

AMISR-14: Equatorial Spread F Observations, Current Status and Plans

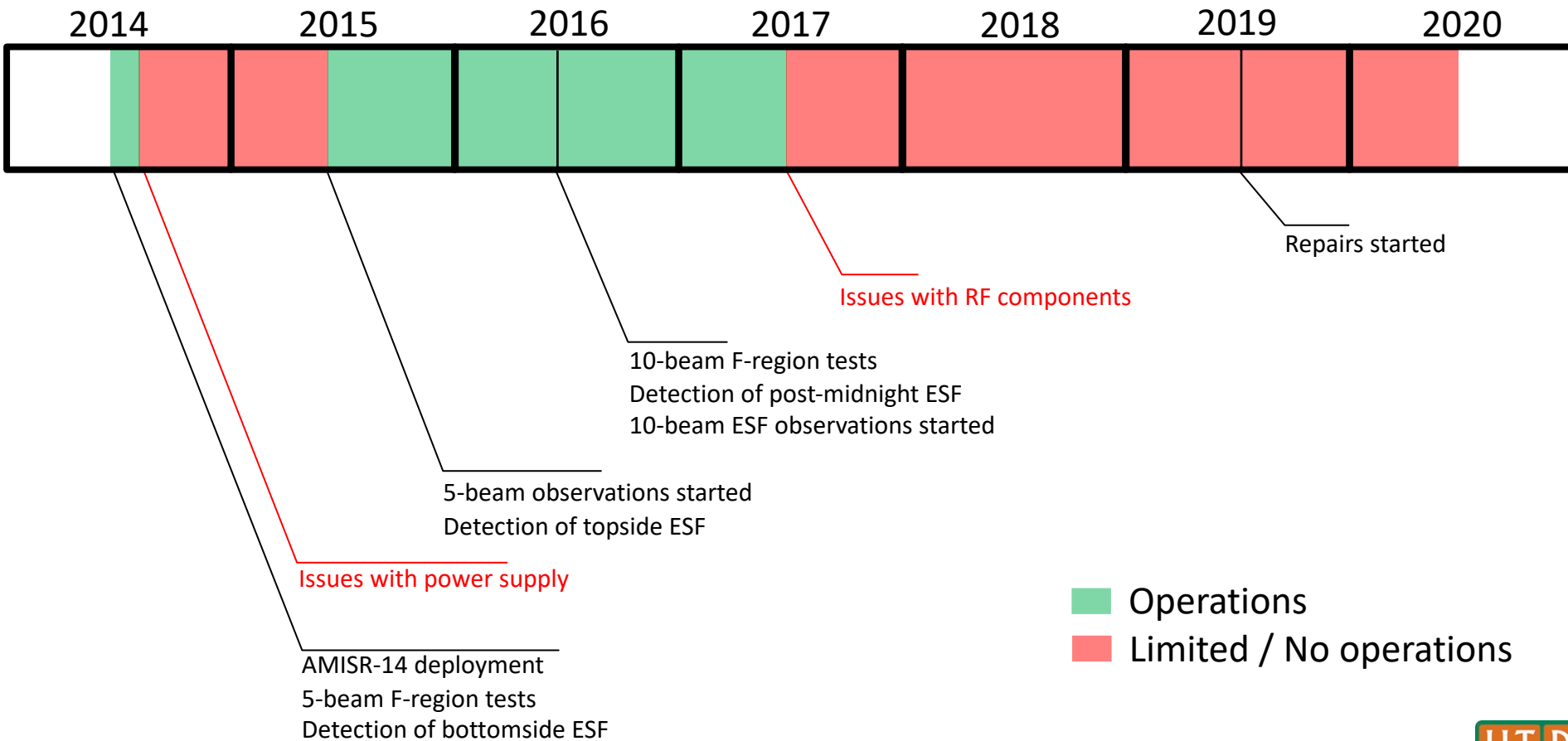
