LIGO S6 Scimon shift 帰朝報告

西澤篤志　川村静児　佐藤修一
For NAOJ-TAMA group
As member of LSC-AIC

S6 Scimon shift 概要

- LSC member でdutyが50%以上の人はLIGOの論文の共著者になれる代わりに、観測シフトの義務が発生する
- 半年毎（今回は2010/1/-6/30）に割り当て
- Dutyのメンバー積算量に対して機関ごとにアサインされる
- 今回は　21シフトのブロックがNAOJグループに対して割り当てられる
- 7（佐藤）+7（川村）+7（西澤）で担当
- Owl（0-8）, Morning（8-16）, Evening（16-24）の3シフト24時間体制
  今回は3人ともOwlを選択
  Rickが「なんでowl？」と聞くので、
  「seijiのアイデアだ」と答えたら、
  Fredが「日本時間にstayしたいってことか」と笑っていた
- Scimon shift（研究者）の他に Ops shift（オペレータ）が組まれる
- 干渉計の運用業務のほとんどは実はオペレータがやってくださる

S6 Scimon shift and schedule

Hanford S6/Commisioning Operator Schedule

[**Owl:** 00:00:01-08:00 **Day:** 08:00-16:00 **Eve:** 16:00-23:59:59 local time = Pacific Time]
Rev date: 2/17/2010 (cgray)

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	February 14	**February 15**	**February 16**	**February 17**	**February 18**	**February 19**	**February 20**
Owl	Corey	Patrick	Patrick	Patrick	Patrick	Patrick	Patrick
Day	Dani	Dani	Jeff	Jeff	Cheryl	Jeff	Dani
Eve	Michael R.	Jeff	Michael R.	Michael S.	Michael S.	Michael S.	Michael S.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	February 21	**February 22**	**February 23**	**February 24**	**February 25**	**February 26**	**February 27**
Owl	Patrick	Patrick	Cheryl	Cheryl	Gerardo	Gerardo	Gerardo
Day	Dani	Dani	Michael R.	Corey	Corey	Corey	Cheryl
Eve	Michael S.	Jeff	Dani	Cyrus	Cyrus	Cyrus	Michael R.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	February 28	**March 1**	**March 2**	**March 3**	**March 4**	**March 5**	**March 6**
Owl	Gerardo	Gerardo	Cheryl	Cheryl	Michael S.	Michael S.	Michael S.
Day	Cheryl	Corey	Corey	Corey	Corey	Corey	Cheryl
Eve	Jeff	Jeff	Michael R.	Cyrus	Cyrus	Cyrus	Michael R.

LSC/Virgo Working Groups TWiki > S6ScimonShifts Web > LHE2010 (17 Feb 2010, GuillermoValdes?)

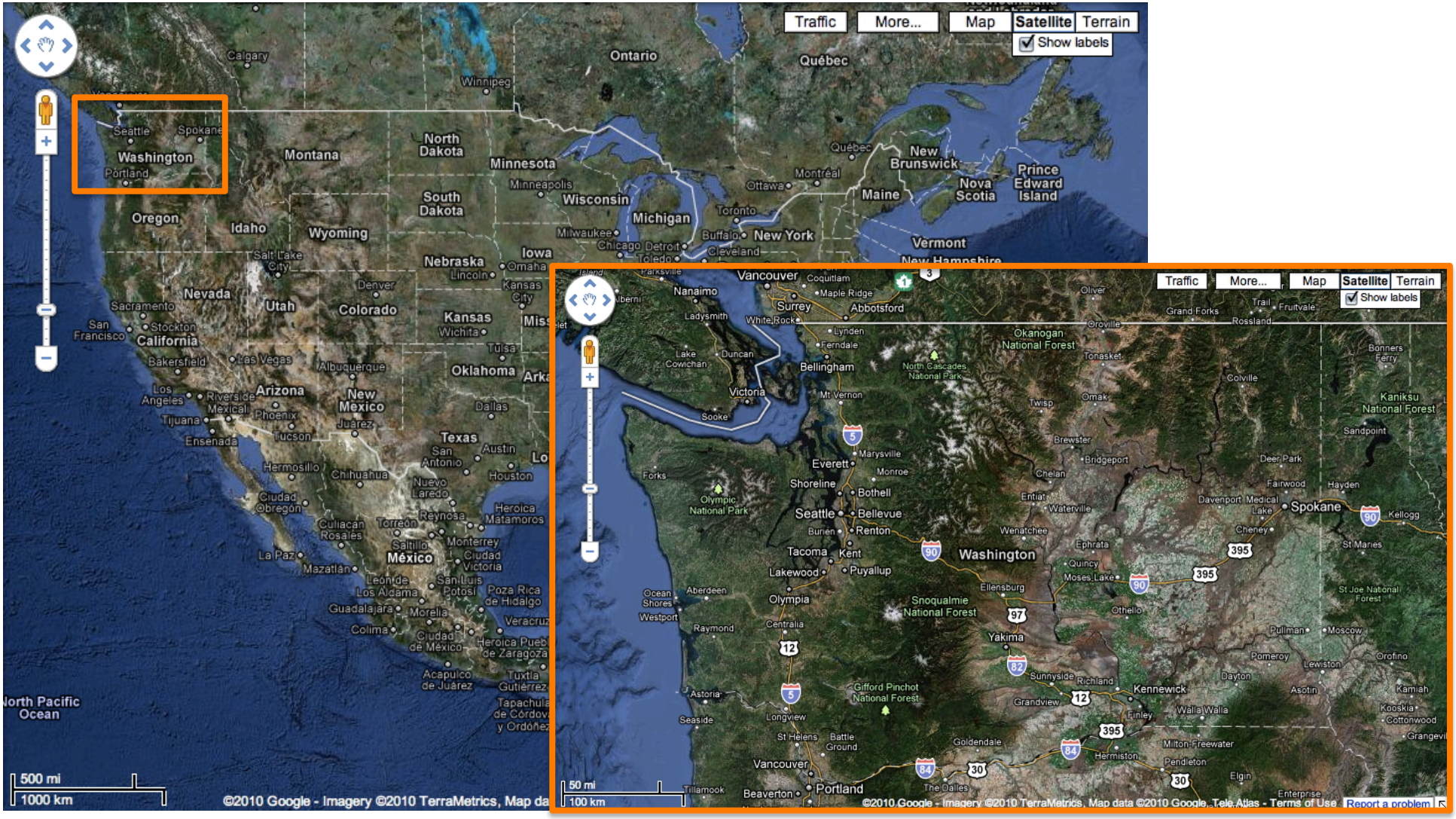
Hanford S6 Scimon Expert Schedule (January 1-June 30 2010)

Please do no edit these pages; contact Mario Diaz if you want to swap any assignments or have any questions Updated: July 29 - 12:00 Central Daylight Time. Owl: 0:00-08:00 Morning: 8:00-16:00 Afternoon: 16:00-24:00 local time = Pacific Time

