

Stan Heckman

Earth Networks

Surface Network of Broadband E Field (1 Hz to 10 MHz) Waveform Recorders

September 2012
653 Earth Networks sites



480 Sites in CONUS

Locates
60% to 80%
of Flashes

"Sees" 99%
of Flashes

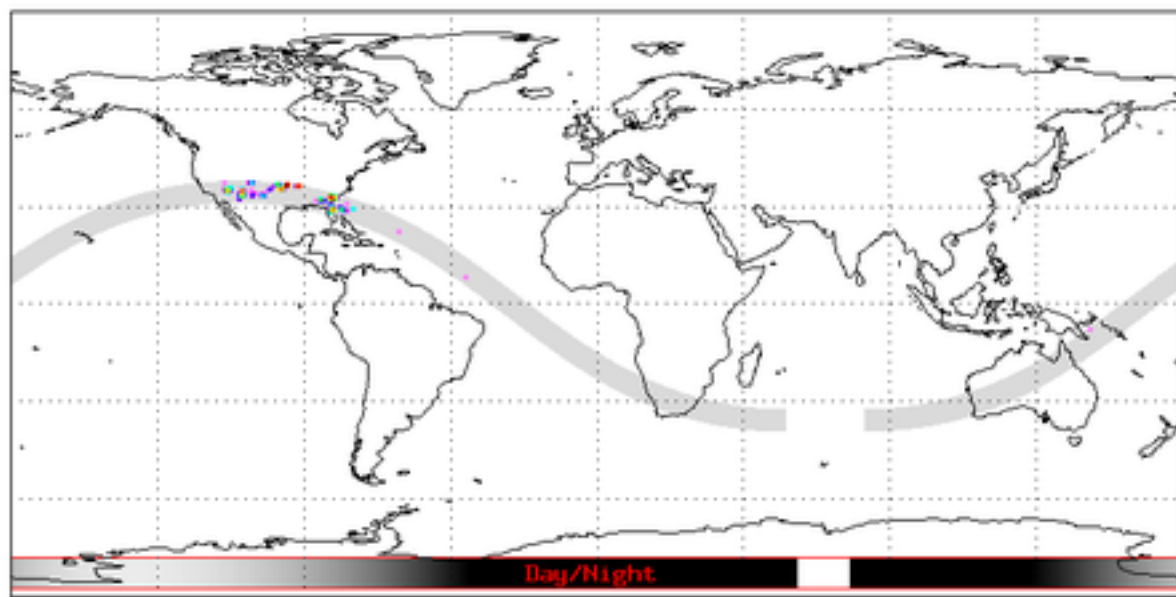
Collaboration?

Electric Field Pulses
are a lot like
Light Pulses

We could cooperate



LIS Data Granule



2012-251T20:14:18.0000Z to 2012-251T21:48:19.0000Z
 areas 95 flashes 565 groups 5245 events 19437

09/19/2012 Version 04.1

Lightning Imaging Sensor

MSFC/NRSR

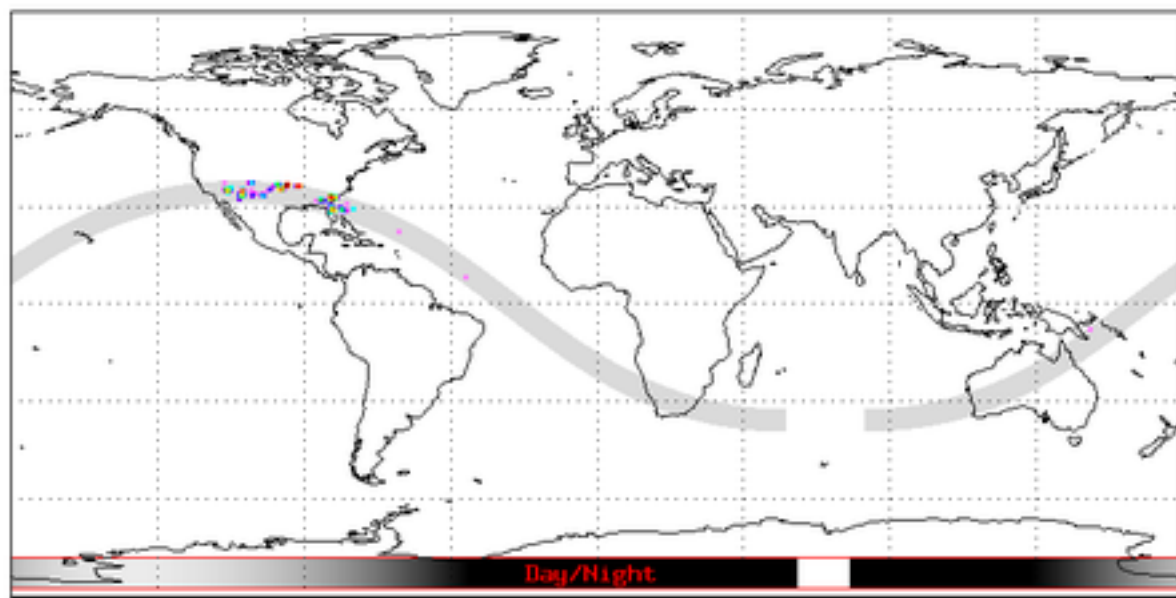
Position cursor over flash of interest and click for a zoomed view.

The orbit data sets may be downloaded in either [uncompressed](#) or [gzip](#) format.

The lightning distribution image above was created from TRMM_LIS_SC.04.1_2012.251.84382.