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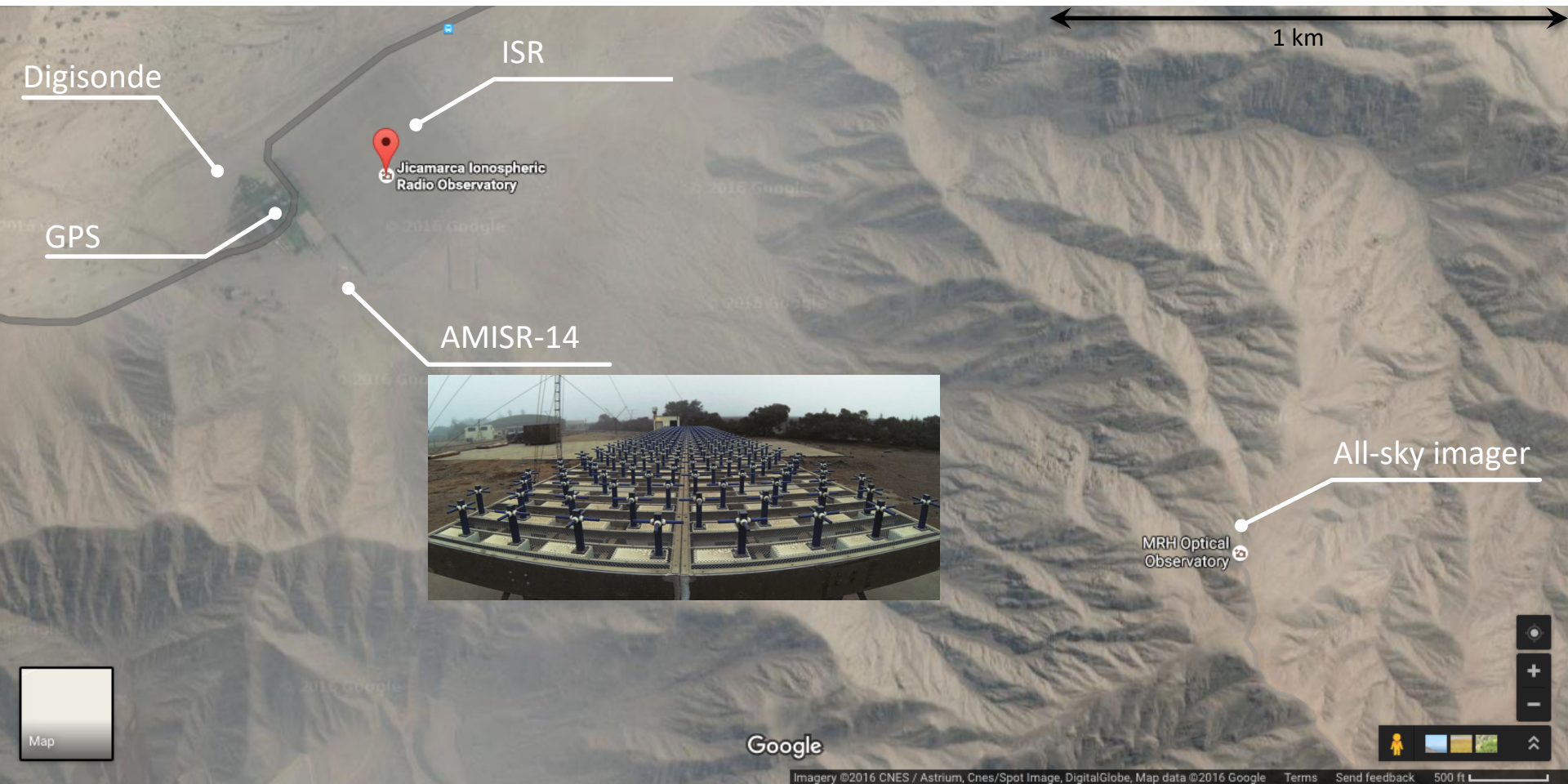
Introduction: AMISR-14

