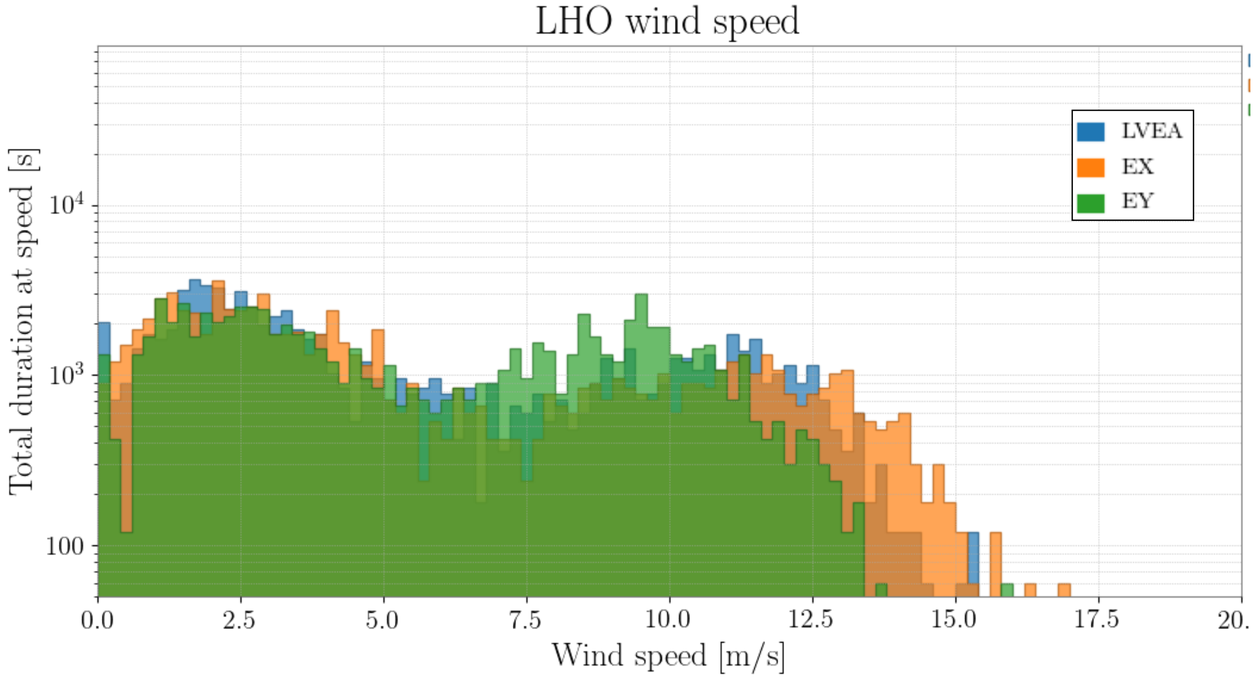


Dec 15, 2018
No Fence, wind from EY,
Wind speeds are similar
Tilt at End stations is large

