

**ASIAEX* South China Sea
Acoustic Fluctuations (and Physical Oceanography)**

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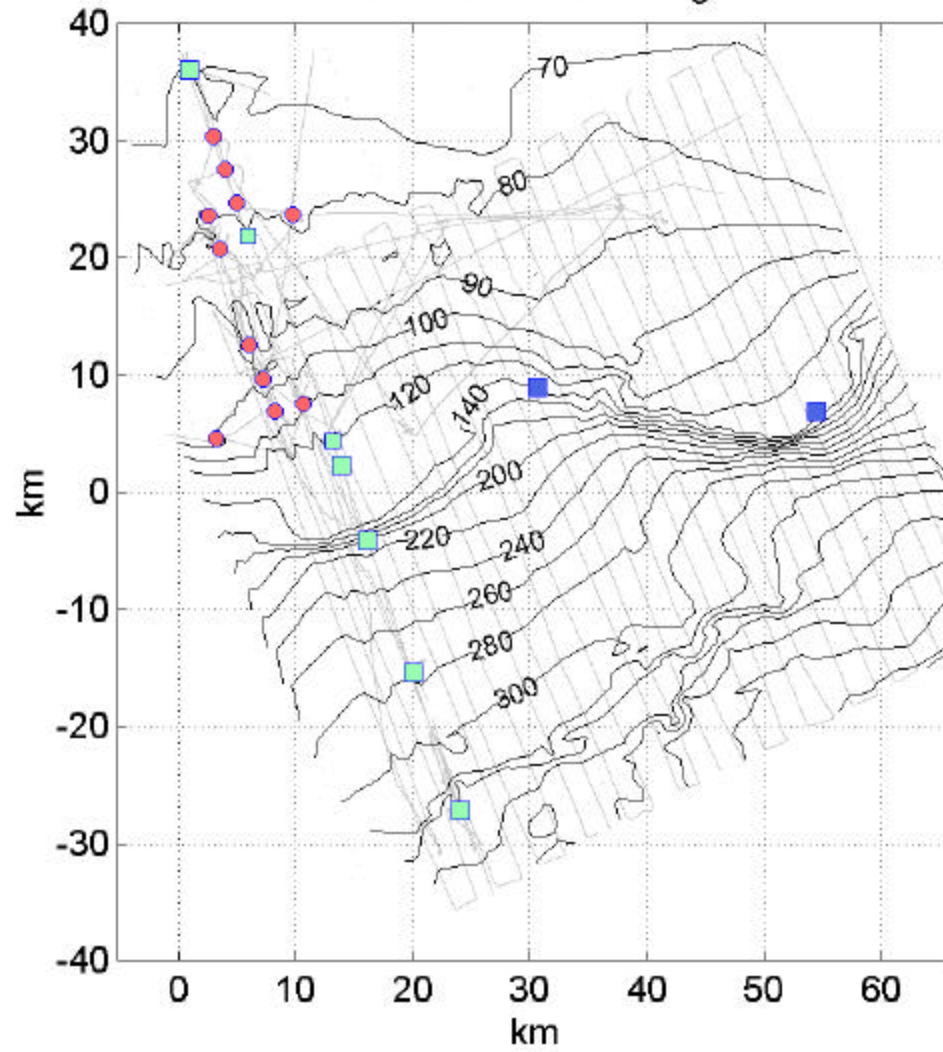
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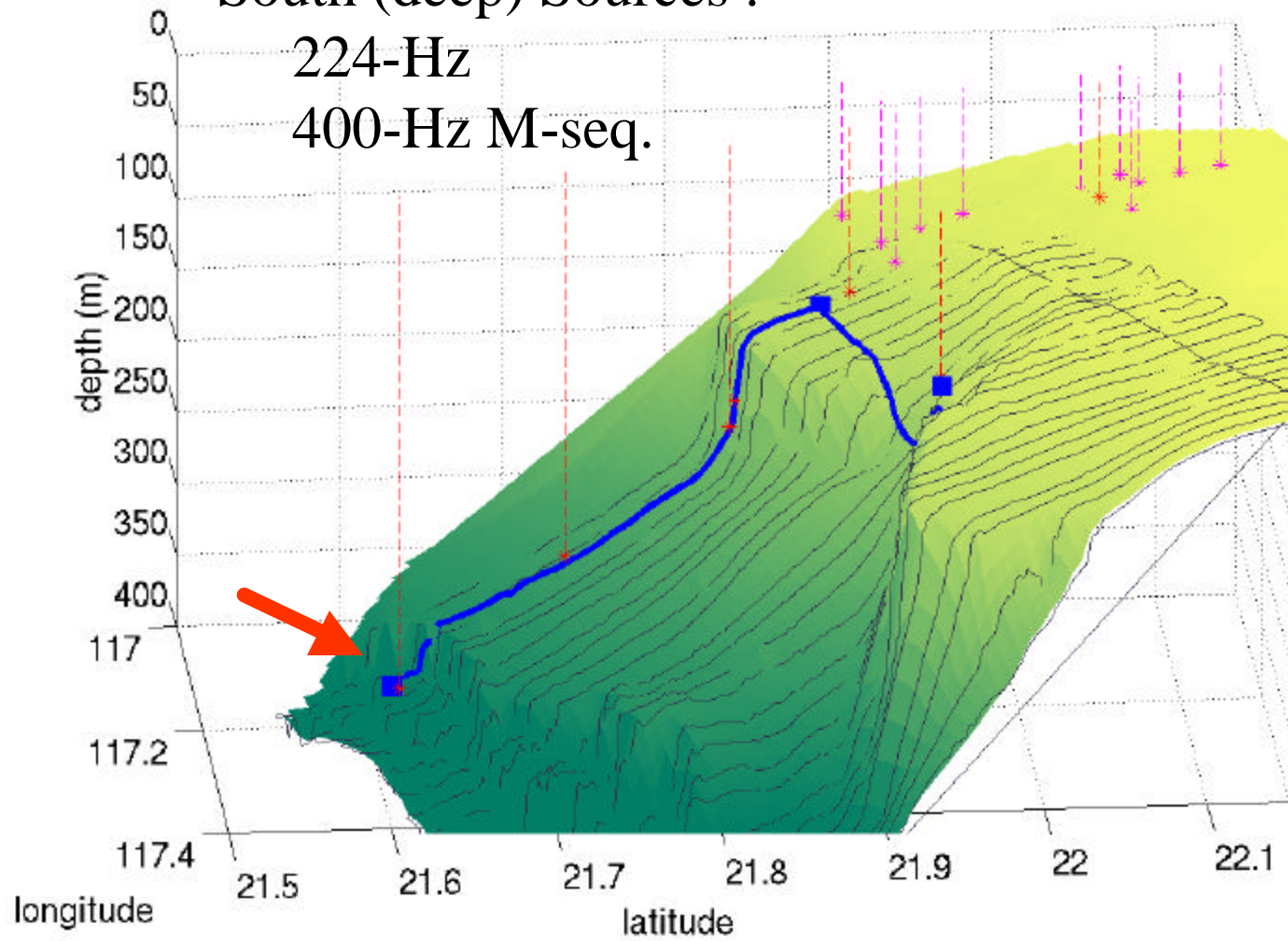
Loco and Env moorings



South (deep) Sources :

