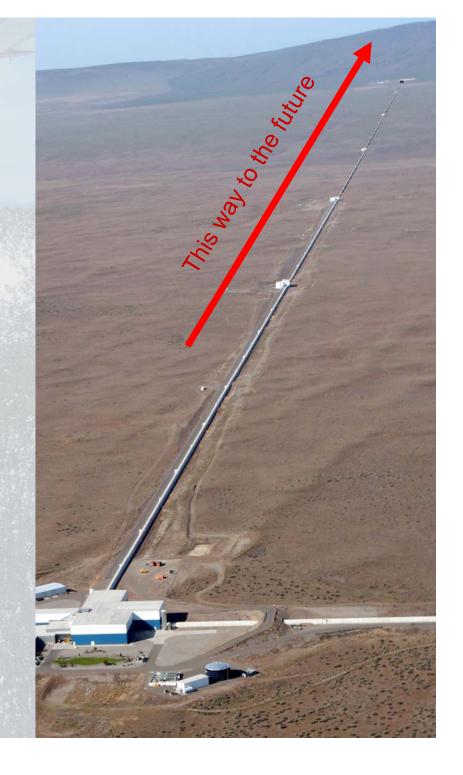
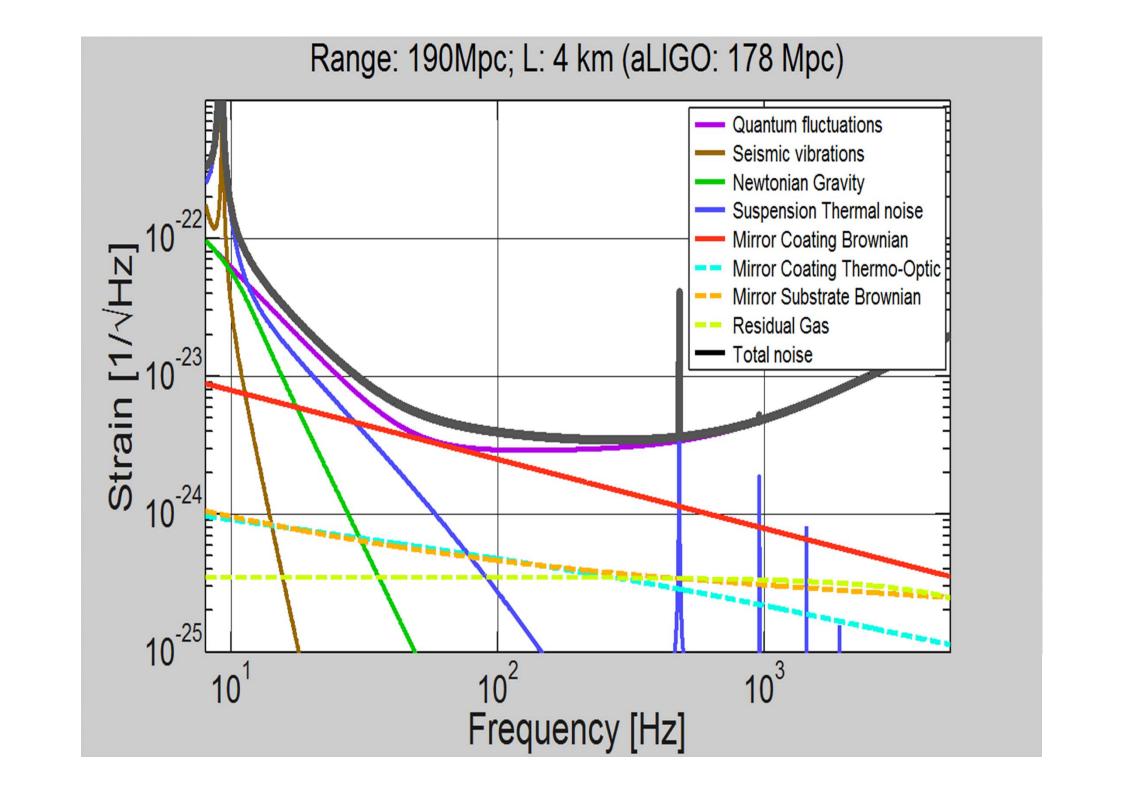
Lavender team Constitutional meeting: Isola d'Elba May 24, 2013 midnight - 3am CEST **GWADW** La Biodola, Isola d'Elba, Italy