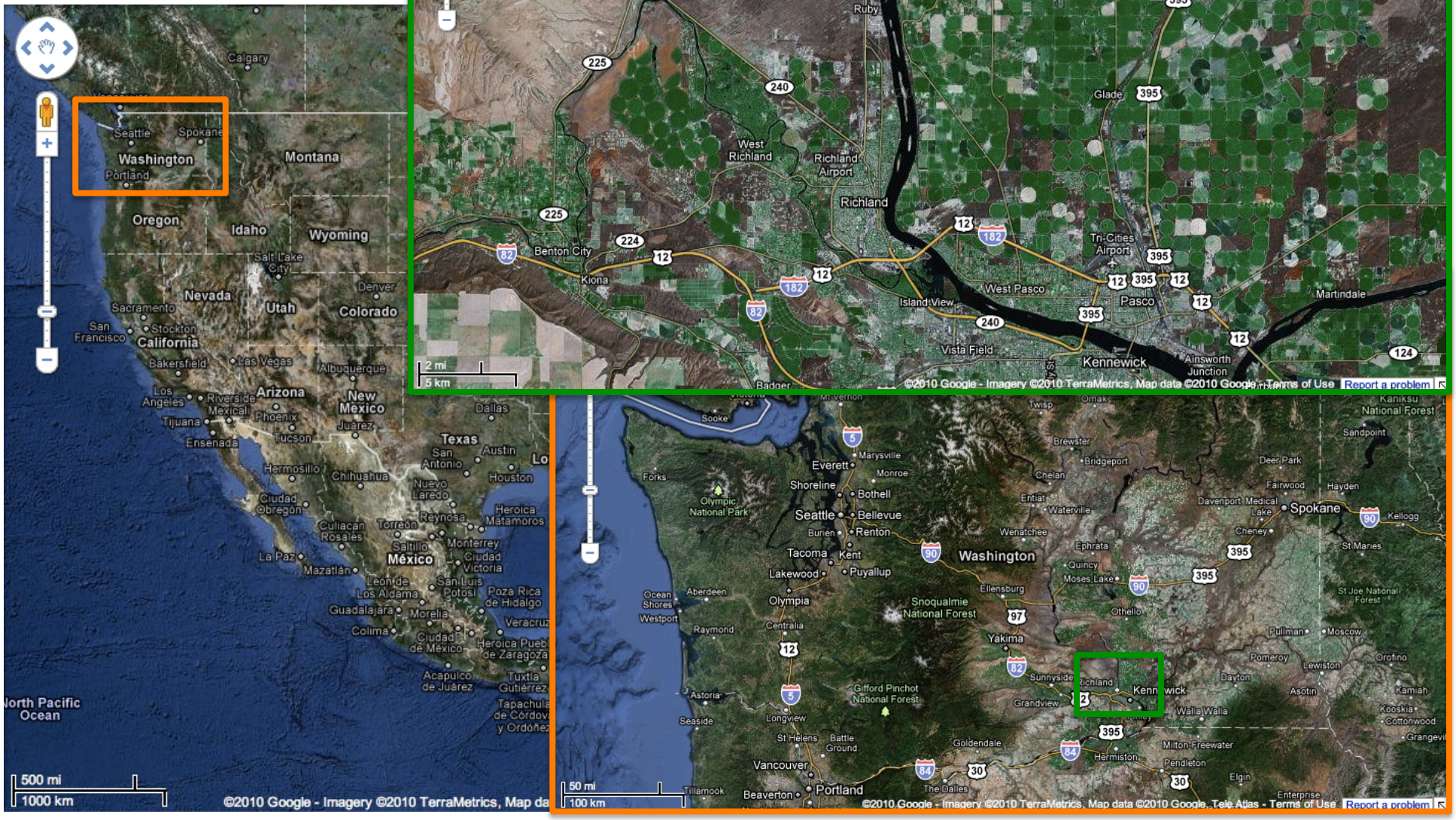
	Friday	Saturday	Sunday	Monday	Tuesda		
	January						
	29	30	31	1	2		
Owl	Caltech	LHO, R. Savage/V. Sandberg	Caltech, Jonathan Berliner	TAMA, Shuichi Sato	TAMA, Shuichi Sato	TAMA, Shuichi Sato	TAMA, Shuichi Sato
Morning	LHO, Daniel Sigg	UWM, Adam Mercer	UWM, Adam Mercer	UWM, Adam Mercer	UWM, Adam Mercer	UWM, Adam Mercer	UWM, Adam Mercer
Afternoon	Caltech, Kipp Cannon	Caltech, Kipp Cannon	Caltech, Jonathan Berliner	Caltech, J. Berliner	Caltech, J. Berliner	Caltech, J. Berliner	Caltech, J. Berliner
	5	6	7	8	9	10	11
Owl	TAMA, Shuichi Sato	TAMA, Seiji Kawamura	TAMA, Shuichi Sato	TAMA, Shuichi Sato	TAMA, Seiji Kawamura	TAMA, Seiji Kawamura	TAMA, Seiji Kawamura
Morning	UWM, Adam Mercer	MIT, Thomas Corbitt	MIT, Thomas Corbitt	MIT, Thomas Corbitt	MIT, Thomas Corbitt	MIT, Thomas Corbitt	MIT, Thomas Corbitt
Afternoon	Caltech, Eric Black	Caltech, Eric Black	Caltech, Eric Black	Caltech, Eric Black	Caltech, Eric Black	Caltech, Eric Black	Caltech, Eric Black
	12	13	14	15	16	17	18
Owl	TAMA, Seiji Kawamura	TAMA, Seiji Kawamura	TAMA, A. Nishizawa	TAMA, A. Nishizawa	TAMA, Seiji Kawamura	TAMA, A. Nishizawa	TAMA, A. Nishizawa
Morning	MIT, Thomas Corbitt	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo
Afternoon	Caltech, Eric Black	LHO, Jonathan Hanks	Caltech, Britta Daudert	Caltech, Britta Daudert	Caltech, Britta Daudert	Caltech, Britta Daudert	Caltech, Britta Daudert
	19	20	21	22	23	24	25
Owl	TAMA, A. Nishizawa	TAMA, A. Nishizawa	TAMA, A. Nishizawa	LHO, Greg Mendell	LHO, Rick Savage	LHO, Dan Moraru	LHO, Dan Moraru
Morning	Caltech, Riccardo De Salvo	Caltech, Riccardo De Salvo	Caltech, Bill Kells	Caltech, Bill Kells	Caltech, Bill Kells	Caltech, Bill Kells	Caltech, Bill Kells

