



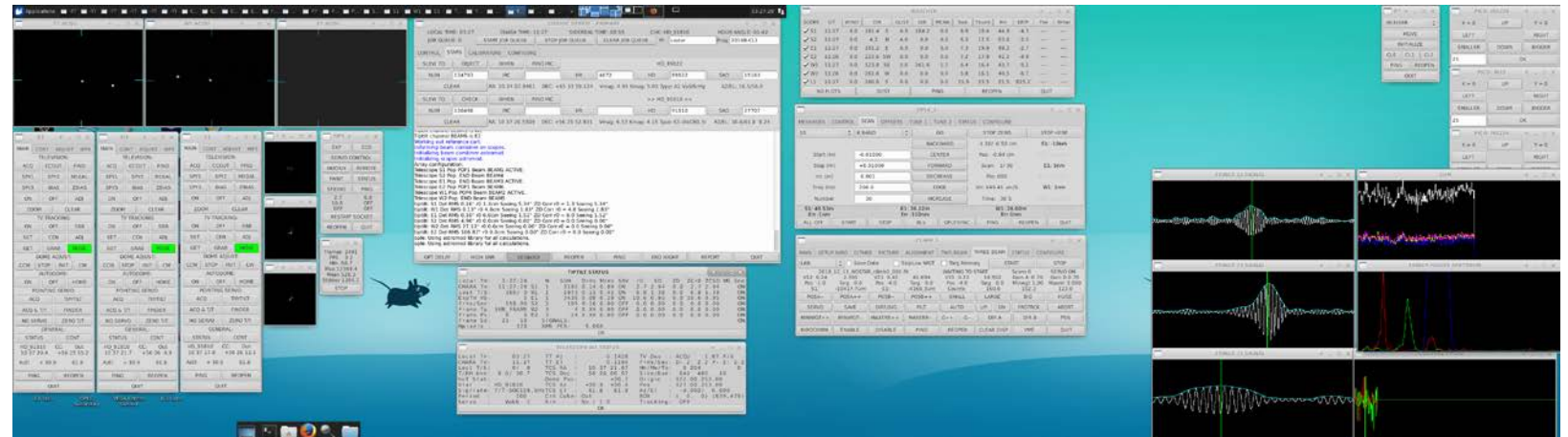
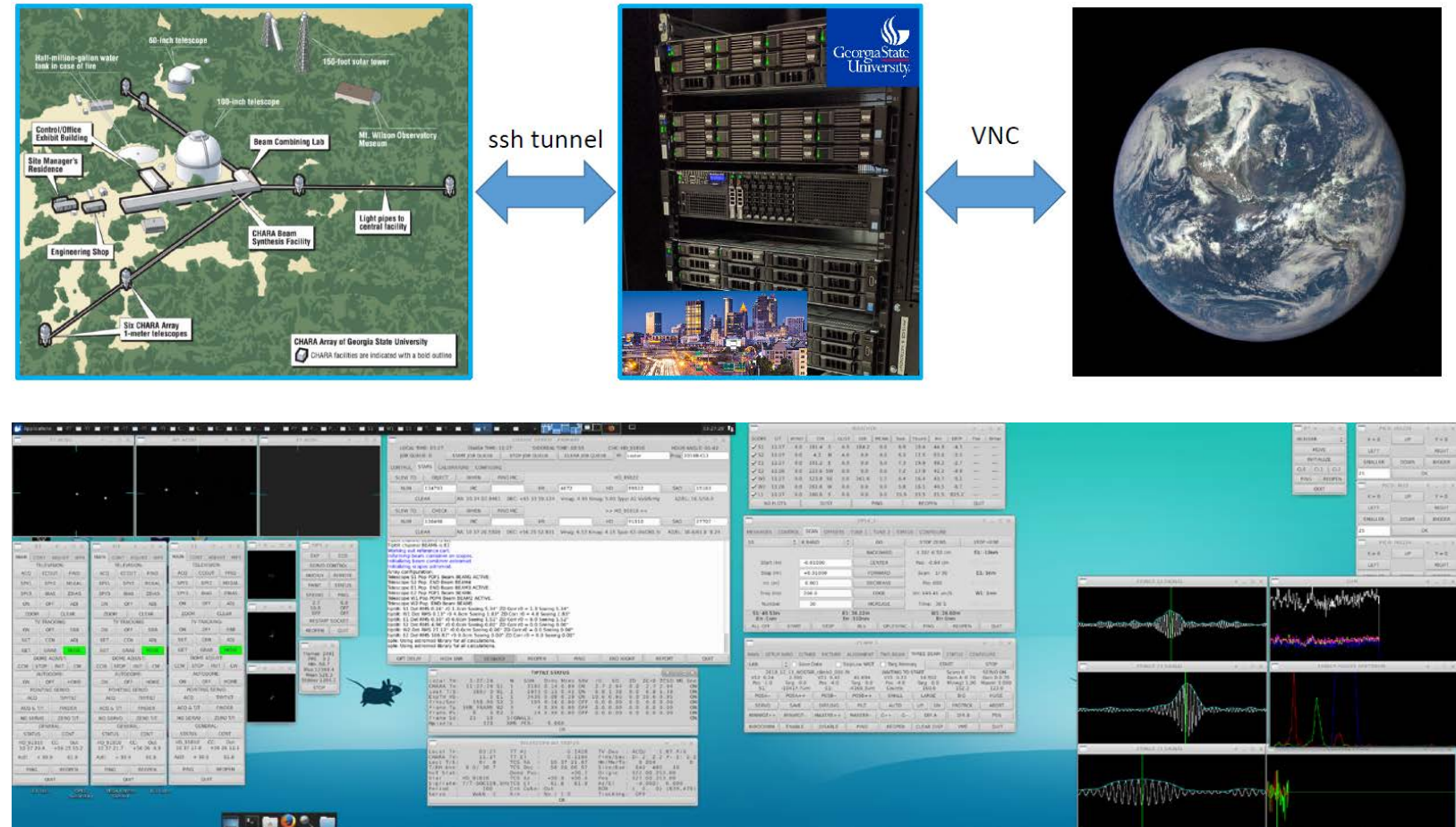
# Remote Operations at CHARA