- AMISR-14
 - **UHF electronically steerable radar system**
 - A 14-panel, ~200kW version of the (128-panel) AMISR system
 - Acquired by UMET from SRI as part of an NSF MRI

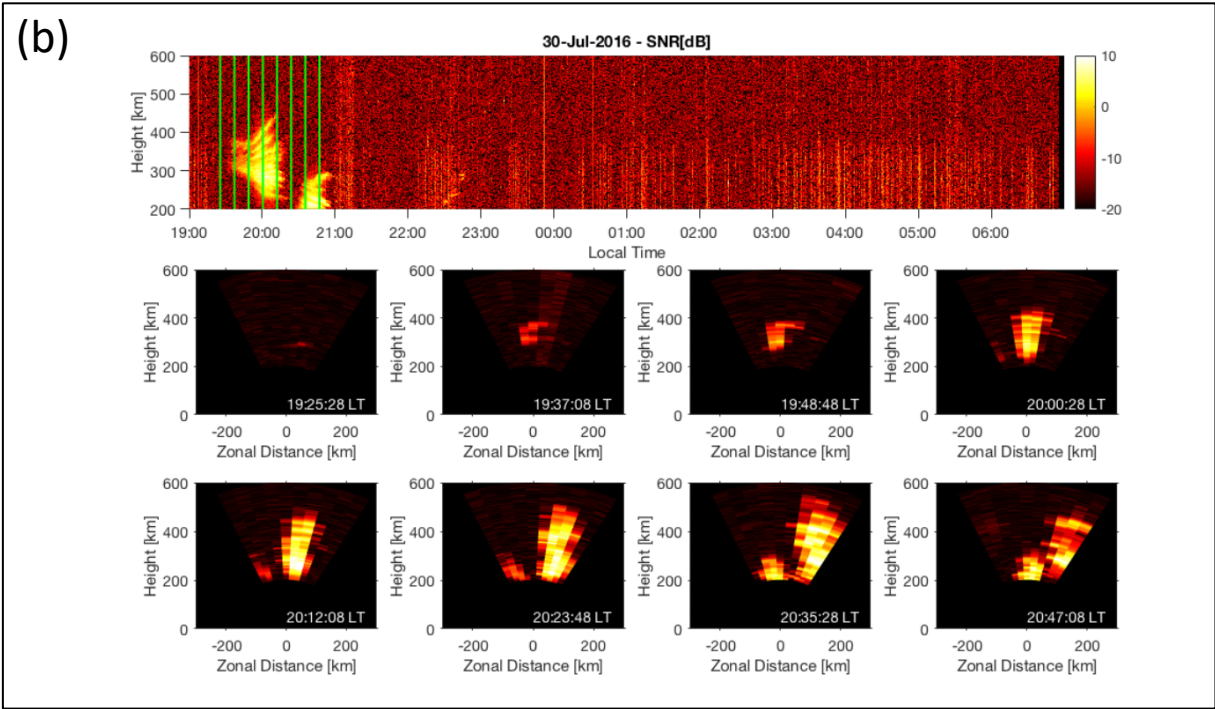
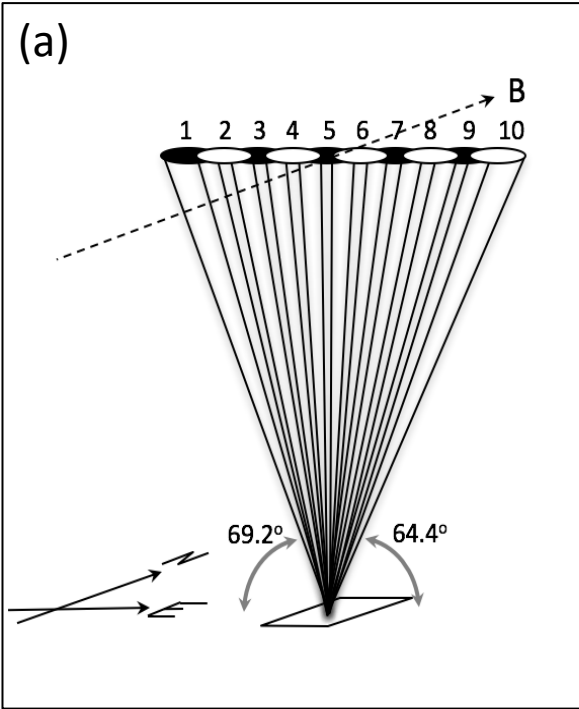


Introduction: Discovery science near the equator

- It will allow for 2D observations of ESF with wider field-of-view than previously possible.
- It will provide a unique experimental capability for assisting and testing basic and applied studies of ESF as well as support to satellite missions and rocket campaigns.