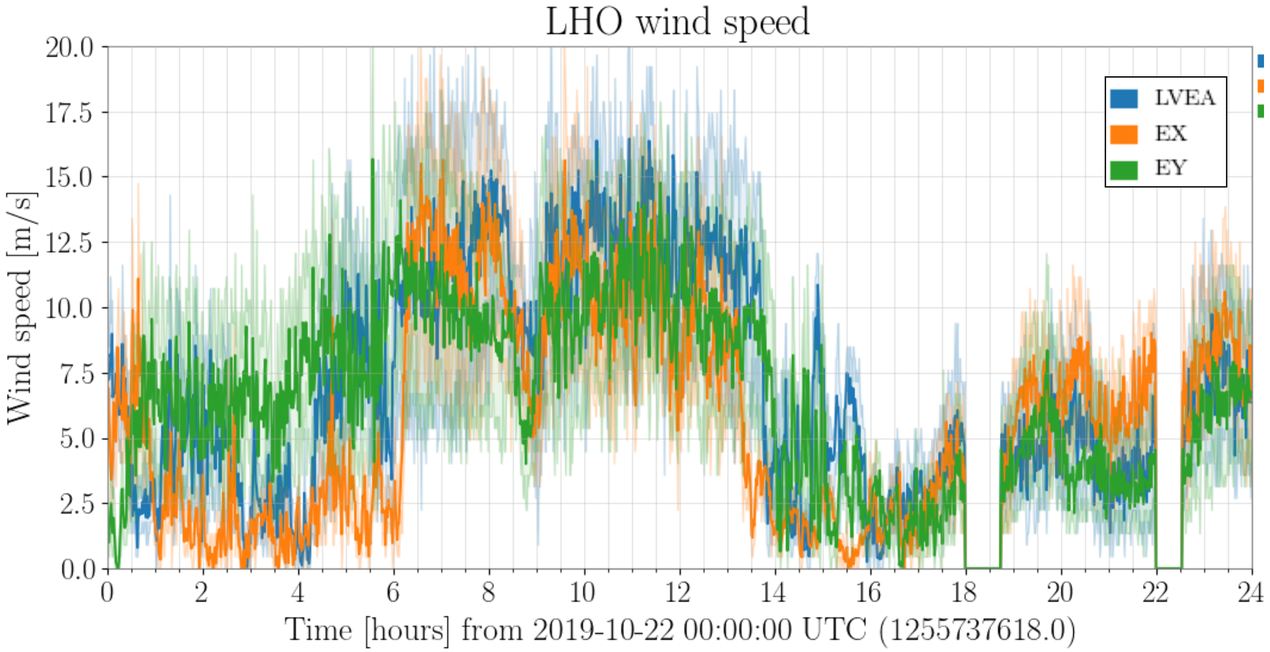


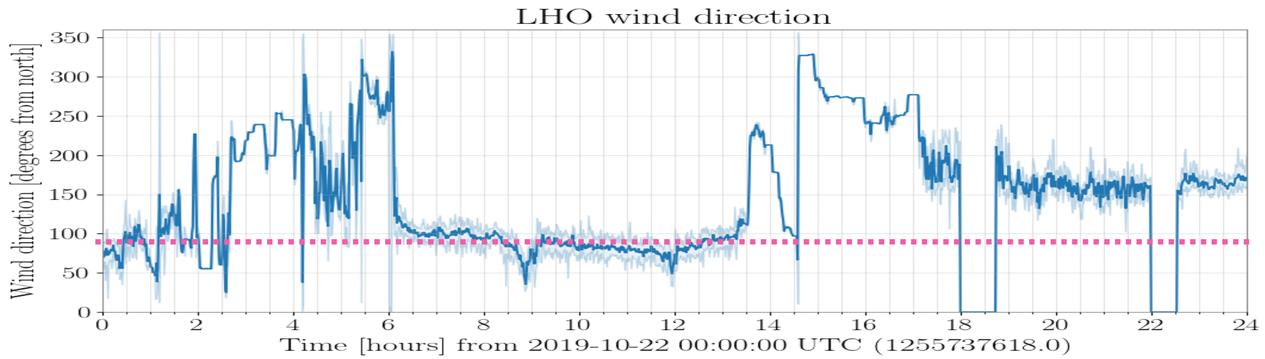


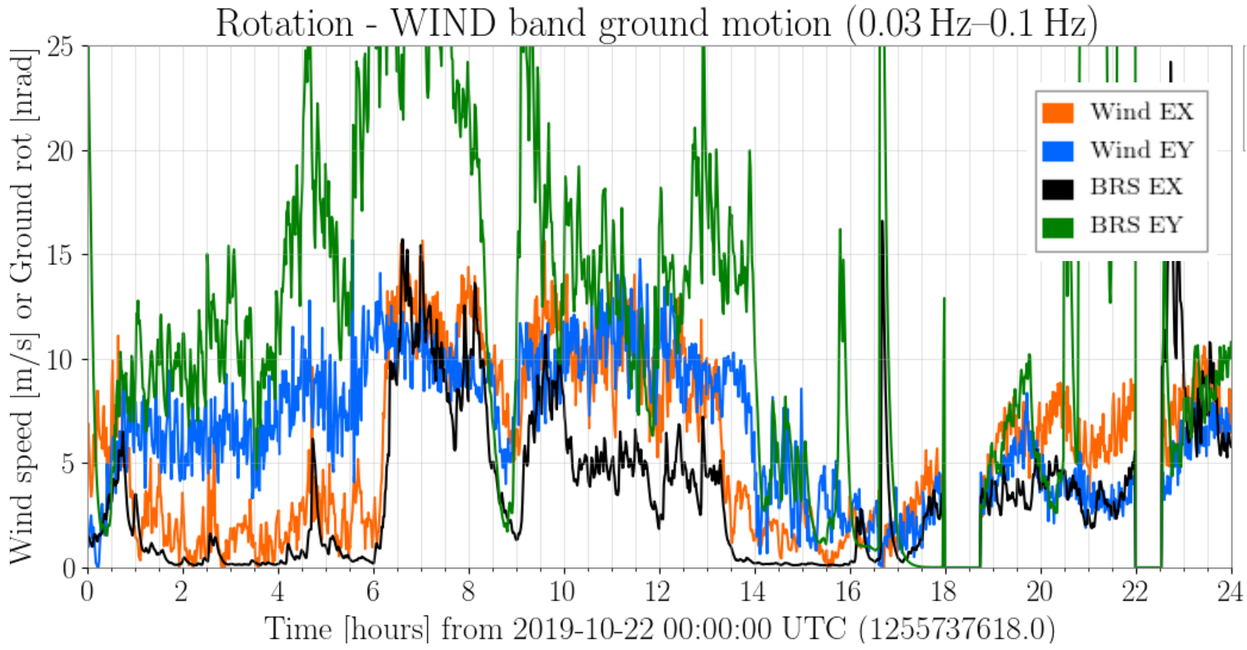


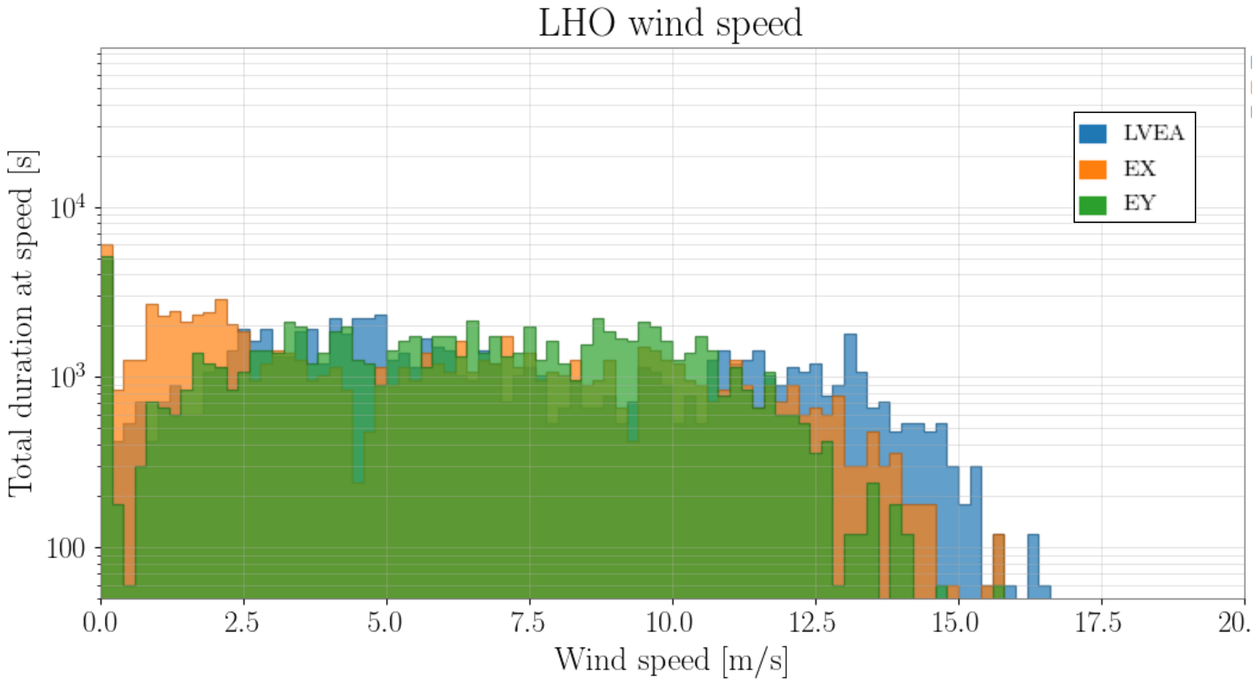


Oct. 22, 2019
No Fence, wind from EY,
Wind speeds are similar
Tilt at End stations is large