Flash time (UTC)	(Lat, Lon)	Radiance	milliseconds	Groups	Events
2012-251T20:34:29.0550Z [Sep 07]	(-7.823, 151.441)	158594	82	9	29
2012-251T20:59:48.2615Z [Sep 07]	(34.666, -113.843)	459922	255	9	41
2012-251T20:59:48.5158Z [Sep 07]	(34.644, -113.918)	103564	0	1	9
2012-251T20:59:53.1871Z [Sep 07]	(34.621, -113.443)	89528	234	3	9
2012-251T20:59:53.4715Z [Sep 07]	(35.332, -113.521)	783429	268	14	51
2012-251T21:00:00.7694Z [Sep 07]	(34.651, -113.413)	50190	193	3	6
2012-251T21:00:03.3477Z [Sep 07]	(34.319, -113.440)	107077	202	3	13
2012-251T21:00:07.5396Z [Sep 07]	(34.501, -113.868)	379651	404	3	30
2012-251T21:00:08.2306Z [Sep 07]	(35.394, -113.593)	698319	391	12	42
2012-251T21:00:08.2321Z [Sep 07]	(35.339, -113.621)	1463795	2	2	71
2012-251T21:00:11.6717Z [Sep 07]	(35.399, -113.054)	291016	50	6	29
2012-251T21:00:13.3798Z [Sep 07]	(34.271, -113.289)	264466	492	11	25
2012-251T21:00:14.8159Z [Sep 07]	(34.675, -113.380)	61351	404	3	6
2012-251T21:00:15.2350Z [Sep 07]	(35.543, -112.302)	40670	0	1	4
2012-251T21:00:15.3245Z [Sep 07]	(35.288, -113.512)	218958	368	7	22
2012-251T21:00:15.4034Z [Sep 07]	(35.336, -114.059)	400233	214	12	29
2012-251T21:00:21.6646Z [Sep 07]	(35.384, -112.085)	2397725	395	26	115
2012-251T21:00:22.5470Z [Sep 07]	(35.307, -113.978)	331924	204	14	27
2012-251T21:00:47.3326Z [Sep 07]	(35.287, -113.475)	2561252	166	10	87
2012-251T21:00:47.6029Z [Sep 07]	(34.277, -113.331)	206044	173	4	20
2012-251T21:00:49.2110Z [Sep 07]	(35.574, -112.305)	420318	223	9	26
2012-251T21:00:50.4195Z [Sep 07]	(34.273, -113.318)	679168	320	3	68

LIS Data Granule



2012-251T20:14:18.0000Z to 2012-251T21:48:19.0000Z
 areas 95 flashes 565 groups 5245 events 19437

09/19/2012 Version 04.1

Lightning Imaging Sensor

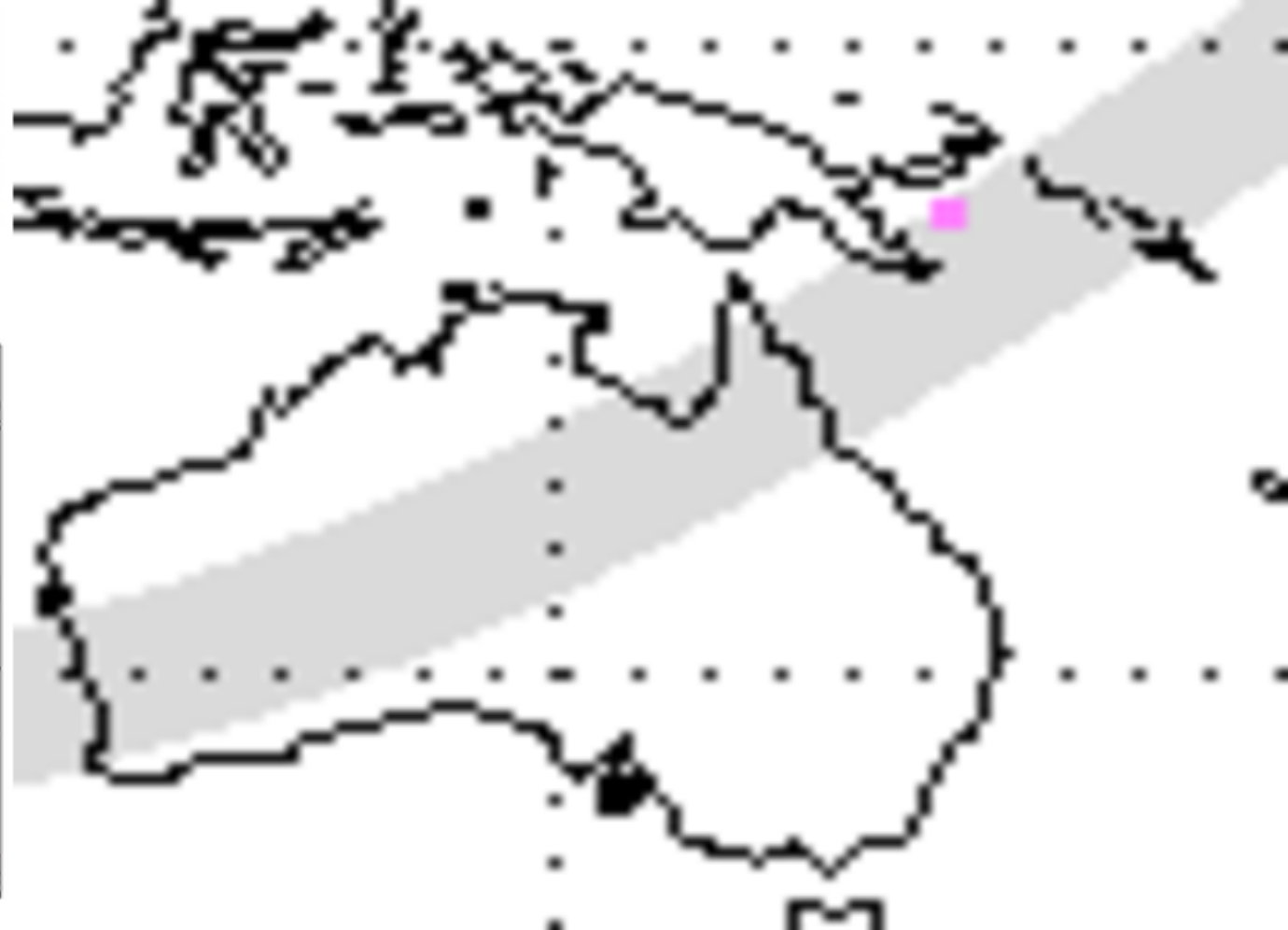
MSFC/NRSR

Position cursor over flash of interest and click for a zoomed view.