Load to LHO

- NRT to SEA :8h
- SEA to PSC :1h
- SEAでの乗り継ぎ悪し



Load to LHO


Traffic
More...
Map
Satellite
Terrain
Show labels
Geneva Junction
Mathews Corner
Eltopia
Sagemoor
Ruby
Glade
West Richland
Richland Airport
Richland
Benton City
Kiona
Tri-Cities Airport
West Pasco
Pasco
Island View
Martindale
Vista Field
Kennewick
Ainsworth Junction
Badger
2 mi
5 km
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Tuxtla Gutiérrez
Tapachula
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500 mi
1000 km
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Yakima
Othello
Ephrata
Quincy
Moses Lake
Wenatchee
Entiat
Waterville
Chelan
Brewster
Bridgeport
Twisp
Omak
Kaniksu National Forest
Sandpoint
Deer Park
Fairwood
Hayden
Davenport
Medical Lake
Spokane
Cheney
Kellogg
St Maries
St Joe National Forest
Pullman
Moscow
Pomeroy
Lewiston
Orofino
Dayton
Asotin
Kamiah
Kooskia
Cottonwood
Grangeville
Walla Walla
Milton-Freewater
Pendleton
Elgin
Enterprise
Hermiston
Goldendale
Sunnyside
Grandview
Richland
Kennewick
Gifford Pinchot National Forest
Astoria
Seaside
Longview
St Helens
Battle Ground
Vancouver
Portland
Beaverton
Tillamook
The Dalles
50 mi
100 km
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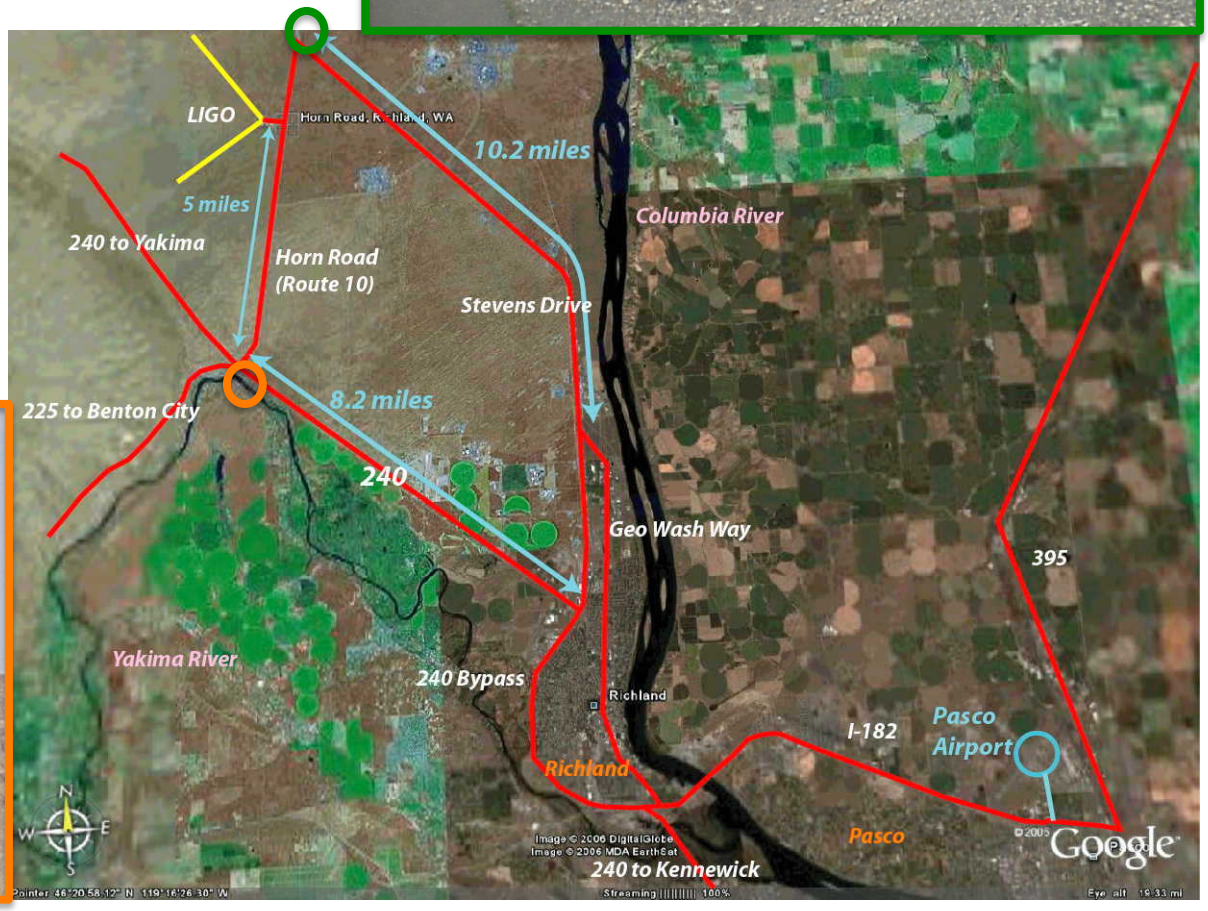
Driving to the site

- アクセスの基本はレンタカー
- PSC to Richland :30-40min.
- Richland to site :30min.
- 240経由 / Stevens Drive経由
- 余談：
  Toyota:7往復で1/2タンク残
  Ford:7往復（＋α）で1/8タンク残



S6 Scimon training

- 1-2回/monthでトレーニングセッションを開催
- By Gabriela Gonzalez
- Via EVO / Offline video
- 1h Scimon + 1h IFO basics
- 初めての人は出席が必須
  Sj, Sa は複数回目なのでofflineにて省略

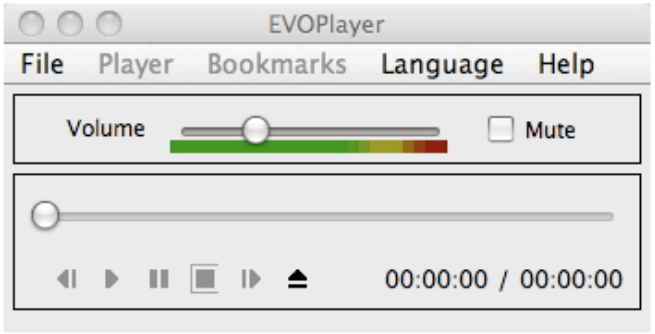
S6 Scimon Tutorial

S6 page: LLO, LHO

- SciMon duties
- InterferometerBasics
- Control room tools: DiagnosticsTools (DTT) , DmtViewer, DataView

Recorded training sessions:

To see previously recorded sessions, you first need to click on the "EVO Player" link in http://evo.caltech.edu/ .This will download the "EVOplayer.jnlp" application, and open a window like this for you:



From the "File" menu, you can choose to open a local *.evo file, or a URL pointing to an *.evx file. If you don't have a fast internet access, you may want to download the XXX.evo file and all the XXX_N (N=0,1,...) files to your computer, and see the recording without needing any internet connection. However, be aware that you will be downloading ~150 MB for each 2-hr session.
If you have a decent internet bandwidth, you should just use the links to the *.evx files provided below in the "Open URL" option of the "File" menu.

Both of the sessions recorded will open a video window (ViEVO) showing the desktop used, which is very important to follow the presentation. Do not close the ViEVO ? window when it opens! If you do, choose "restart video client" in the "File" menu. The video runs a bit behind the recorded voice (one-few seconds).

Sessions last ~2hrs, with the first hour dedicated to the "basic" scimon training, going over the SciMon duties. The second hour is dedicated to one of two topics, "interferometer basics", or "control room tools", using the pages listed at the top of this page.

The scimon duties description in the Nov 20 session uses the more recent wiki pages.

- November 20,2009:
  The recording is 1h59' long. The session on software tools in the control room starts at 1h15'. The desktop screen shows the mouse pointing to what is being talked about.
- November 9,2009:
  The recording is 2h17' long. The session on interferometer basics starts at 1h17'. The desktop screen shows the mouse pointing to what is being talked about.
- October 12, 2009:

S6 Scimon page

Jump Search

DetChar

Hello Shuichi Sato?

– Create personal sidebar

DetChar Web
Create New Topic
Index
Search
Changes
Notifications
RSS Feed
Statistics
Preferences

Webs

AIC
AuthProject
Bursts
CBCDataQualityVeto
CW
DAC
DetChar
GWHEN
Gracedb
LLS
LSC
OPT
RadioAnalysisGroup
S6ScimonShifts
SWG
Sandbox

LSC/Virgo Working Groups TWiki > DetChar Web > Runs > SciMo

Local Information For Scimons

Local LHO Information

Local LLO Information

Please contribute!