Observations: July 2016, 10 beams



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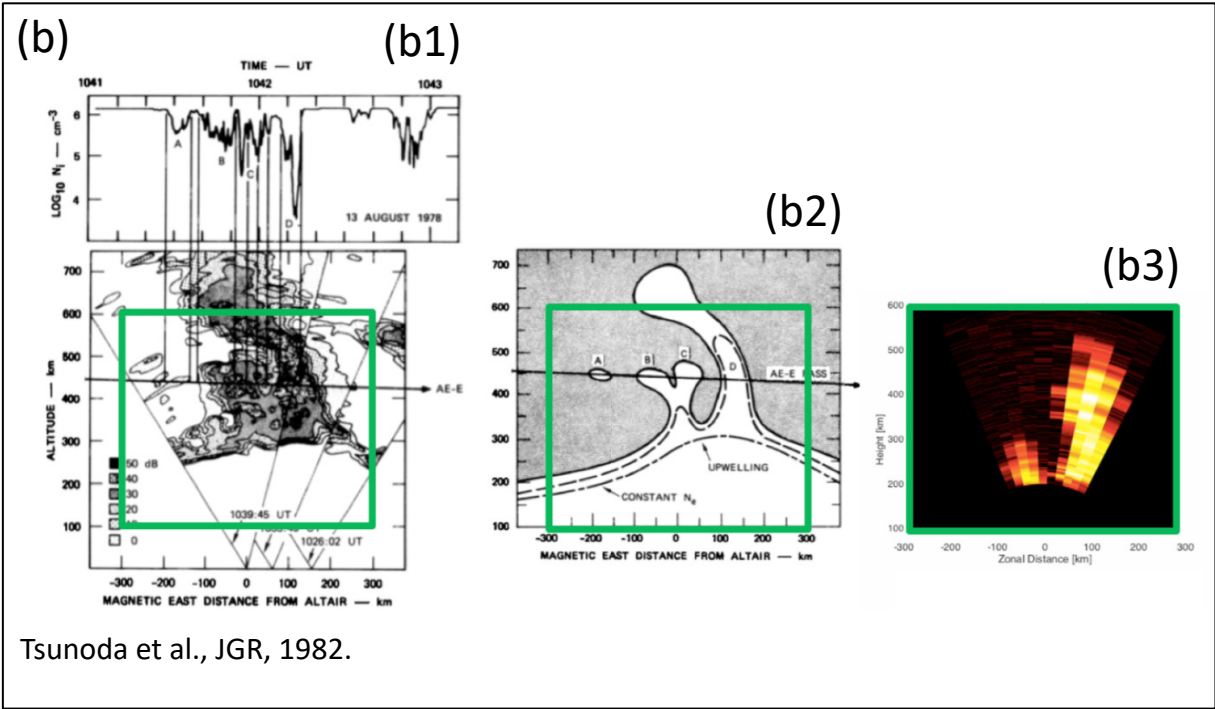
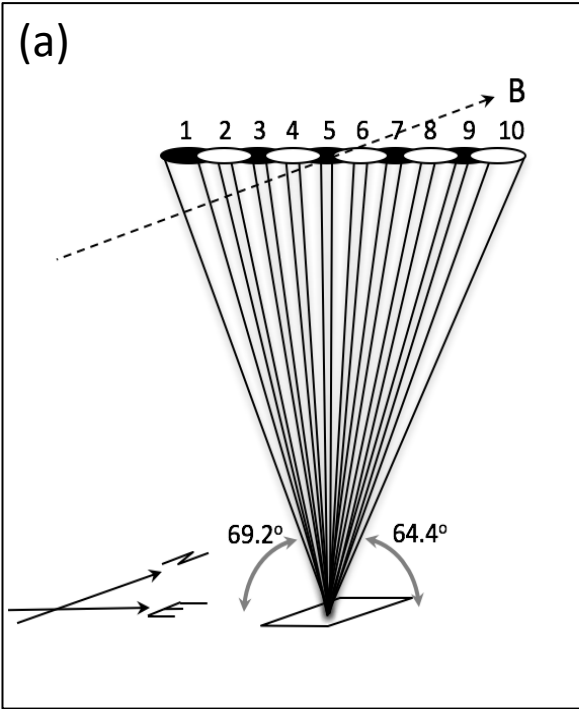
Table 1 – AMISR-14 pointing directions.

