

# Support from non-Millstone Hill ISRs during experiment

Ashton S. Reimer

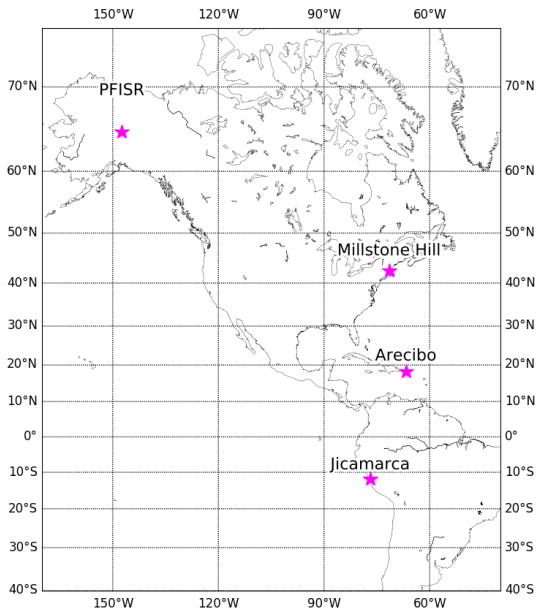
<sup>1</sup>Center for Geospace Studies  
SRI International

July 23, 2018

## 1 ISRs

- Arecibo
- Jicamarca
- PFISR

## 2 Other Instruments



# Arecibo



Photo: Seth Shostak/AP

A. S. Reimer (SRI)

ISR Support

July 23, 2018

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# Arecibo Antennas



## Arecibo: Schedule

## Arecibo Observatory Telescope Schedule

July 16 - July 30, 2018

## TRANSMITTERS



## VISITORS

(or PIs)

Q. Zhou  
P. Bernhardt  
E. Kendal  
E. Hossa  
J. Deneva  
E. Fonseca  
P. Demorest  
D. Nice  
A. Virkki  
P. Taylor  
L. Hagnani  
V. Kaspi  
K. Stovall  
R. Ferdnan  
R. Minochin  
C. Patel  
L. Spitler  
N. Palliguguru  
D. Li  
D. Lorimer  
J. van Leeuwen  
E. Scott  
S. Ransom

COMMENSAL PROJECTS:  
P2030: A2754, A2757  
ALFA: A2774, A2854

VER 7.0 - 18Jul18

AST	16 MON	17 TUE	18 MED	19 THU	20 FRI	21 SAT	22 SUN	23 MON	24 TUE	25 MED	26 THU	27 FRI	28 SAT	29 SUN	30 MON	LST
2	P2789 rf	P2780	P2780	P2030 vk	P2780	P2030	X102	R3037 pt	T3289	P2030	R3037	P2030	X111		P2780 pd/dn	
4	X111	pd/dn	pd/dn	P2945	pd/dn	R3288 fv	pp	P2945	ek	P2945	X102	P1693 jd	P2825	P2945		
6	P1693 jd		NANO	X111	X111	av		X111		X111 to	pp	X111	X111 to	X111		(b)
8	X111	NANO	P2945	P1693 jd	NANO	NE1		P2945	ISR	P1693 jd		A3261	P1693 jd	X111 to	P1693 jd	
10	X111	X111	X111	X111	X111	X111		X111	SSch			X111	X111			
12	MAINT	MAINT e/f	MAINT	MAINT	MAINT f/e	X111	P3264 dl	MAINT	MAINT	MAINT	MAINT	MAINT	MAINT	P2822	P2780 pd/dn	MAINT f/e
14	f/e		f/e	e/f		P3054 ls	P3054 ls	+DB	e/f	f/e	e/f	f/e	P3054 ls			
16		P3283			P3283	X111 to	P1693 jd	X110 elec		+DB			P3283	(d)	+DB	
18		MAINT e/f			MAINT f/e	X109	X111 to	MAINT	T3259 pb	T3259 pb			X111	NANO	T3259 pb	
20	R3035 av					P2825	X111 to	f/e	MAINT -DB	MAINT e/f			P3231	X111 to		+DB
22	VE62									-DB				X111 to	P1693 jd	
24	X111	X111 to	P1693 jd	X111 to	X111 to	X111	A3120 kmj	T3289	X111 to	P1693 jd	X111 to	P1693 jd		X111 to	X111	X111
26	R3037 pt	P3227				X102	X111 to	ek	A3261 lm	P2825	A3261 lm	A3261 lm	P1693 jd	X111	A3261 lm	
28	P2945	P2945	A3261 lm	X111 to	A3261 lm	pp	P2945	ISR	X111		A3261 lm	A3261 lm	P1693 jd	P2945		
30	P2780 pd/dn	P2780 pd/dn	P3227 tc	P3181	P3269	Obs Night	R3037 -pt-	SSch	R3037 pt	R3037 pt	A3069	P2945	R3037 pd/dn	P2780 pd/dn	P2789 ft	

# Arecibo: Schedule

## Schedule:

- <http://www.naic.edu/vscience/schedule/scedfra2.htm>

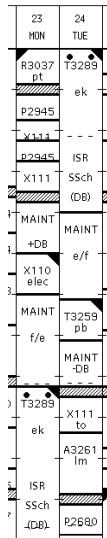
## Radar Mode:

- Coded Long Pulse
- Plasma Lines
- 300–600 m range resolution
- Start: July 23 16:15 AST\*
- End: July 24 08:00 AST\*

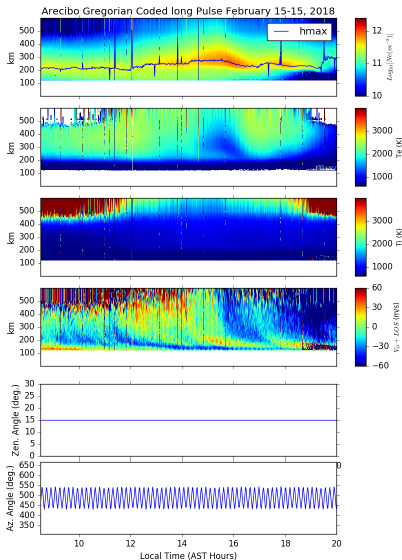
\*Atlantic Standard Time UTC-04:00 (Same as Millstone Hill)

**Realtime:** <https://www.naic.edu/aisr/olmon2005/omframedoc.html>

**Proposal:** <http://www.naic.edu/vscience/schedule/scedfra2.htm>

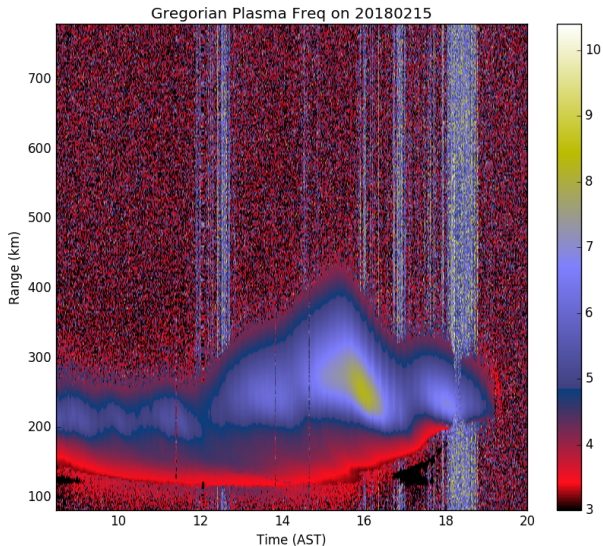


# Arecibo: Example Summary Plots





# Arecibo: Example Plasma Line Data



# Jicamarca



Photo: Craig Heinselman

# Jicamarca: Schedule

## Schedule:

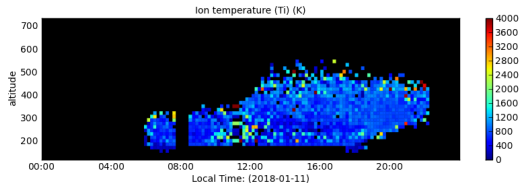
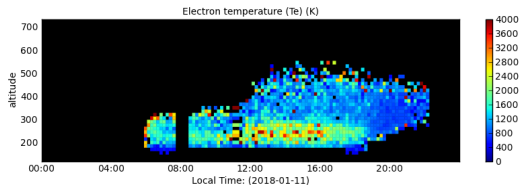
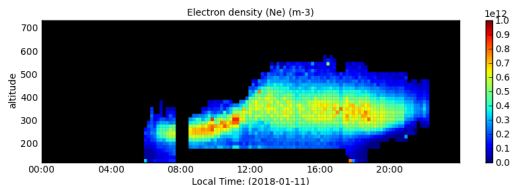
- <http://jro.igp.gob.pe/calendar.html>

## Radar Mode:

- EW Drift + Faraday + Imaging
- Medium power
- **Start:** July 23 18:00 PST\*
- **End:** July 24 07:00 PST\*

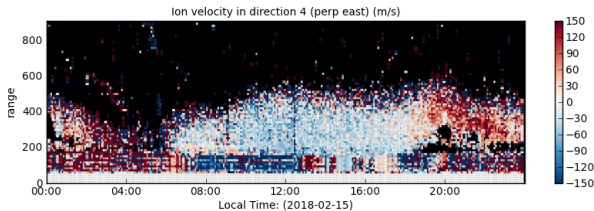
\*Peru Standard Time is UTC-05:00 (Millstone Hill is UTC-04:00)