- Quick Links
- S6 SciMon Duties
  - Before you arrive
  - Duties while on shift
  - Data Monitoring Duties
  - Quick Software Guide For LIGO Data Analysis
  - Elog entries Templates
    - 1: FOMs
    - 2: Loudest glitches
      - Reading Omega Scans
    - 3: Science Segments
  - How to make and edit an elog entry
  - Troubleshooting:
    - Issue Relationg To
    - At LIGO Hanford Observatory
    - At LIGO Livingston Observatory
  - To-do list

Quick Links

- **S6 pages**: LLO, LHO
- **Virgo:** logbook, detector operations
- **Omega:**
  - Daily Reports: L1 H1
  - Loudest 3 glitches: L1 H1 (click on calendar on left)
- **ELOGS:** LLO LHO
- **CDS Home Page**: LLO LHO
- **Latest Earthquakes**: USGS worldwide, USGS US only quakes (gives lower magnitude quakes than the worldwide link), expected arrival time of quakes (> mag4) at the detectors
- **Dead Channel Monitors:** DCM for LLO DCM for LHO
- **Data Quality Flag Generator:** Make DQ Flag
- **Fscans**: Main Line Finding Page: S6NoiseLineSearch. Calendars: H1L1V1 hoft Daily Fscans, LHO Daily Fscans, LLO Daily Fscans and Post-processing.
- **Hardware Injections:** Burst, CBC, CW, Stochastic: https://www.lsc-group.phys.uwm.edu/twiki/bin/view/DAC/S6VSR2HardwareInjections

- Duty50%以上の全てのLSC memberにシフトが割り当てられる
- シフトに際し必要となる/参考となる広範な情報が網羅的にリンクされている（いたせりつくせり）

Scimon duties

- Scimonの仕事は「データのクオリティーを保証すること」
- 具体的な仕事内容として以下の5項目が挙げられている
- 赤字はe-Logエントリに関連するもの

S6 SciMon Duties

"Scimons" (scientific monitors) main responsibility is to vouch for data quality being reasonable, as seen from the control room, for gravitational waves discovered during their shift. Scimons and operators jointly decide when to start a science segment.

Also, we count on scimons to use the opportunity of being close to the instrument, operators, local commissioners, and control room software tools to investigate and characterize problems happening during the shift (in general with the operator's help), providing clues for commissioners for fixing the problem, creating data quality flags if needed, and even stopping a science segment if data quality is bad enough.

1 前シフトのFOMにコメントすること

2 前シフトの3大グチッチの調査

3 必要な場合DQフラッグを立てる

4 Dead チャンネルをモニタする

5 前シフトのscience segmentをまとめる

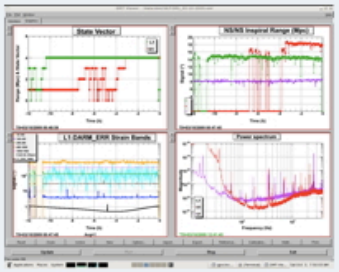
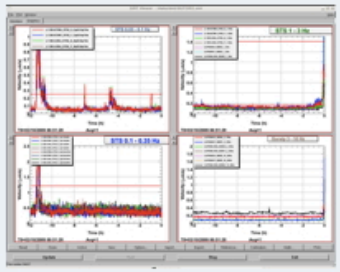
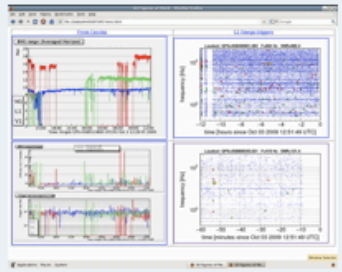
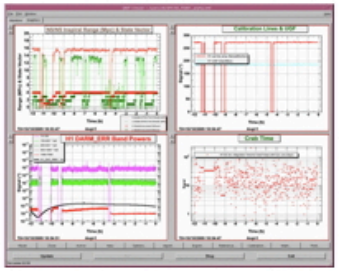
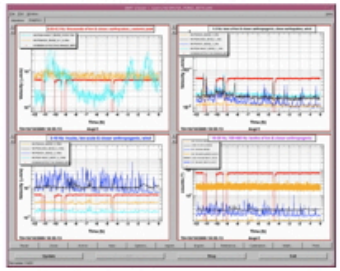
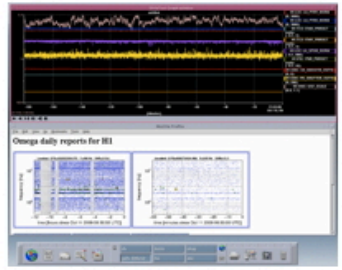
Duty	Short Description	Links
Add notes to previous shift FOMs	Arrive a few minutes early to touch base with previous scimon and operator, get the shift history referring to the 12-hr FOMs, and add a subentry to the printed FOMs at the beginning of your shift. Check FOM 1 to make sure the hardware injections are active. If they are not, ask the operator if AWG needs to be rebooted.	FOMs page Template
Investigate 3 loudest glitches	Investigate **loudest 3 glitches** in the previous shift (get clues from outgoing scimon!). The three loudest triggers in the previous shift's science mode, along with DQ flags and omega scans, can be found here: H1, L1. The investigations by the scimon will mostly be based on *asking local commissioners and operators* information about these glitches, complementing investigations done by people off-site.	Example Loudest 3: L1 H1 Example
Create a DQ Flags If Needed	If something unusual happens during the shift that may or is known to affect the data quality, create a special DQ flag (i.e.,baling, identified earthquakes, planes, helicopters, etc.) This should be done in agreement with operators, since the flags are possibly related to the ``activity" bit of the state vector. Use this Data Quality Flag Generator to create the flag, and add an entry in the elog documenting the details.	DQ Flag Generator Example
Check Dead Channel Monitor	Check the dead channel monitor (DCM) sometime during your shift. If the channel appears on the list in the report, and is a new channel (not in in the DCM log file for previous days), email Ezra Tucker and copy detchar@relativity.phys.lsu.edu with the details. If you see the same channel for several shifts, please send an email before your last shift reminding the group about the unsolved problem. Please refer to the DCM homepage for more detailed descriptions of each problem. AT LHO: If there is a new Dead Channel that wasn't there in the previous shift, email both Robert Schofield and Richard McCarthy.	DCM homepage DCM for LHO, DCM for LLO
Annotate list of science segments	The list of science segments in the shift should be posted automatically by "scimon" elog account 30 minutes before the end of the shift. Edit the entry adding the reason for end of each science segment, comments about data quality in each science segment, and any DQ flags inserted. It is useful to keep a list of end-of-segments during the shift, to be used in this entry at the end of the shift. Talk to the operator to agree on details (and to avoid duplication too).	Example Template

Duty1: Add notes to previous shift's FOMs

- 担当シフトが始まるとすぐに前シフトのFOMsが自動的にe-Logにエントリされる
- 正確には12時間分のデータが現れるが、前シフトの8時間分のみ考慮すればよい
- 引き継ぎ情報に基づいて、それぞれについてまとめのコメントを書き加える

1: FOMs

This entry is done at the beginning of the shift, as a subentry to the automatically printed plots of FOMs, with information provied by the previous scimon.
The table below shows an example of FOMs at LLO and LHO.