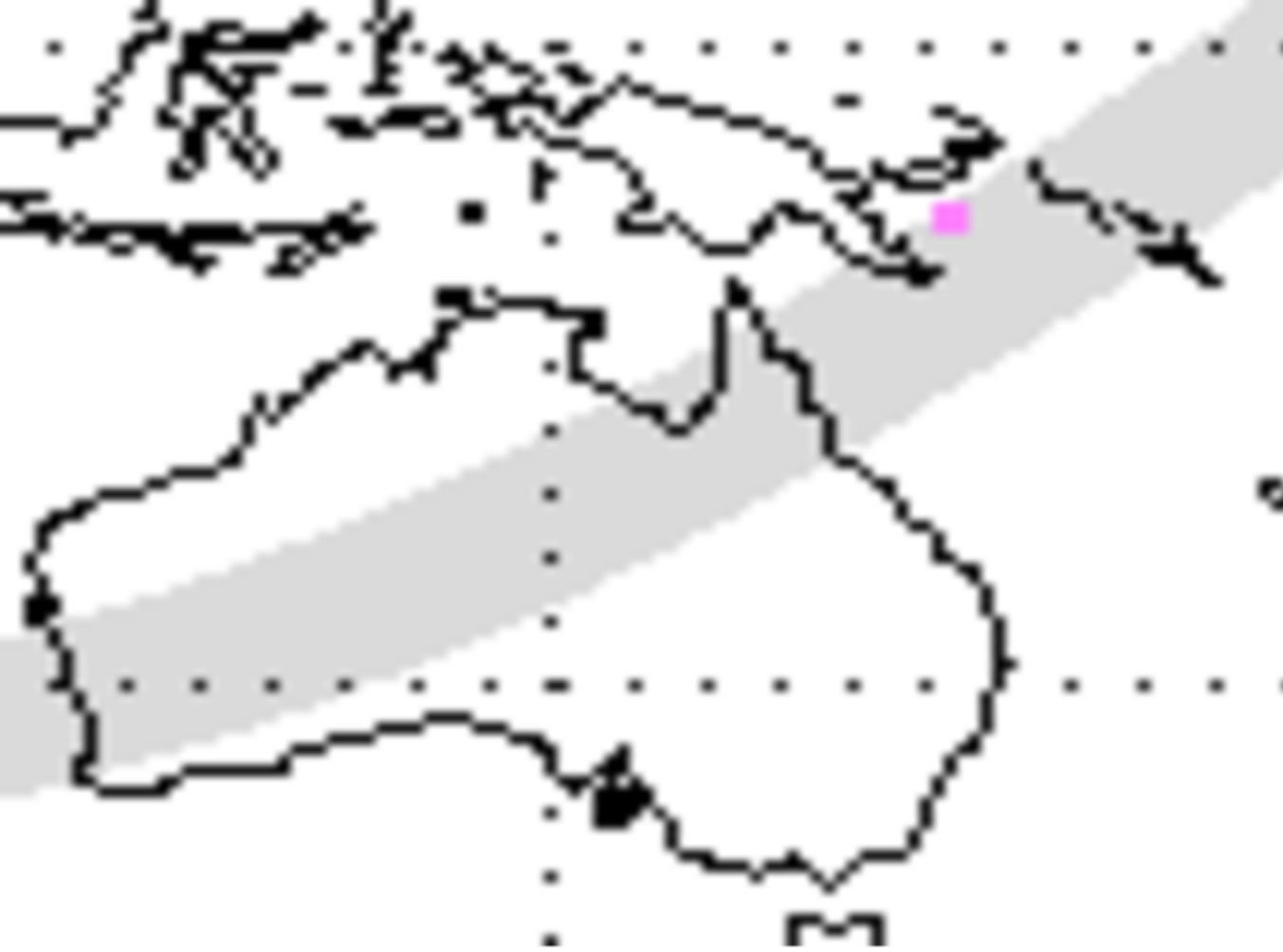
The orbit data sets may be downloaded in either [uncompressed](#) or [gzip](#) format.

The lightning distribution image above was created from TRMM_LIS_SC.04.1_2012.251.84382.

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2012-251T20:59:53.4715Z [Sep 07]	(35.332, -113.521)	783429	268	14	51
2012-251T21:00:00.7694Z [Sep 07]	(34.651, -113.413)	50190	193	3	6
2012-251T21:00:03.3477Z [Sep 07]	(34.319, -113.440)	107077	202	3	13
2012-251T21:00:07.5396Z [Sep 07]	(34.501, -113.868)	379651	404	3	30
2012-251T21:00:08.2306Z [Sep 07]	(35.394, -113.593)	698319	391	12	42
2012-251T21:00:08.2321Z [Sep 07]	(35.339, -113.621)	1463795	2	2	71
2012-251T21:00:11.6717Z [Sep 07]	(35.399, -113.054)	291016	50	6	29
2012-251T21:00:13.3798Z [Sep 07]	(34.271, -113.289)	264466	492	11	25
2012-251T21:00:14.8159Z [Sep 07]	(34.675, -113.380)	61351	404	3	6
2012-251T21:00:15.2350Z [Sep 07]	(35.543, -112.302)	40670	0	1	4
2012-251T21:00:15.3245Z [Sep 07]	(35.288, -113.512)	218958	368	7	22
2012-251T21:00:15.4034Z [Sep 07]	(35.336, -114.059)	400233	214	12	29
2012-251T21:00:21.6646Z [Sep 07]	(35.384, -112.085)	2397725	395	26	115
2012-251T21:00:22.5470Z [Sep 07]	(35.307, -113.978)	331924	204	14	27
2012-251T21:00:47.3326Z [Sep 07]	(35.287, -113.475)	2561252	166	10	87
2012-251T21:00:47.6029Z [Sep 07]	(34.277, -113.331)	206044	173	4	20
2012-251T21:00:49.2110Z [Sep 07]	(35.574, -112.305)	420318	223	9	26
2012-251T21:00:50.4195Z [Sep 07]	(34.273, -113.318)	679168	320	3	68



