



DSES Winter Science Projects

Prototype Results

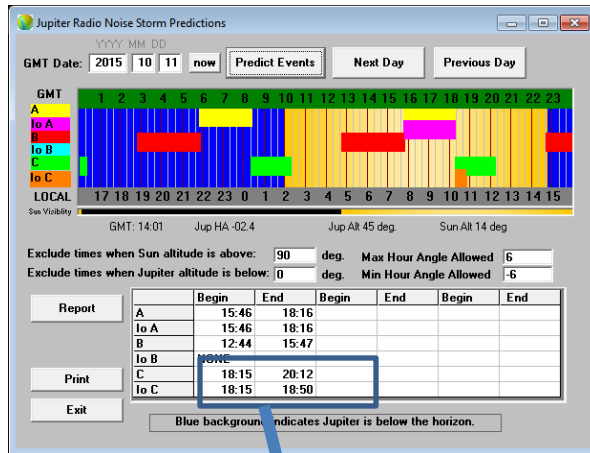
Ray Uberecken
Dr. Rich Russel

10-12-15

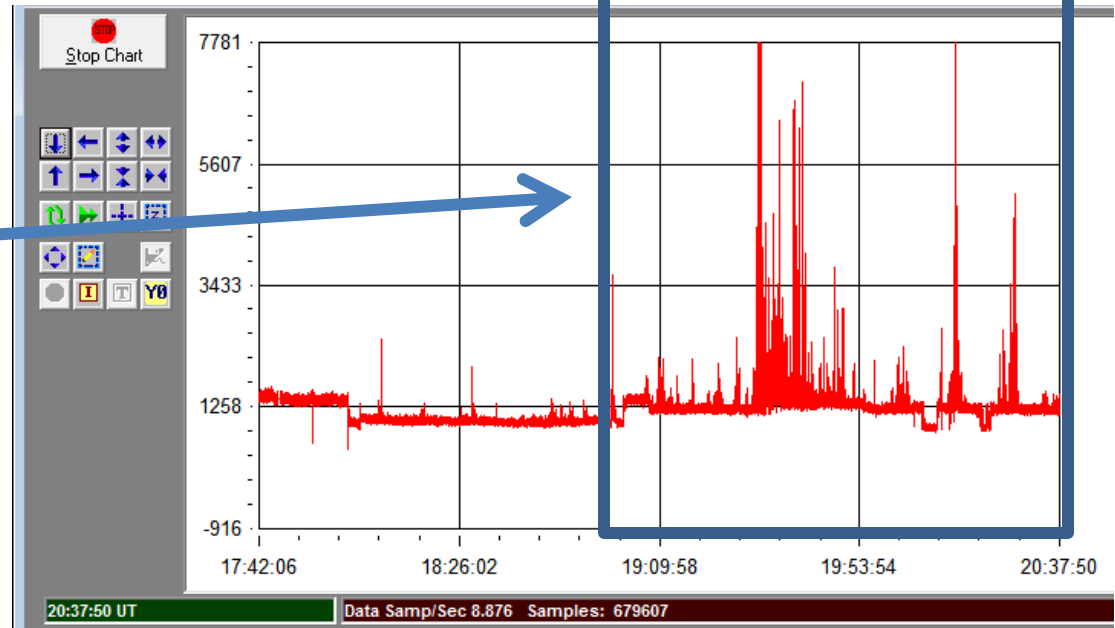
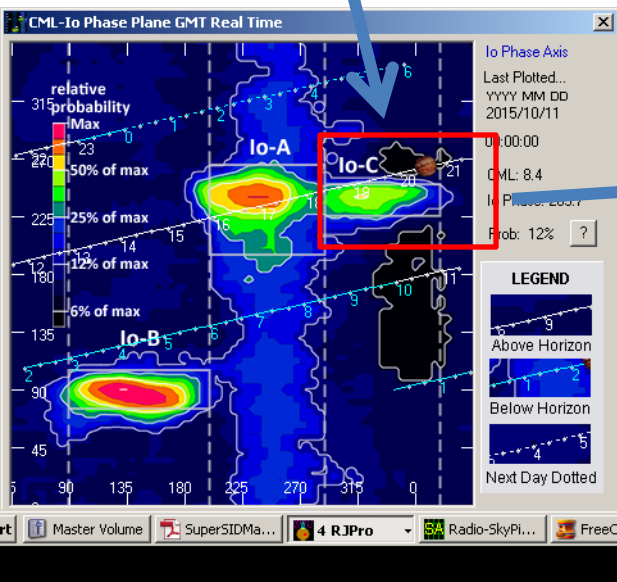
Radio JOVE