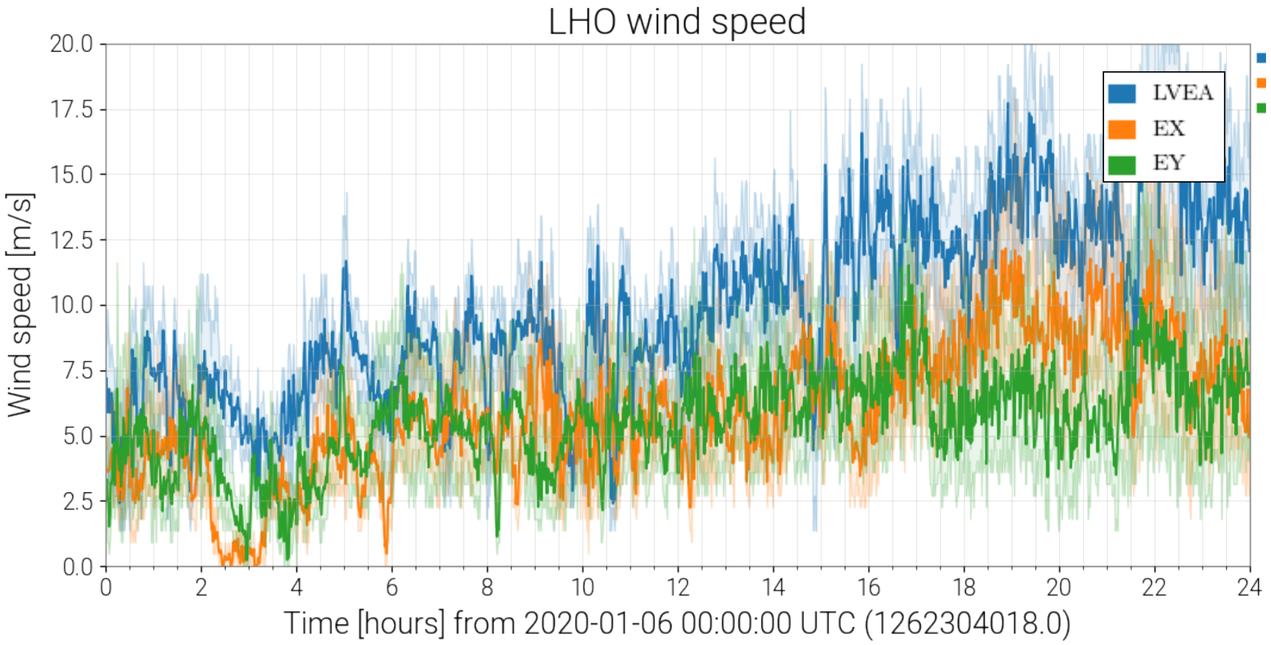


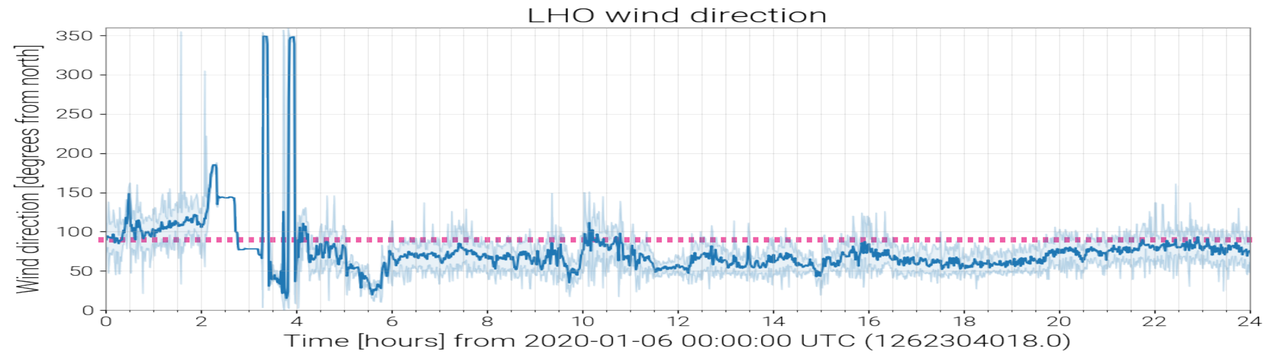


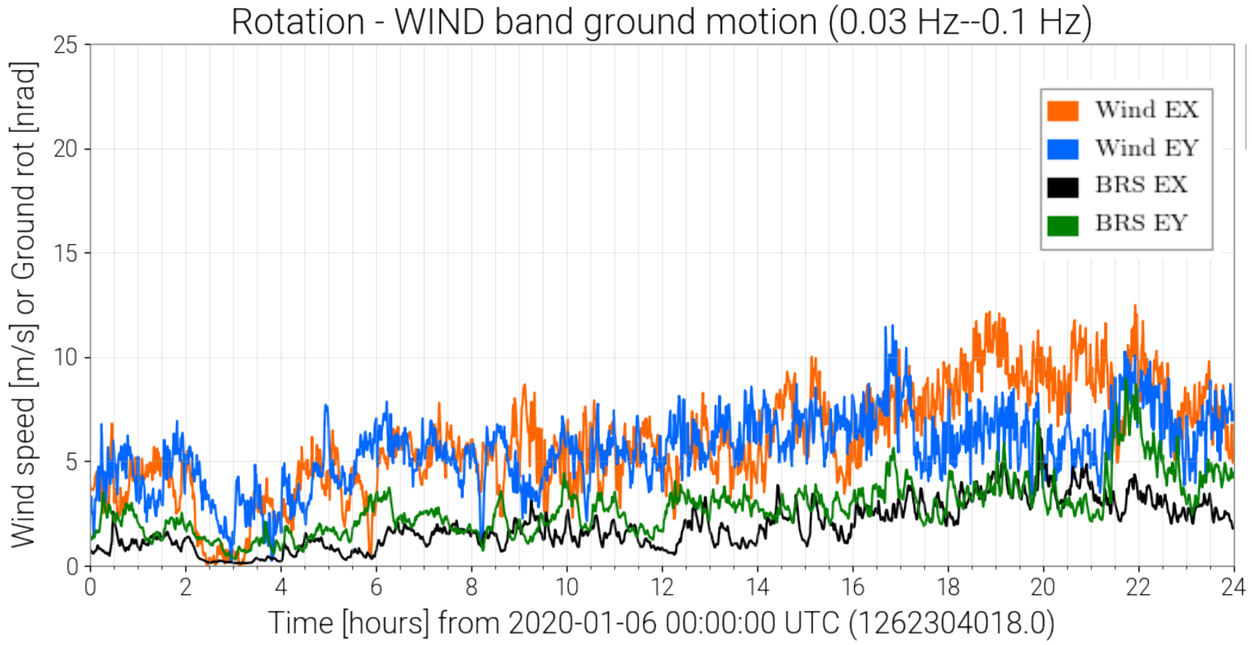


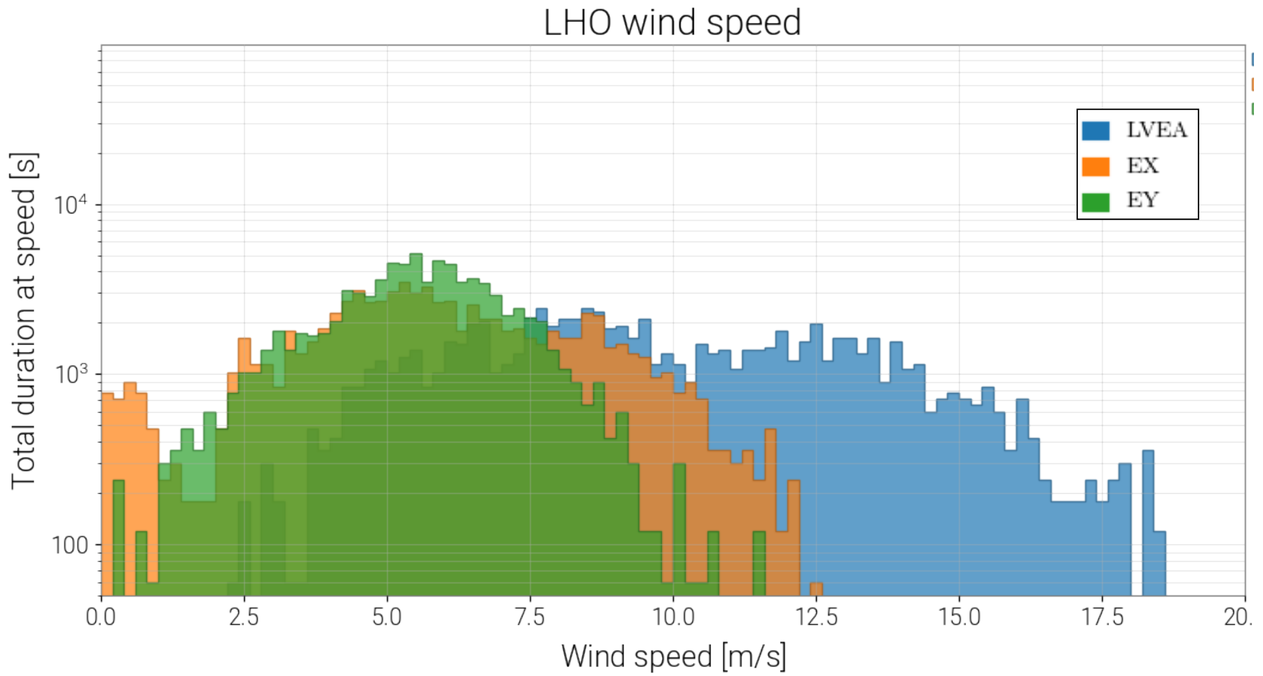


Jan 6, 2020
Fence, wind from EY,
Wind speeds at End are reduced
Tilt is reduced