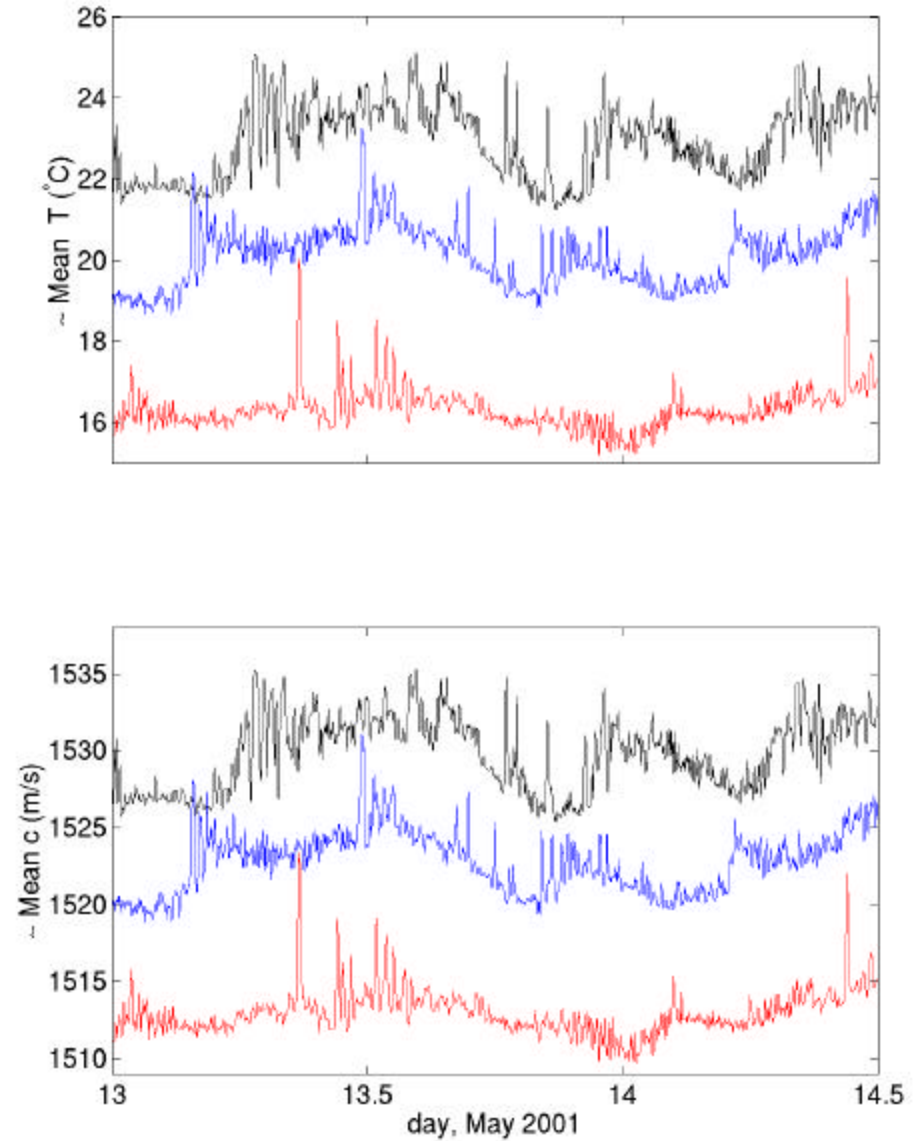
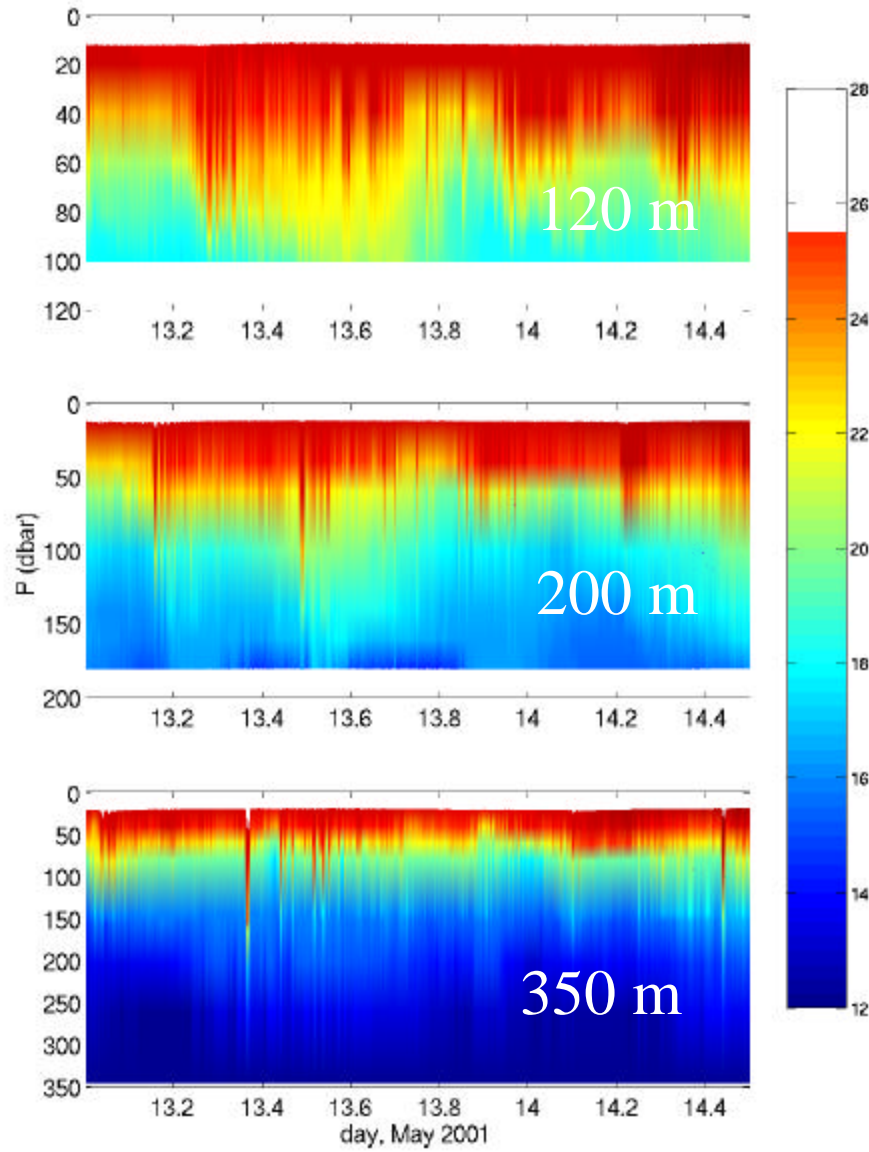
224-Hz

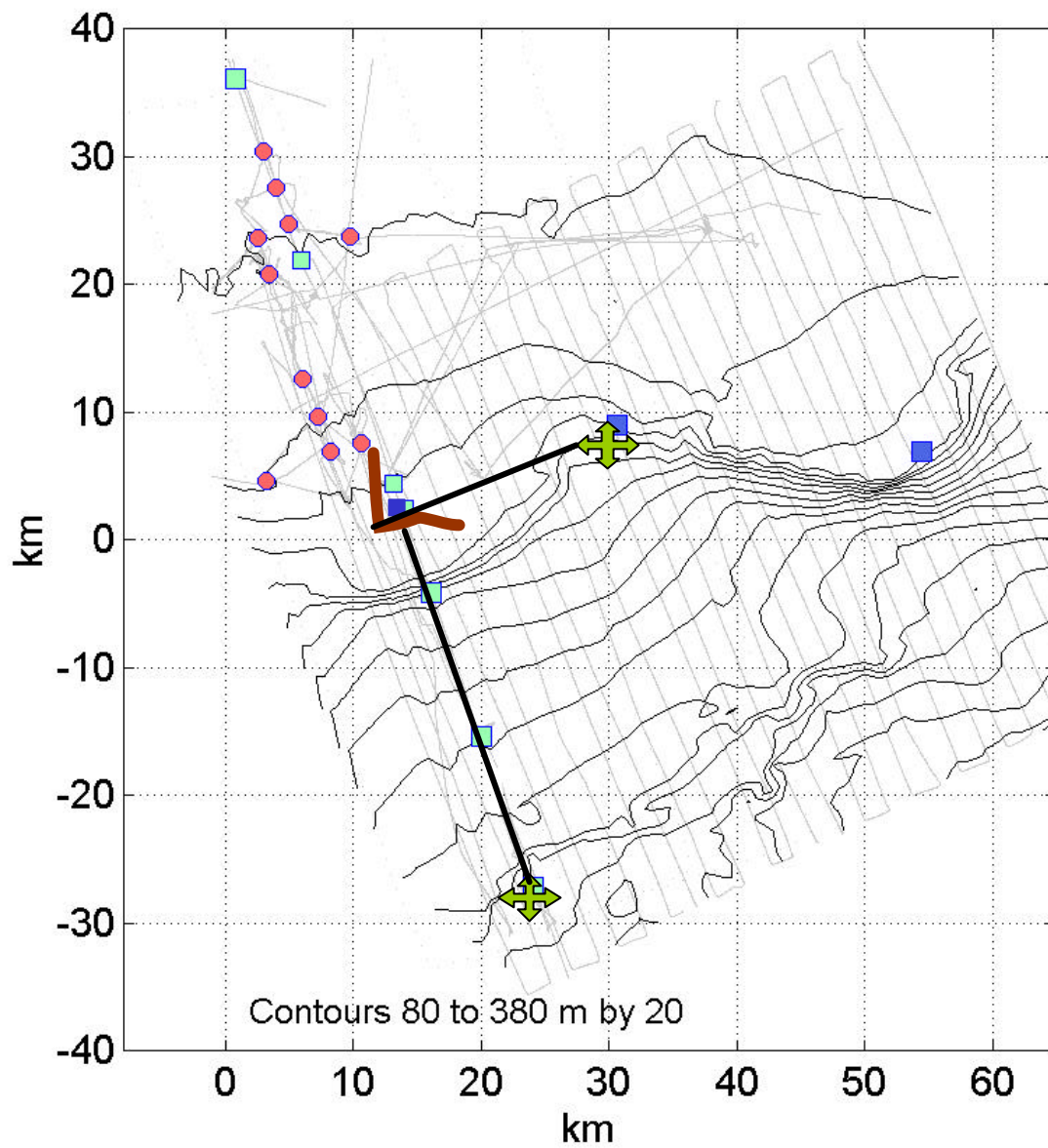
400-Hz M-seq.