Jeremy Jones, CHARA Data Scientist



# Remote Observing

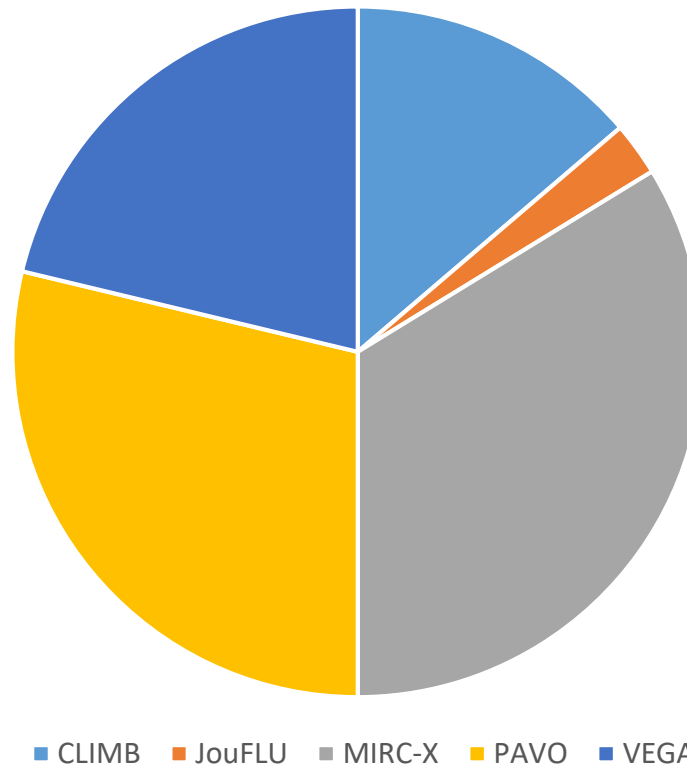
- Connect to Atlanta machine using VNC
- Atlanta machine connects to mountain using SSH tunnel
- CHARA software runs similar to on the mountain



# Remote Observing

- Went public in June 2018
- 80 nights (~40%) of remote observing requested in 2018
  - CLIMB: 11 nights
  - JouFLU: 2 nights
  - MIRC-X: 27 nights
  - PAVO: 23 nights
  - VEGA: 17 nights

Requests by Combiner

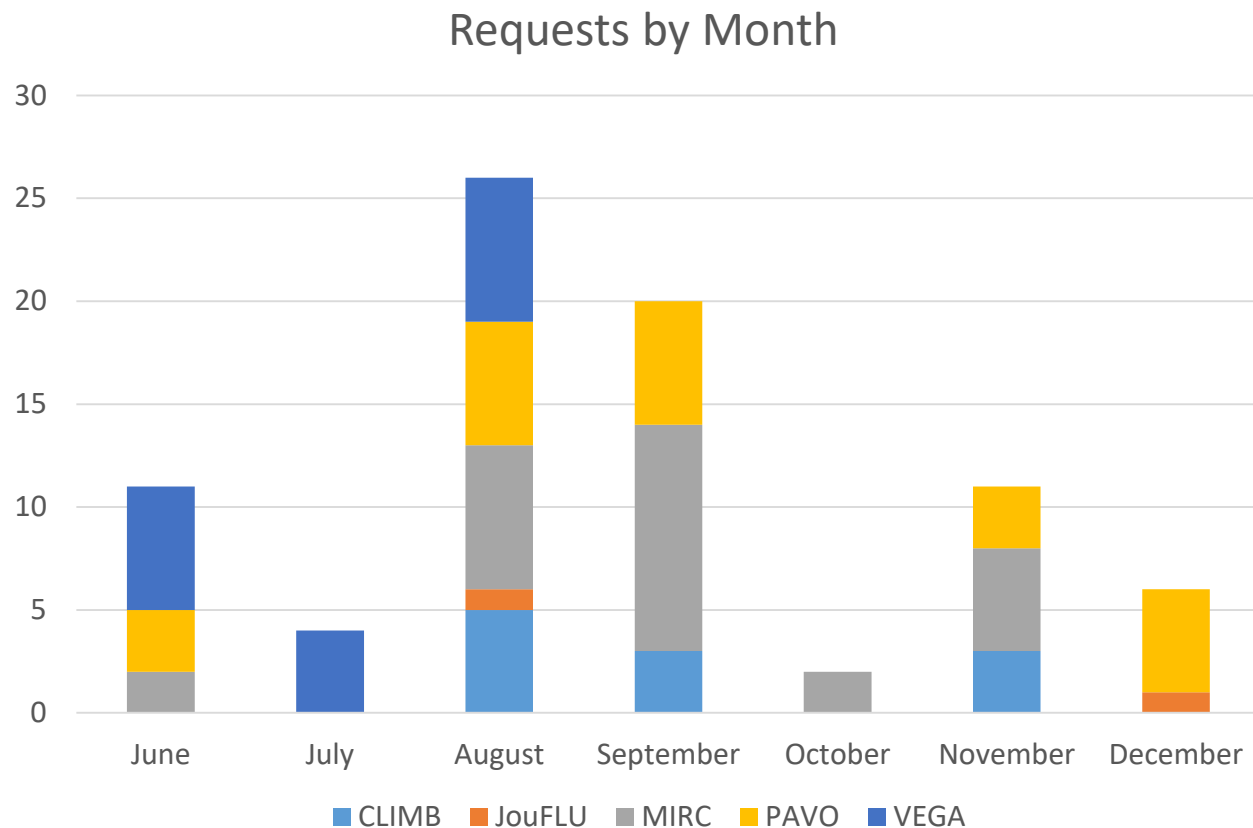


This counts nights where the remote observing system was used to spy on the observing



# Remote Observing

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This counts nights where the remote observing system was used to spy on the observing



# Signing up for Remote Observing

## CHARA Remote Observing Signup

Use this form to sign up for remote observing dates.

**\* Required**

Email address \*

Your email

PI Name \*

Who is the PI for these observations?