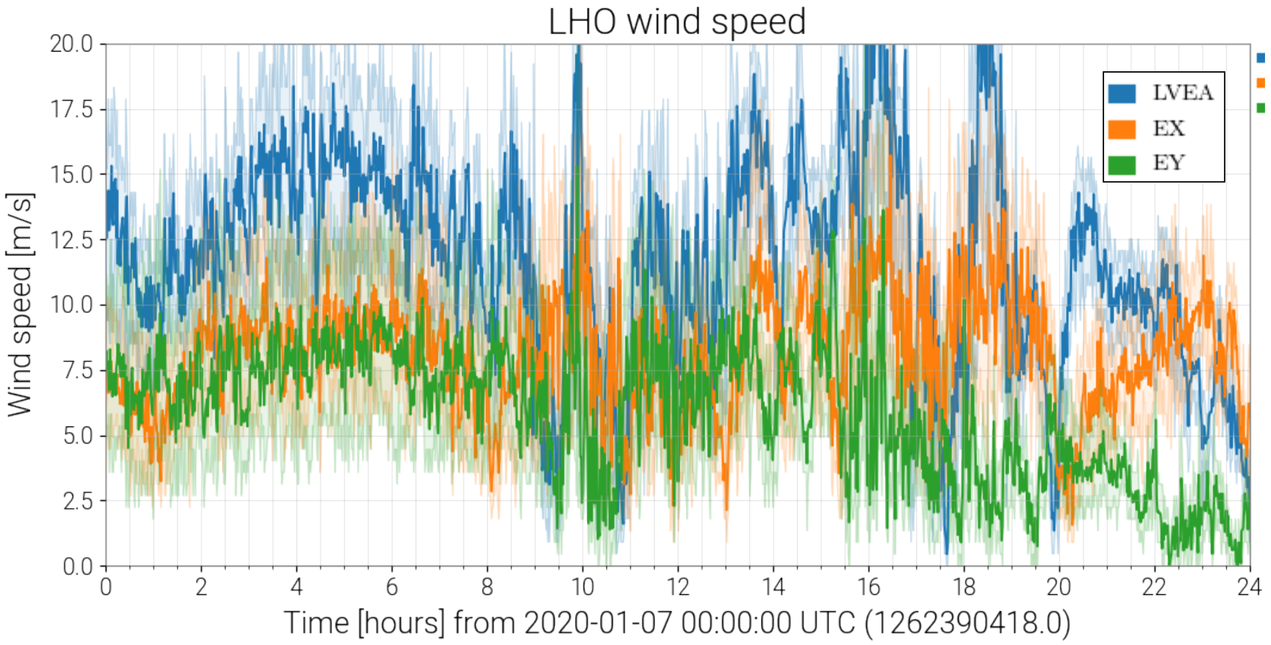


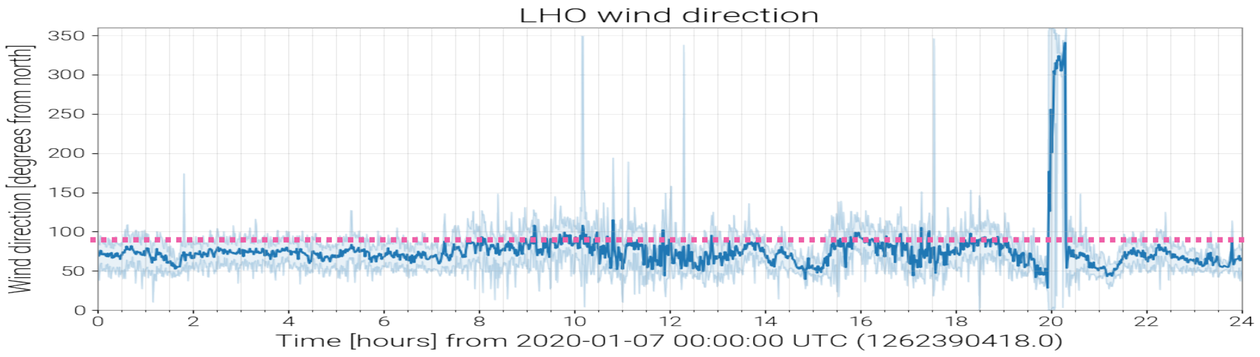


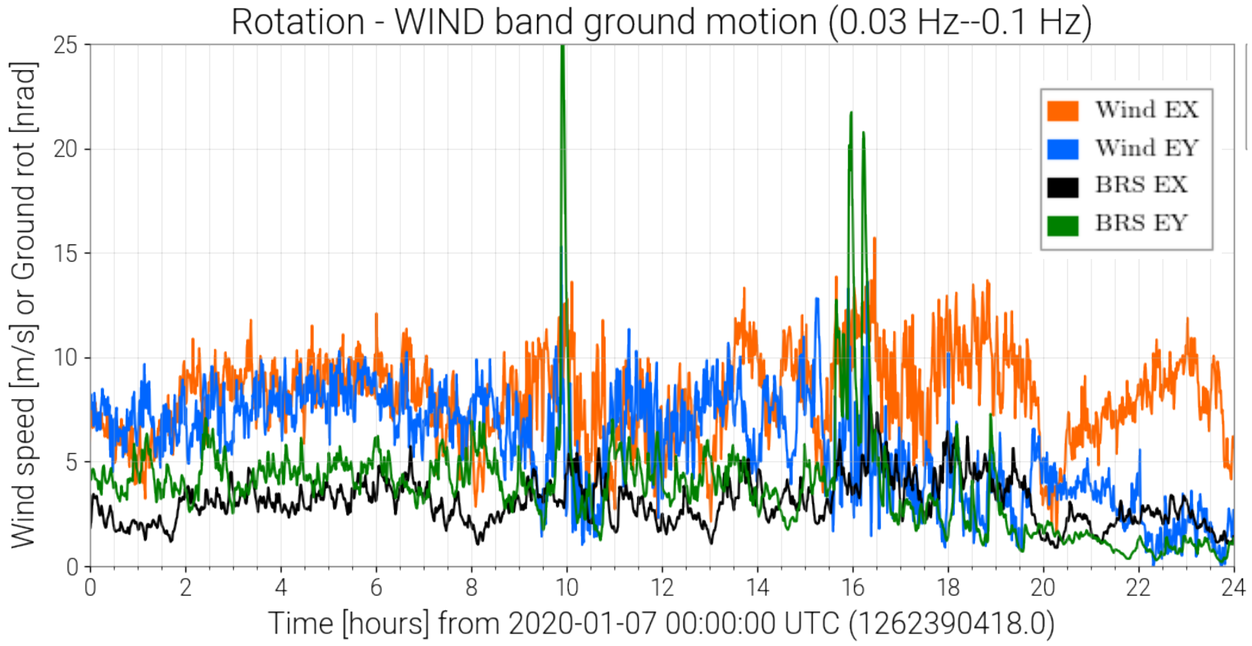


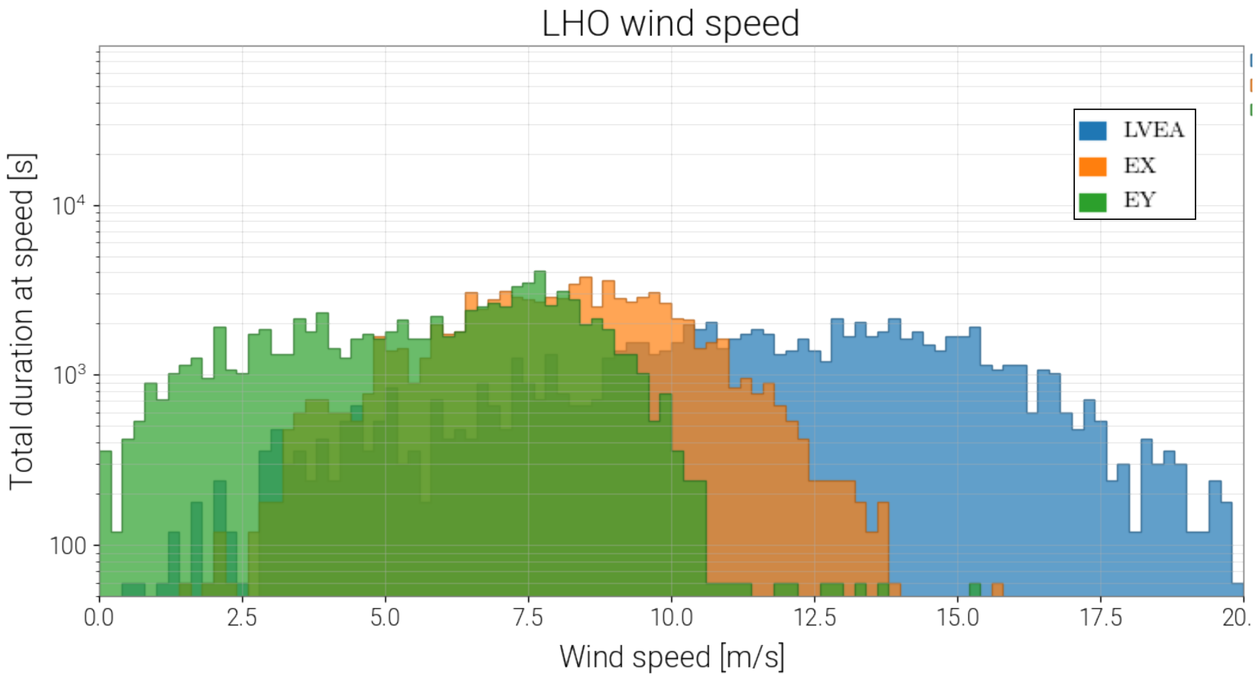


Jan 7, 2020
Fence, wind from EY,
Wind speeds at End are reduced
Tilt is reduced (still see some glitches at EY, though)