Flash time (UTC)	(Lat, Lon)
2012-251T20:34:29.0550Z [Sep 07]	(-7.823, 151.441)
2012-251T20:59:48.2615Z [Sep 07]	(34.666, -113.843)
2012-251T20:59:48.5158Z [Sep 07]	(34.644, -113.918)
2012-251T20:59:53.1871Z [Sep 07]	(34.621, -113.443)
2012-251T20:59:53.4715Z [Sep 07]	(35.332, -113.521)
2012-251T21:00:00.7694Z [Sep 07]	(34.651, -113.413)
2012-251T21:00:03.3477Z [Sep 07]	(34.319, -113.440)
2012-251T21:00:07.5396Z [Sep 07]	(34.501, -113.868)
2012-251T21:00:08.2306Z [Sep 07]	(35.394, -113.593)
2012-251T21:00:08.2321Z [Sep 07]	(35.339, -113.621)
2012-251T21:00:11.6717Z [Sep 07]	(35.399, -113.054)
2012-251T21:00:13.3798Z [Sep 07]	(34.271, -113.289)
2012-251T21:00:14.8159Z [Sep 07]	(34.675, -113.380)
2012-251T21:00:15.2350Z [Sep 07]	(35.543, -112.302)
2012-251T21:00:15.3245Z [Sep 07]	(35.288, -113.512)
2012-251T21:00:15.4034Z [Sep 07]	(35.336, -114.059)
2012-251T21:00:21.6646Z [Sep 07]	(35.384, -112.085)
2012-251T21:00:22.5470Z [Sep 07]	(35.307, -113.978)
2012-251T21:00:47.3326Z [Sep 07]	(35.287, -113.475)



20120907203427054	-7.81	151.45	9	1
20120907203427056	-7.82	151.44	17	1
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20120907203427062	-7.81	151.43	18	1
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20120907203427137	-7.81	151.40	4	0

20120907203427098	-7.82	151.50	29	0
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20120907205946461	34.66	-113.83	46	10
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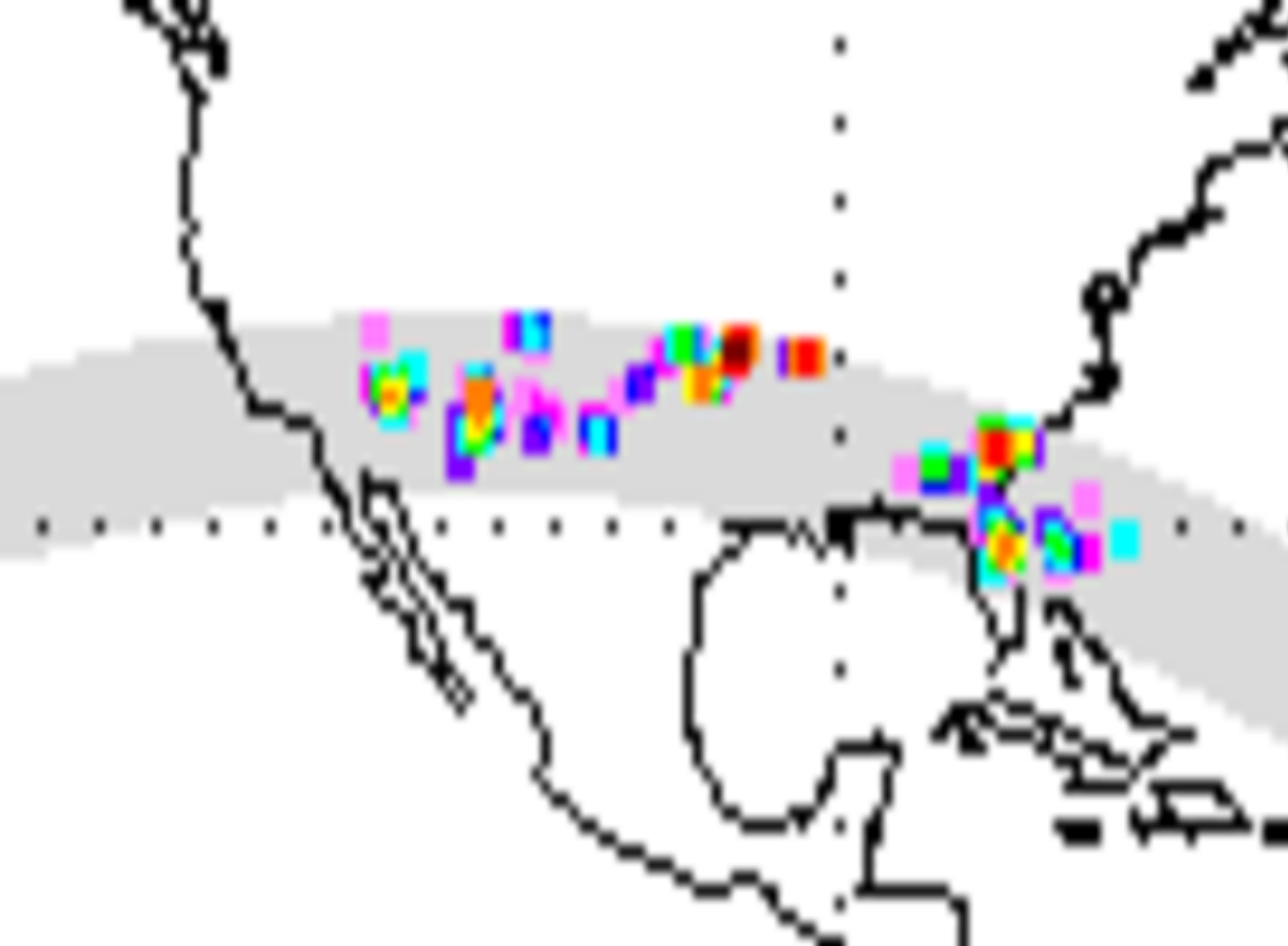
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Flash time (UTC)	(Lat,	Lon)
2012-251T20:34:29.0550Z	[Sep 07]	(-7.823,	151.441)
2012-251T20:59:48.2615Z	[Sep 07]	(34.666,-113.843)	
2012-251T20:59:48.5158Z	[Sep 07]	(34.644,-113.918)	
2012-251T20:59:53.1871Z	[Sep 07]	(34.621,-113.443)	
2012-251T20:59:53.4715Z	[Sep 07]	(35.332,-113.521)	
2012-251T21:00:00.7694Z	[Sep 07]	(34.651,-113.413)	
2012-251T21:00:03.3477Z	[Sep 07]	(34.319,-113.440)	
2012-251T21:00:07.5396Z	[Sep 07]	(34.501,-113.868)	
2012-251T21:00:08.2306Z	[Sep 07]	(35.394,-113.593)	
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2012-251T21:00:11.6717Z	[Sep 07]	(35.399,-113.054)	
2012-251T21:00:13.3798Z	[Sep 07]	(34.271,-113.289)	
2012-251T21:00:14.8159Z	[Sep 07]	(34.675,-113.380)	
2012-251T21:00:15.2350Z	[Sep 07]	(35.543,-112.302)	
2012-251T21:00:15.3245Z	[Sep 07]	(35.288,-113.512)	
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2012-251T21:00:21.6646Z	[Sep 07]	(35.384,-112.085)	
2012-251T21:00:22.5470Z	[Sep 07]	(35.307,-113.978)	
2012-251T21:00:47.3326Z	[Sep 07]	(35.287,-113.475)	
2012-251T21:00:47.6029Z	[Sep 07]	(34.277,-113.331)	
2012-251T21:00:49.2110Z	[Sep 07]	(35.574,-112.305)	
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20120907203427056	-7.82	151.44	17	1
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20120907203427060	-7.81	151.43	30	1
20120907203427062	-7.81	151.43	18	1
20120907203427126	-7.84	151.39	19	0
20120907203427128	-7.85	151.40	16	1
20120907203427137	-7.81	151.40	4	0
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20120907205946261	34.67	-113.81	13	6
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2012-09-07T20:59:46.4601960	34.70	-113.77		
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2012-09-07T20:59:46.5141641	34.69	-113.84		