	FOM1	FOM2	FOM3
LLO			
LHO			

The template for the subentry follows, with comments on the last 8 hours of each FOM:

FOM1 (state vector, BNS range, strain bands)
- a single science segment OR few, long segments OR several short segments due to xx
- BNS range stable at xx Mpc OR range decreasing (increasing) from xx to xx OR range decreased betwen xx and xx hs due to xx
- Noise in frequency bands stable OR increasing or decreasing power in xx freq bands OR noise increased in xx freq band between xx and xx

FOM2 (seismic noise)
- earthquake (train, wind, storm,...) in xx between xx and xx hrs, visible in xx freq band, coincident with feature seen in range in FOM1
- increasing (decreasing) noise in xx band, due to xx

FOM3 (glitchiness)
- stable glitch rate during the shift OR
time between xx and xx significantly more/less glitchy due to xx, coincident with feature seen in rage in FOM1 and/or seismic noise in xx band
- high glitchiness at xx Hz

Duty1: Add notes to previous shift's FOMs

- ほとんどの情報はe-Log上で共有される
- 必要に応じて記事をエントリする
- シフト関連の情報もコミッショニング関連の情報もすべてここに集約される
- 干渉計でなにが起っているかはここを読めば、ほとんどの情報は得られる
- FOMsやscence segmentなどの情報は自動的にエントリされる（RoboScifom…）

00:01:01 Fri Feb 19 2010 (Local)

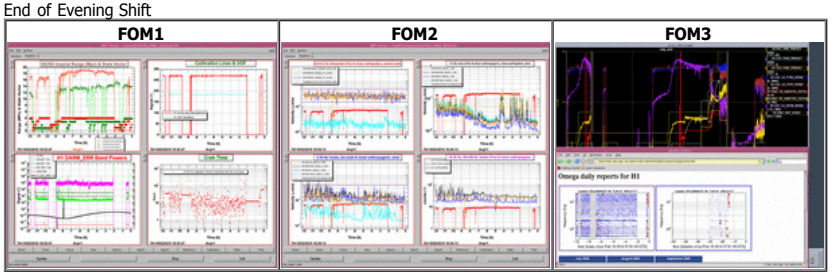
Subentry

Topic: RoboMon Author: Science Monitor Fri Feb 19 08:01:01 2010 UTC

RoboScifom

Figures of Merit

End of Evening Shift



This entry automatically elogged by **ROBO SCIFOM**

- *Science Monitor* http://ilog.ligo-wa.caltech (ref url)

CDS

Add or Remove Keyword: NO_KEYWORD Submit

00:38:42 Fri Feb 19 2010 (Local)

Topic: LHO, H1, SciMon Author: Atsushi Nishizawa Fri Feb 19 08:38:42 2010 UTC

FOMs

FOM1 (state vector, BNS range, strain bands)
- one science segments
- BNS range was between 18 and 19 Mpc
- Noise in frequency bands stable

FOM2 (seismic noise)
- seismic disturbance in all freq band was less noisy, compared with those yesterday, except for 1-3 Hz band where many large spikes ware seen between -4 and -1.5 hrs

FOM3 (glitchiness)
- stable glitch rate during the long segment.

- *Atsushi Nishizawa* http://ilog.ligo-wa.caltech (ref url)

NO_KEYWORD

Add or Remove Keyword: NO_KEYWORD Submit

00:10:39 Fri Feb 19 2010 (Local)

Subentry

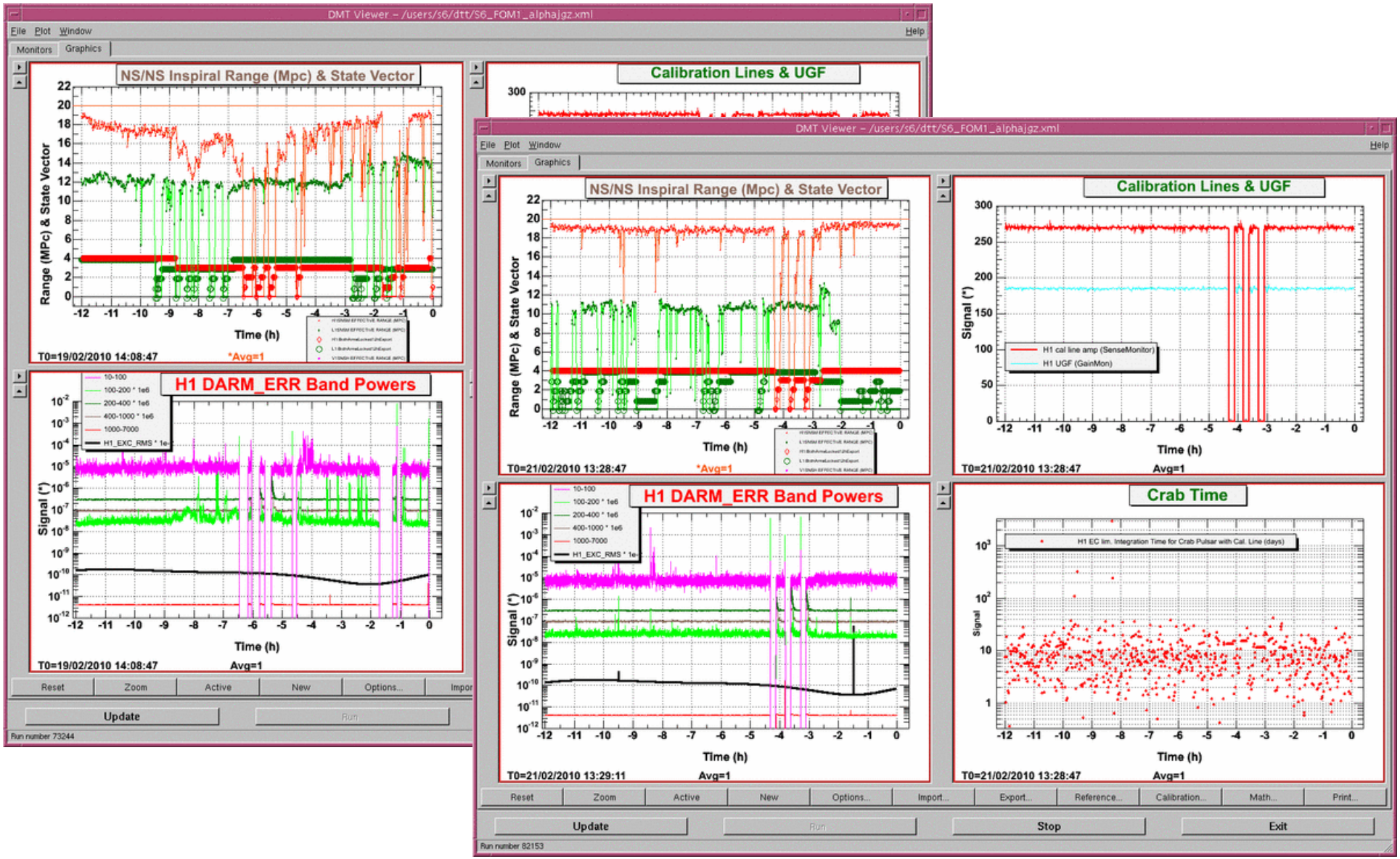
Topic: RoboMon Author: Dave Barker Fri Feb 19 08:10:39 2010 UTC