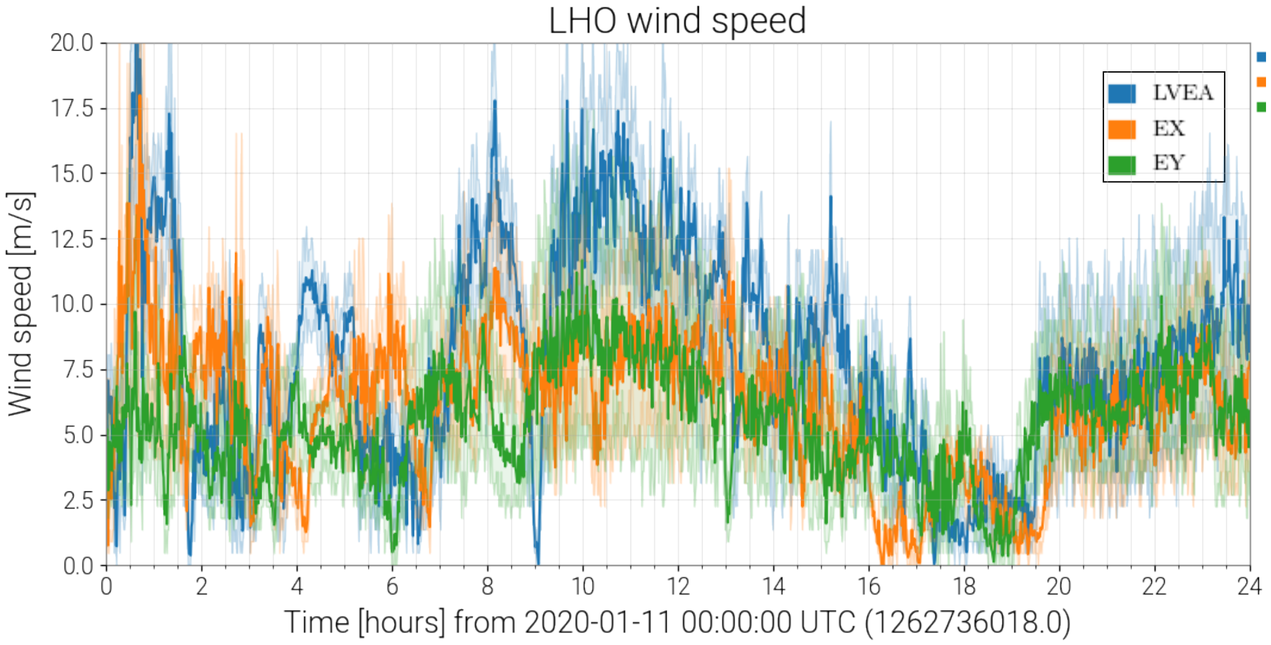


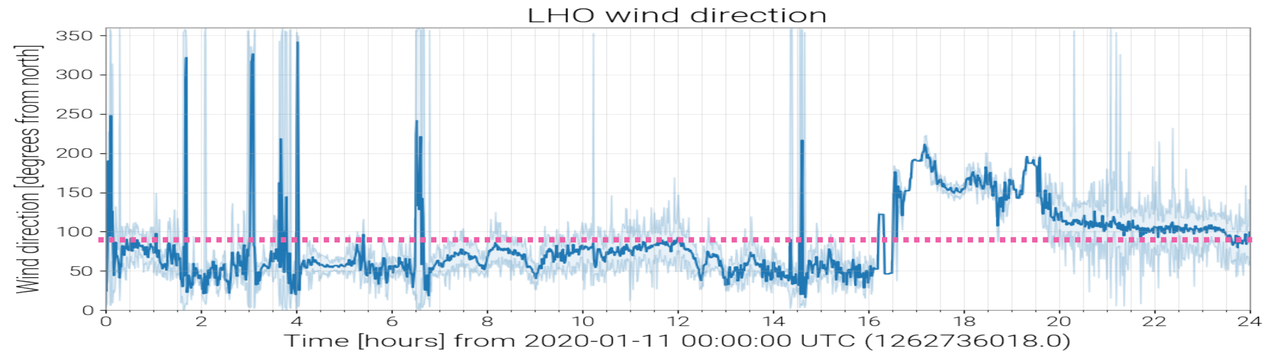


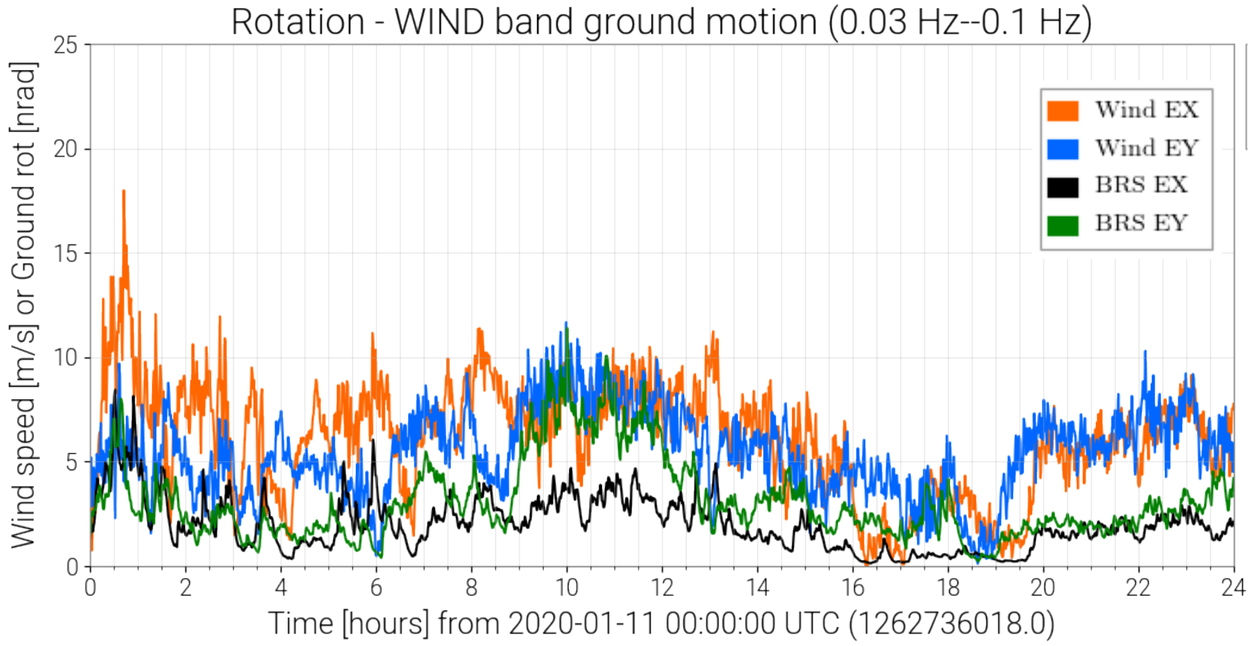


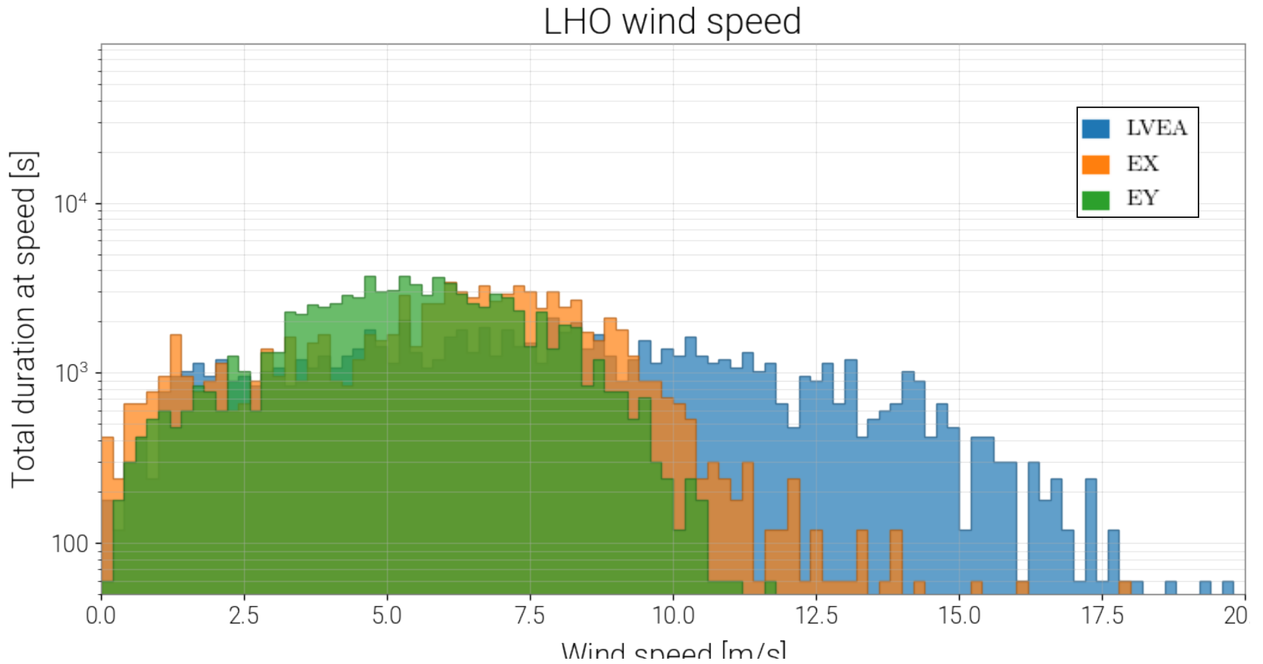


Jan 11, 2020
Fence, wind from EY,
Wind speeds at End are reduced
Tilt is reduced

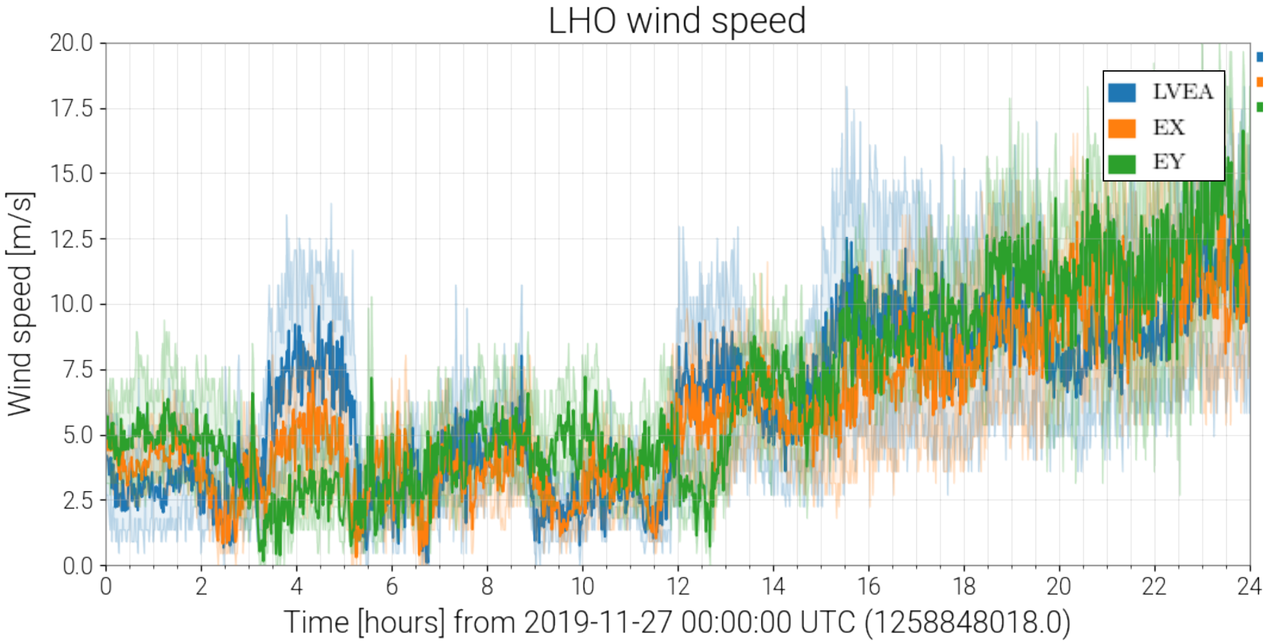