South Line $T(z,t)$ and $c(z,t)$


... $\sigma_t(z,t)$






 T/C/P/ADCP

 LOCO - T/P

 T chain

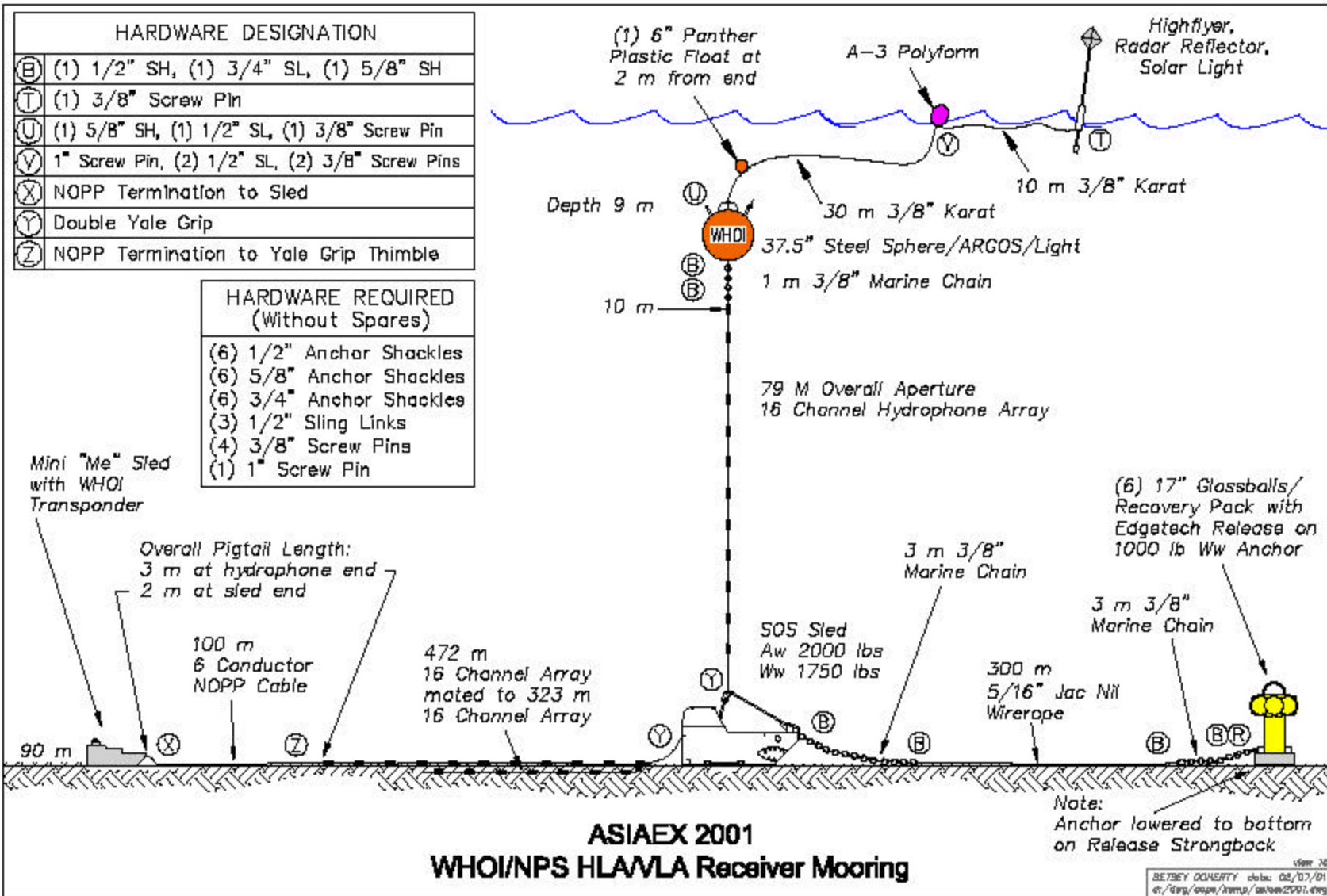
 Projectors

 Horiz./vertical
line array

Receive:
2 May 2001—
18 May 2001

HARDWARE DESIGNATION	
Ⓟ	(1) 1/2" SH, (1) 3/4" SL, (1) 5/8" SH
Ⓣ	(1) 3/8" Screw Pin
Ⓤ	(1) 5/8" SH, (1) 1/2" SL, (1) 3/8" Screw Pin
Ⓨ	1" Screw Pin, (2) 1/2" SL, (2) 3/8" Screw Pins
Ⓧ	NOPP Termination to Sled
Ⓨ	Double Yale Grip
Ⓩ	NOPP Termination to Yale Grip Thimble

HARDWARE REQUIRED (Without Spares)	
(6)	1/2" Anchor Shackles
(6)	5/8" Anchor Shackles
(6)	3/4" Anchor Shackles
(3)	1/2" Sling Links
(4)	3/8" Screw Pins
(1)	1" Screw Pin

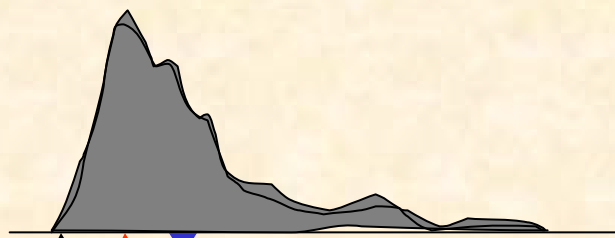


ASIAEX 2001
WHOI/NPS HLA/VLA Receiver Mooring

124 m depth; VLA 42-121m; HLA: 32 phones@15 m = 465 m

Pulse arrivals

Match Filter output



Peak

Leading edge

Centroid

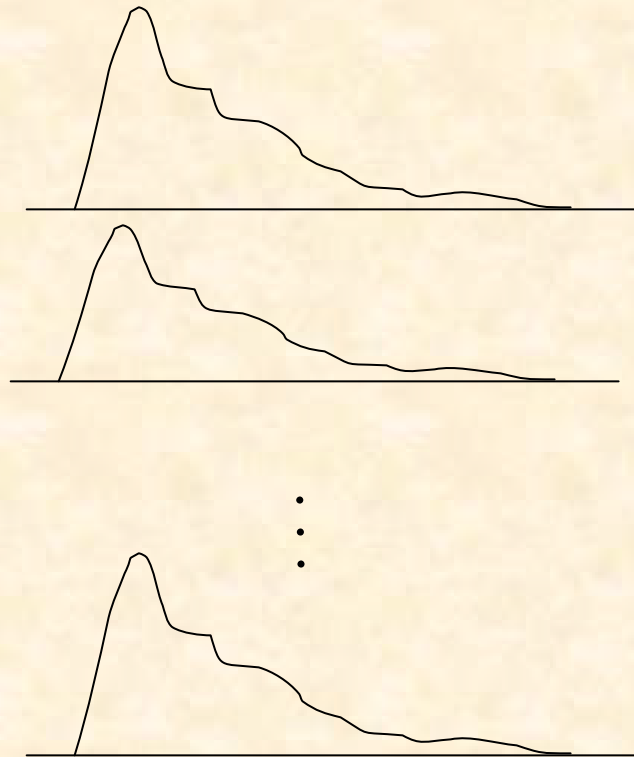
$$C = \sum_{t=t_1}^{t_2} a^2 t \cong \int_{t_1}^{t_2} a(t)^2 t dt$$

Energy

$$E_1 = \sum_{t=t_1}^{t_2} a^2 \cong \int a^2(t) dt$$

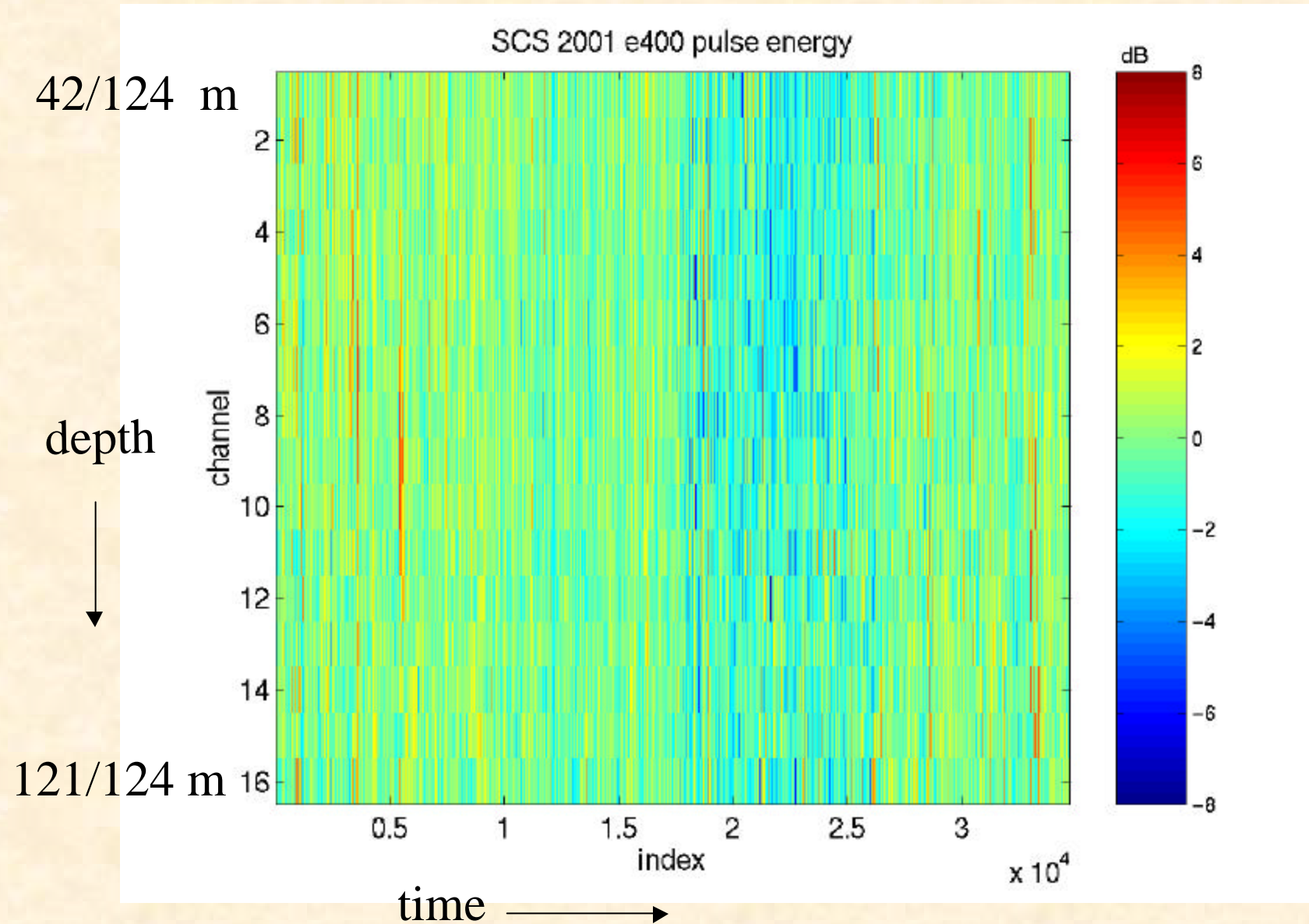
Vertical line array

Depth (m)