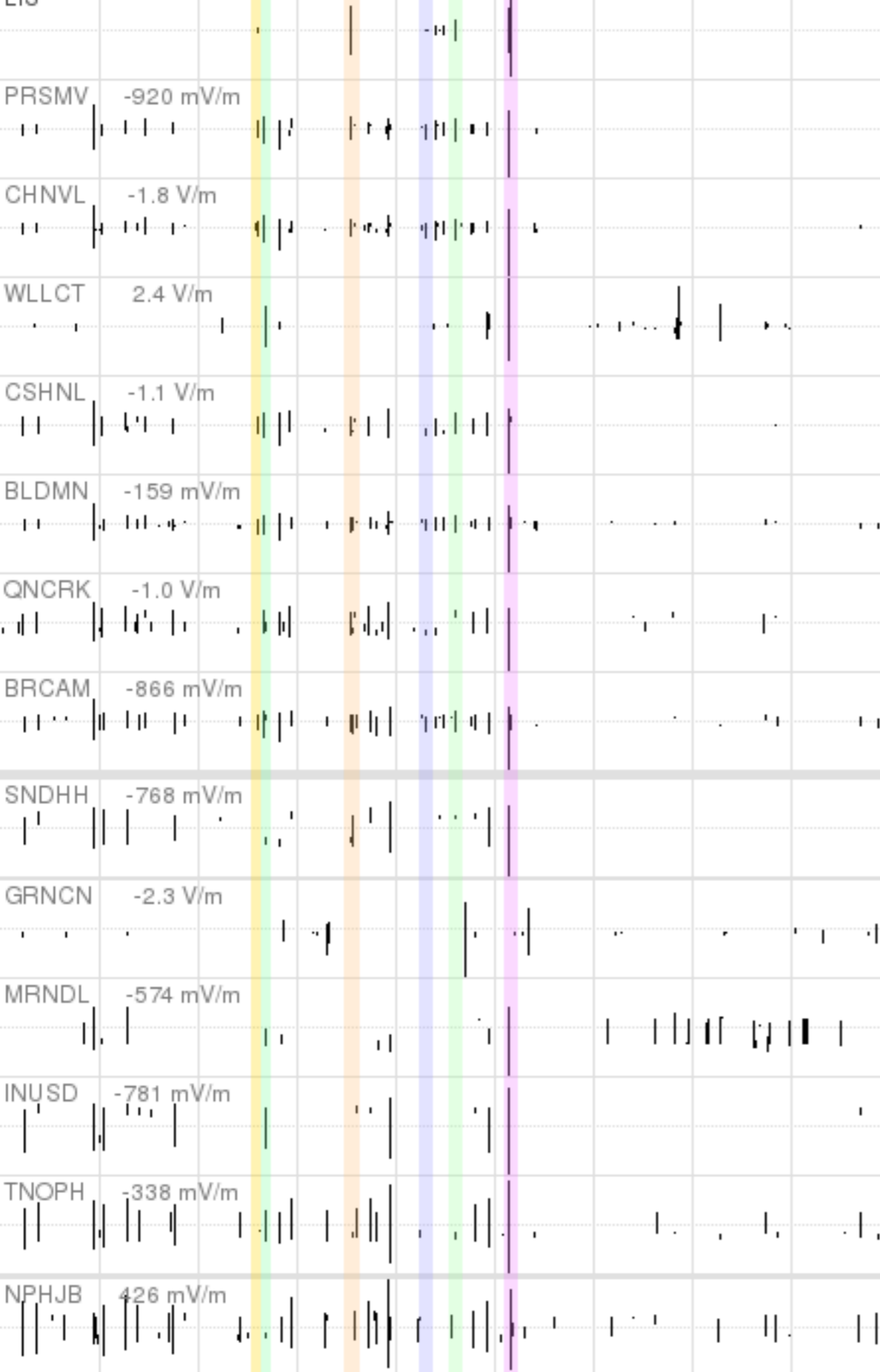
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2012-09-07T20:59:51.1851510	34.66	-113.51		
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20120907205951479	35.33	-113.53	162	12
2012-09-07T20:59:51.4771034	35.70	-113.53		
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2012-09-07T20:59:51.4771034	35.70	-113.53		
20120907205951482	35.32	-113.51	10	6
20120907205951494	35.34	-113.51	11	2
20120907205951496	35.33	-113.52	187	3
20120907205951511	35.34	-113.53	64	15
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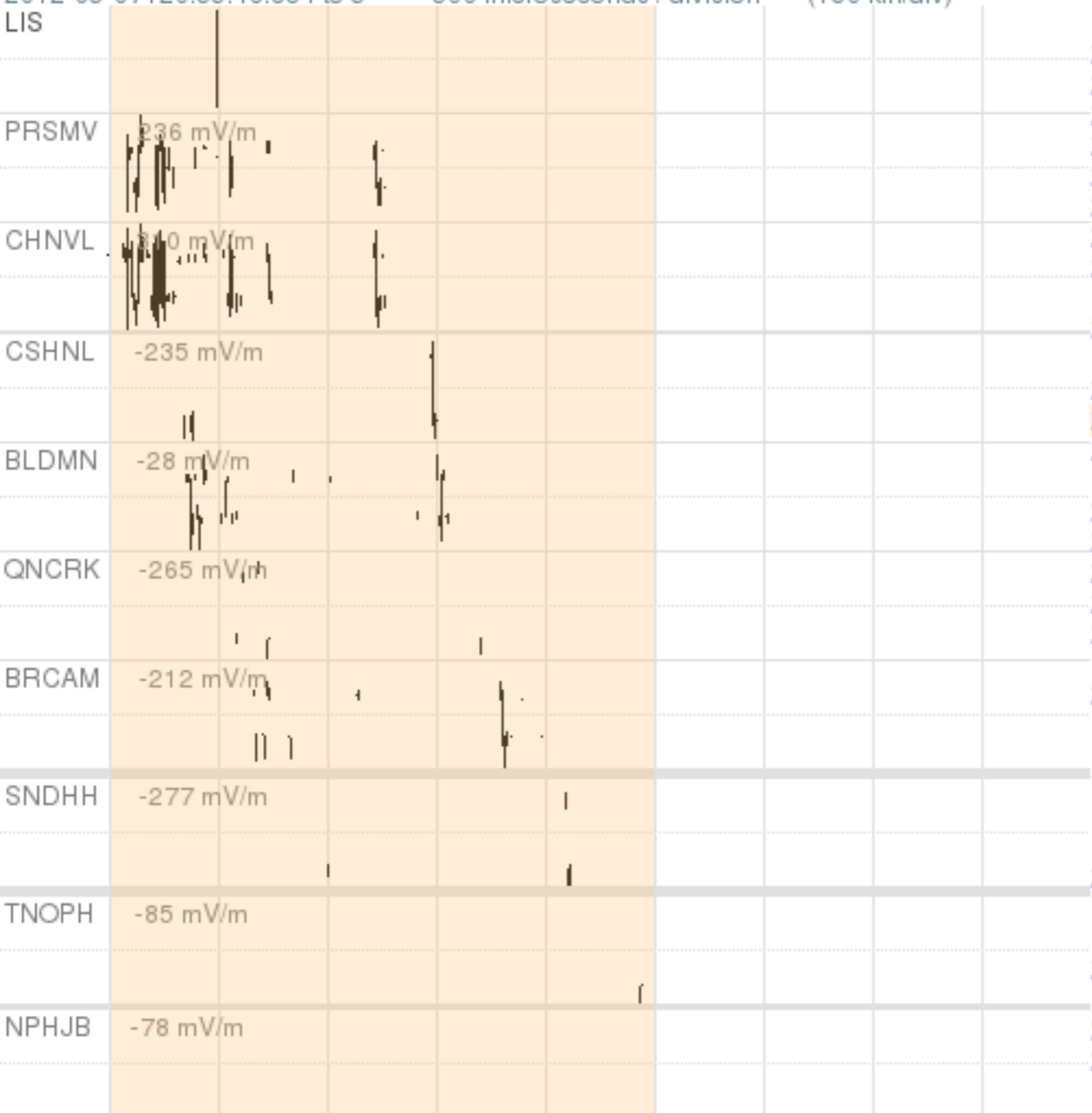
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2012-251T20:34:29.0550Z	[Sep 07]	(-7.823,	151.441)
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2012-251T20:59:48.5158Z	[Sep 07]	(34.644,-113.918)	
2012-251T20:59:53.1871Z	[Sep 07]	(34.621,-113.443)	
2012-251T20:59:53.4715Z	[Sep 07]	(35.332,-113.521)	
2012-251T21:00:00.7694Z	[Sep 07]	(34.651,-113.413)	
2012-251T21:00:03.3477Z	[Sep 07]	(34.319,-113.440)	
2012-251T21:00:07.5396Z	[Sep 07]	(34.501,-113.868)	
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2012-251T21:00:08.2321Z	[Sep 07]	(35.339,-113.621)	
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2012-251T21:00:13.3798Z	[Sep 07]	(34.271,-113.289)	
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2012-251T21:00:15.3245Z	[Sep 07]	(35.288,-113.512)	
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2012-251T21:00:47.3326Z	[Sep 07]	(35.287,-113.475)	
2012-251T21:00:47.6029Z	[Sep 07]	(34.277,-113.331)	
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2012-251T21:00:50.4195Z	[Sep 07]	(34.273,-113.318)	