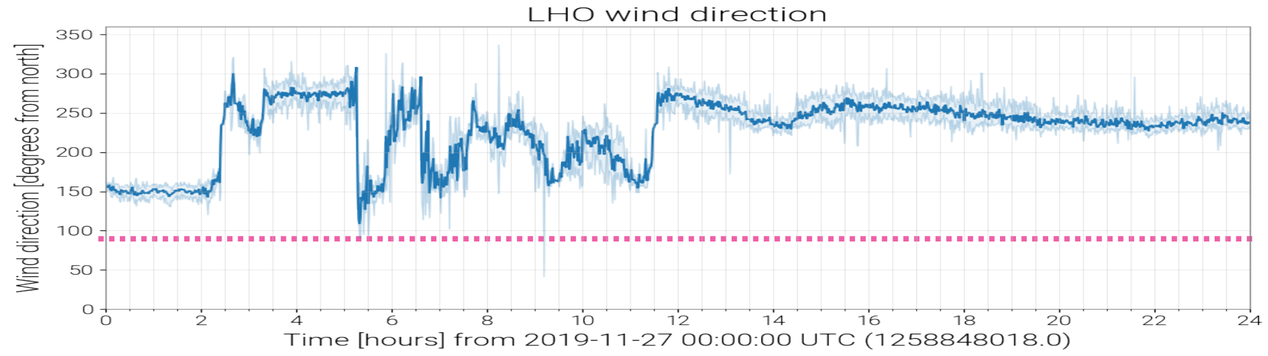


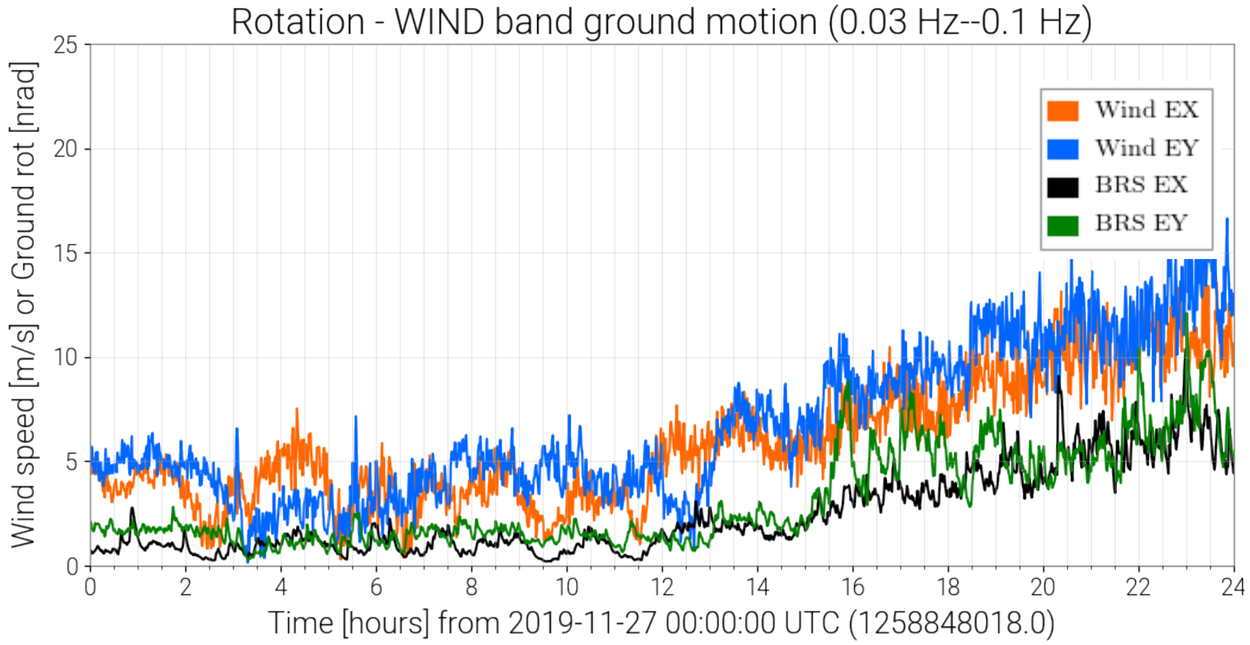


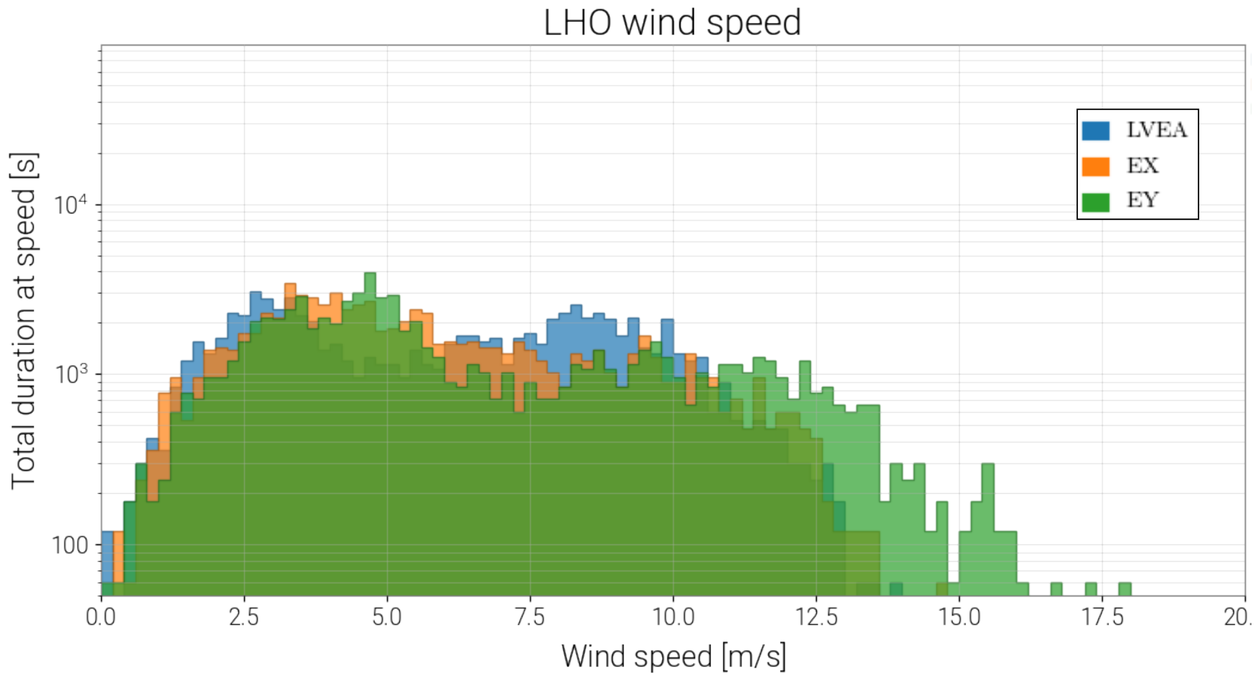


Nov 27, 2019
Fence - but - wind from OTHER DIRECTION,
Wind speeds are similar
This was the first wind storm after installation -
and the Fences didn't help