Jupiter IO-C Storm Detection

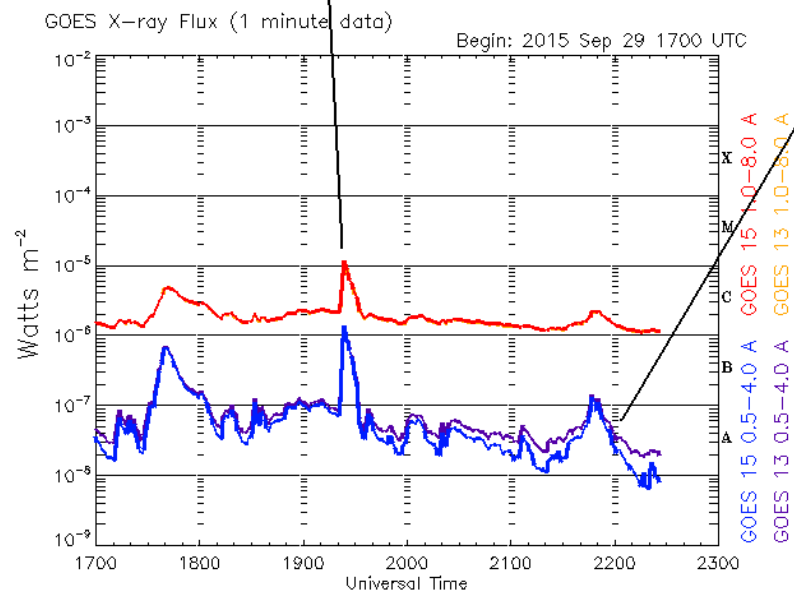
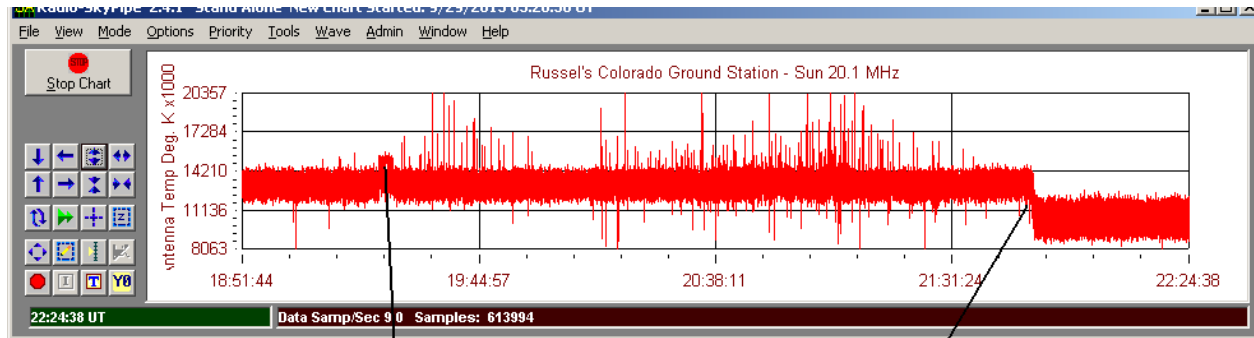
Prediction



Detection



Radio JOVE Solar Flare Detection



LATEST X-RAY EVENT (1-8Å)

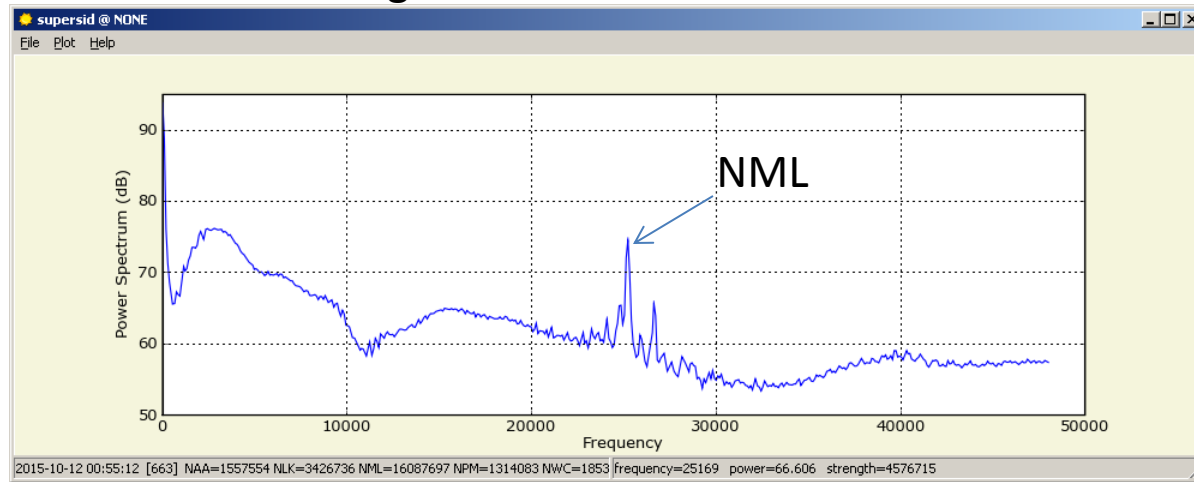
Current	2015-09-29 22:27:00 UTC	C1.1	Ratio: 0.009
Beginning	2015-09-29 19:20:00 UTC	C2.2	
Maximum	2015-09-29 19:24:00 UTC	M1.1	Integrated flux: 0.002880 J m ⁻²
End	2015-09-29 19:27:00 UTC	C6.5	