# Jicamarca: Example Plasma Density and Temperature

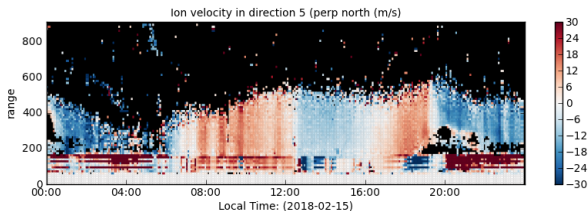


# Jicamarca: Example Drifts

## Meridional, E-W (magnetic E-W)



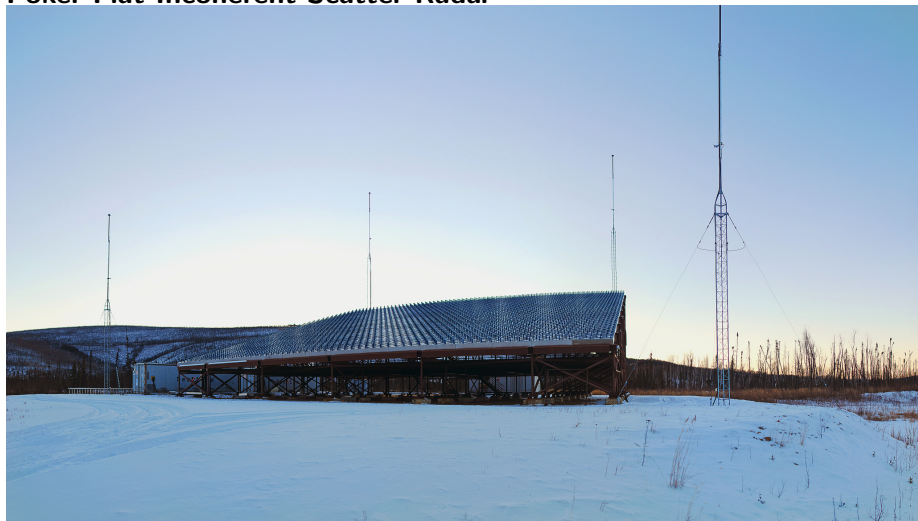
## Vertical, Up-Down (magnetic N-S)



More info: [http://jro.igp.gob.pe/english/radar/operation/modes/drifts\\_en.htm](http://jro.igp.gob.pe/english/radar/operation/modes/drifts_en.htm) and  
<https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/1998JA900110>

# PFISR

## Poker Flat Incoherent Scatter Radar



(November 2014)

# PFISR: Schedule

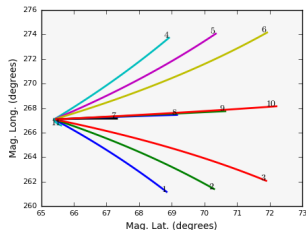
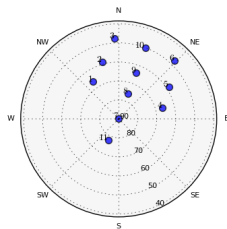
## Schedule:

- <http://amisr.com/database/61/sched/2018/07>

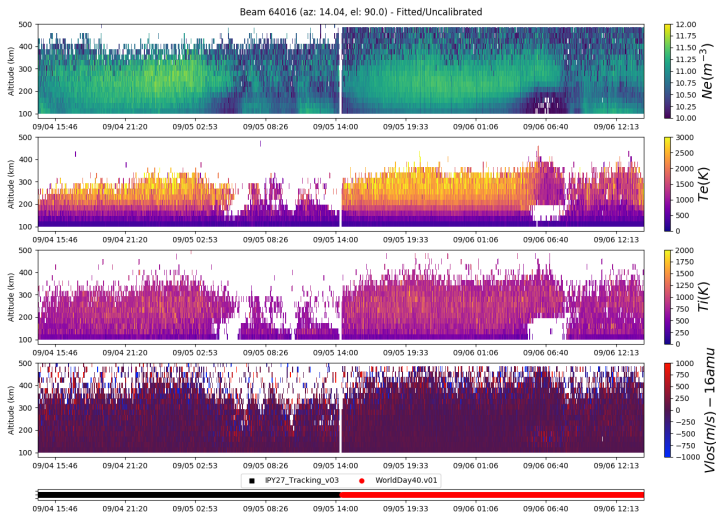
## Radar Mode:

- WorldDay40.v01
- 11 Beams
- Long Pulse, Alternating Code, and Plasma Lines
- **Start:** July 23 17:00 UTC
- **End:** July 24 17:00 UTC

Millstone Hill is UTC-04:00

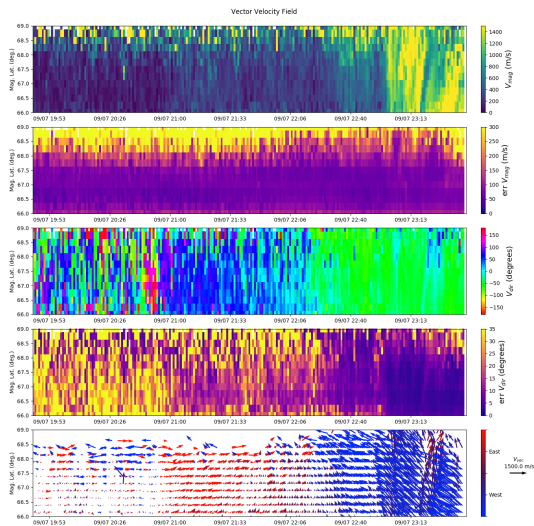


## PFISR Data





## PFISR Data



# Other Instruments

## Global Context:

- Realtime SuperDARN data: <https://superdarn.ca/real-time>
- Realtime ACE (IMF) data: <https://www.swpc.noaa.gov/products/ace-real-time-solar-wind>