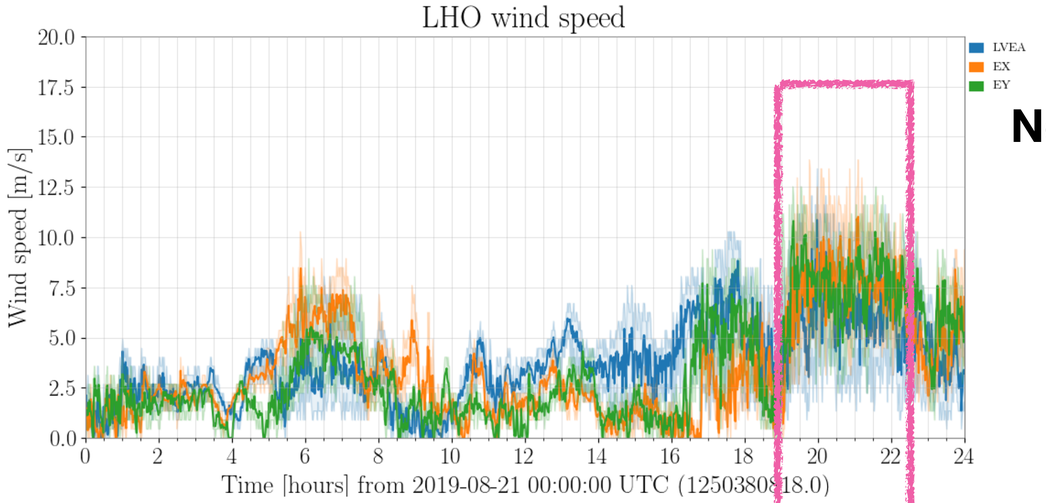


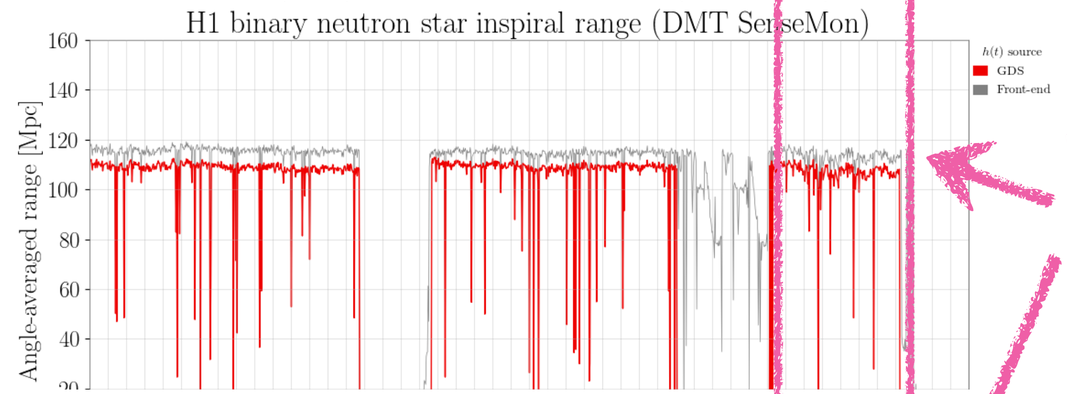


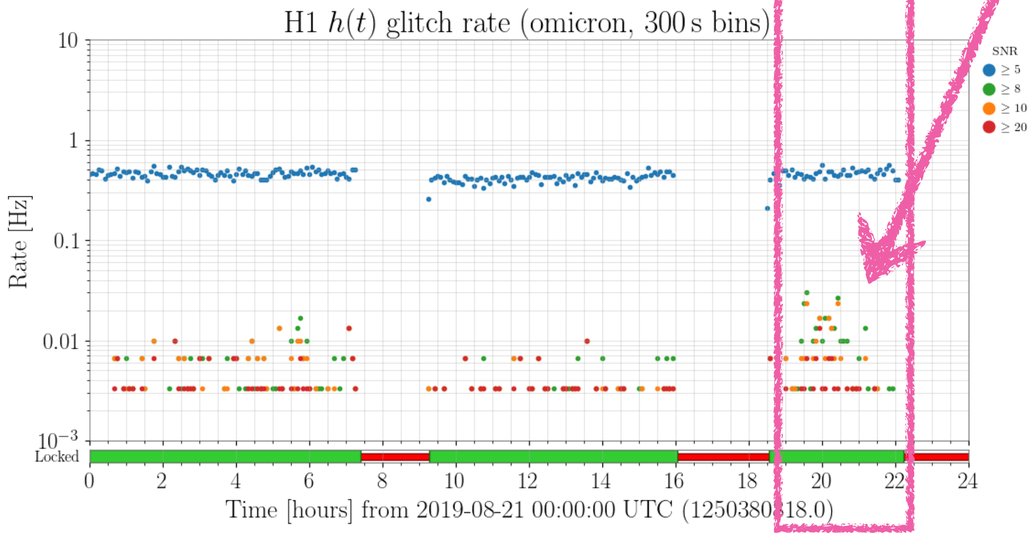


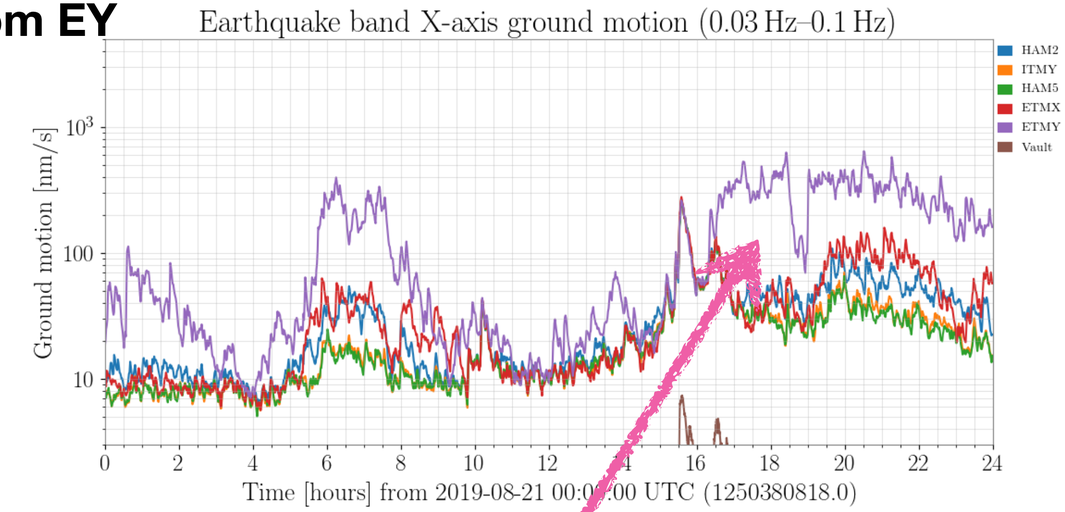
Aug 21, 2019

No Fence, wind from EY







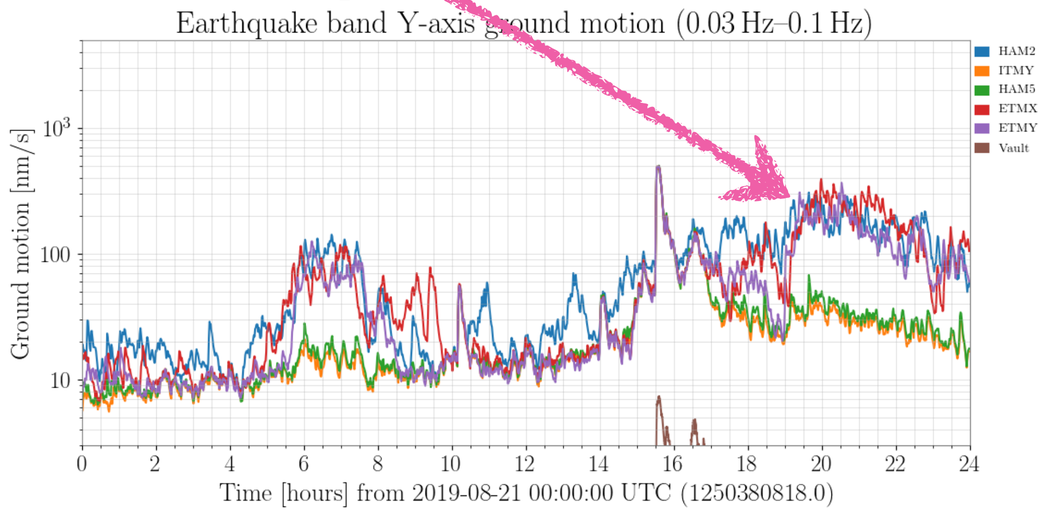


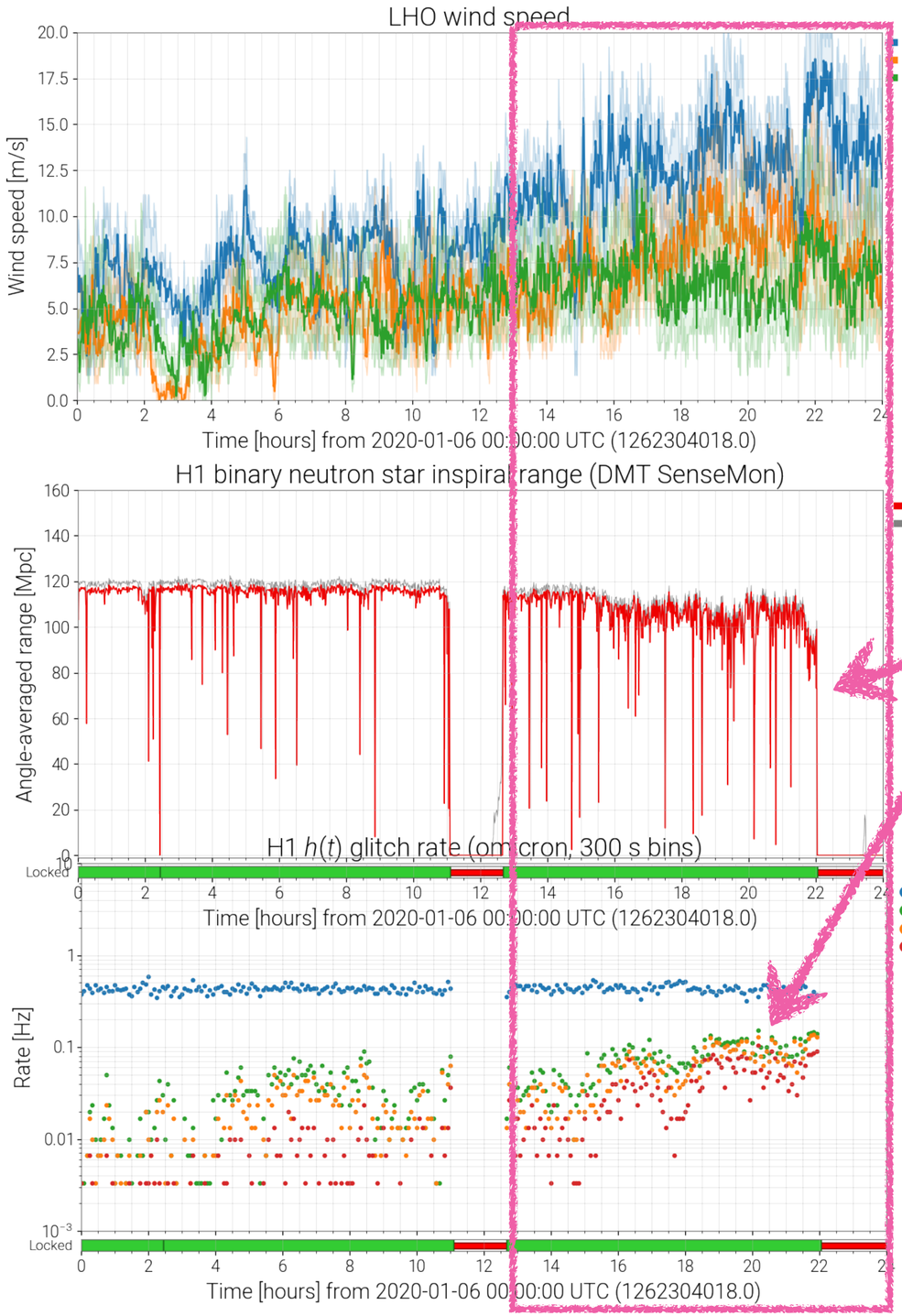
What else do we see?

Does this help locking and range?

Is the glitch rate better?