Your answer

CHARA Program ID

Your answer

Observing Dates \*

What nights will the observations be taking place? (Please use local time dates, not UT dates)

Your answer

Beam Combiner

Your answer

Go here for more details:  
[chara.gsu.edu/observers/remote-observing](http://chara.gsu.edu/observers/remote-observing)



# The Atlanta CHARA Data Center

**ACDC**

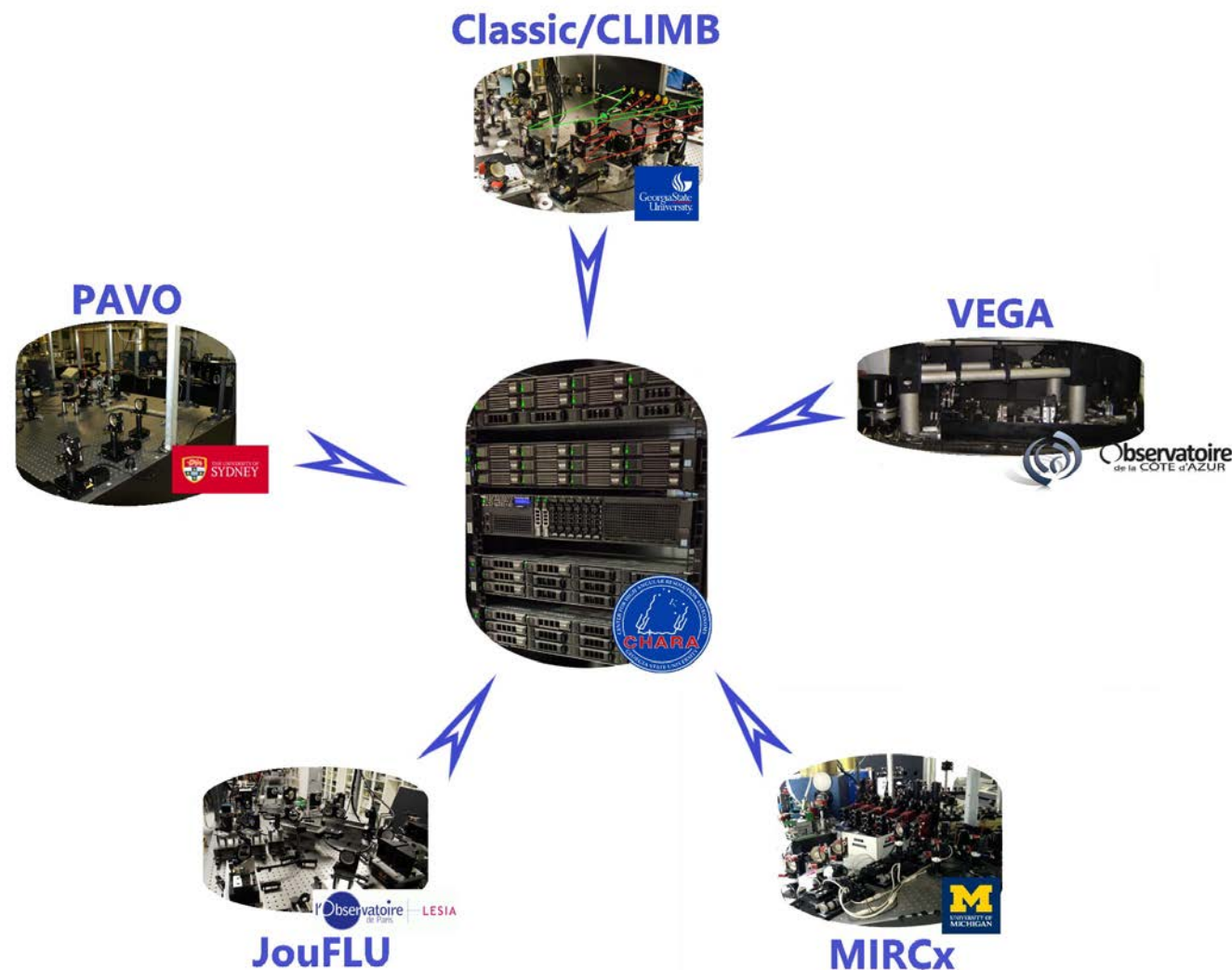
# The Atlanta CHARA Data Center





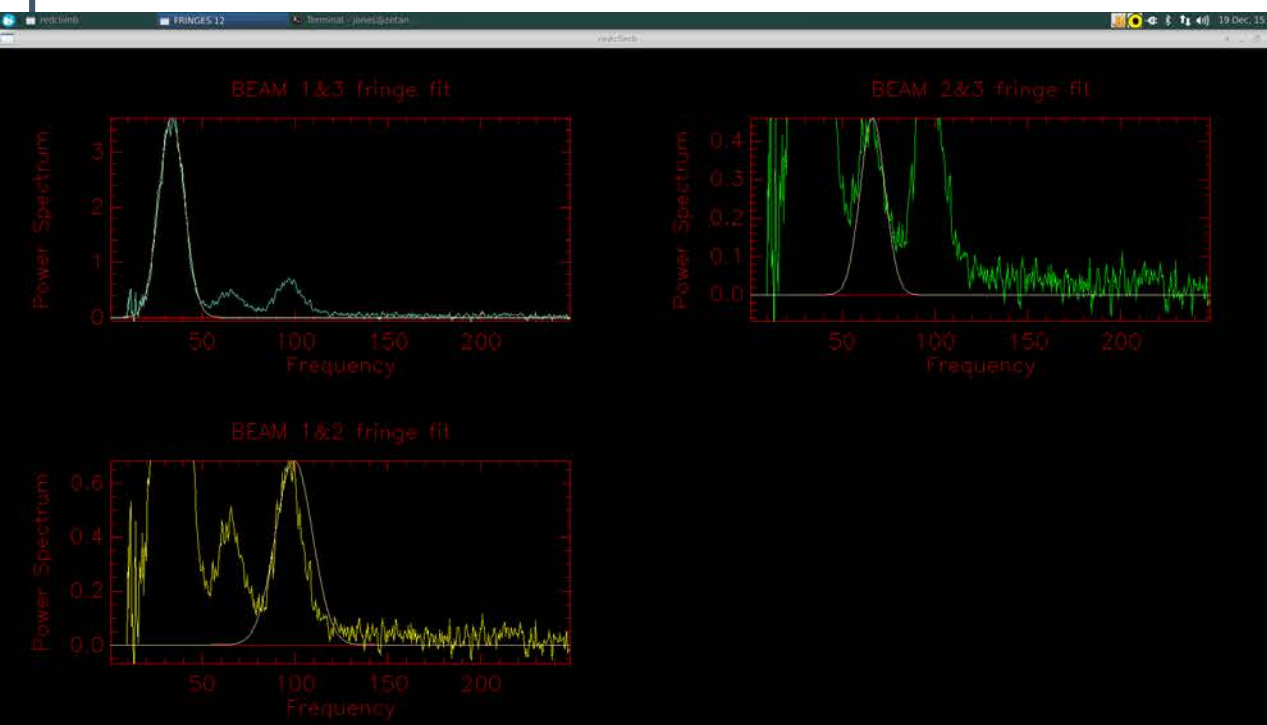
# The Archive

- Up to date:
  - Classic
  - CLIMB
  - JouFLU
  - PAVO
- Partial:
  - VEGA
- To Do:
  - MIRC/MIRC-X