Updated 2015 Sep 29 2227 UTC

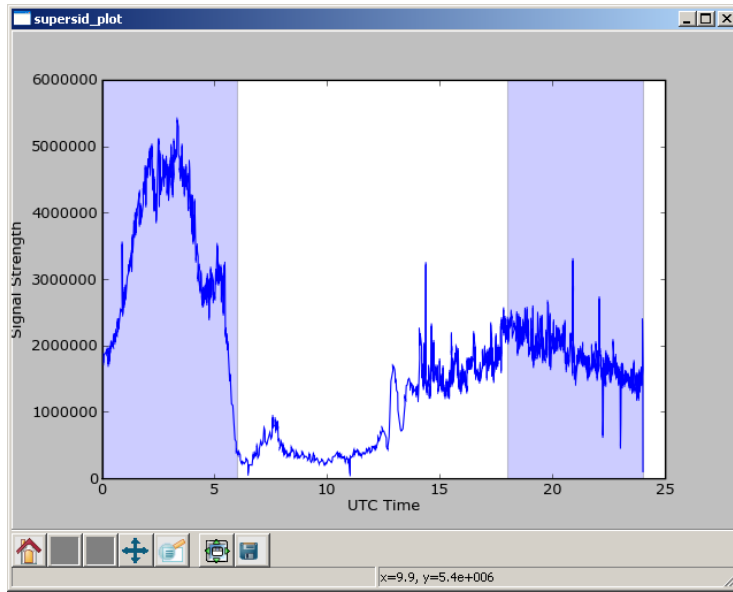
NOAA/SWPC Boulder, CO USA

SuperSID (Solar Flare Detector)