Beam Number	Azimuth (degrees)	Elevation (degrees)
1	-90	69.2
2	-90	74.0
3	-90	80.4
4	-90	85.2
5	0	90.0
6	90	85.2
7	90	80.4
8	90	74.0
9	90	69.2
10	90	64.4

Table 2 – AMISR-14 experiment parameters.

Parameter	Value
Frequency	445 MHz
Bragg wavelength	0.34 m
Panel configuration	7 (N/S) x 2 (E/W)
Antenna HPBW (NS/EW)	2° (N/S) - 8° (E/W)
Peak power	174 kW
Number of beam positions	10
Pulses per beam position	16
Inter-Pulse Period (IPP)	937.5 km
Code length	28 bauds
Baud length	3.0 km
Sampling	1.5 km
Coherent integration	None
Incoherent integration	320

Observations: July 2016, 10 beams



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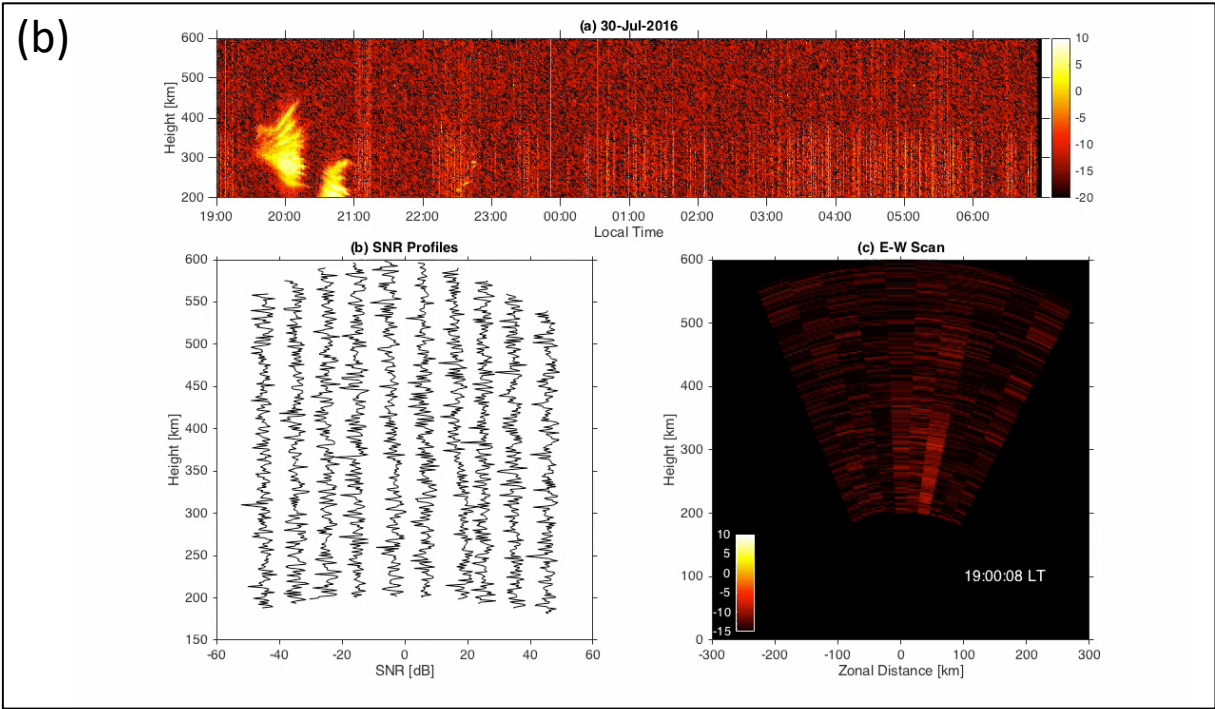
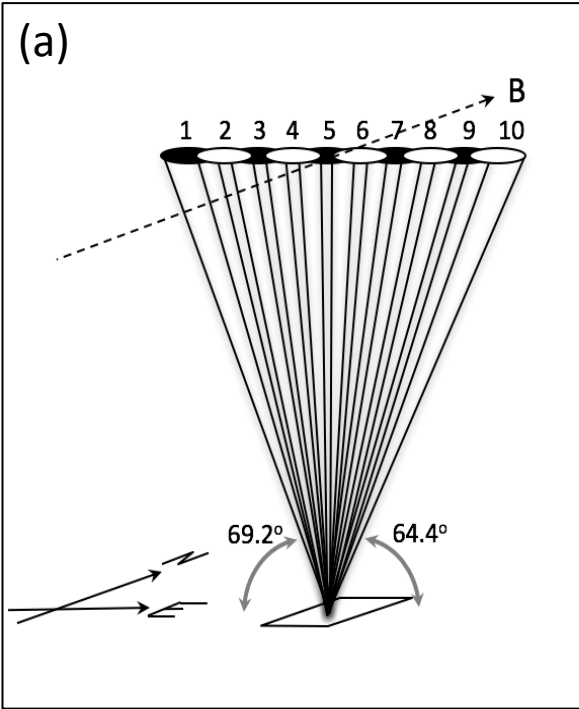
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Current Status & Plans