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20120907203427058	-7.81	151.45	12	1
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20120907203427137	-7.81	151.40	4	0
20120907203427098	-7.82	151.50	29	0
20120907205946261	34.67	-113.81	13	6
20120907205946355	34.67	-113.83	112	10
20120907205946431	34.69	-113.79	7	5
2012-09-07T20:59:46.4304376	34.74	-113.78		
20120907205946433	34.69	-113.79	5	5
20120907205946442	34.66	-113.81	26	5
20120907205946445	34.69	-113.79	7	4
20120907205946449	34.68	-113.81	26	5
20120907205946461	34.66	-113.83	46	10
2012-09-07T20:59:46.4601960	34.70	-113.77		
20120907205946517	34.66	-113.86	214	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
2012-09-07T20:59:46.266	34.73	-113.77		
20120907205946515	34.64	-113.92	103	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
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2012-09-07T20:59:51.1851510	34.66	-113.51		
20120907205951213	34.61	-113.43	7	0
20120907205951421	34.62	-113.44	57	8
2012-09-07T20:59:51.4202087	34.29	-113.71		
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20120907205951473	35.32	-113.51	5	13
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2012-09-07T20:59:51.4771034	35.70	-113.53		
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20120907205951494	35.34	-113.51	11	2
20120907205951496	35.33	-113.52	187	3
20120907205951511	35.34	-113.53	64	15
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20120907203427054	-7.81	151.45	9	1
20120907203427056	-7.82	151.44	17	1
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20120907203427062	-7.81	151.43	18	1
20120907203427126	-7.84	151.39	19	0
20120907203427128	-7.85	151.40	16	1
20120907203427137	-7.81	151.40	4	0
20120907203427098	-7.82	151.50	29	0
20120907205946261	34.67	-113.81	13	6
20120907205946355	34.67	-113.83	112	10
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20120907205946442	34.66	-113.81	26	5
20120907205946445	34.69	-113.79	7	4
20120907205946449	34.68	-113.81	26	5
20120907205946461	34.66	-113.83	46	10
2012-09-07T20:59:46.4601960	34.70	-113.77		
20120907205946517	34.66	-113.86	214	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
2012-09-07T20:59:46.266	34.73	-113.77		
20120907205946515	34.64	-113.92	103	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
20120907205951187	34.62	-113.45	24	10
2012-09-07T20:59:51.1851510	34.66	-113.51		
20120907205951213	34.61	-113.43	7	0
20120907205951421	34.62	-113.44	57	8
2012-09-07T20:59:51.4202087	34.29	-113.71		
20120907205951471	35.33	-113.54	48	13
20120907205951473	35.32	-113.51	5	13
2012-09-07T20:59:51.4705974	35.11	-113.32		
20120907205951477	35.32	-113.53	20	11
20120907205951479	35.33	-113.53	162	12
2012-09-07T20:59:51.4771034	35.70	-113.53		
20120907205951480	35.33	-113.52	36	12
2012-09-07T20:59:51.4771034	35.70	-113.53		
20120907205951482	35.32	-113.51	10	6
20120907205951494	35.34	-113.51	11	2
20120907205951496	35.33	-113.52	187	3
20120907205951511	35.34	-113.53	64	15
2012-09-07T20:59:51.5087110	35.37	-113.52		
20120907205951552	35.34	-113.51	16	17
20120907205951584	35.34	-113.51	17	1