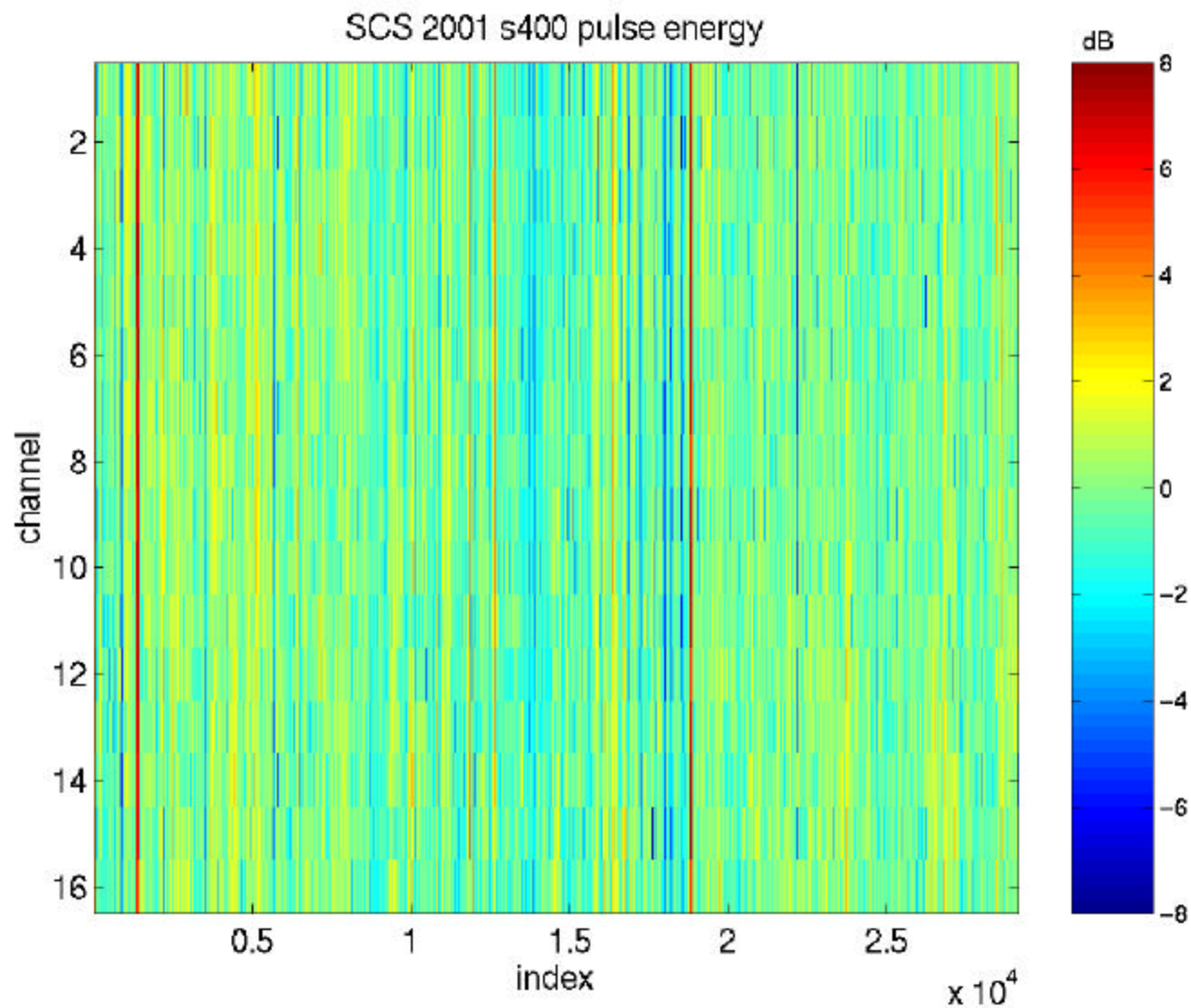


$$E = \sum_{z=z_1}^{z_2} \sum_{t=t_1}^{t_2} a^2 \cong \iint a(t)^2 dt dz$$

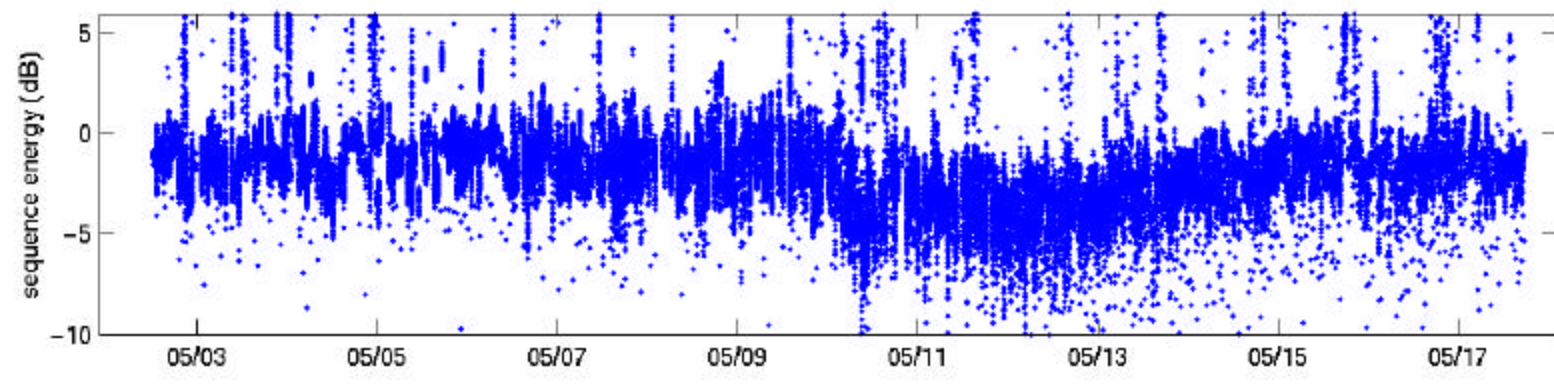
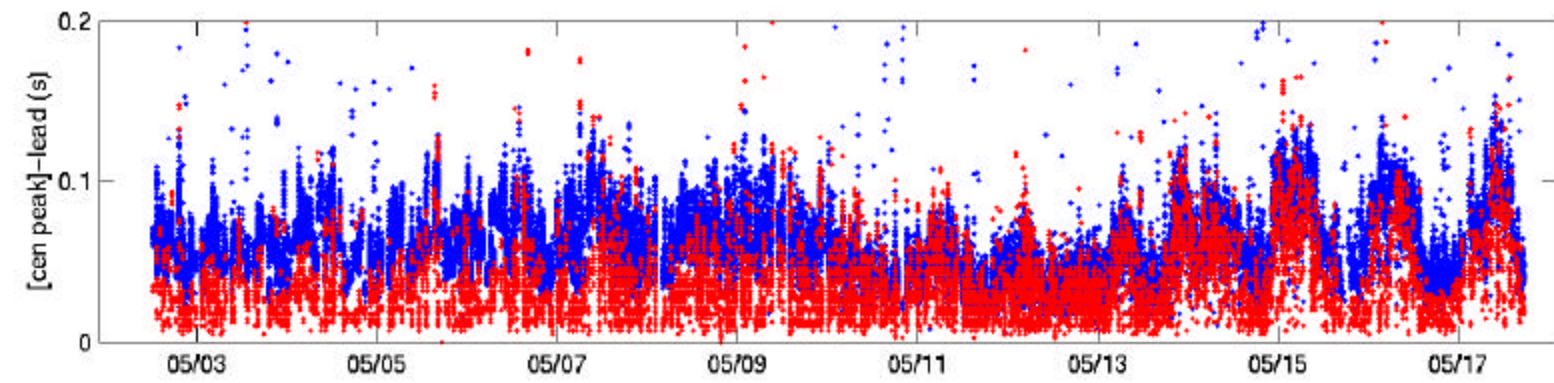
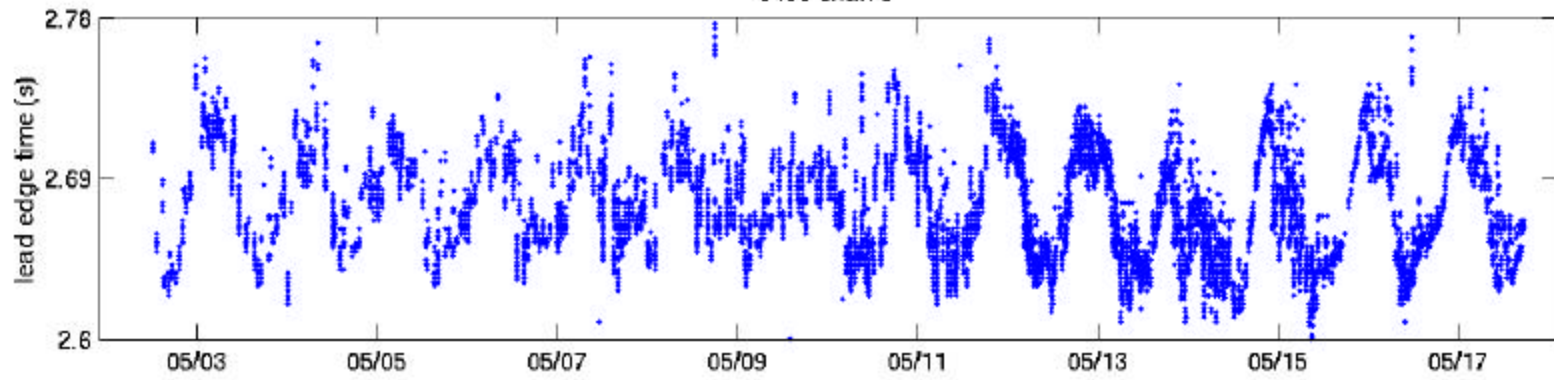
VLA arrivals: Impulse response energy E over the 16 days, East 400 Hz, vs. depth and time