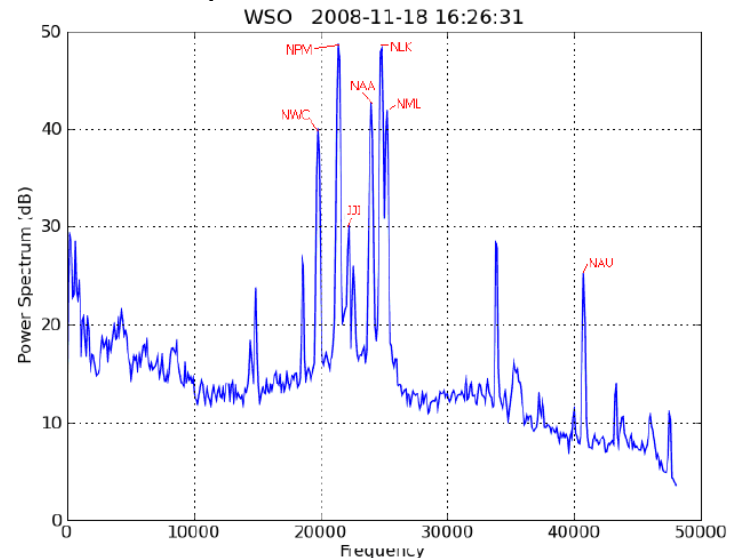
Coverage from Russel's House



10-10-15 NML Plot



Example with most stations



HI Detection Cassiopeia A

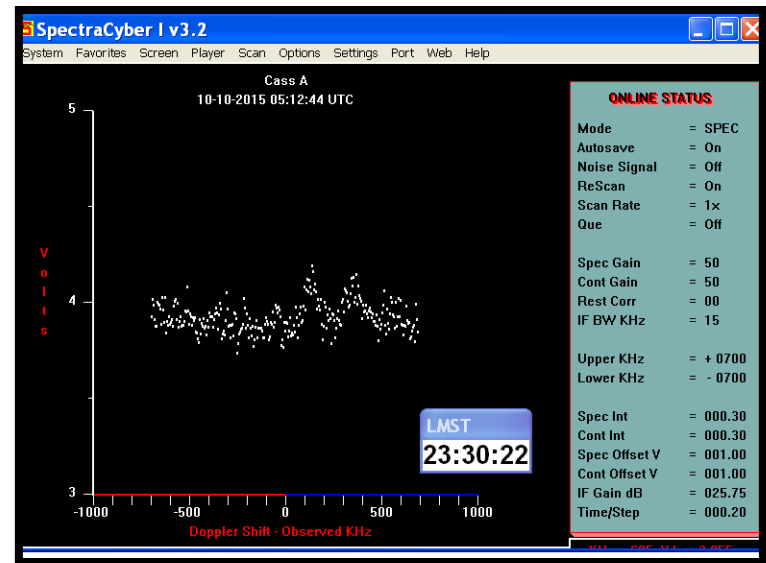
9 foot Dish



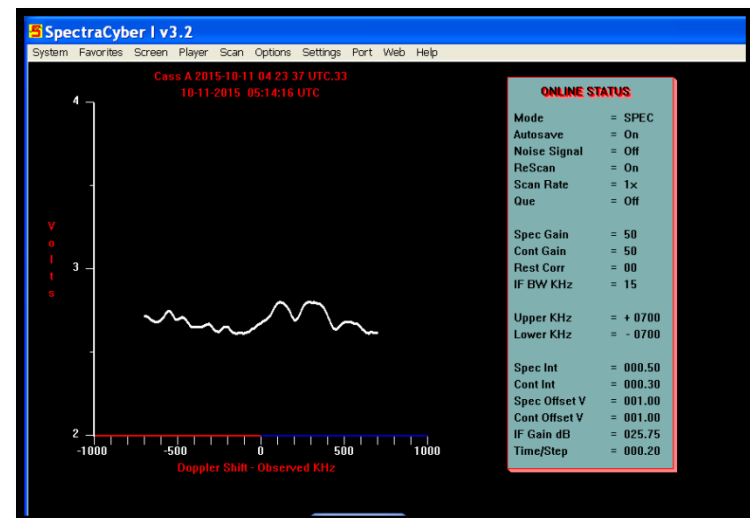
1420.406 MHz Feed



DAY 1 Raw Scan Data

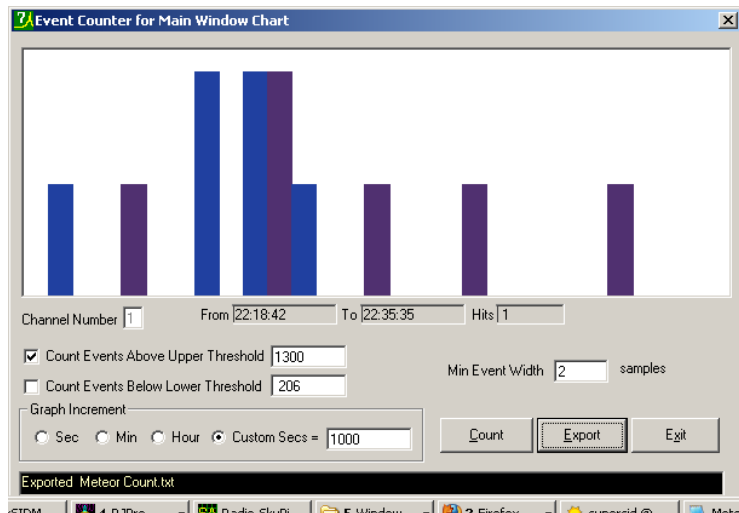
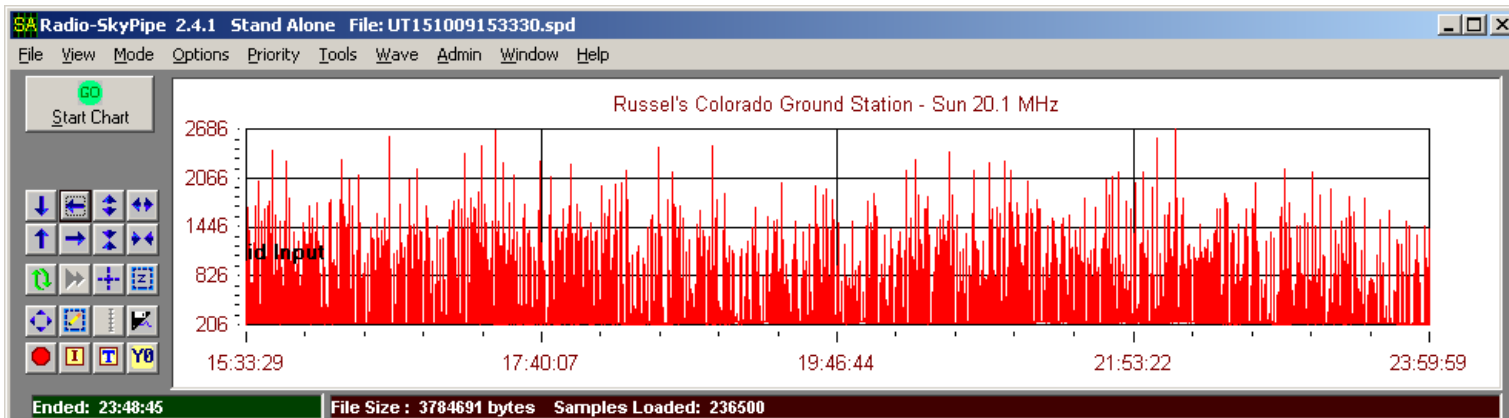