20120907203427054	-7.81	151.45	9	1
20120907203427056	-7.82	151.44	17	1
20120907203427058	-7.81	151.45	12	1
20120907203427060	-7.81	151.43	30	1
20120907203427062	-7.81	151.43	18	1
20120907203427126	-7.84	151.39	19	0
20120907203427128	-7.85	151.40	16	1
20120907203427137	-7.81	151.40	4	0
20120907203427098	-7.82	151.50	29	0
20120907205946261	34.67	-113.81	13	6
20120907205946355	34.67	-113.83	112	10
20120907205946431	34.69	-113.79	7	5
2012-09-07T20:59:46.4304376	34.74	-113.78		
20120907205946433	34.69	-113.79	5	5
20120907205946442	34.66	-113.81	26	5
20120907205946445	34.69	-113.79	7	4
20120907205946449	34.68	-113.81	26	5
20120907205946461	34.66	-113.83	46	10
2012-09-07T20:59:46.4601960	34.70	-113.77		
20120907205946517	34.66	-113.86	214	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
2012-09-07T20:59:46.266	34.73	-113.77		
20120907205946515	34.64	-113.92	103	16
2012-09-07T20:59:46.5141641	34.69	-113.84		
20120907205951187	34.62	-113.45	24	10
2012-09-07T20:59:51.1851510	34.66	-113.51		
20120907205951213	34.61	-113.43	7	0
20120907205951421	34.62	-113.44	57	8
2012-09-07T20:59:51.4202087	34.29	-113.71		
20120907205951471	35.33	-113.54	48	13
20120907205951473	35.32	-113.51	5	13
2012-09-07T20:59:51.4705974	35.11	-113.32		
20120907205951477	35.32	-113.53	20	11
20120907205951479	35.33	-113.53	162	12
2012-09-07T20:59:51.4771034	35.70	-113.53		
20120907205951480	35.33	-113.52	36	12
2012-09-07T20:59:51.4771034	35.70	-113.53		
20120907205951482	35.32	-113.51	10	6
20120907205951494	35.34	-113.51	11	2
20120907205951496	35.33	-113.52	187	3
20120907205951511	35.34	-113.53	64	15
2012-09-07T20:59:51.5087110	35.37	-113.52		
20120907205951552	35.34	-113.51	16	17
20120907205951584	35.34	-113.51	17	1