# Remote Data Reduction



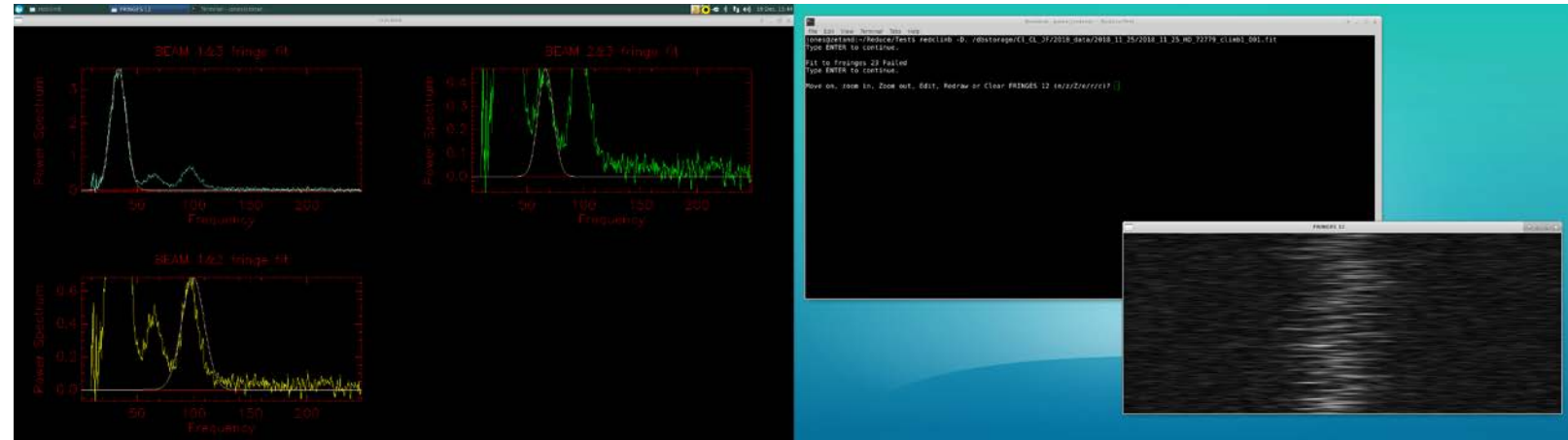
```
File Edit View Terminal Tabs Help
jones@zetand:~/Reduce/Tests redclimb -D: /dbstorage/CL_CL_3F/2018_data/2018_11_25/2018_11_25_HD_72779_climb1_001.fit
Type ENTER to continue.
Fit to freinges 23 Failed
Type ENTER to continue.
Move on, zoom in, zoom out, Edit, Redraw or Clear FRINGES 12 (m/z/2/e/r/c)?
```



# Remote Data Reduction

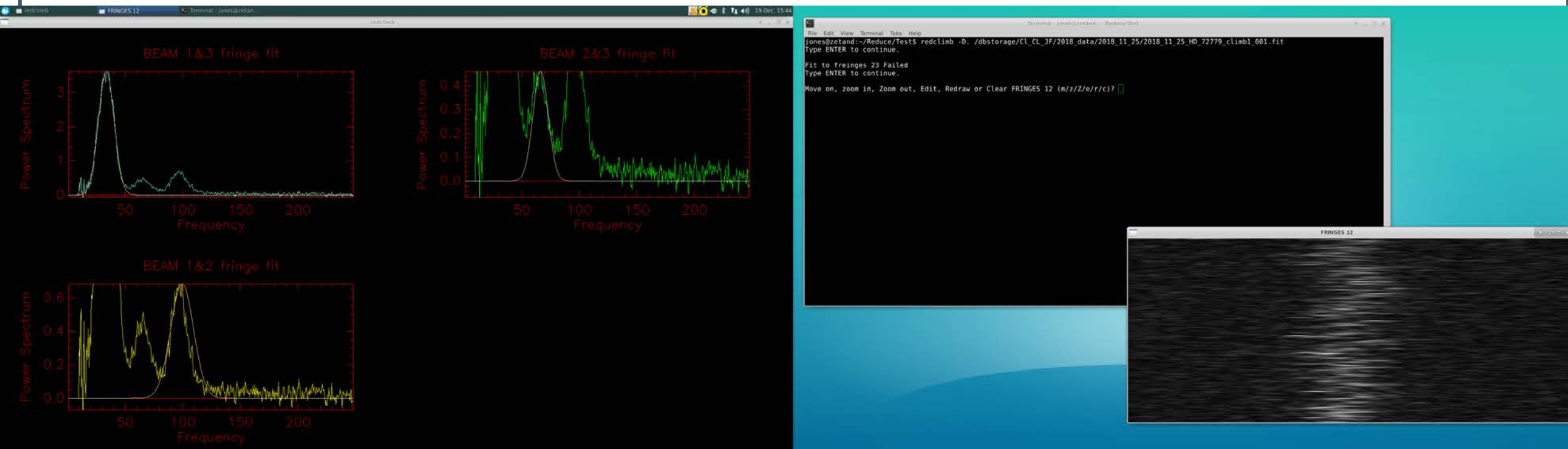
## The Idea

- Data Reduction Machine linked to archive
- Reduce data remotely
- Download final reduction
- **Benefits:**
  - Reduction software always up to date
  - No need to download raw data
  - Cross-platform



