

S5, S6 and S7



LSC - VIRGO Spring Meeting, Baton Rouge

LIGO-G070070-A-D

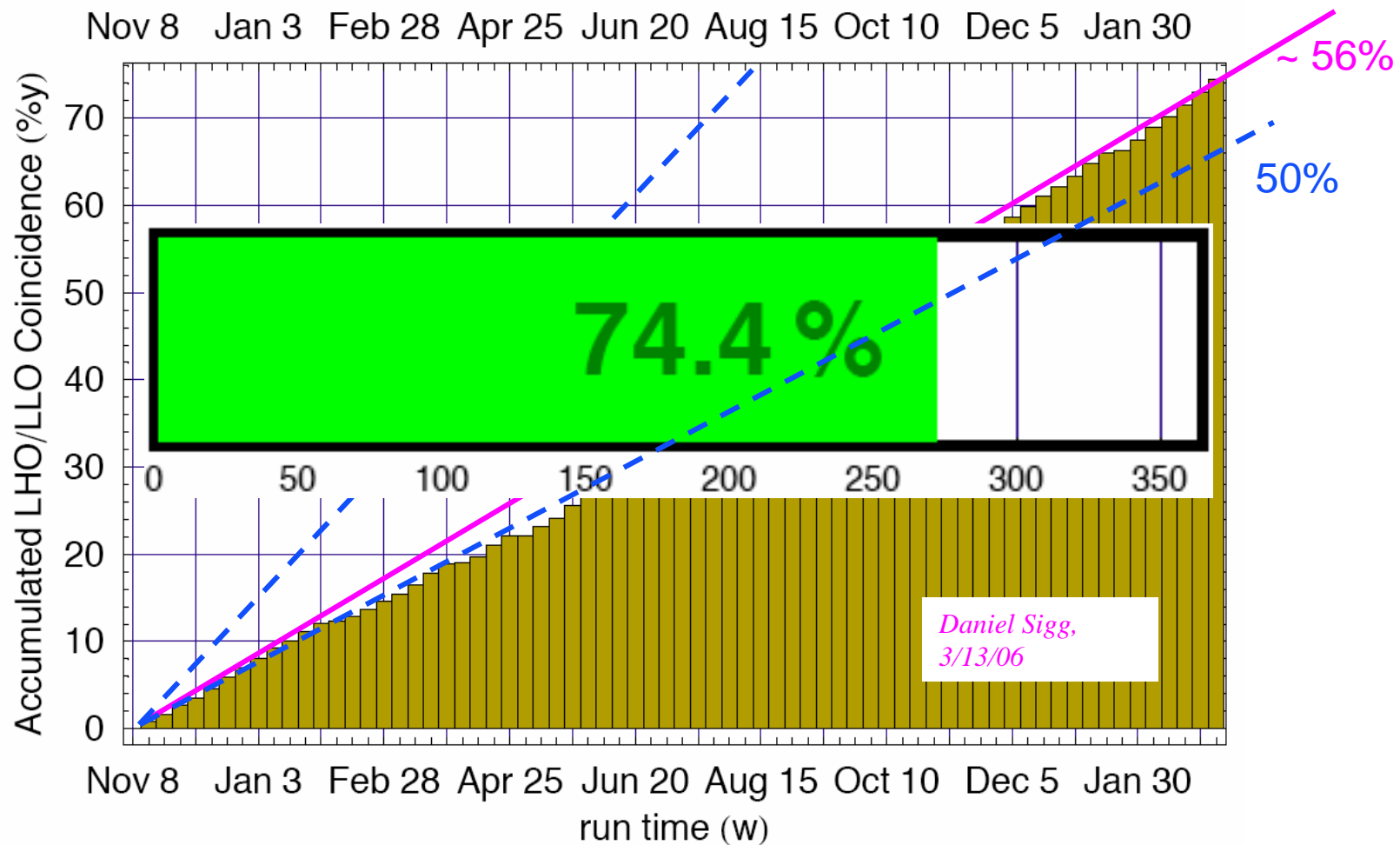
M. Zucker

3/20/2007

Photo credit: Shawn Lani and Peter Richards, San Francisco

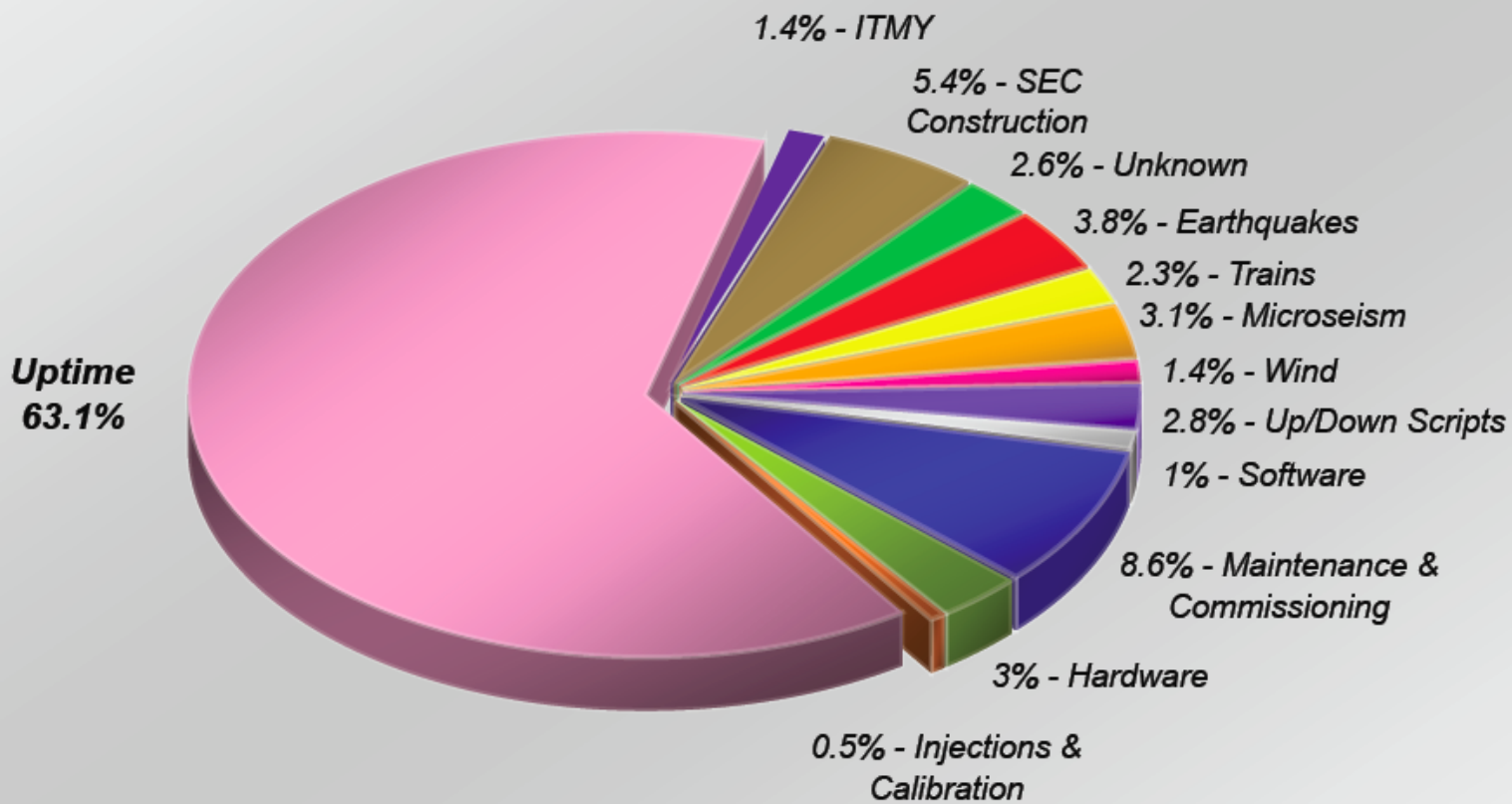


Hx-L1 Coincidence Accumulation



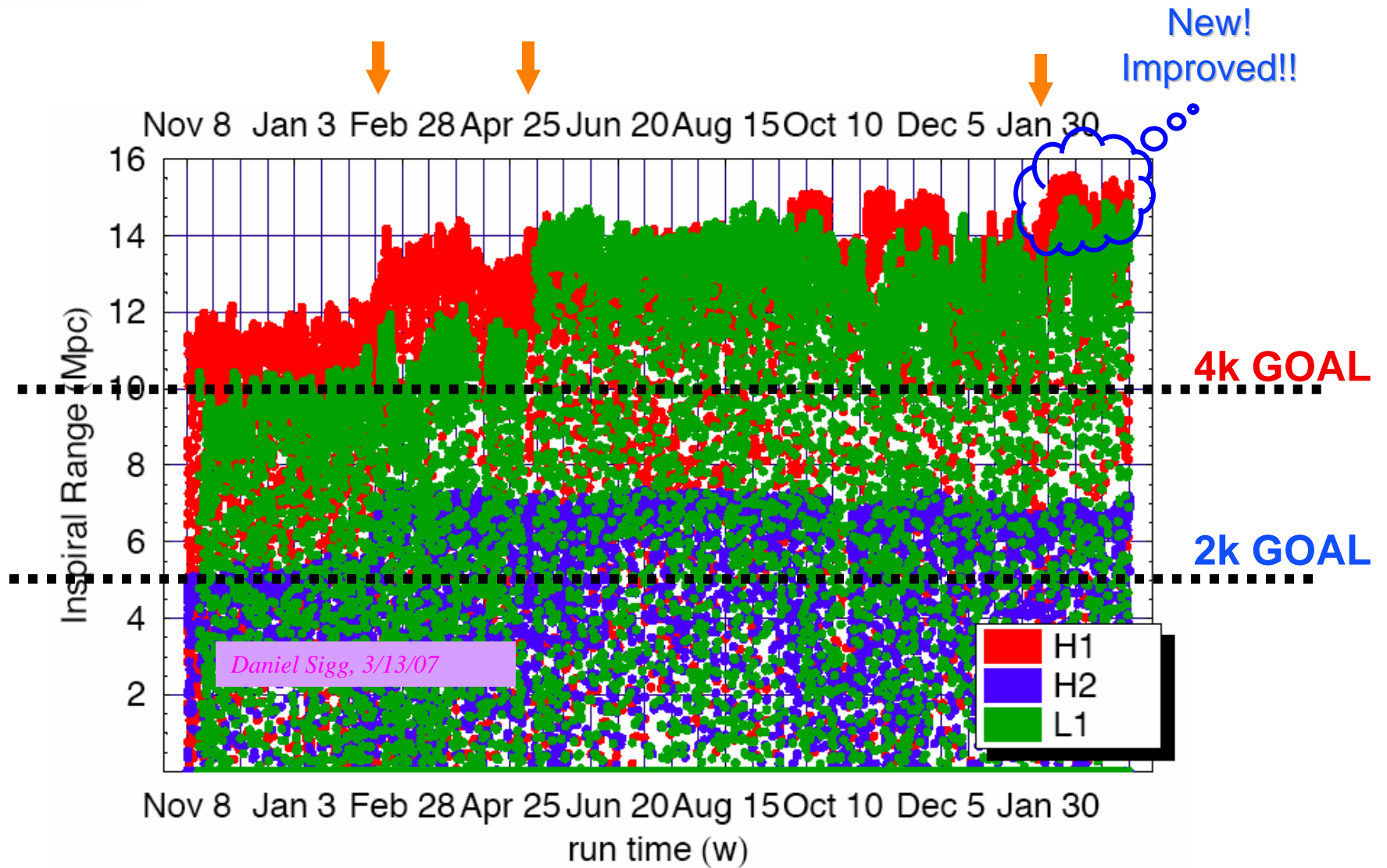
⇒ Project 1y intersite coincidence @ **September 1 2007 (±)**

L1 in S5: Where Has The Time Gone?
Science Segments 110 - 4743 (Nov 24 2005 - Mar 14 2007)





BNS Sensitivity History





Progress against upconversion

- ❑ Still not clear on *physics* behind coupling of m_{seism} (& other LF disturbances) to ~ 100 Hz strain, but...
- ❑ Reduced forces applied to TM's improved both sensitivity and stationarity on H1 and L1 in January
- ❑ H1: partial implementation of PEPI, retuned WFS, SUS damping --> $\sim 2x$ reduction in RMS force
 - H1 now solid at $15 + \text{Mpc}$, nearly independent of m_{seism} (!)
- ❑ L1: increased bandwidth tidal loop (ETMx only) & LF integrators
 - L1 now around $14 + \text{Mpc}$, also much less variable w/ m_{seism}
 - Bonus: ~ 40 h lock on L1 now demonstrated