PRSMV	-920 mV/m					20120907203427054	-7.81	151.45	9	1
						20120907203427056	-7.82	151.44	17	1
						20120907203427058	-7.81	151.45	12	1
CHNVL	-1.8 V/m					20120907203427060	-7.81	151.43	30	1
						20120907203427062	-7.81	151.43	18	1
						20120907203427126	-7.84	151.39	19	0
WLLCT	2.4 V/m					20120907203427128	-7.85	151.40	16	1
						20120907203427137	-7.81	151.40	4	0
						20120907203427098	-7.82	151.50	29	0
CSHNL	-1.1 V/m					20120907205946261	34.67	-113.81	13	6
						20120907205946355	34.67	-113.83	112	10
						20120907205946431	34.69	-113.79	7	5
BLDMN	-159 mV/m					2012-09-07T20:59:46.4304376	34.74	-113.78		
						20120907205946433	34.69	-113.79	5	5
						20120907205946442	34.66	-113.81	26	5
QNCRK	-1.0 V/m					20120907205946445	34.69	-113.79	7	4
						20120907205946449	34.68	-113.81	26	5
						20120907205946461	34.66	-113.83	46	10
						2012-09-07T20:59:46.4601960	34.70	-113.77		
BRCAM	-866 mV/m					20120907205946517	34.66	-113.86	214	16
						2012-09-07T20:59:46.5141641	34.69	-113.84		
						2012-09-07T20:59:46.266		34.73		-113.77
SNDHH	-768 mV/m					20120907205946515	34.64	-113.92	103	16
						2012-09-07T20:59:46.5141641	34.69	-113.84		
MRNDL	-574 mV/m					20120907205951187	34.62	-113.45	24	10
						2012-09-07T20:59:51.1851510	34.66	-113.51		
INUSD	-781 mV/m					20120907205951213	34.61	-113.43	7	0
						20120907205951421	34.62	-113.44	57	8
						2012-09-07T20:59:51.4202087	34.29	-113.71		
TNOPH	-338 mV/m					20120907205951471	35.33	-113.54	48	13
						20120907205951473	35.32	-113.51	5	13
						2012-09-07T20:59:51.4705974	35.11	-113.32		
						20120907205951477	35.32	-113.53	20	11
						20120907205951479	35.33	-113.53	162	12
						2012-09-07T20:59:51.4771034	35.70	-113.53		
						20120907205951480	35.33	-113.52	36	12
						2012-09-07T20:59:51.4771034	35.70	-113.53		
						20120907205951482	35.32	-113.51	10	6
						20120907205951494	35.34	-113.51	11	2
						20120907205951496	35.33	-113.52	187	3
						20120907205951511	35.34	-113.53	64	15
						2012-09-07T20:59:51.5087110	35.37	-113.52		
						20120907205951552	35.34	-113.51	16	17
						20120907205951584	35.34	-113.51	17	1



20120907203427054	-7.81	151.45	9	1
20120907203427056	-7.82	151.44	17	1
20120907203427058	-7.81	151.45	12	1
20120907203427060	-7.81	151.43	30	1
20120907203427062	-7.81	151.43	18	1
20120907203427126	-7.84	151.39	19	0
20120907203427128	-7.85	151.40	16	1
20120907203427137	-7.81	151.40	4	0
20120907203427098	-7.82	151.50	29	0
20120907205946261	34.67	-113.81	13	6
20120907205946355	34.67	-113.83	112	10
20120907205946431	34.69	-113.79	7	5
2012-09-07T20:59:46.4304376	34.74			-113.78
20120907205946433	34.69	-113.79	5	5
20120907205946442	34.66	-113.81	26	5
20120907205946445	34.69	-113.79	7	4
20120907205946449	34.68	-113.81	26	5
20120907205946461	34.66	-113.83	46	10
2012-09-07T20:59:46.4601960	34.70			-113.77
20120907205946517	34.66	-113.86	214	16
2012-09-07T20:59:46.5141641	34.69			-113.84
2012-09-07T20:59:46.266	34.73			-113.77
20120907205946515	34.64	-113.92	103	16
2012-09-07T20:59:46.5141641	34.69			-113.84
20120907205951187	34.62	-113.45	24	10
2012-09-07T20:59:51.1851510	34.66			-113.51
20120907205951213	34.61	-113.43	7	0
20120907205951421	34.62	-113.44	57	8
2012-09-07T20:59:51.4202087	34.29			-113.71
20120907205951471	35.33	-113.54	48	13
20120907205951473	35.32	-113.51	5	13
2012-09-07T20:59:51.4705974	35.11			-113.32
20120907205951477	35.32	-113.53	20	11
20120907205951479	35.33	-113.53	162	12
2012-09-07T20:59:51.4771034	35.70			-113.53
20120907205951480	35.33	-113.52	36	12
2012-09-07T20:59:51.4771034	35.70			-113.53
20120907205951482	35.32	-113.51	10	6
20120907205951494	35.34	-113.51	11	2
20120907205951496	35.33	-113.52	187	3
20120907205951511	35.34	-113.53	64	15
2012-09-07T20:59:51.5087110	35.37			-113.52
20120907205951552	35.34	-113.51	16	17
20120907205951584	35.34	-113.51	17	1

Light pulses are like E pulses

Locations for 60% to 80%

Waveforms for almost all