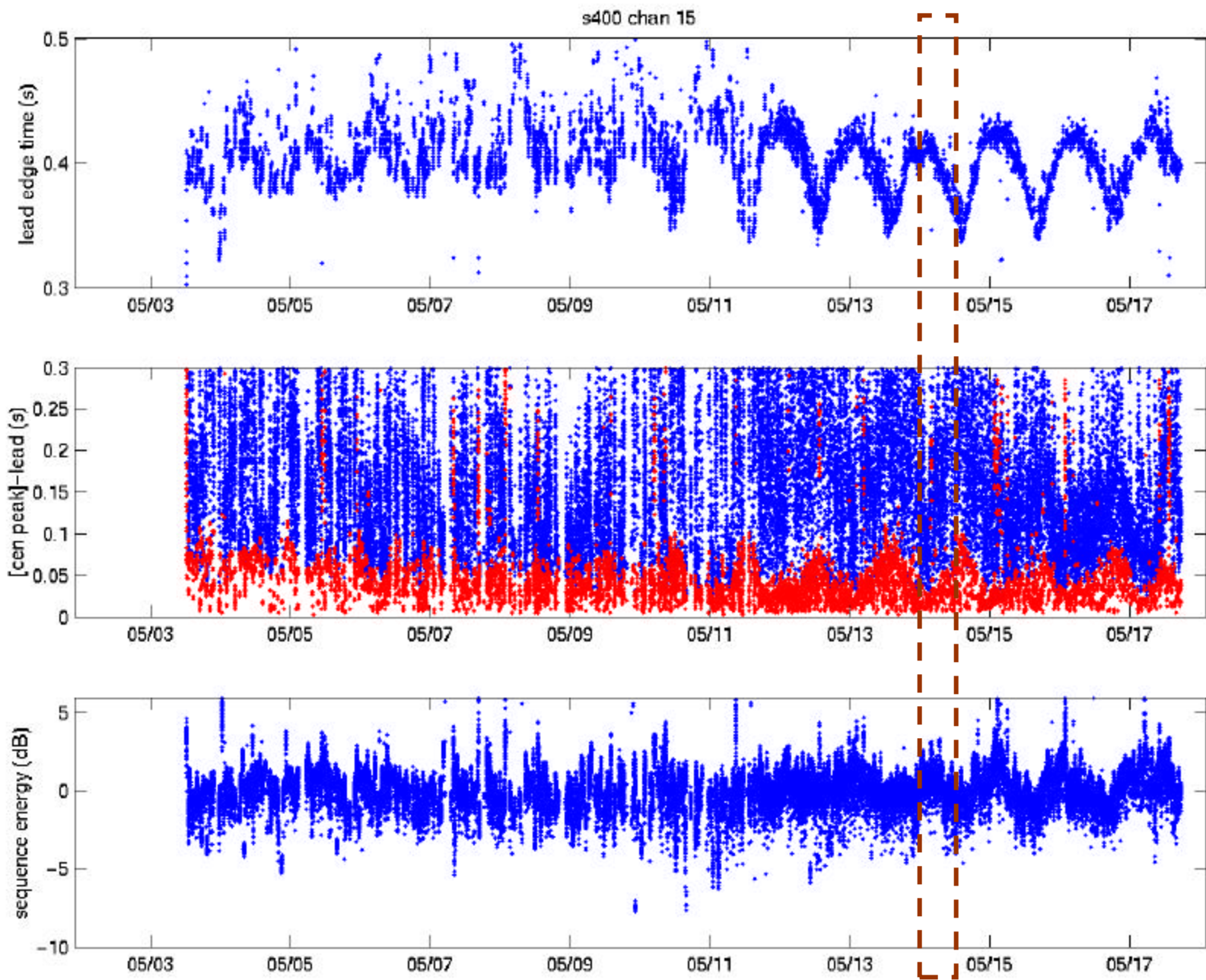


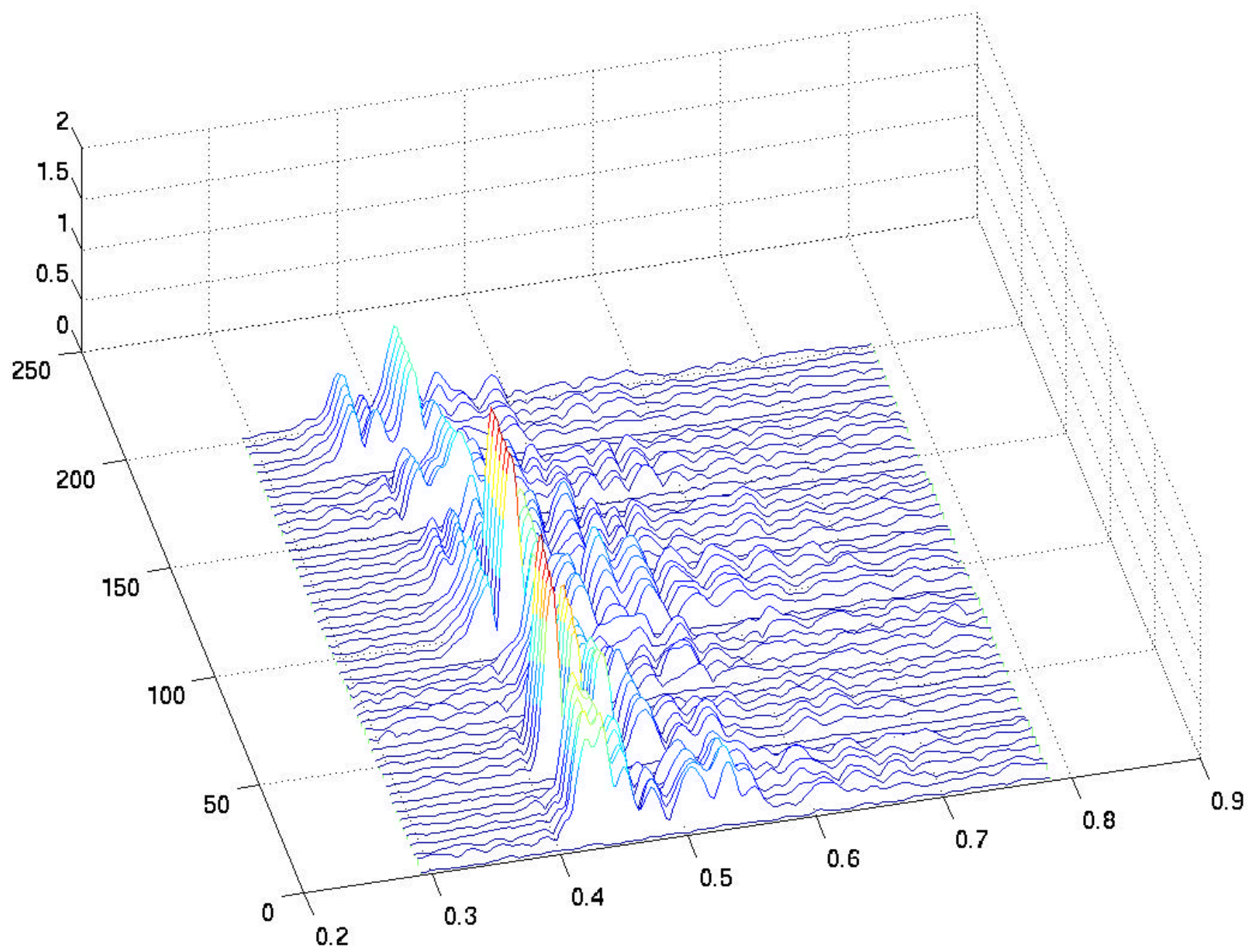
VLA arrivals: Impulse response energy E over the 16 days, **South** 400 Hz, vs. depth and time