Long is good

- Coating noise
 - Gain: L^{1.5}
 - Cryogenic/Crystal: no need
- Displacement noise
 - Gain: L
 - Newtonian N. irrelevant
- Radiation pressure
 - Becomes irrelevant
- Shot noise
 - Gain: ~sqrt(L)
 - Freq. indep. Squeezing
- Vertical susp. Thermal
 - Gain: constant

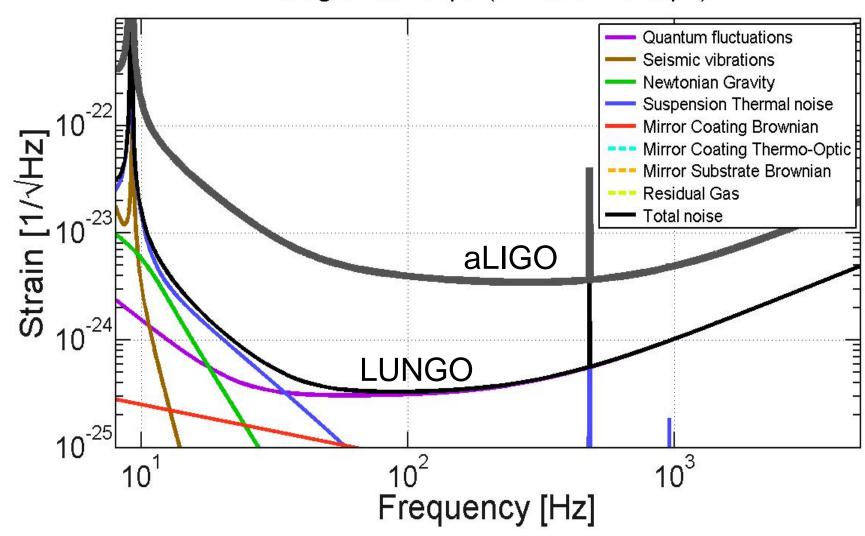






The range for 40km

Range: 2557Mpc (aLIGO: 178 Mpc)



Cost - Benefit

- Vacuum cost
 - -~\$300M per site for 40km arms
 - -~\$3.75M/km per site
- NS/NS range ~2.5Gpc
 - -70Mpc/km
 - 19Mpc / \$1M
- Risk
 - Site selection and characterization
 - ...other than that...maybe steel price?