RoboBootMon

Boot Log 18 Feb 2010

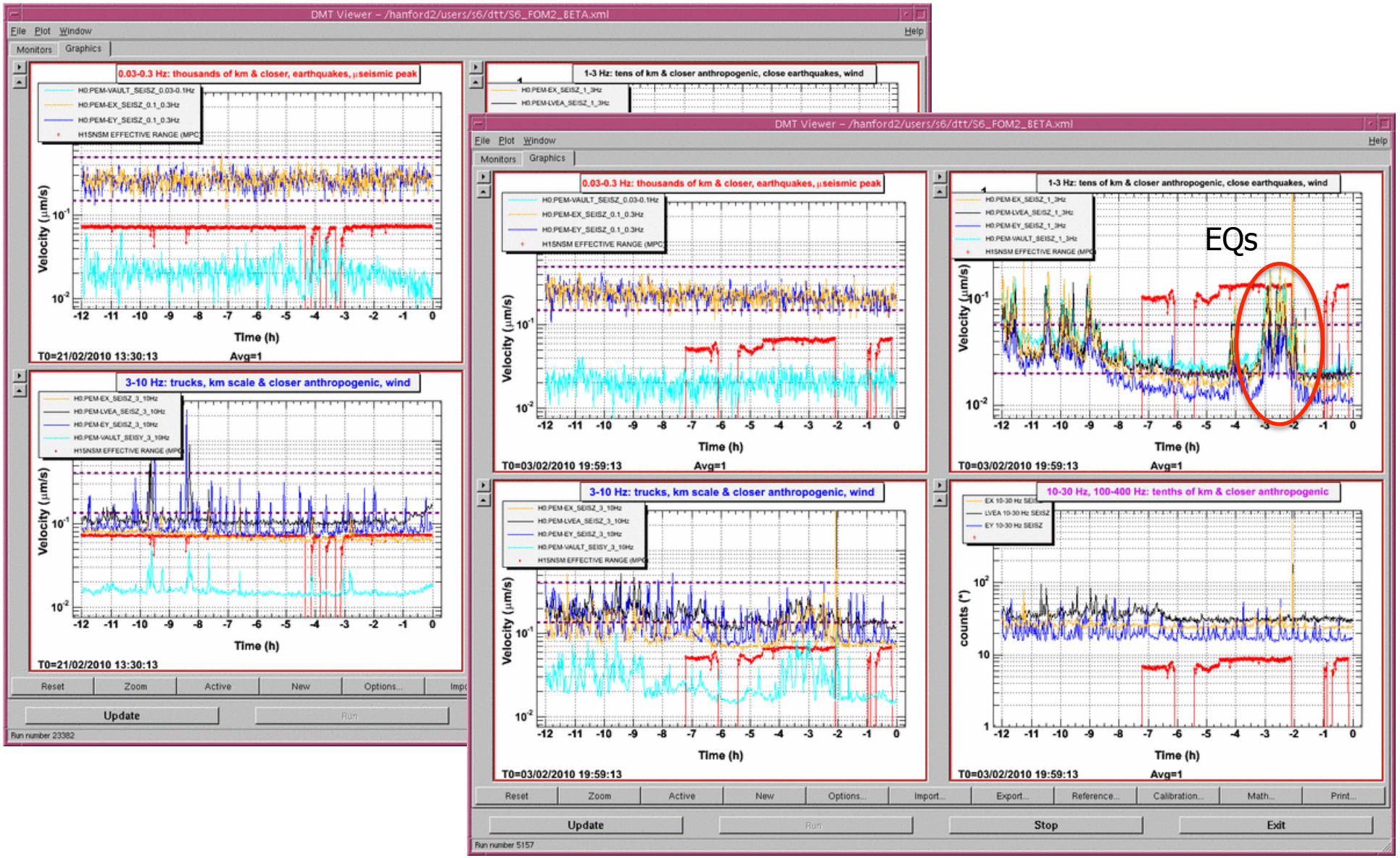
FOM1

- State vectorおよびbinary range
- L-error信号のバンドごとのパワー
- Cal.lineおよびUGF



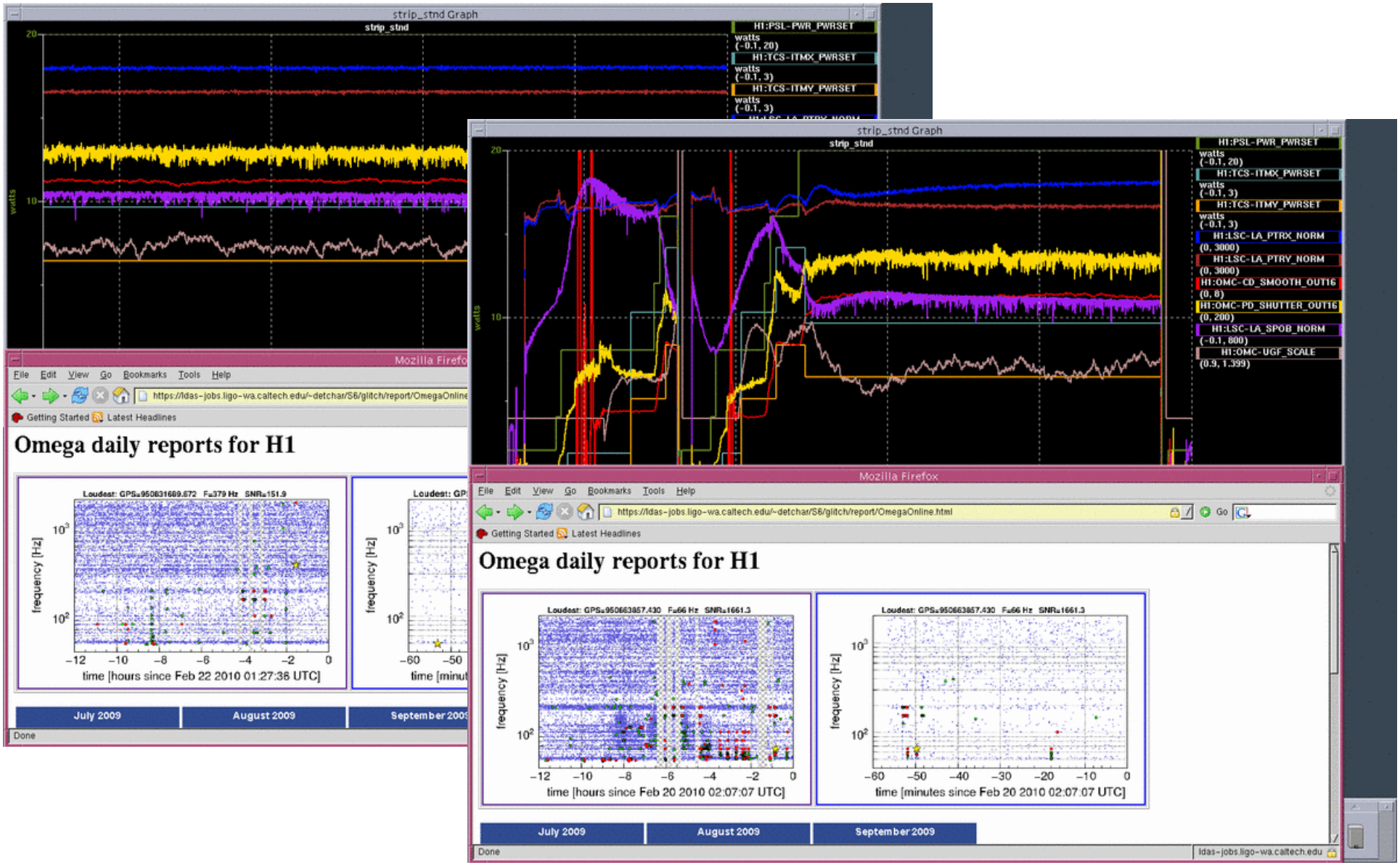