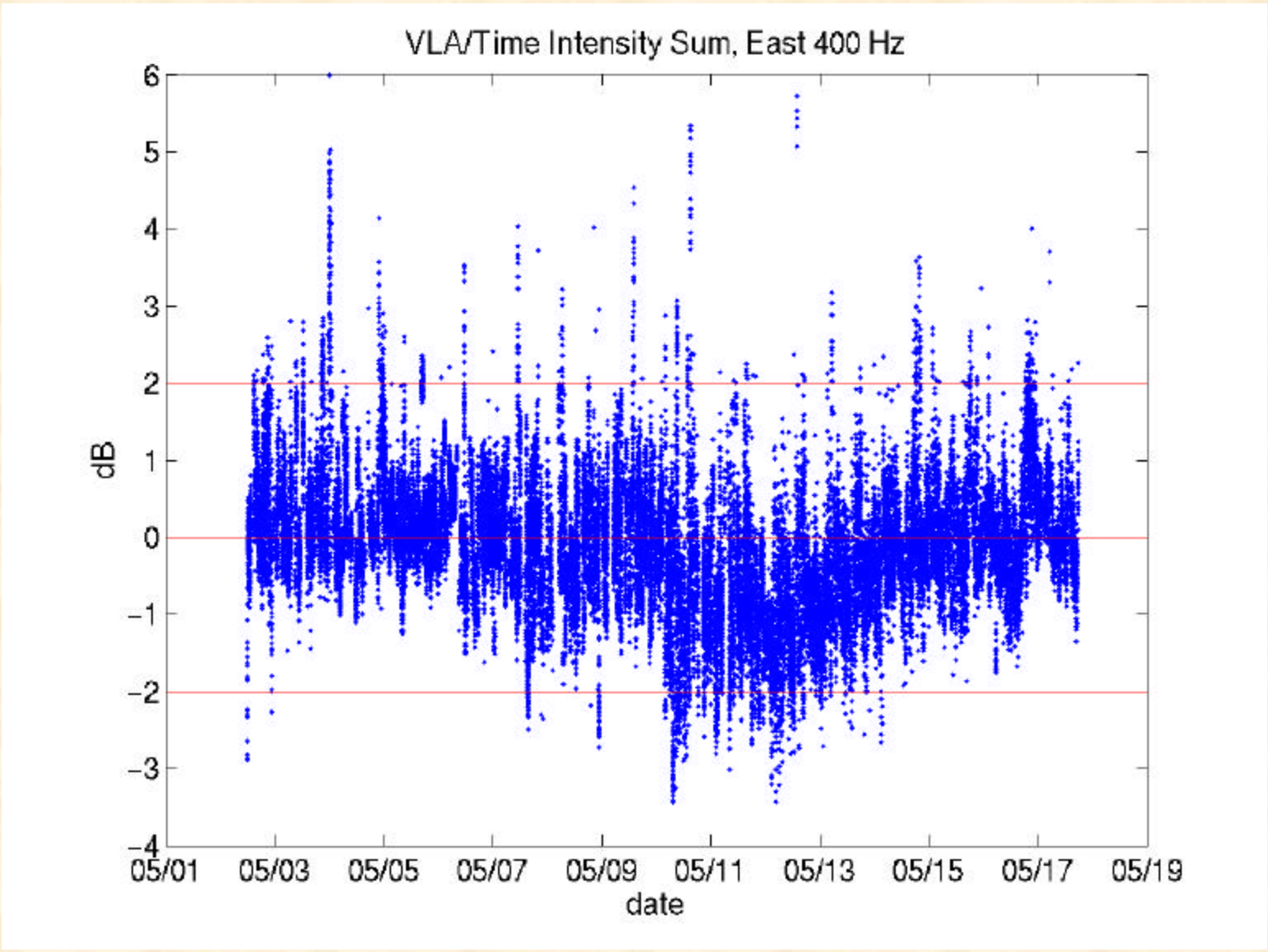
c400 chan 5



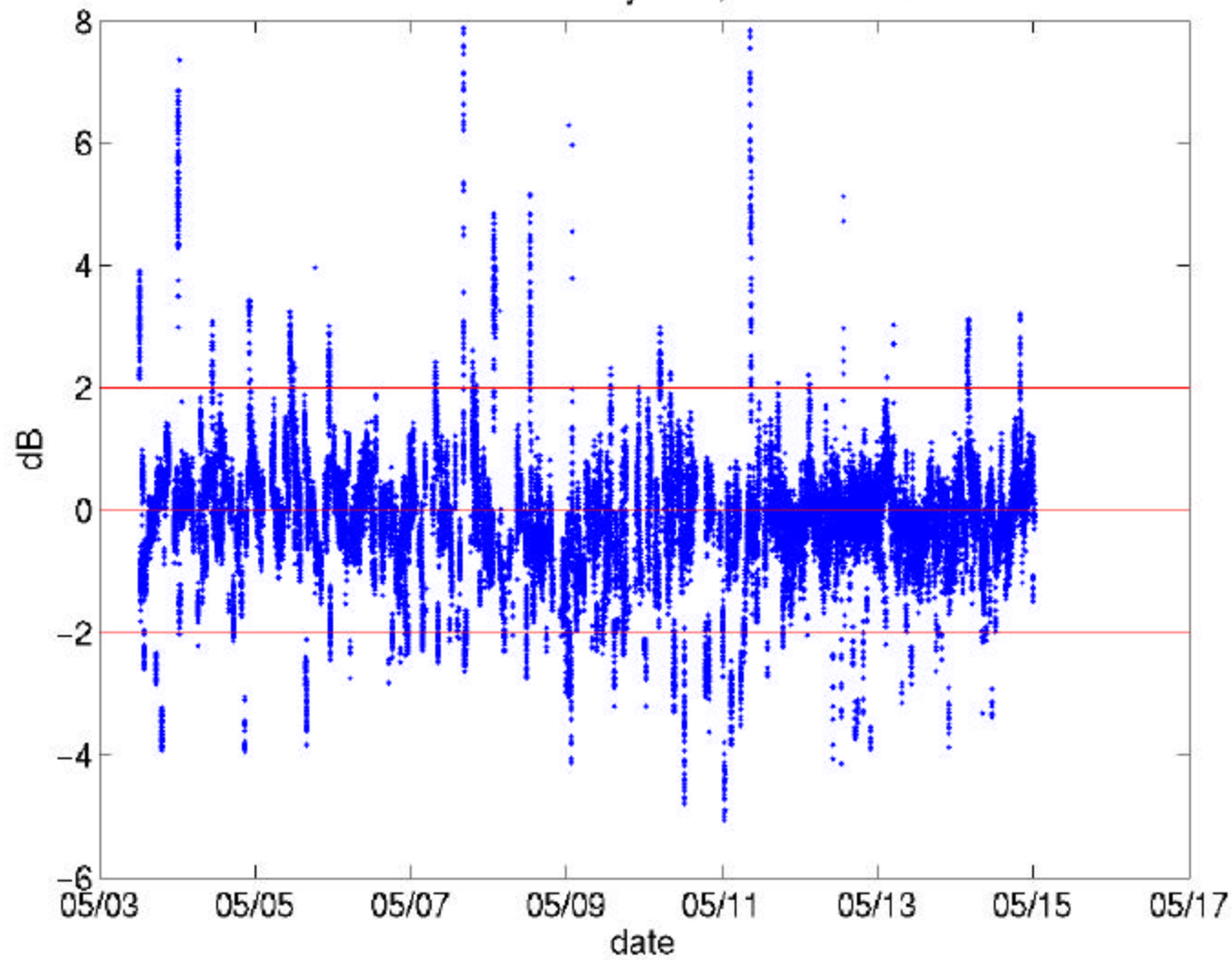




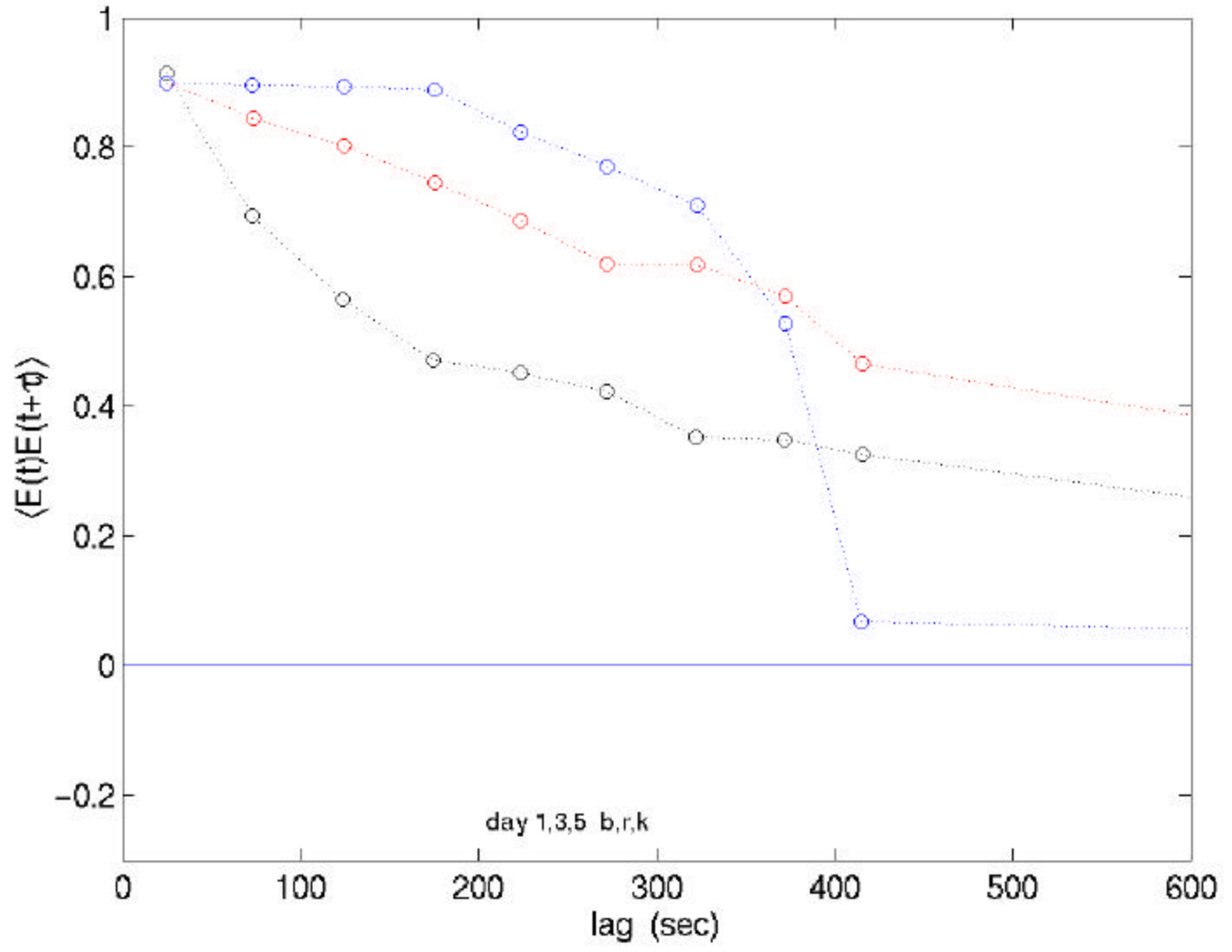
Time (s)