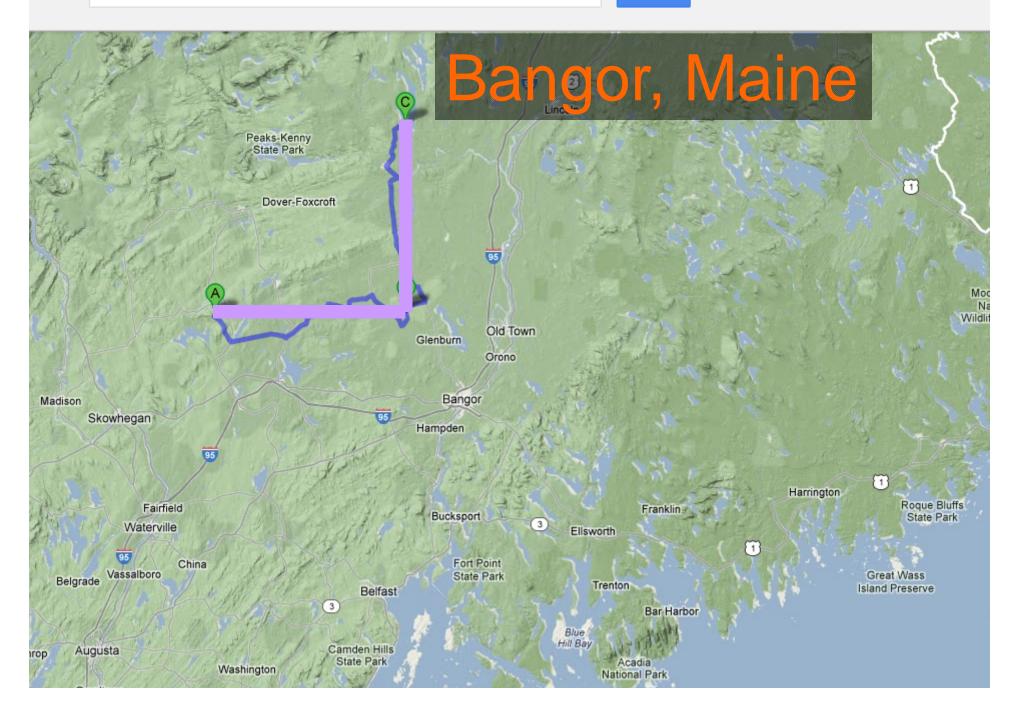
Site selection

 End stations into mountains, otherwise as flat as possible

- Height difference due to earth curvature
 - About 31m, any basin curvature helps
- Can we fit such a thing on earth? ...