Progress against upconversion (H1)

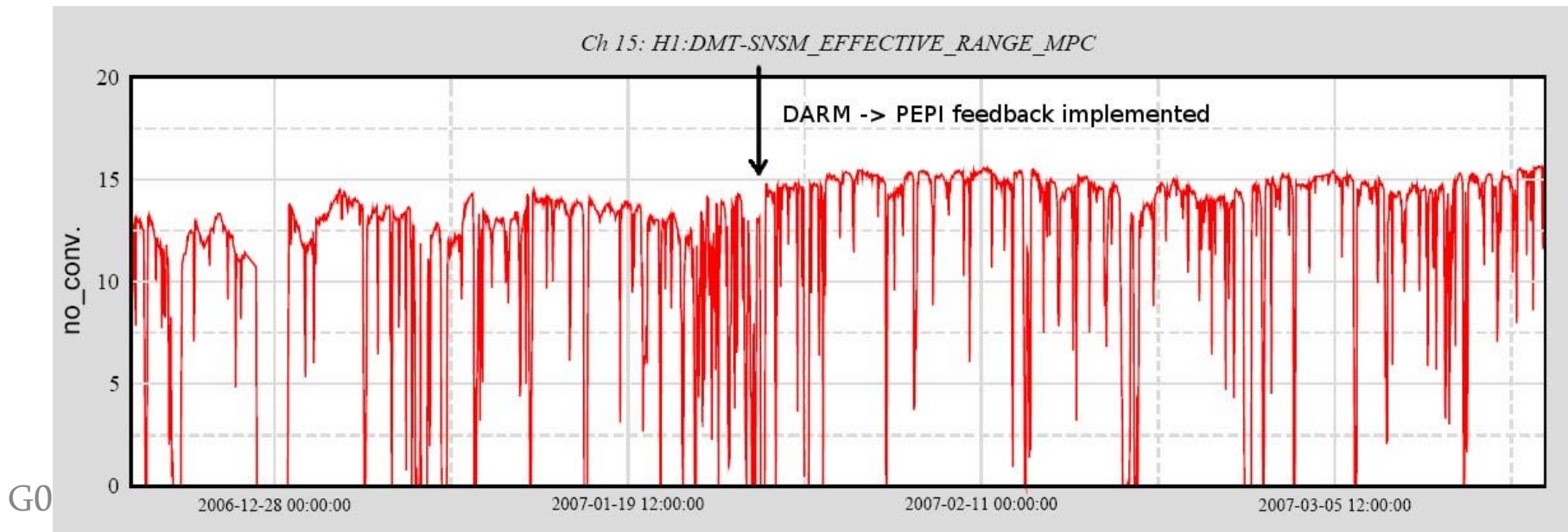
} Factor of ~ 2 or 3

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

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