Multi-Instrument AMISR-Jicamarca Observation of Equatorial Electrojet Irregularities

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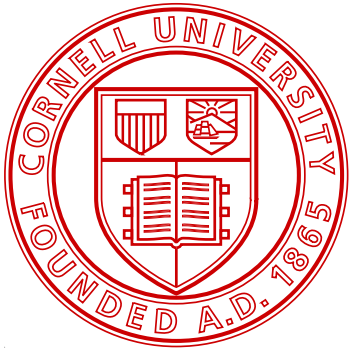
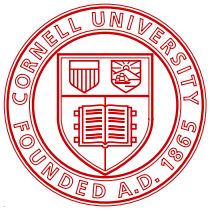


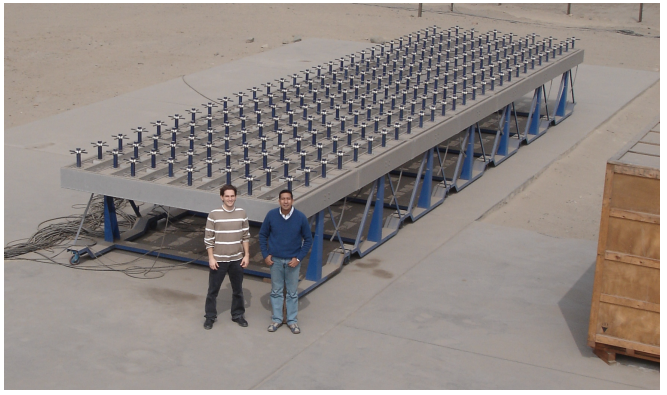
Outline

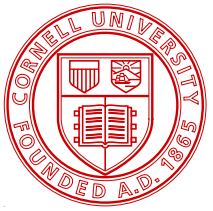
- Experimental Setup
- Jicamarca Electrojet and 150 km echoes
- AMISR-Jicamarca comparison
- East-west/up-down asymmetry
- Clues from in-beam imaging
- Conclusions



Experimental Setup

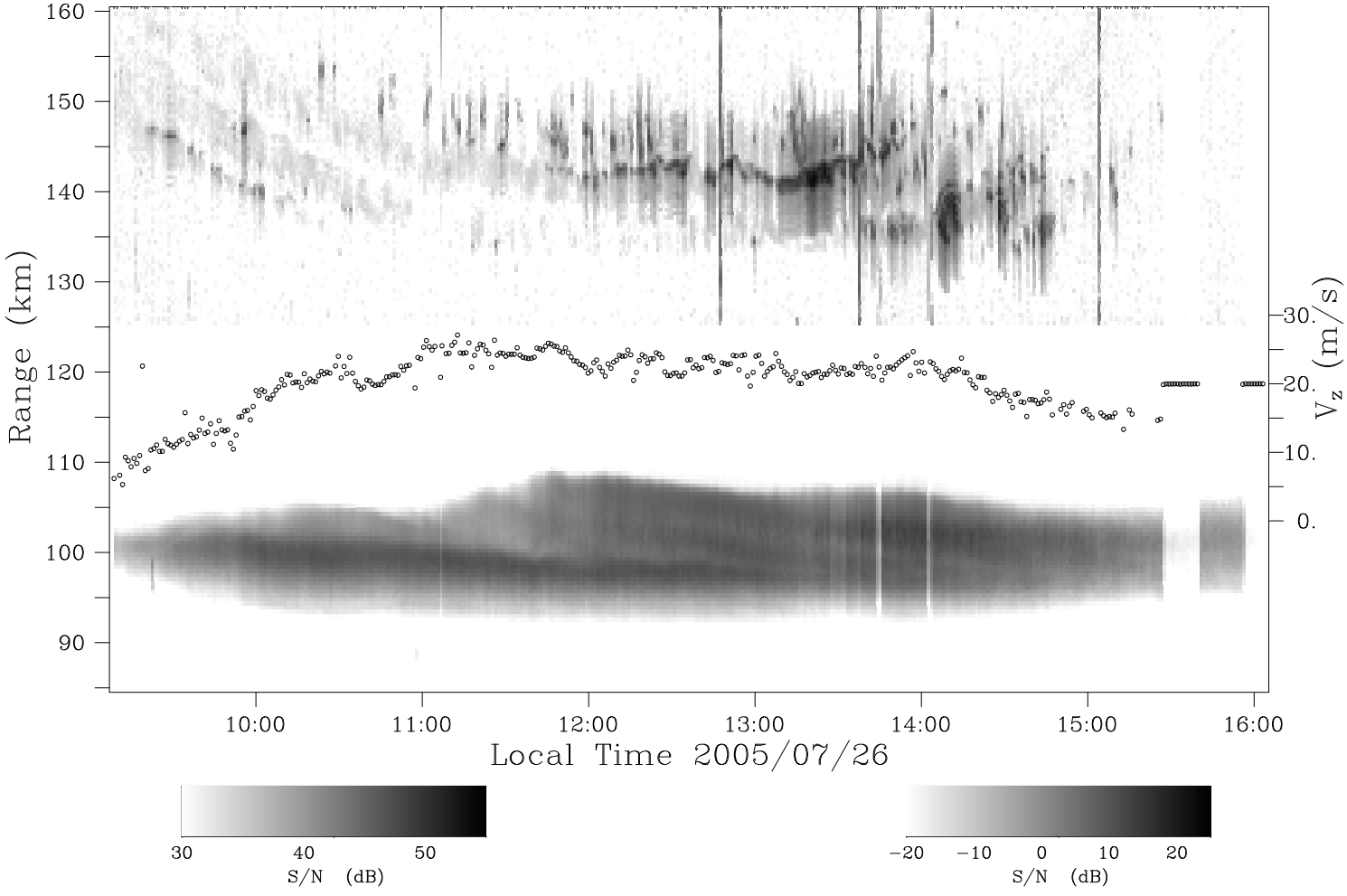
- Jicamarca main antenna vertical beam, 150 km echoes / EEJ
- AMISR, 435 MHz, five beams: -32°, -24°, -12°, 0°, 12° east of zenith in 7x1, 28x8 configuration, $\sim$2.5°E-W beam width
- In-beam imaging using eight antenna modules
- Bistatic link Jicamarca-Paracas for measuring density profiles from Faraday rotation
- Oblique Yagi antenna