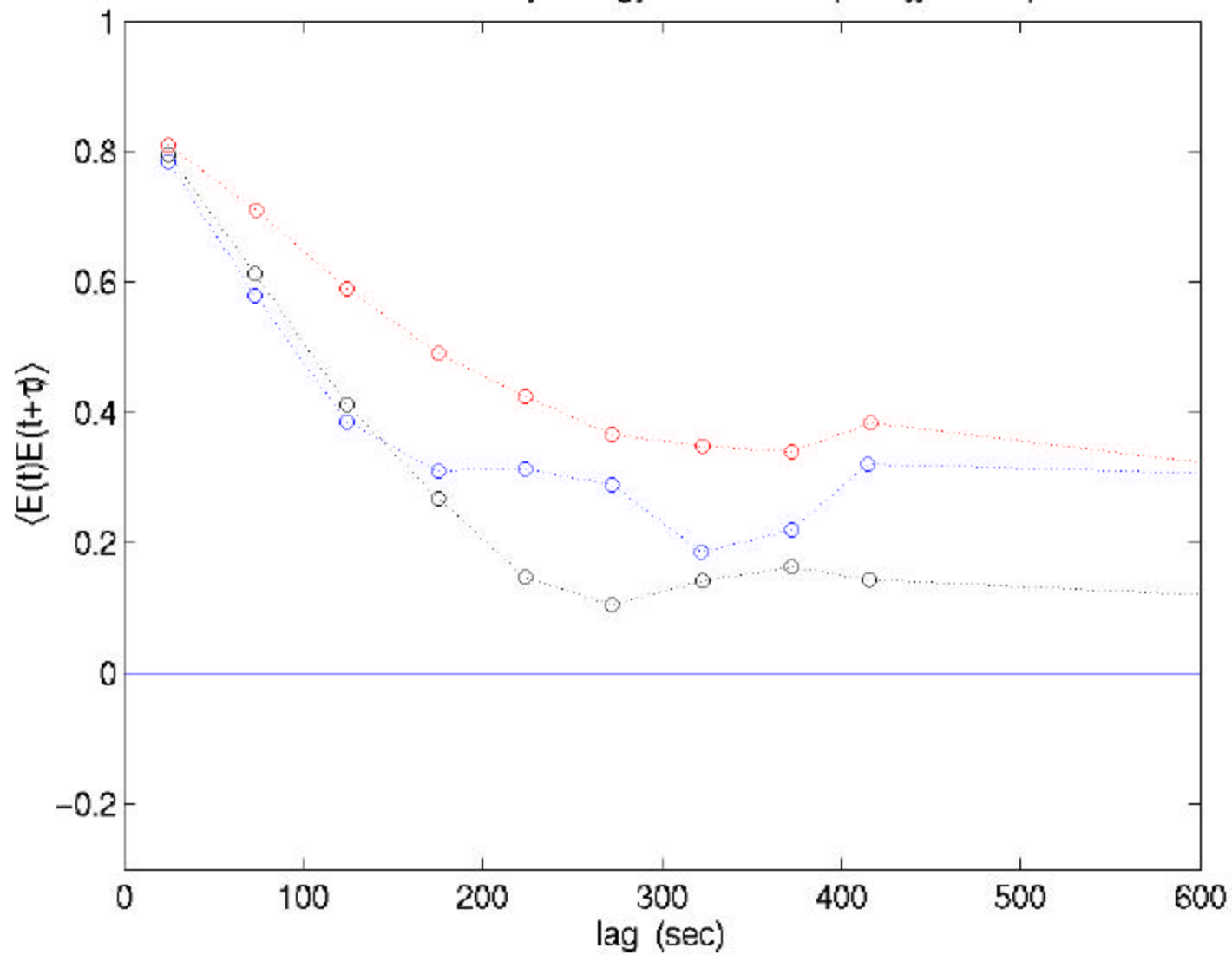
VLA/Time Intensity Sum, South 400 Hz

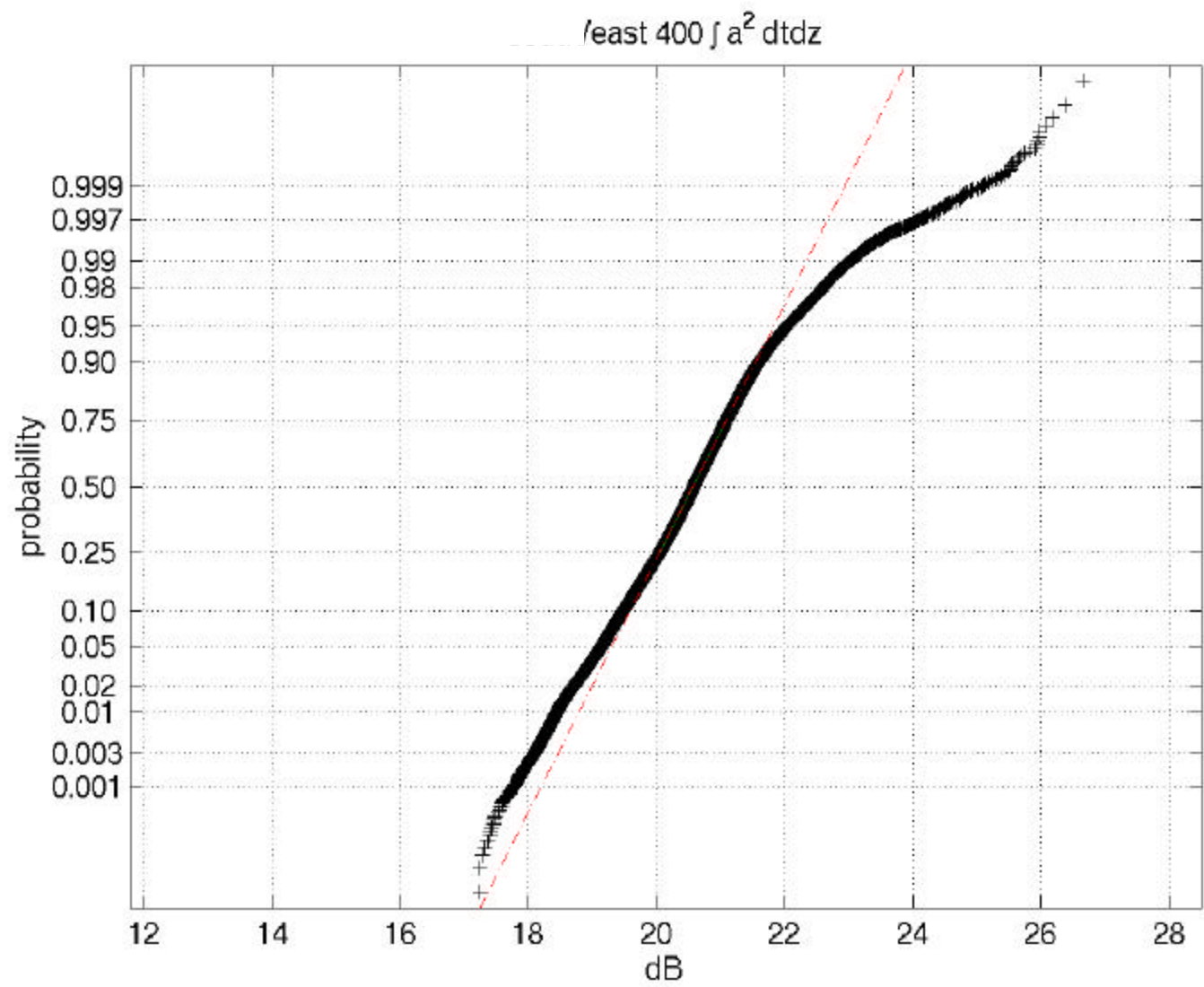


South 400 Hz daily energy correlation ($E = \iint a^2 dt dz$)