# Remote Data Reduction

## The Bad News

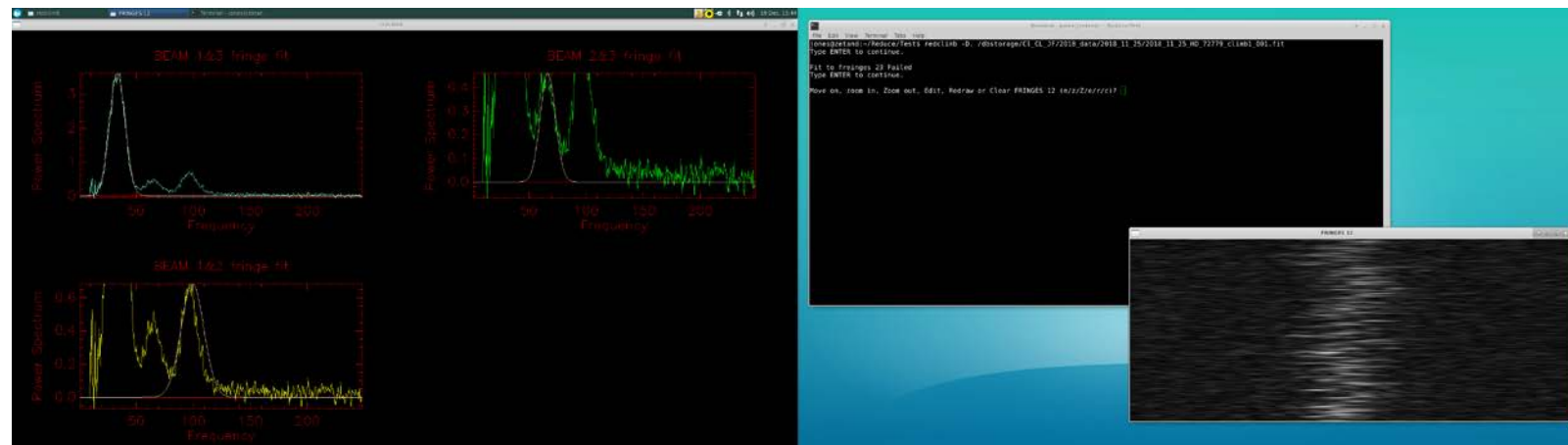




# Remote Data Reduction

## The Good News

- Improved Security
- Archive unaffected
- redfluor, redclimb  
reinstalled
- PAVO reduction software  
reinstalled
- **To Do:**
  - Set up appropriate  
permissions
  - Reinstall VEGA &  
MIRC-X pipelines







# Signing up for Remote Data Reduction

**CHARA Remote Data Reduction Access Form**

Use this form to request access to the CHARA Data Reduction machine.

**\* Required**

**Email address \***

Your email

**Name \***

Your answer

**Preferred Username**

What username would you like to use for the system? (We will use your last name if none is provided)

Your answer

**Are you the PI for any proprietary data?**

Proprietary data are data that were taken within the last 18 months. If yes, we will give you access to those data.

☐ Yes

☐ No

Go here for more details:  
[chara.gsu.edu/observers/data-reduction-software](http://chara.gsu.edu/observers/data-reduction-software)

# Automated Observing Logs

## Night Log

- Converts output from CD to be human-readable
- Similar to night report email, but with more info
- Convenient csv format