FOM2

- Seismic activity
- 各バンドごとのパワー



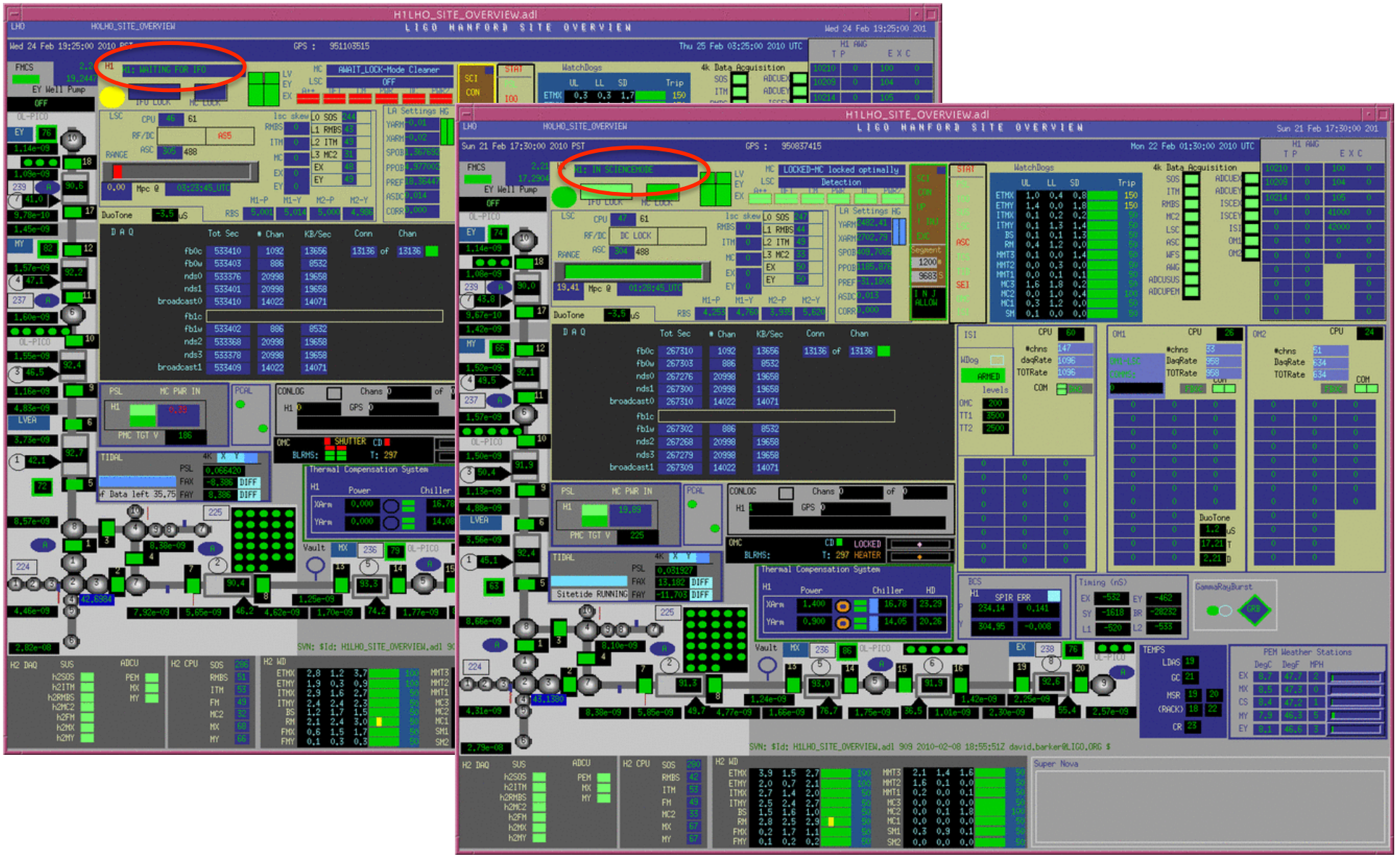
FOM2

- “Omega scan” によるグリッチ表示
- SNRごとに色分け



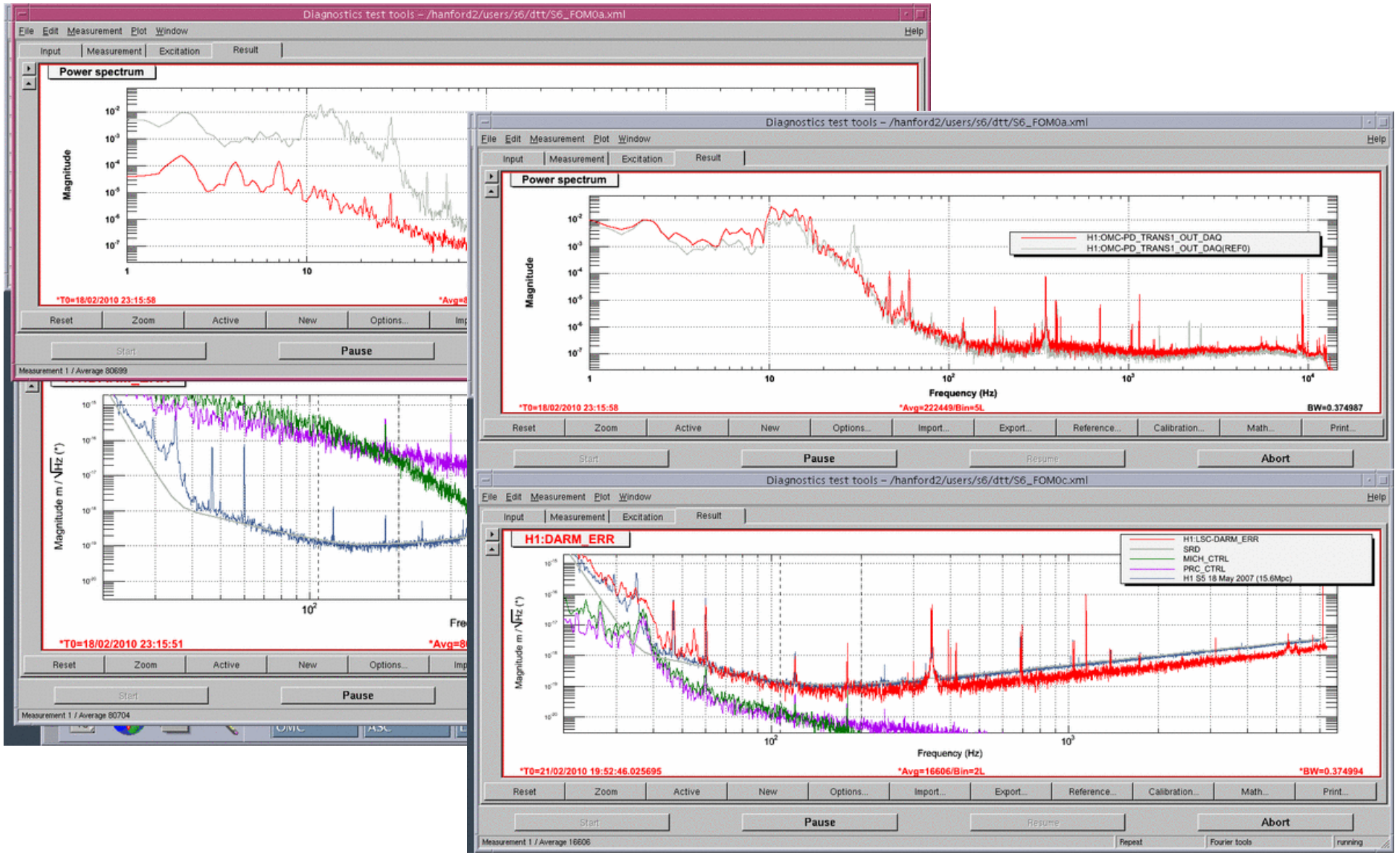
FOM0?