DAY 2 Average Smoothed Data



Meteor Detection

(55.25 MHz Reflections using Ham Radio and N-S Wire Dipole)



Meteor Count.txt - Notepad			
File	Edit	Format	View Help
10/9/2015	15:33:30	15:50:23	0
10/9/2015	15:50:23	16:07:16	1
10/9/2015	16:07:16	16:24:09	0
10/9/2015	16:24:09	16:41:02	0
10/9/2015	16:41:02	16:57:55	1
10/9/2015	16:57:55	17:14:48	0
10/9/2015	17:14:48	17:31:41	0
10/9/2015	17:31:41	17:48:34	2
10/9/2015	17:48:34	18:05:27	0
10/9/2015	18:05:27	18:22:20	2
10/9/2015	18:22:20	18:39:13	2
10/9/2015	18:39:13	18:56:06	1
10/9/2015	18:56:06	19:12:59	0
10/9/2015	19:12:59	19:29:52	0
10/9/2015	19:29:52	19:46:45	1
10/9/2015	19:46:45	20:03:38	0
10/9/2015	20:03:38	20:20:31	0
10/9/2015	20:20:31	20:37:24	0
10/9/2015	20:37:24	20:54:17	1
10/9/2015	20:54:17	21:11:10	0
10/9/2015	21:11:10	21:28:03	0
10/9/2015	21:28:03	21:44:56	0
10/9/2015	21:44:56	22:01:49	0
10/9/2015	22:01:49	22:18:42	0
10/9/2015	22:18:42	22:35:35	1
10/9/2015	22:35:35	22:52:28	0
10/9/2015	22:52:28	23:09:21	0
10/9/2015	23:09:21	23:26:14	0
10/9/2015	23:26:14	23:43:07	0
10/9/2015	23:43:07	00:00:00	0
			12

Itty Bitty Telescope



Measures Thermal Temperatures

Requires modification of the meter to be viable

Remote Operations

- The CASS A scans were accomplished over the internet from Rich's house using Ray's Radio Telescope! Test SAT!

Plishner Install Plan

- Require more power storage at communication van
 - Add solar panel and battery capacity
- Requires Internet Access at Communications van – request is being reviewed
- Telescope Installs:
 - Radio JOVE – Use 20 ft metal poles cemented in ground at site
 - SuperSID – mount antenna above ground to keep out of snow
 - Meteor Counting – Test SDR-14 Receiver, build 55 MHz antenna
 - HI – Move 1420 MHz feed onto 60 ft dish, move Spectra Cyber and computers to communications trailer
 - Computer – All systems will be controlled by 1 computer tied to internet (requirement is to minimize power usage)

Data Collection and Analysis

- Radio JOVE – automatic feed to NASA
- SuperSID – automatic feed to Stanford
- Meteor Count – start baseline daily counts, compare with future meteor shower predictions (Orionid: Oct 21-22, Leonid: Nov 17-18)
- HI Measurements: CASS A, Cygnus A, Taurus, etc...) Galactic rotation (measure Galactic HI along different points to calculate galactic rotation rate)

Follow On Activities

- DSES Member Radio Telescope Gold Level Certification
- District 20 science opportunity
- SARA March Conference paper (Arizona)