2018\_01\_23\_Obs\_Summary.csv - Excel

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Beam Combiner	Obs_Pi	Program_IUT	HA	Telescopes	PoPs	Target	Nan	Target Typ	Wavelength	Cart Offset	Reference	Visibility	E: Closure	Ph Alignment	Entry (Y/N)	
1	CLASSIC	Kaminski	2017B-NO	2:49:33	0:47:38 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	15148.8	N/A	0.638	N/A	N		
2	CLASSIC	Kaminski	2017B-NO	2:56:06	0:51:14 E1 W1	1 3	HIP_11048	OBJ	2.2 (E1)	15069.8	N/A	0.557	N/A	N		
3	CLASSIC	Kaminski	2017B-NO	3:02:52	0:54:42 E1 W1	1 3	HD_23265	OBJ	2.2 (E1)	14719.8	N/A	0.572	N/A	N		
4	CLASSIC	Kaminski	2017B-NO	3:08:33	1:06:41 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	14891.5	N/A	0.544	N/A	N		
5	CLASSIC	Kaminski	2017B-NO	3:14:07	1:09:18 E1 W1	1 3	HIP_11048	OBJ	2.2 (E1)	14880.9	N/A	0.509	N/A	N		
6	CLASSIC	Kaminski	2017B-NO	3:20:57	1:12:50 E1 W1	1 3	HD_23265	CAL2	2.2 (E1)	14521.9	N/A	0.46	N/A	N		
7	CLASSIC	Kaminski	2017B-NO	3:26:41	1:24:52 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	14663.6	N/A	0.473	N/A	N		
8	CLASSIC	Kaminski	2017B-NO	3:32:18	1:27:32 E1 W1	1 3	HIP_11048	OBJ	2.2 (E1)	14623.9	N/A	0.49	N/A	N		
9	CLASSIC	Kaminski	2017B-NO	3:37:53	1:29:49 E1 W1	1 3	HD_23265	CAL2	2.2 (E1)	14467.5	N/A	0.487	N/A	N		
10	CLASSIC	Kaminski	2017B-NO	4:09:24	2:07:42 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	14393.0	N/A	0.629	N/A	N		
11	CLASSIC	Kaminski	2017B-NO	4:17:03	2:15:22 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	14249.0	N/A	0.54	N/A	N		
12	CLASSIC	Kaminski	2017B-NO	4:23:08	2:18:30 E1 W1	1 3	HIP_11048	OBJ	2.2 (E1)	14304.9	N/A	0.545	N/A	N		
13	CLASSIC	Kaminski	2017B-NO	4:42:54	2:41:18 E1 W1	1 3	HD_14212	CAL1	2.2 (E1)	14038.0	N/A	0.427	N/A	N		
14	CLASSIC	Kaminski	2017B-NO	4:49:24	2:44:51 E1 W1	1 3	HIP_11048	OBJ	2.2 (E1)	13805.5	N/A	0.482	N/A	N		
15	CLASSIC	Kaminski	2017B-NO	4:56:16	2:48:25 E1 W1	1 3	HD_23265	CAL2	2.2 (E1)	13689.9	N/A	0.454	N/A	N		
16	CLASSIC	Kaminski	2017B-NO	5:36:01	0:04:17 E1 W1	1 3	HD_38899	CAL1	2.2 (E1)	13689.9	N/A	0.473	N/A	N		
17	CLASSIC	Kaminski	2017B-NO	5:43:00	0:24:19 E1 W1	1 3	HD_24540	OBJ	2.2 (E1)	13689.9	N/A	0.518	N/A	N		
18	CLASSIC	Kaminski	2017B-NO	5:50:52	0:16:21 E1 W1	1 3	HD_39317	CAL2	2.2 (E1)	13689.9	N/A	0.569	N/A	N		
19	CLASSIC	Kaminski	2017B-NO	7:23:49	0:16:21 E1 W1	1 3	HD_74198	CHK	2.2 (E1)	13689.9	N/A	0.598	N/A	N		
20	CLASSIC	Kaminski	2017B-NO	9:53:47	-00:56:30 E1 W1	1 3	HD_96738	CAL1	2.2 (E1)	13689.9	N/A	0.657	N/A	N		
21	CLASSIC	Kaminski	2017B-NO	10:00:49	-00:40:42 E1 W1	1 3	HIP_53767	OBJ	2.2 (E1)	13689.9	N/A	0.529	N/A	N		
22	CLASSIC	Kaminski	2017B-NO	10:07:27	-00:40:42 E1 W1	1 3	HD_95242	CAL2	2.2 (E1)	13689.9	N/A	0.52	N/A	N		
23	CLASSIC	Kaminski	2017B-NO	10:13:54	-00:36:19 E1 W1	1 3	HD_96738	CAL1	2.2 (E1)	13689.9	N/A	0.506	N/A	N		
24	CLASSIC	Kaminski	2017B-NO	10:21:43	-00:19:44 E1 W1	1 3	HIP_53767	OBJ	2.2 (E1)	13689.9	N/A	0.463	N/A	N		
25	CLASSIC	Kaminski	2017B-NO	10:27:07	-00:19:44 E1 W1	1 3	HD_95242	CAL2	2.2 (E1)	13689.9	N/A	0.469	N/A	N		
26	CLASSIC	Kaminski	2017B-NO	10:35:56	-00:14:14 E1 W1	1 3	HD_96738	CAL1	2.2 (E1)	13689.9	N/A	0.475	N/A	N		
27	CLASSIC	Kaminski	2017B-NO	10:44:11	0:02:46 E1 W1	1 3	HIP_53767	OBJ	2.2 (E1)	13689.9	N/A	0.435	N/A	N		
28	CLASSIC	Kaminski	2017B-NO	10:51:25	0:02:46 E1 W1	1 3	HD_95242	CAL2	2.2 (E1)	13689.9	N/A	0.436	N/A	N		
29	CLASSIC	Kaminski	2017B-NO	10:59:08	0:09:01 E1 W1	1 3	HD_96738	CAL1	2.2 (E1)	13689.9	N/A	0.349	N/A	N		
30	CLASSIC	Kaminski	2017B-NO	11:07:42	0:26:21 E1 W1	1 3	HIP_53767	OBJ	2.2 (E1)	13689.9	N/A	0.445	N/A	N		
31	CLASSIC	Kaminski	2017B-NO	11:15:47	0:26:21 E1 W1	1 3	HD_95242	CAL2	2.2 (E1)	13689.9	N/A	0.549	N/A	N		
32	CLASSIC	Kaminski	2017B-NO	11:23:08	0:33:05 E1 W1	1 3	HD_96738	CAL1	2.2 (E1)	13689.9	N/A	0.479	N/A	N		
33	CLASSIC	Kaminski	2017B-NO	11:29:40	0:48:23 E1 W1	1 3	HIP_53767	OBJ	2.2 (E1)	13689.9	N/A	0.487	N/A	N		
34	CLASSIC	Kaminski	2017B-NO	11:37:33	0:48:23 E1 W1	1 3	HD_95242	CAL2	2.2 (E1)	13689.9	N/A	0.48	N/A	N		
35	CLIMB_2	Kaminski	2017B-NO	13:24:04	0:48:23 S1 E1 W1	1 5 1	HD_17460	CHK	2.2 (E1)	13689.9	N/A	0.491 0.572	6/1.4	N		
36	CLIMB_2	Kaminski	2017B-NO	14:06:18	0:48:23 S1 E1 W1	1 5 1	HD_17460	CHK	2.2 (E1)	13689.9	N/A	0.609 0.531	7/-1.8	N		
37	CLIMB_2	Kaminski	2017B-NO	14:14:29	0:48:23 S1 E1 W1	1 5 1	HD_18165	OBJ	2.2 (E1)	13689.9	N/A	0.499 0.329	5/7.4	N		
38	CLIMB_2	Kaminski	2017B-NO	14:22:22	0:48:23 S1 E1 W1	1 5 1	HD_17460	CHK	2.2 (E1)	13689.9	N/A	0.609 0.531	7/-1.8	N		