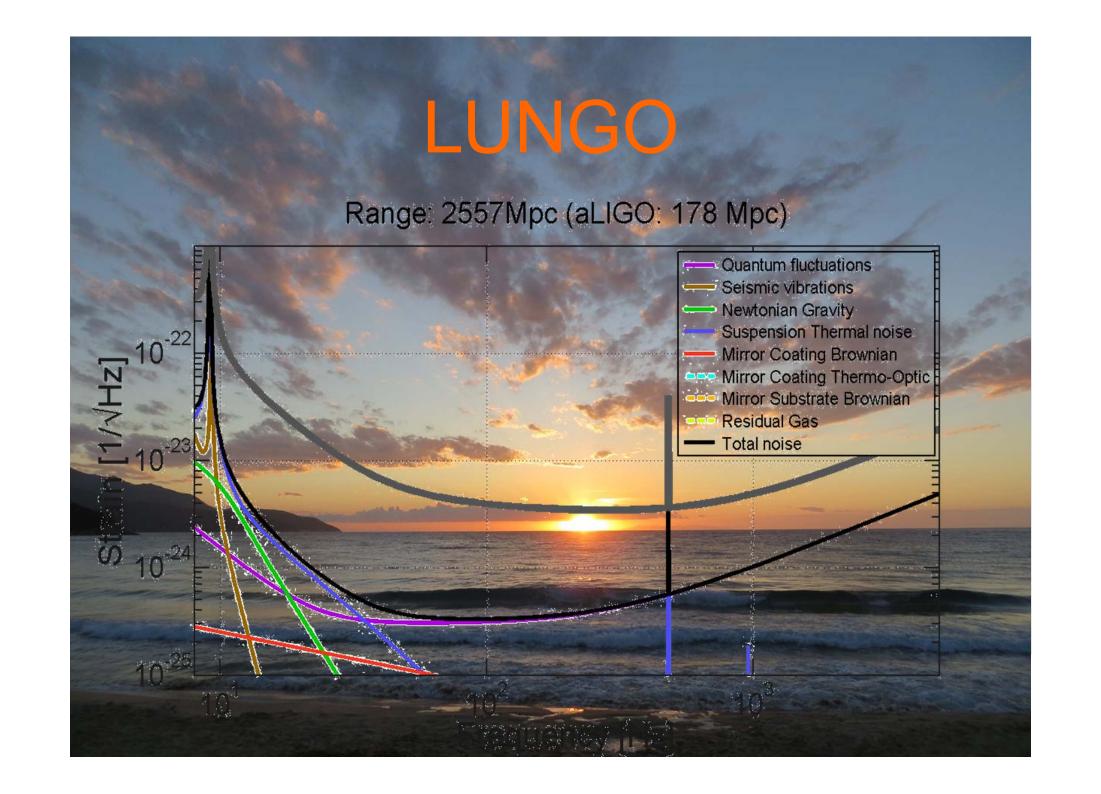


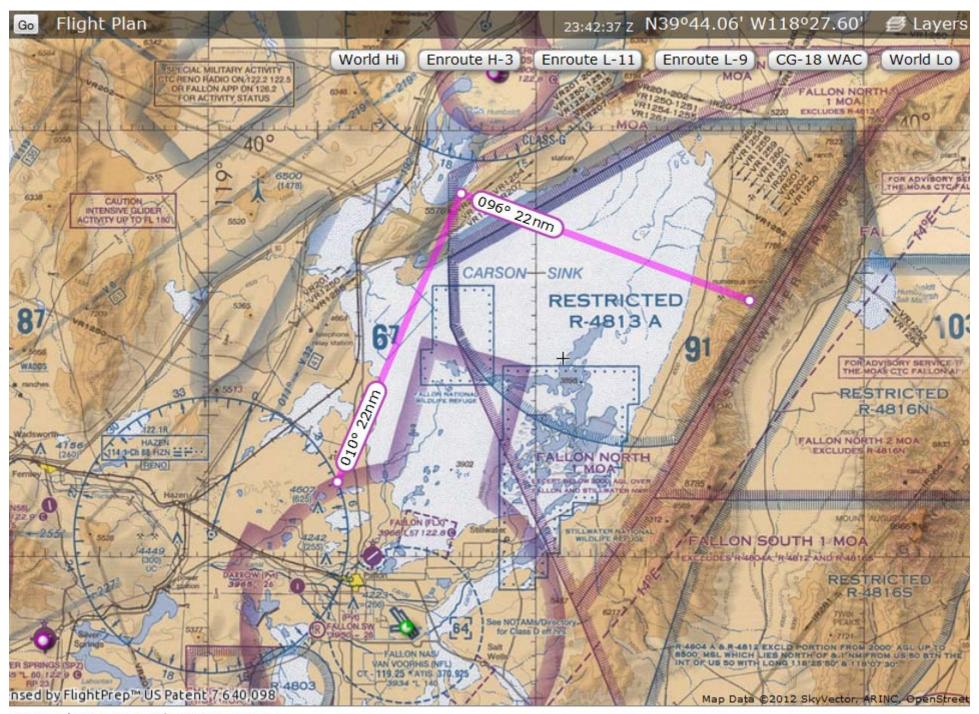
The Message

Yes, you guessed it...

MAKE IT LONG!

- Invest in steel...
- Make the 4km LUNGO prototype (aLIGO) work





IL CHarts AILDOLES Chairs Lotnu ruetrrices www.weatnerBink.com N45°9.83' W69°2.54' ight Plan 00:17:23 Z Layers World Hi World Lo Enroute H-11 CF-19 WAC Enroute L-32 1732 (207) Seboeis TWO: FALLS 366 - 32 323 - 50 Brownville LINCOLN RGNL (LRG) Junction 208 L 28 122 8 10 V122.8 178 - 24 1228 1 JONES (PVI) 50 400 -- 25 ® Lincoln 15 AGL View Brownville Monson Williamantic Sebeg Sebec Bawerbank Medfordo Lake 144 892 Milo cesort. Medford O Enfield North Sulford RIVERSIDE (PST) Center HOWLAND West Enfield 1326 South Sebec BUZZPORT -IR851-852 Dover-Foxcroft 203 - 3 203 **GHASE MEML (44B)** MAYO RGNE Boyd Lake 520 - 29 122.9 B -HOSP 15 AGL Passadumkea Abbot Village (Unverified) 548 LAGRANGE (365) Gulford 1080 SPECIAL MILITARY ACTIVITY 60 (310)CONTACT BANGOR RADIO UC 05 AGL ON 122.3 255.4 Parkman Olamon MORREL (Pvt) FOR ACTIVITY STATUS N Bradford OLD TOWN 500 - 19 272 OLD === NIELD 1122 ETC BANGOR APPLIVITHIN 1256) 20 NM ON: 124.5 239.3 N Dexter 1568 630 GREENFIELD HILL HARTE'(Pvt) Bradfor OLD TOWN 016 (256)230 - 30 Garland DEWITT OLD TOWN (OLD) (R) 272-OLD 126 140 122 8 0 Cambridge 102 84 122 B O Costigan 22nm RINTH E Corinth Exeter Harmony Corners 106° 22nm 33 1 30 122.8 (Pvt) W-Corinth LUCKY LANDING (06B) (249) TERRA & & Great d-Town 1 115 - 150 122.9.01 Moose 382 - 26 122.2 265) UC Connna BANGOR St Albans Kenduskeag Stetson CTC BA ightPrep™US Patent 7,640,098