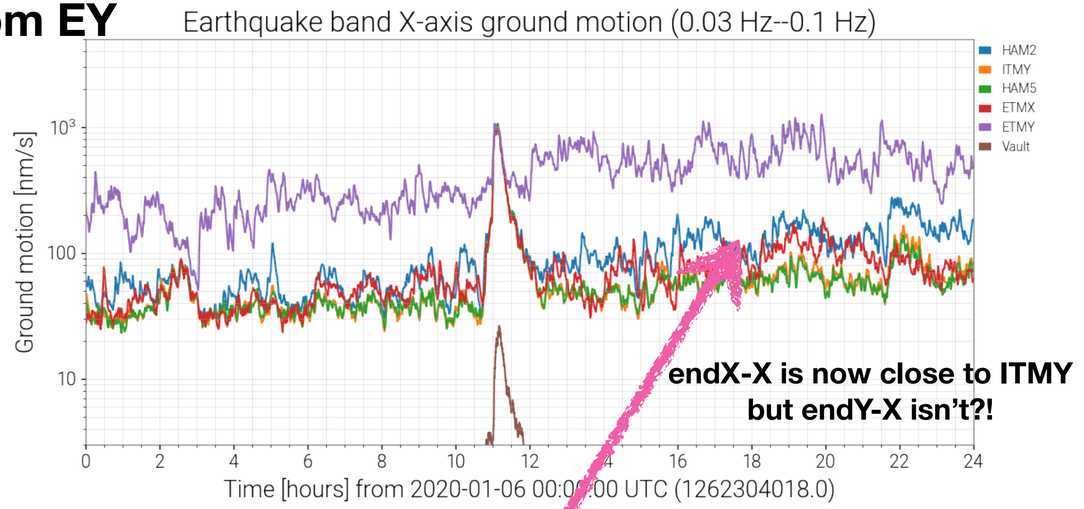
How does the horz. BLRMS change?





Jan 6, 2020

With Fence, wind from EY



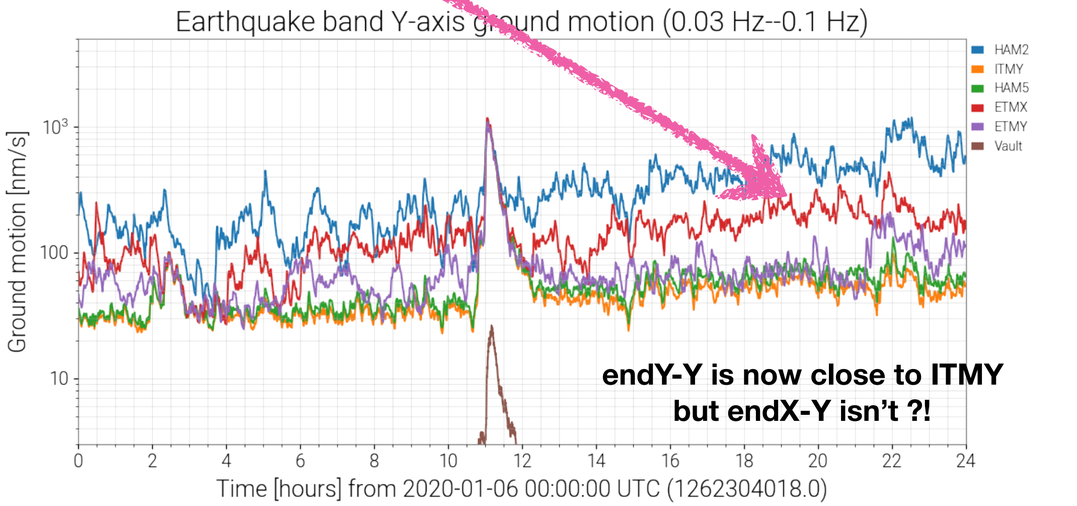
endX-X is now close to ITMY but endY-X isn't?!

What else do we see?

Does this help locking and range?

Is the glitch rate better?

How does the horz. BLRMS change?



endY-Y is now close to ITMY but endX-Y isn't ?!