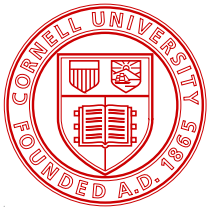




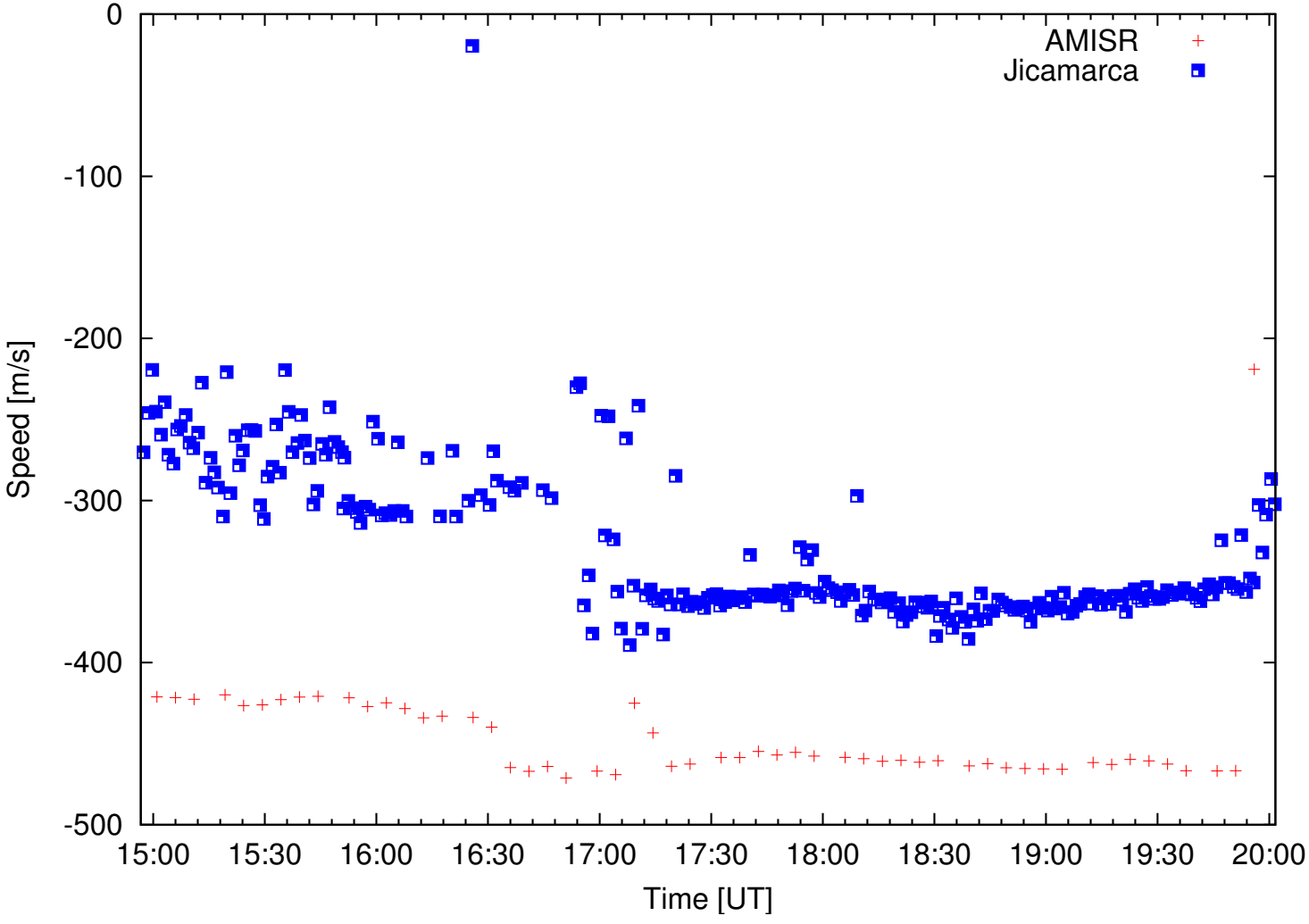
Electrojet and 150 km echoes

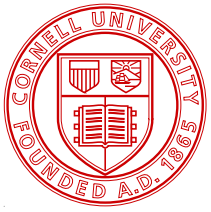
From Jicamarca:



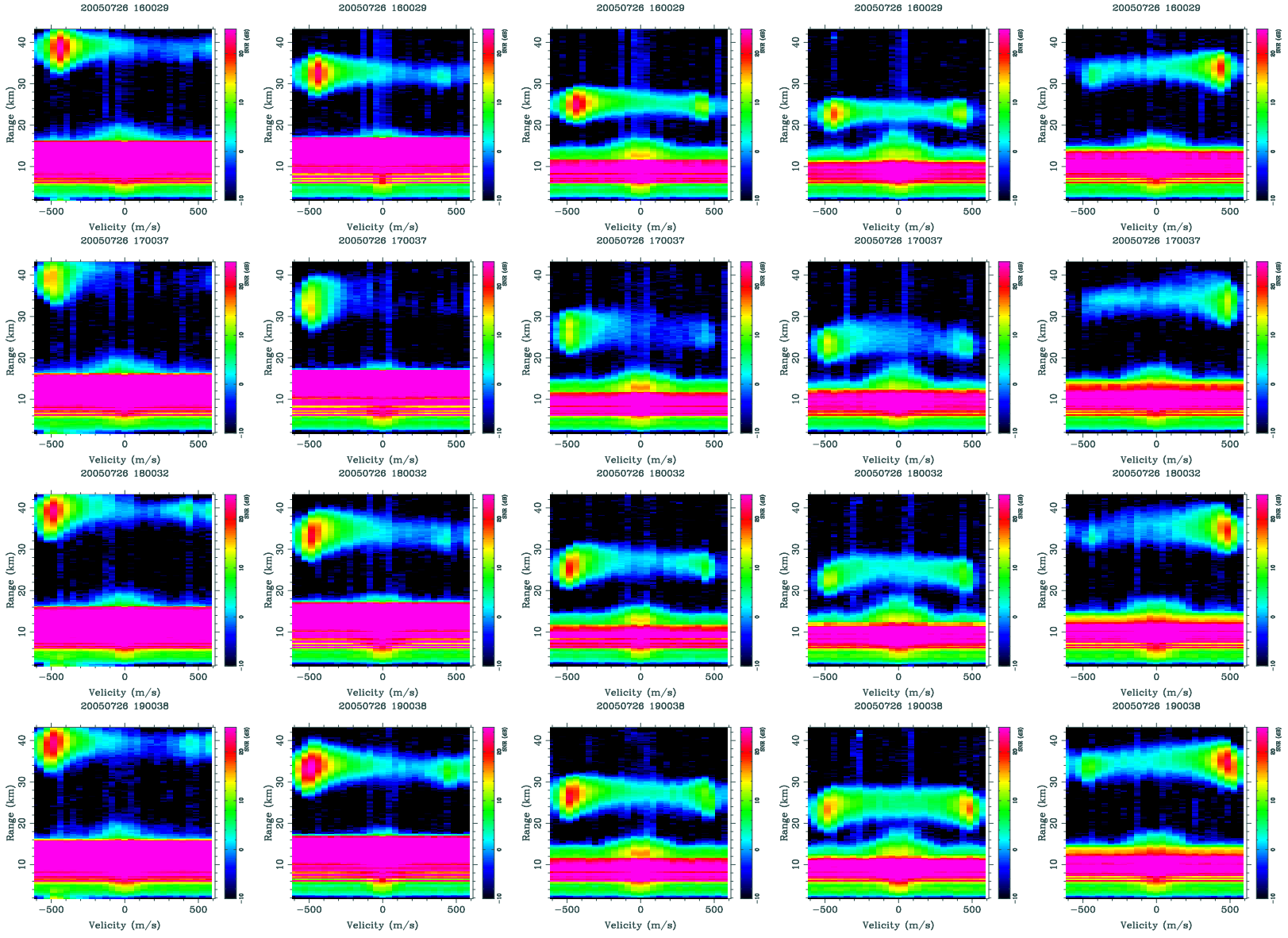


AMISR-Jicamarca comparison

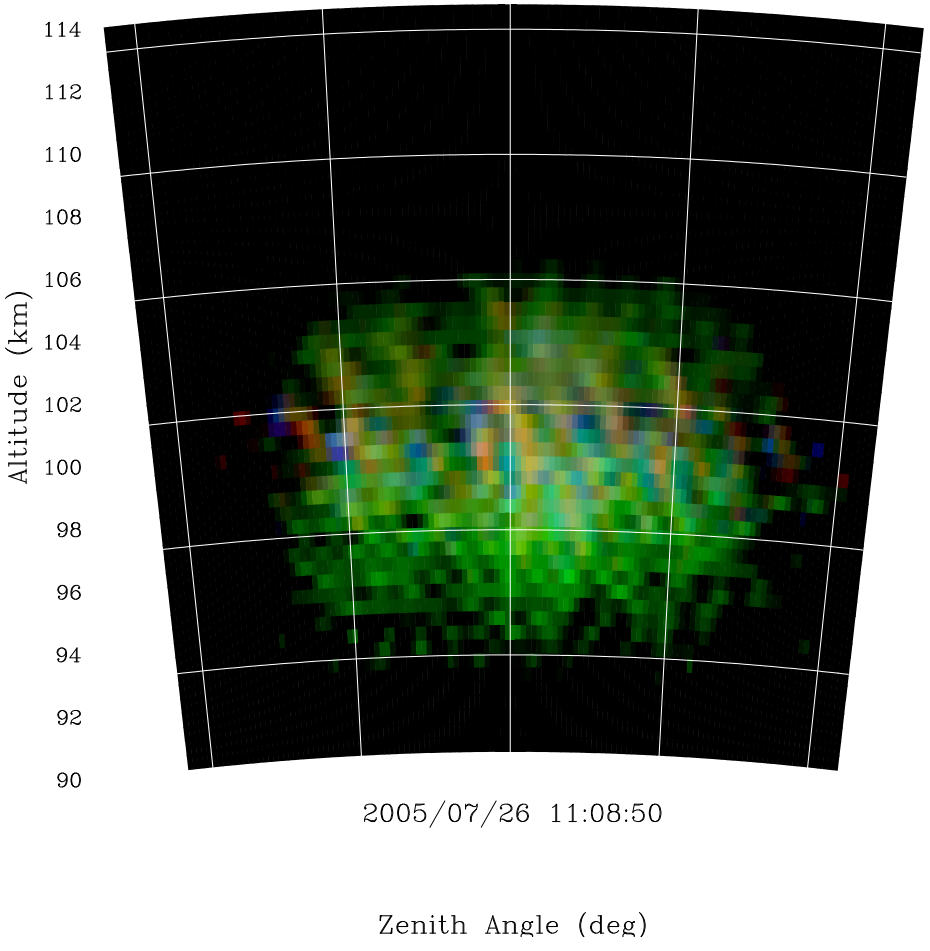




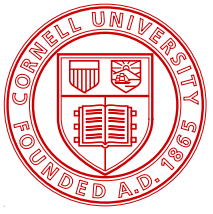
East-west/up-down asymmetry



In-beam Imaging



- Large scale primary waves tilted
- Polarization electric field tilted
- Net electric field different in enhancements and depletions
- East-going waves not as much above threshold as west-going waves



Conclusions & Future work

- AMISR is useful tool for coherent scatter experiments
- Fast beam steering is great!
- Type 1 speeds higher at UHF than VHF, needs some more work to verify kinetic theory
- Sudden increase in type 1 speeds around noon somewhat puzzling

Acknowledgments

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