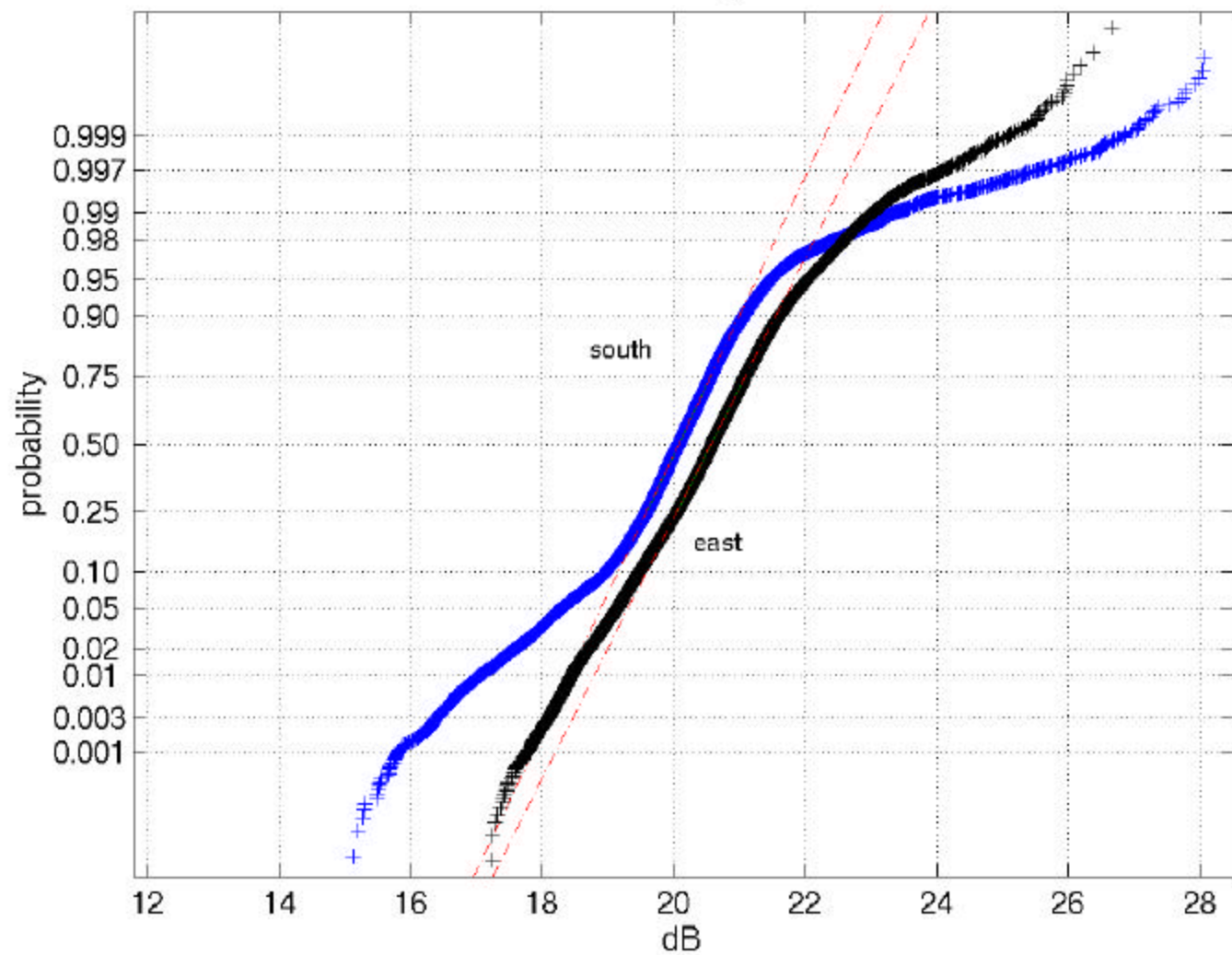


East 400 Hz daily energy correlation ($E = \iint a^2 dt dz$)

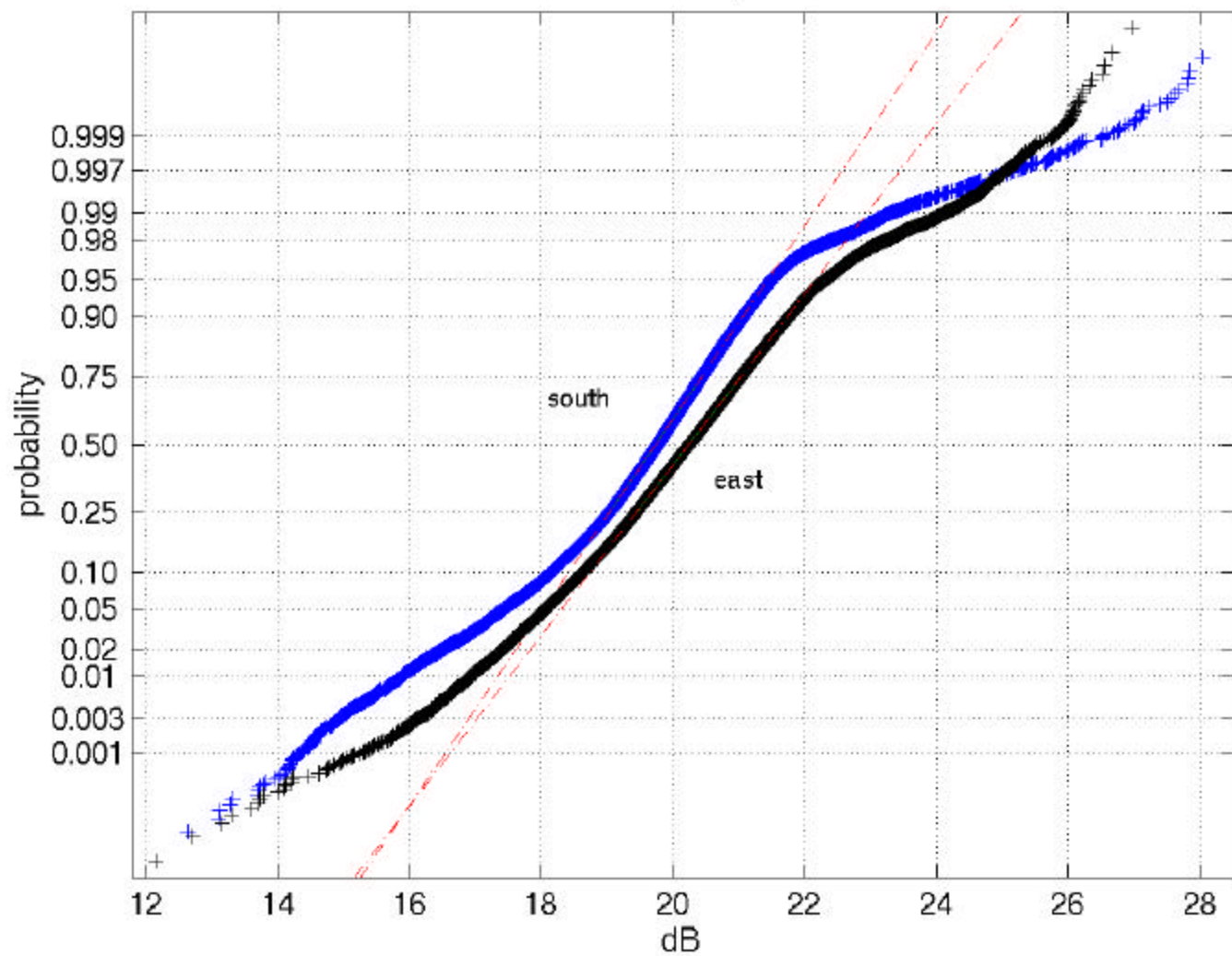




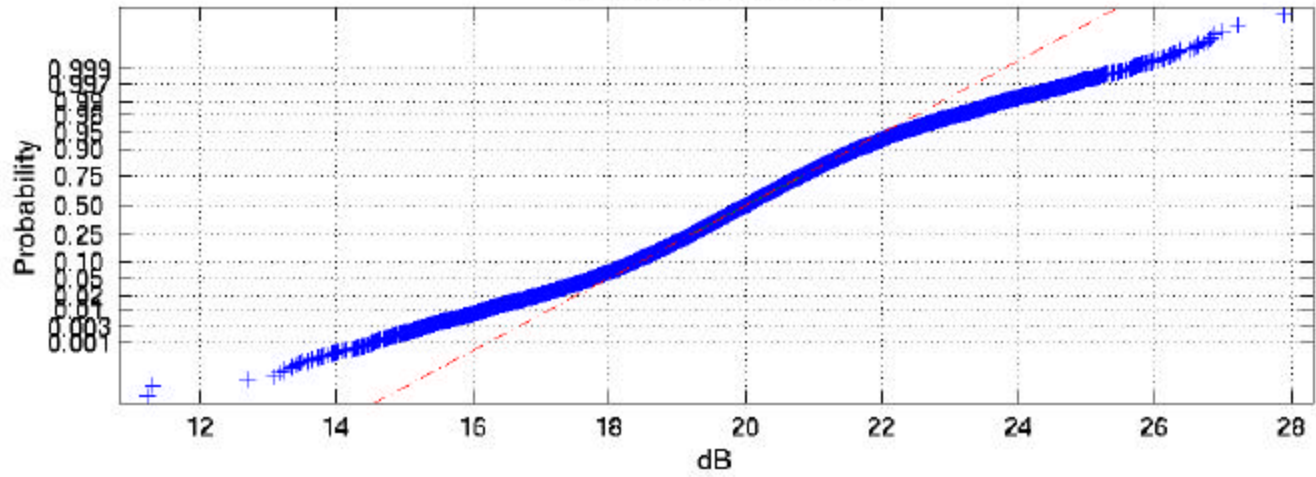
south/east 400 $\int a^2 dt dz$



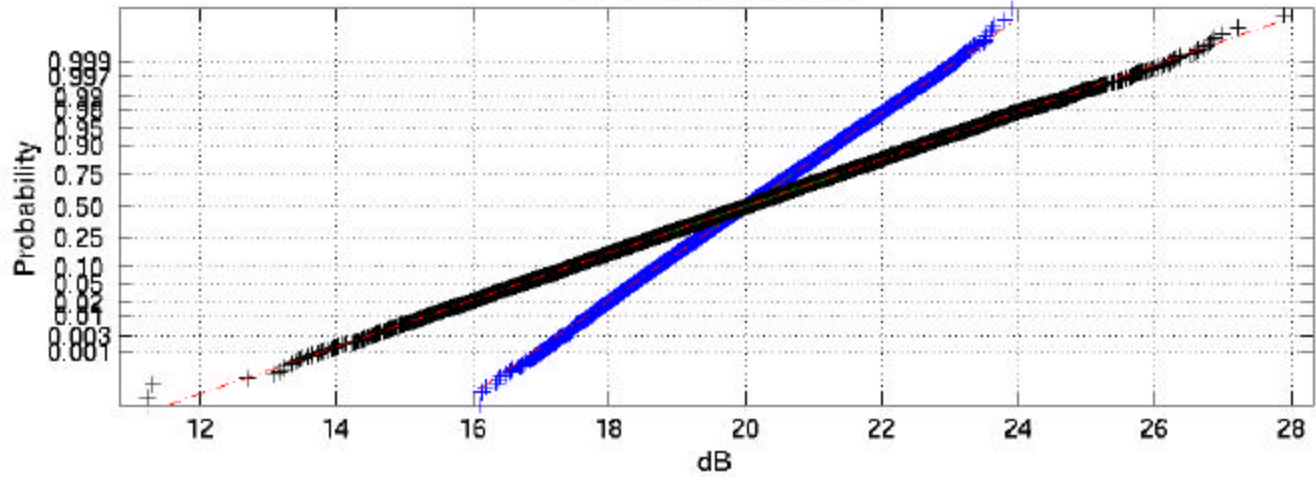
south/east 400 phone 8



Normal Probability Plot



Normal Probability Plot



Summary

Lots of work left to do !!!