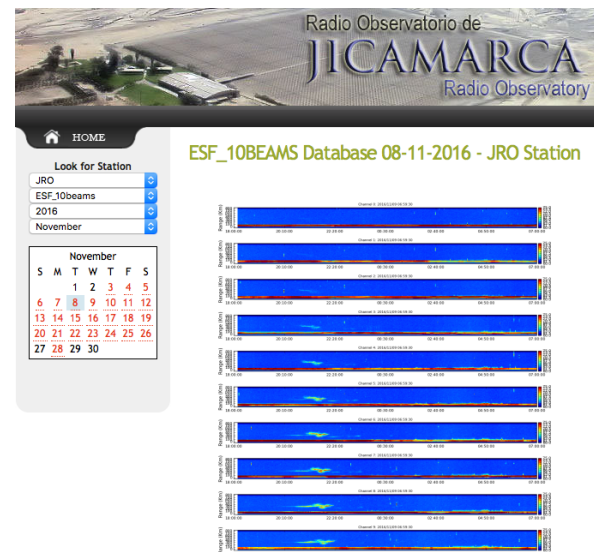
(a)

Current status

- Jicamarca repaired 8 panels so far
- IGP/JRO stopped activities in 03/2020
- Looking into existing observations

Plans

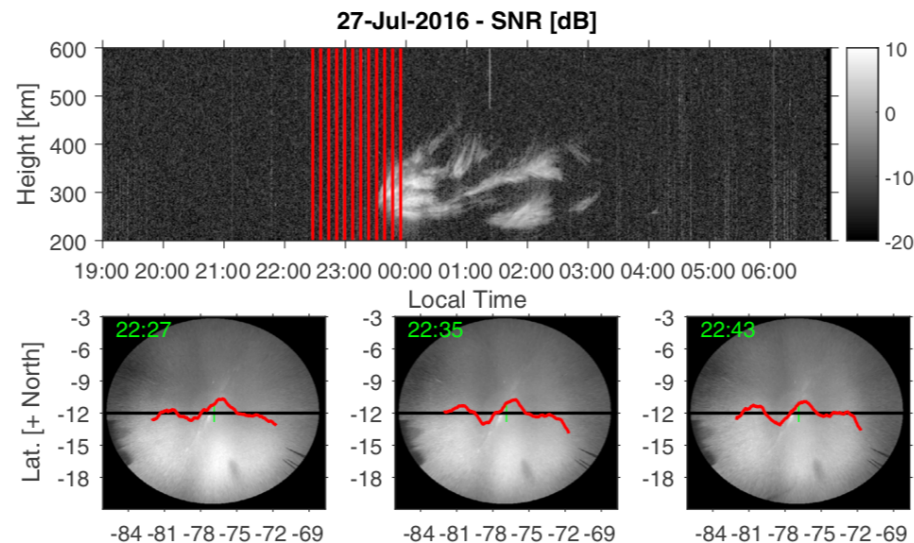
- Finish repairs
- Planned semi-continuous operations



http://jro-app.igp.gob.pe/amisr14/web_amisr14/#

(b)

- Local vs non-local ESF genesis
- Conditions prior to post-midnight ESF



Rodrigues et al., PEPS, 2018.