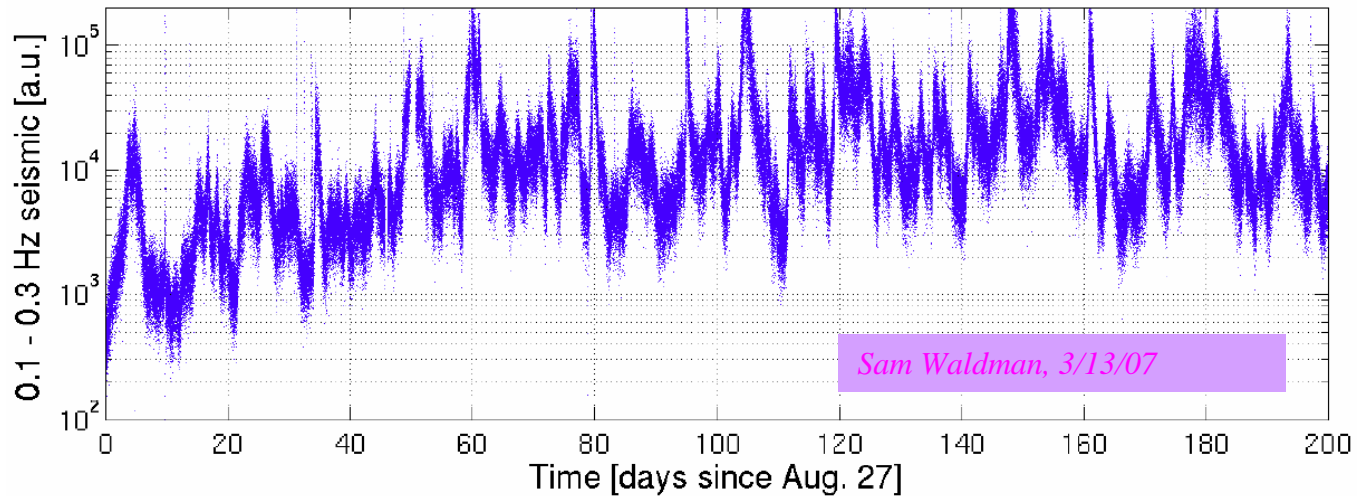
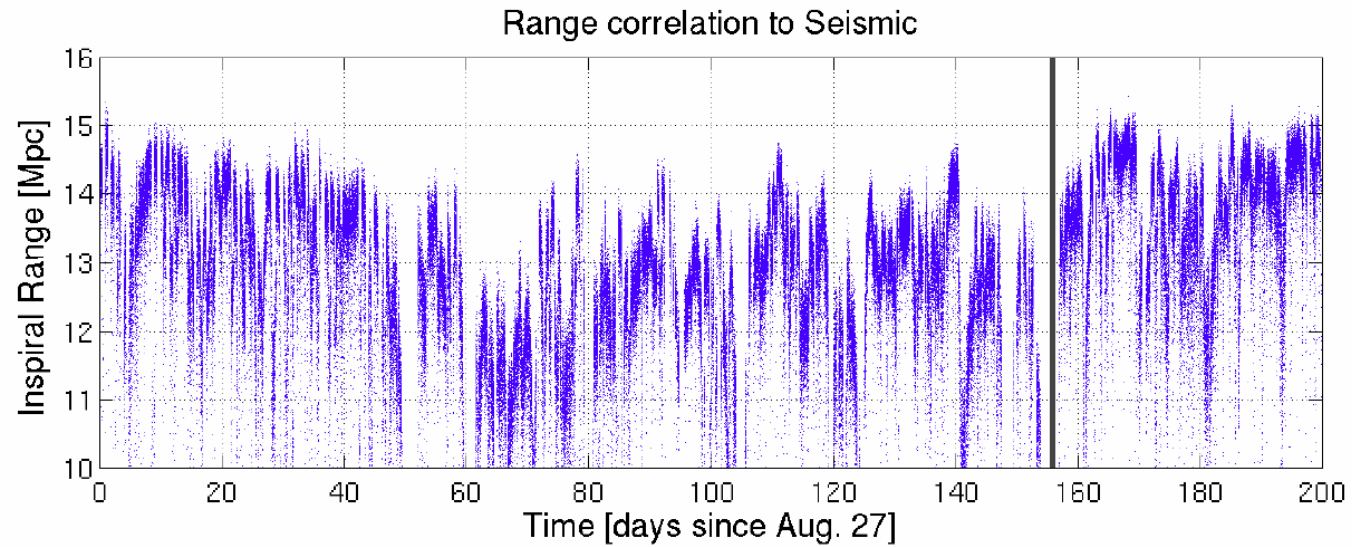
Keita Kawabe 1/29/07

Justin Garofoli, 3/13/07





Progress against upconversion (L1)





What next?
Mission Priorities:

Detect Gravitational Waves

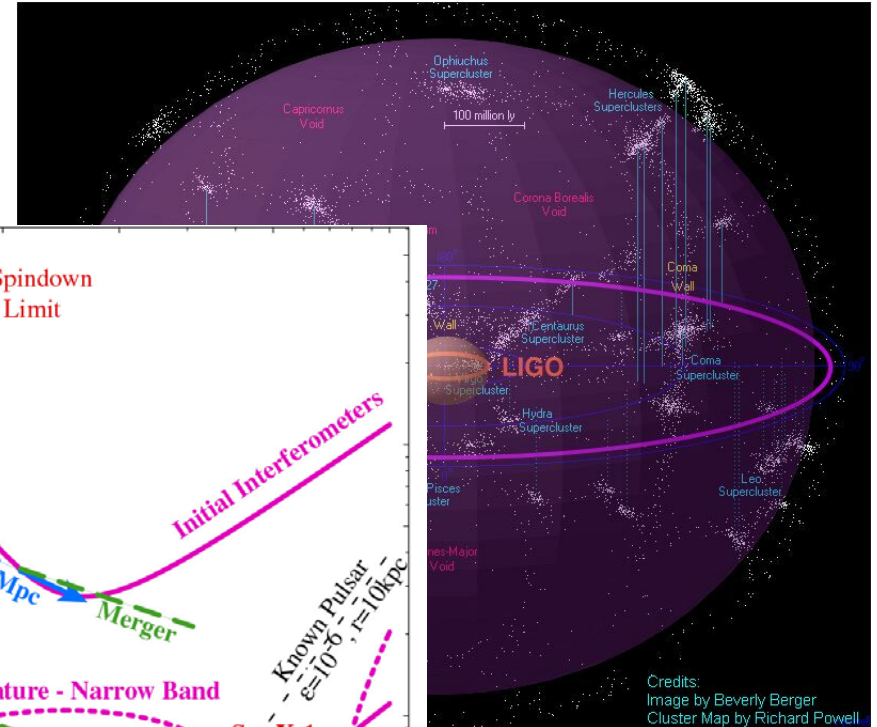
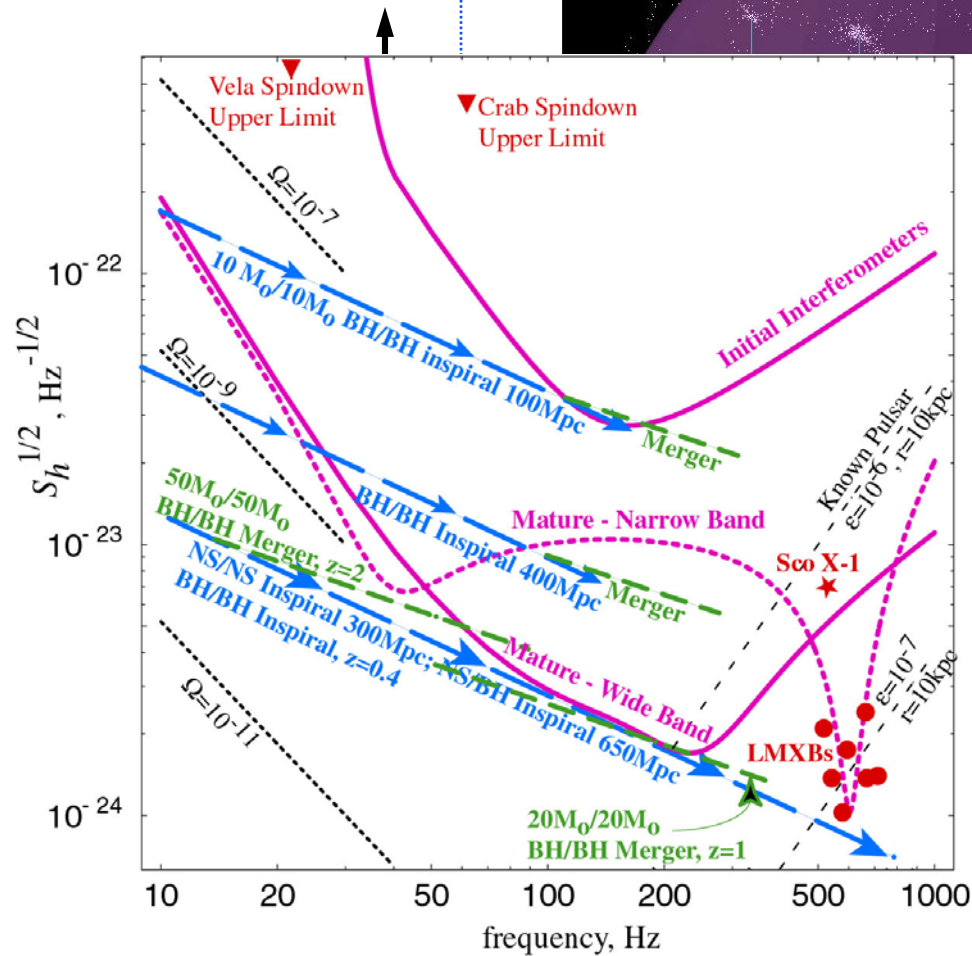
Detect Lots of Gravitational Waves