- 干渉計ステータス表示
- 基本的にはAll-greenでscience modeへ移行できる



FOM4?

- 干渉計スペクトル感度のリアルタイム表示
- 19-20Mpc @20W input to MC



Duty2: Three loudest glitches

- 前シフトのscience dataから3大グリッチがリストされる
- これらの原因を突き止める/可能性をさぐる/断念する

2: Loudest glitches

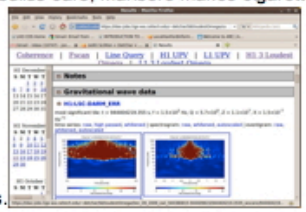
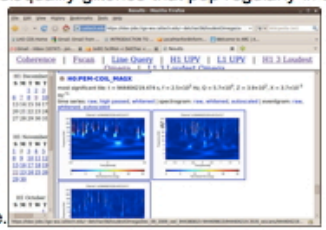
Refer to list for H1 and L1. Report technical problems of the top-three list to Tomoki Isogai (isogait@carleton.edu).

You can use the DQ web interface to find out DQ flags if not automatically generated. Search for " [" to find flags active at the requested time.

You should also check for context (nearby glitches) in Omega pages for H1 and L1.Report technical problems to Laura Cadonati (cadonati@physics.umass.edu).
You can also run run an OmegaScan for each glitch. Documentation for the omega glitch monitor can be found here.

Some channels are noisy and will frequently show up in scans even if they are not meaningfully correlated with the glitch. These scans of random times which are not correlated with a real glitch may help provide some sense of what to expect for background noise in the scan.

Reading Omega Scans

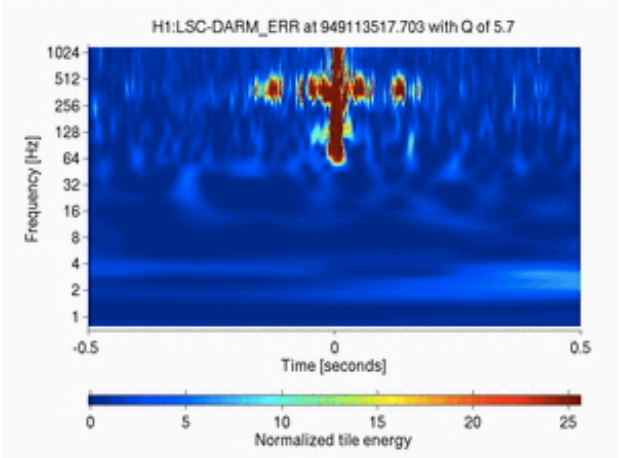
- Omega scans are ONLY triggered while the detector is in Science Mode, and should not detect lock-losses. It is most effective for detecting strange sounds or brief dips in range.
- Pay special attention to the H1:LSC-DARM_ERR channel (or L1...). This is the all-important "Gravity Wave Channel." To use an analogy from Rick Savage (LHO), Ford builds cars, Marlboro makes cigarettes, and LIGO outputs DARM_ERR. It will be the first listing in the omega scan page. This channel triggers omega scans. 
- The LSC Channel Wiki is your best friend.
- Glitches are represented by RED colors, which means high Signal-Noise-Ratio. Blue is low, ambient noise.
- Note when that glitch happened: Was it 0 seconds? -0.5 seconds? +1 seconds?
- Using that information, you can look at the other channels that are displayed by the omega scan and see if their "glitch" is coincident with DARM_ERR's glitch.
- You can also disqualify glitches that pop regularly in the background...After all, if it didn't cause DARM_ERR to glitch at other times, it probably didn't cause it to glitch this time. 
- Be keen to patterns: If all of the ACCX's, Y's, or Z's are glitching (accelerometers), that means something is shaking, and you should say that. Likewise, if you see lots of "BSC9" or "HAM6" or something similar, it means that something funny is going on in a particular chamber, and you should say that.Here's a good example. Scroll down to "LHO Environment" and you will see that in BSC1 and the LVEA, there is something going on in the MAG channels. You don't even have to know anything about these channels to know that there is a pattern going on here which deserves mention. If you are curious, BSC1 is a chamber inside of the LVEA, and the magnetometers were registering very strong magnetic fields in this chamber.
- If nothing interesting comes up, don't be dissuaded. Supposedly, less than 1/10 automatic omega scans yield useful results.
- Check the DQ flags for each scan. Note any interesting entries there.

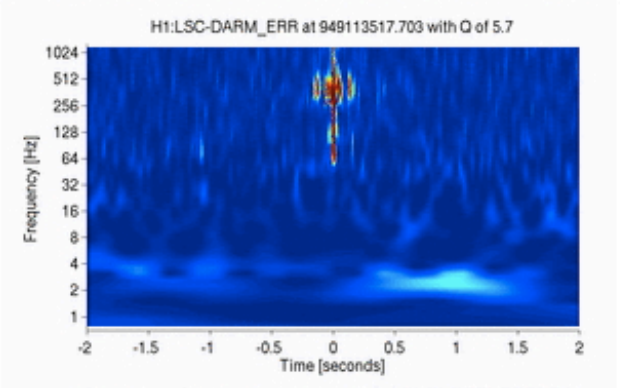
Duty2: Three loudest glitches

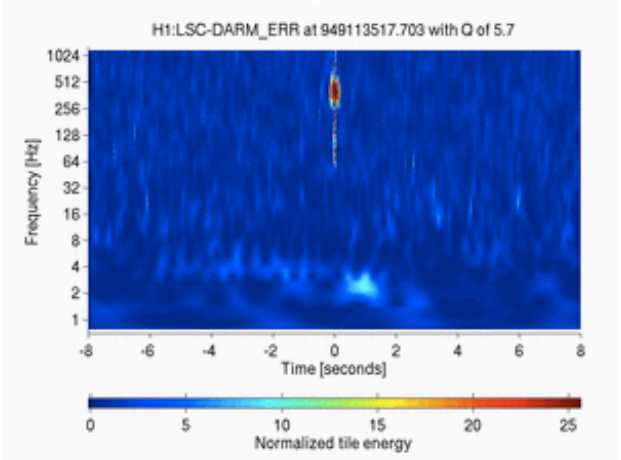
Gravitational wave data

H1:LSC-DARM_ERR

most significant tile: t = 949113517.704 s, f = 3.5×10^{2} Hz, Q = 5.7×10^{0}, Z = 9.9×10^{3}, X = 1.9×10^{-9} $Hz^{-1/2}$
time series: raw, high passed, whitened | spectrogram: raw, whitened, autoscaled | eventgram: raw, whitened, autoscaled







LIGO

Line Search | Veto | Glitches

H1 February 2010

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

H1 January 2010

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

H1 December 2009

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Loudest Omega Triggers (Feb_01_2010_owl_949046415-949075215)

All loudest triggers in 8 hours in science mode times ordered by SNR.
Segments Used

https://ldas-jobs.ligo-wa.caltech.edu/~detchar/S6/loudestOmega/Feb_01_2010_owl_949046415-949075215/science_segs.txt

1. 9
(Pe 57649.3314, End: 949057651.9245, f: 413.15, SNR: 752.86)

Omega Scan
DMT DQ Flags

2. 949057642.8750
(Peak: 949057642.8750, Start: 949057641.8305, End: 949057643.4720, f: 278.00, SNR: 682.20)

Omega Scan
DMT DQ Flags

3. 949057635.0312
(Peak: 949057635.0312, Start: 949057634.0700, End: 949057635.8959, f: 338.50, SNR: 528.39)

Omega Scan
DMT DQ Flags

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