2018 01 23 Obs Summary

# Automated Observing Logs

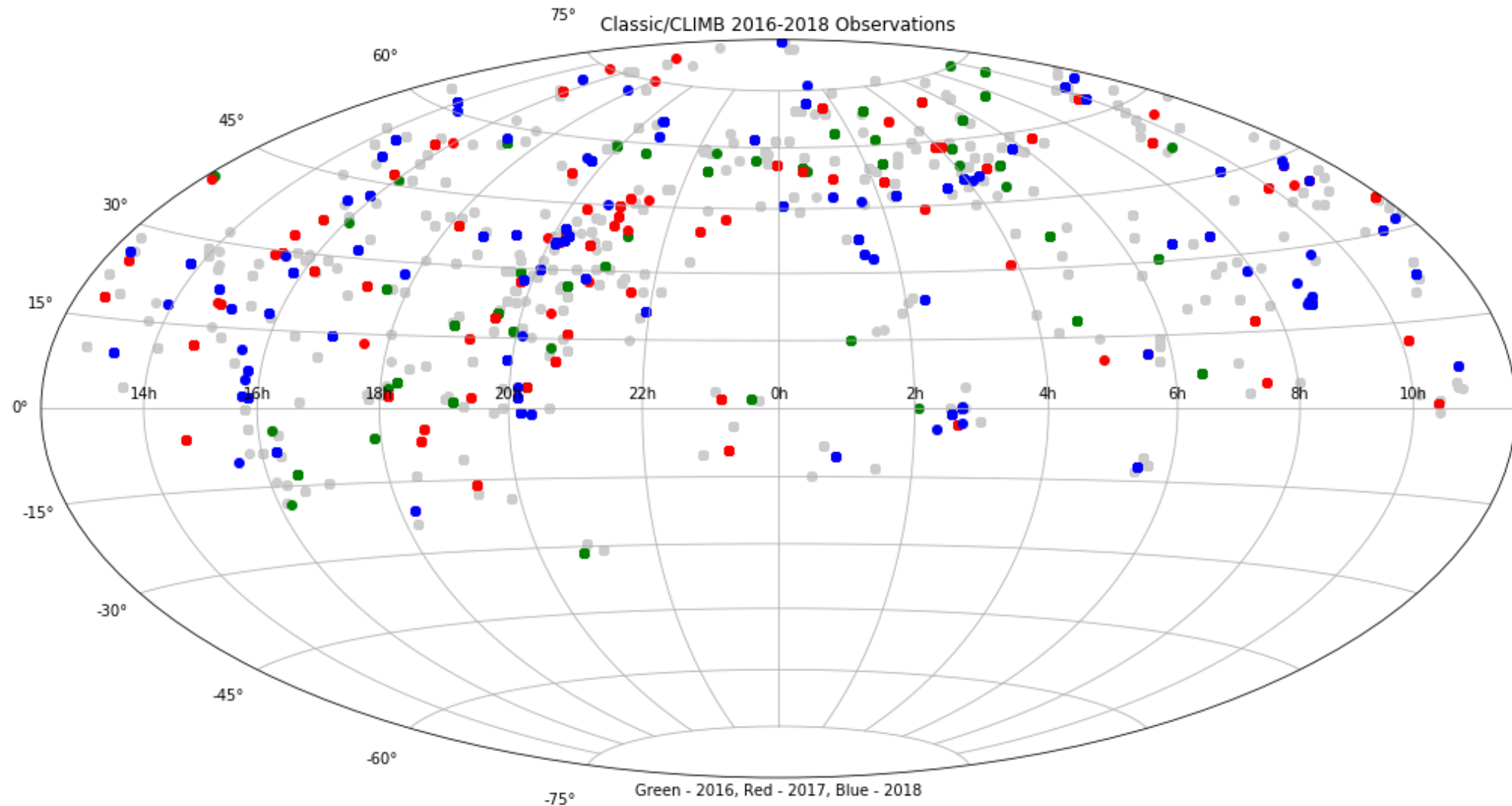
## Data Log

- Based on saved data
  - More accurate
  - More complete
  - Slower to generate
- Same convenient csv format

2018\_05\_11\_log.csv - Excel

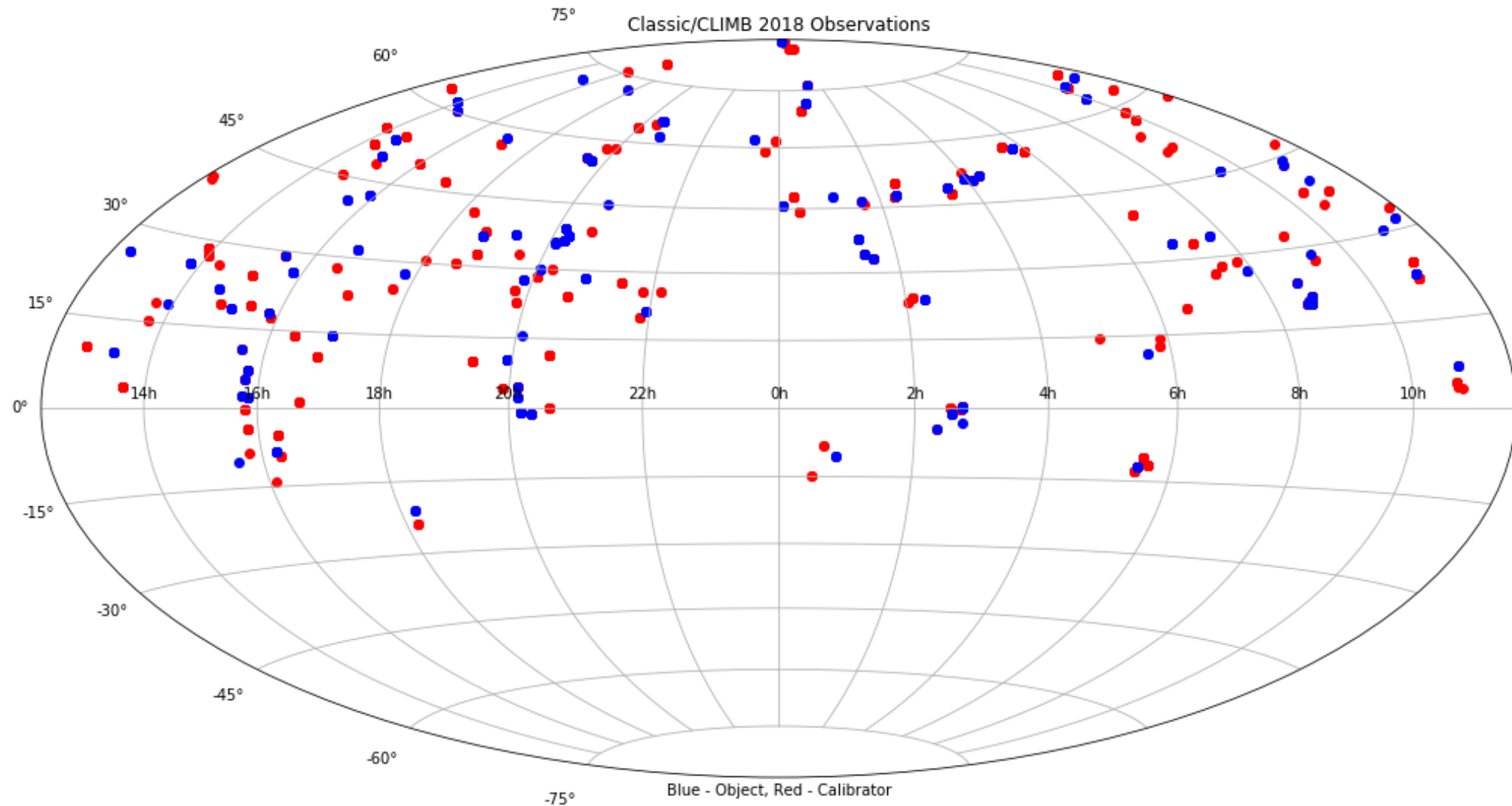
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	COMBINER	OBS_PI	PROGRAM	UT_TIME	HOUR_ANGLE	BEAM_1	BEAM_2	BEAM_3	BEAM_4	BEAM_5	BEAM_6	BEAMS	POPS	TAR_NAME	TAR_TYPE	OBS_WL	VIS_EST1	VIS_EST2	VIS_EST3	CP_EST1	CP_EST2
2	CLASSIC	ten_Brumr	2018A-CTE	06 15 27.6-01 57 35.431					S2	E2	E1	5&6		HD_13908	OBJECT	2.1329	0.3945				
3	CLASSIC	ten_Brumr	2018A-CTE	06 20 50.3-02 05 00.100					S2	E2	E1	5&6		HD_14147	OBJECT	2.1329	0.205178				
4	CLASSIC	ten_Brumr	2018A-CTE	06 26 09.4-02 03 52.112					S2	E2	E1	5&6		HD_14224	CAL2	2.1329	0.432726				
5	CLASSIC	ten_Brumr	2018A-CTE	06 32 20.6-01 40 39.700					S2	E2	E1	5&6		HD_13908	CAL1	2.1329	0.517357				
6	CLASSIC	ten_Brumr	2018A-CTE	06 37 02.8-01 48 44.960					S2	E2	E1	5&6		HD_14147	CAL1	2.1329	0.237733				
7	CLASSIC	ten_Brumr	2018A-CTE	06 41 04.9-01 48 54.105					S2	E2	E1	5&6		HD_14224	CAL2	2.1329	0.538818				
8	CLASSIC	ten_Brumr	2018A-CTE	06 51 15.6-01 21 41.621					S2	E2	E1	5&6		HD_13908	CAL1	2.1329	0.373378				
9	CLASSIC	ten_Brumr	2018A-CTE	06 56 36.2-01 29 08.406					S2	E2	E1	5&6		HD_14147	OBJECT	2.1329	0.163621				
10	CLASSIC	ten_Brumr	2018A-CTE	07 01 40.4-01 28 15.268					S2	E2	E1	5&6		HD_14224	CAL2	2.1329	0.369665				
11	CLASSIC	ten_Brumr	2018A-CTE	07 08 56.1-01 03 58.231					S2	E2	E1	5&6		HD_13908	CAL1	2.1329	0.462566				
12	CLASSIC	ten_Brumr	2018A-CTE	07 14 03.2-01 11 38.472					S2	E2	E1	5&6		HD_14147	OBJECT	2.1329	0.159566				
13	CLASSIC	ten_Brumr	2018A-CTE	07 21 53.8-01 07 58.525					S2	E2	E1	5&6		HD_14224	CAL2	2.1329	0.450642				
14																					
15																					
16																					
17																					
18																					
19																					
20																					