Grow a Healthy Field

Looking Forward

Quick
TIFF (LZW)
are needed to

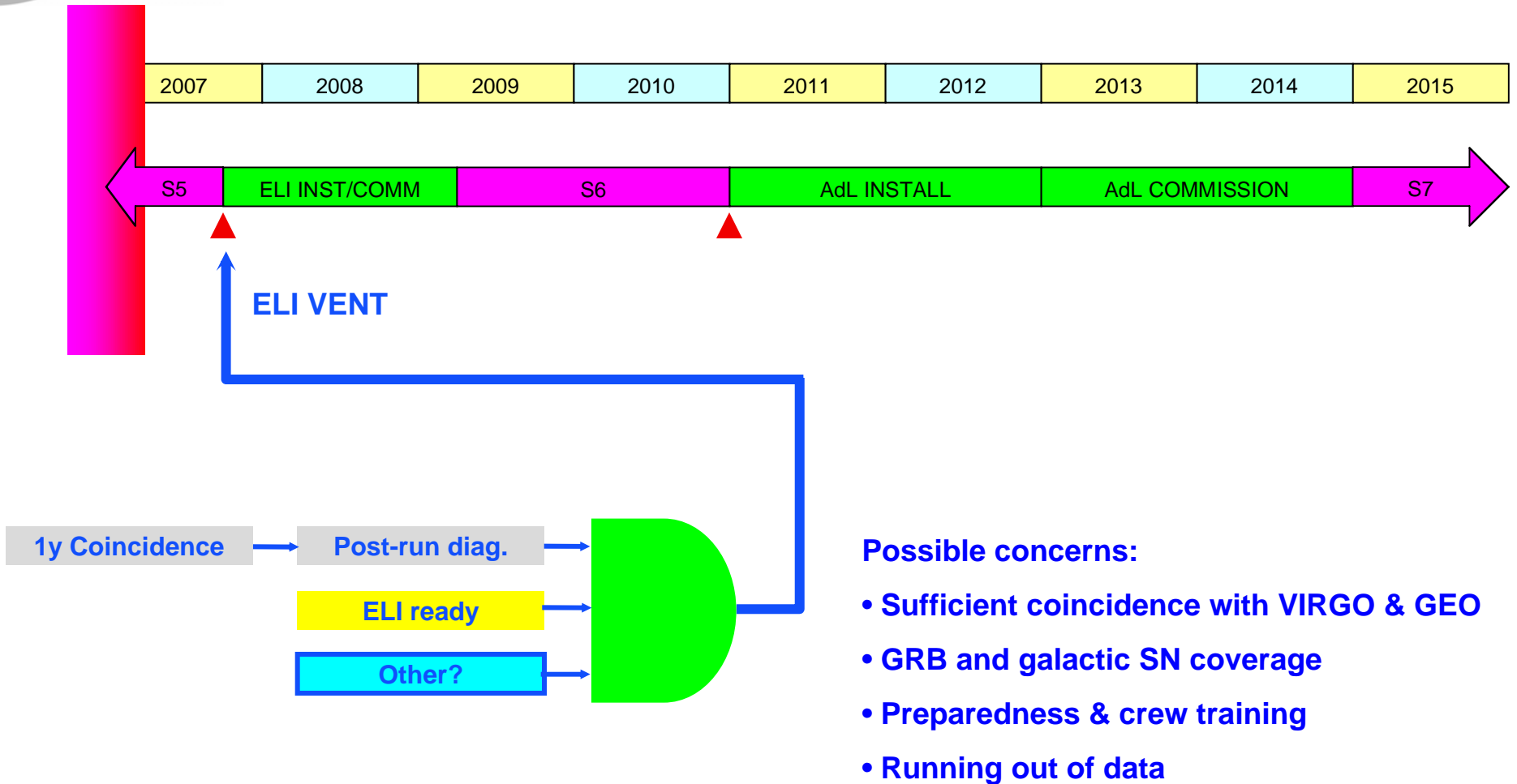
Nutzman et al., a



Credits:
Image by Beverly Berger
Cluster Map by Richard Powell

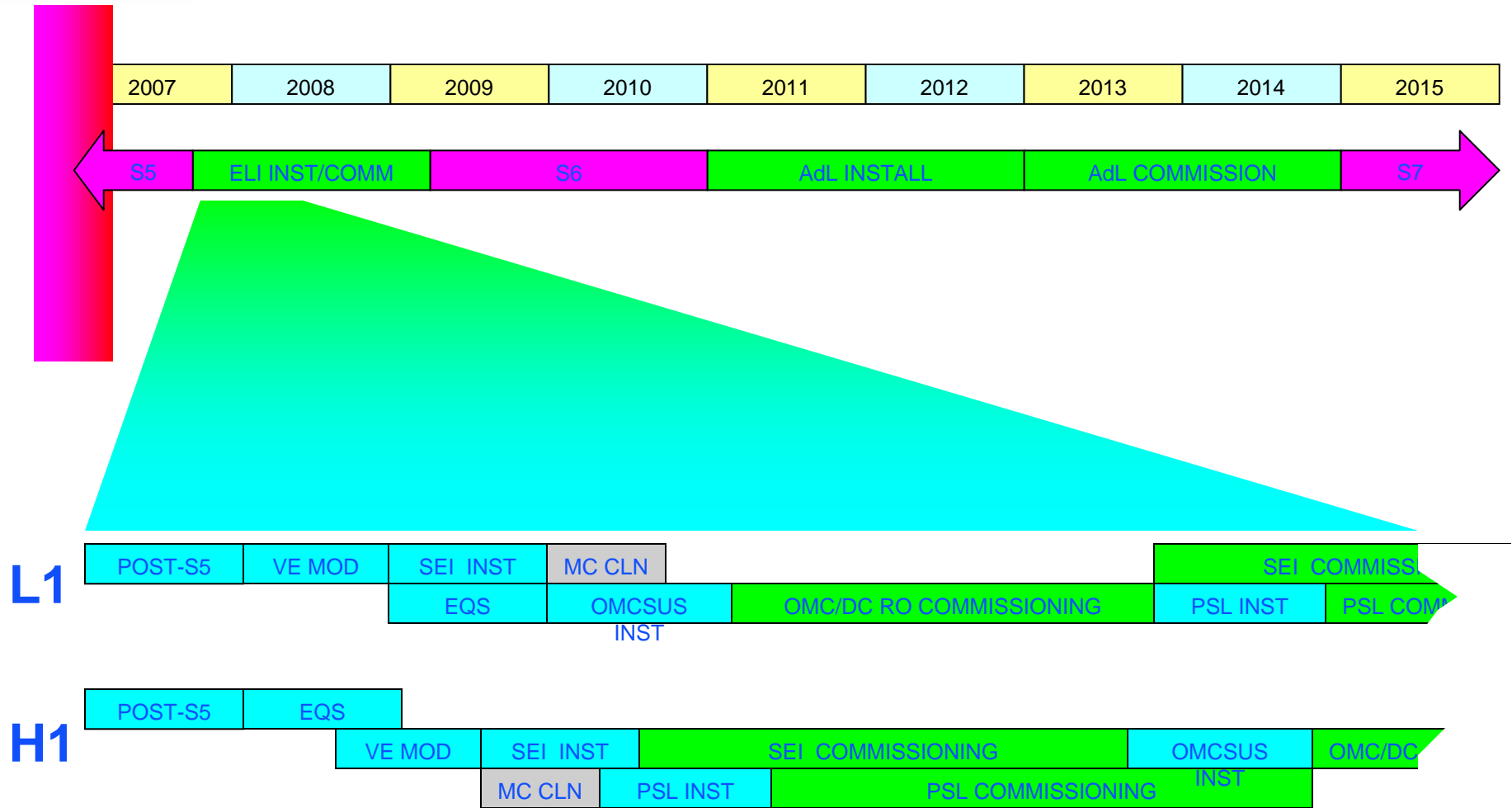


Timeline





Timeline (zoom)





Resource Considerations

- ❑ ELI depends on simultaneous tag-team installation & commissioning at LHO and LLO
- ❑ Full staff complement is expected at both sites
- ❑ AdL hits full throttle with '08 funding
- ❑ AdL also expects full staff complement immediately after ELI installation

Continuing S5 (incl. keeping H2 up) *will* impact S6 and AdL



Summary

At the 3/4 point, S5 is meeting or exceeding all our goals!

(well, perhaps all but one)

Optimized strategy for S6 and S7 will require some disciplined decisions

Now is the time for input and discussion!