# Fun Plots from the Observing Logs





# Fun Plots from the Observing Logs

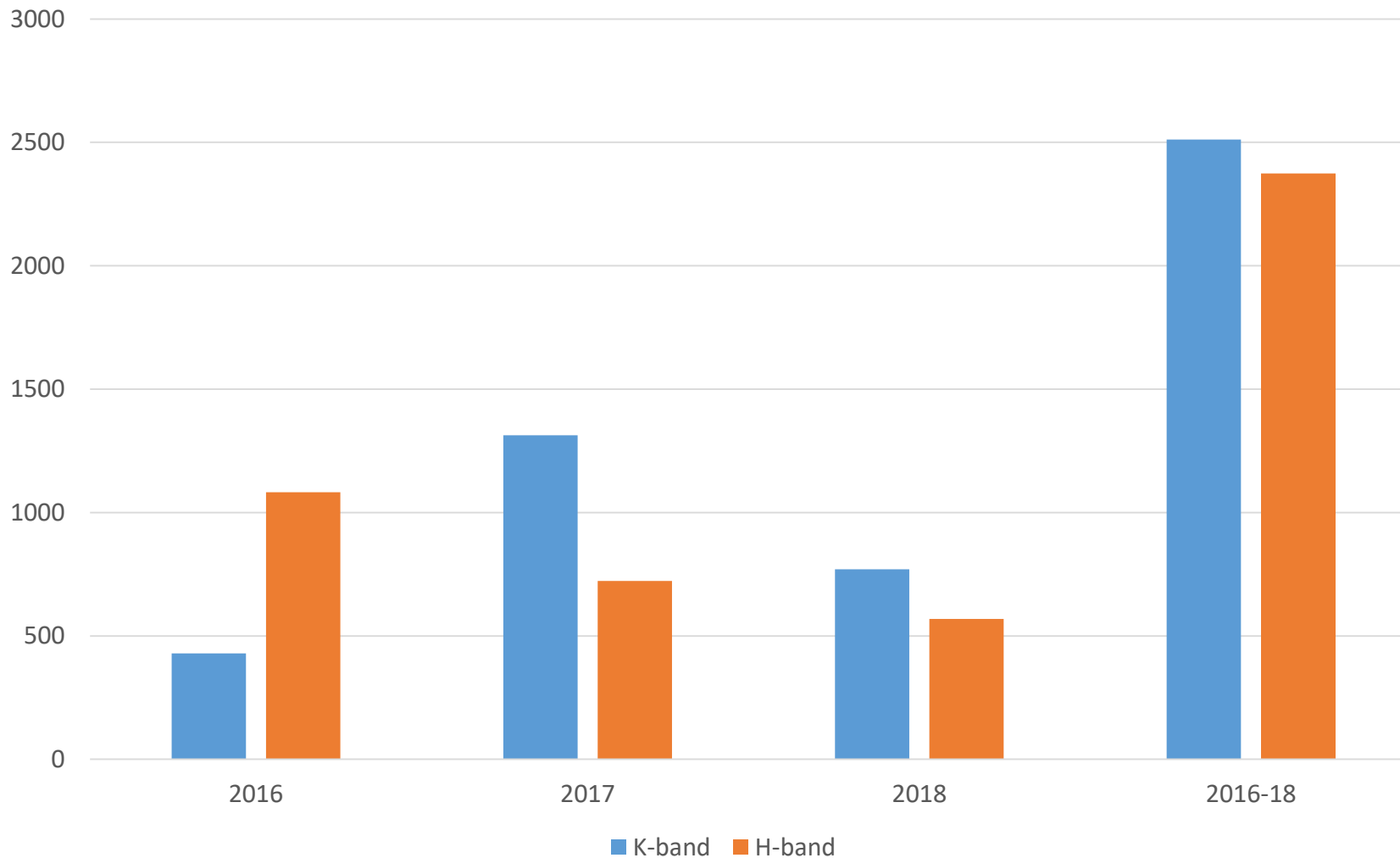






# Fun Plots from the Observing Logs

Most Popular Wavebands





# Fun Plots from the Observing Logs

Most Popular Scopes

