

PROPAGATION MODE AND SCATTER TYPE IDENTIFICATION OF SUPERDARN ECHOES USING HIGH DOPPLER RESOLUTION SPECTRAL ANALYSIS

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PROPAGATION MODE AND SCATTER TYPE IDENTIFICATION OF SUPERDARN ECHOES USING HIGH DOPPLER RESOLUTION SPECTRAL ANALYSIS

Overview

- *Summary of high Doppler resolution analysis (HIGH-DRA)*
- *Look at differences between HIGH-DRA and FITACF*
- *Asses the pros and cons of using HIGH-DRA*
- *Summary and Conclusions*



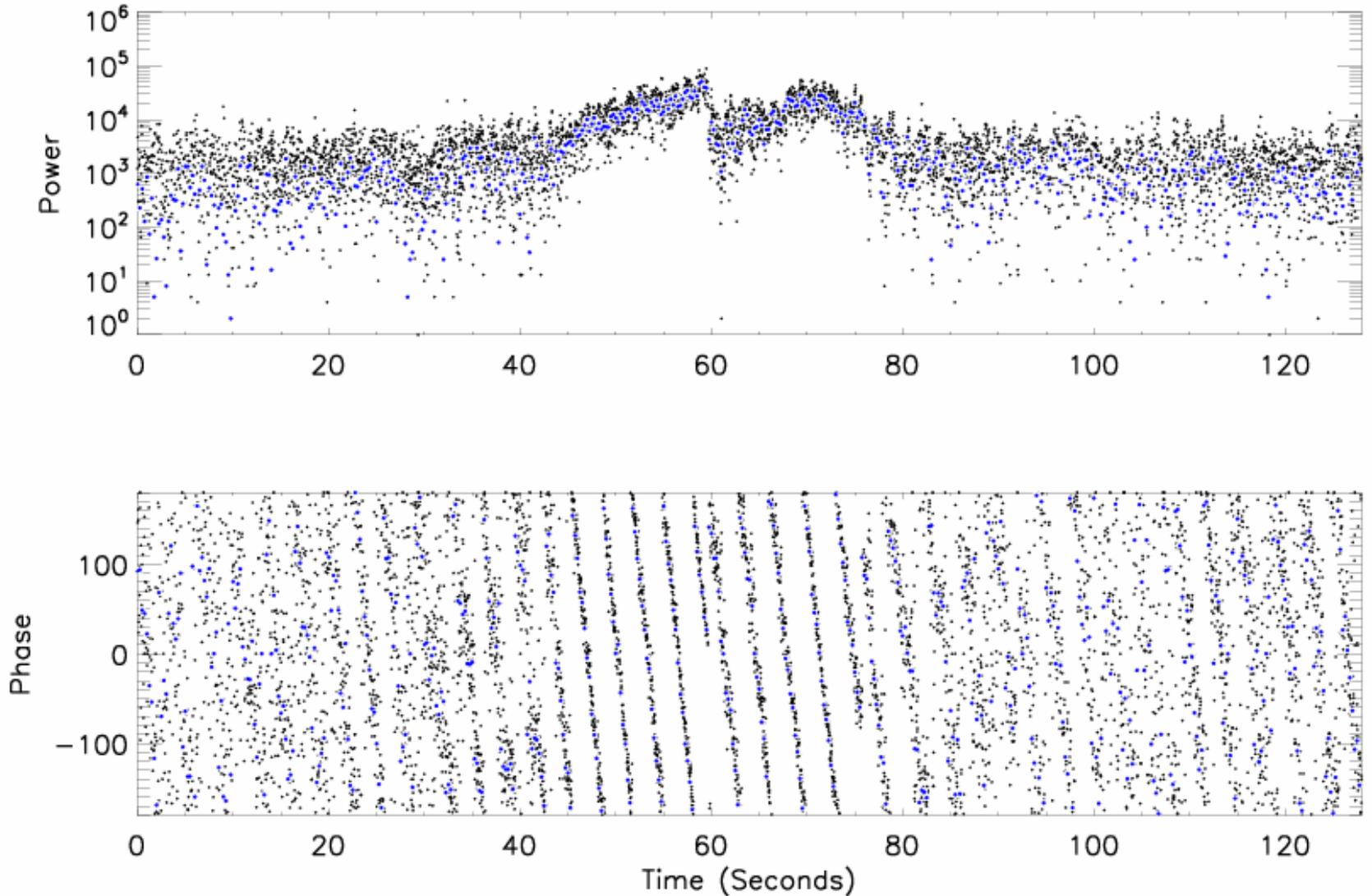
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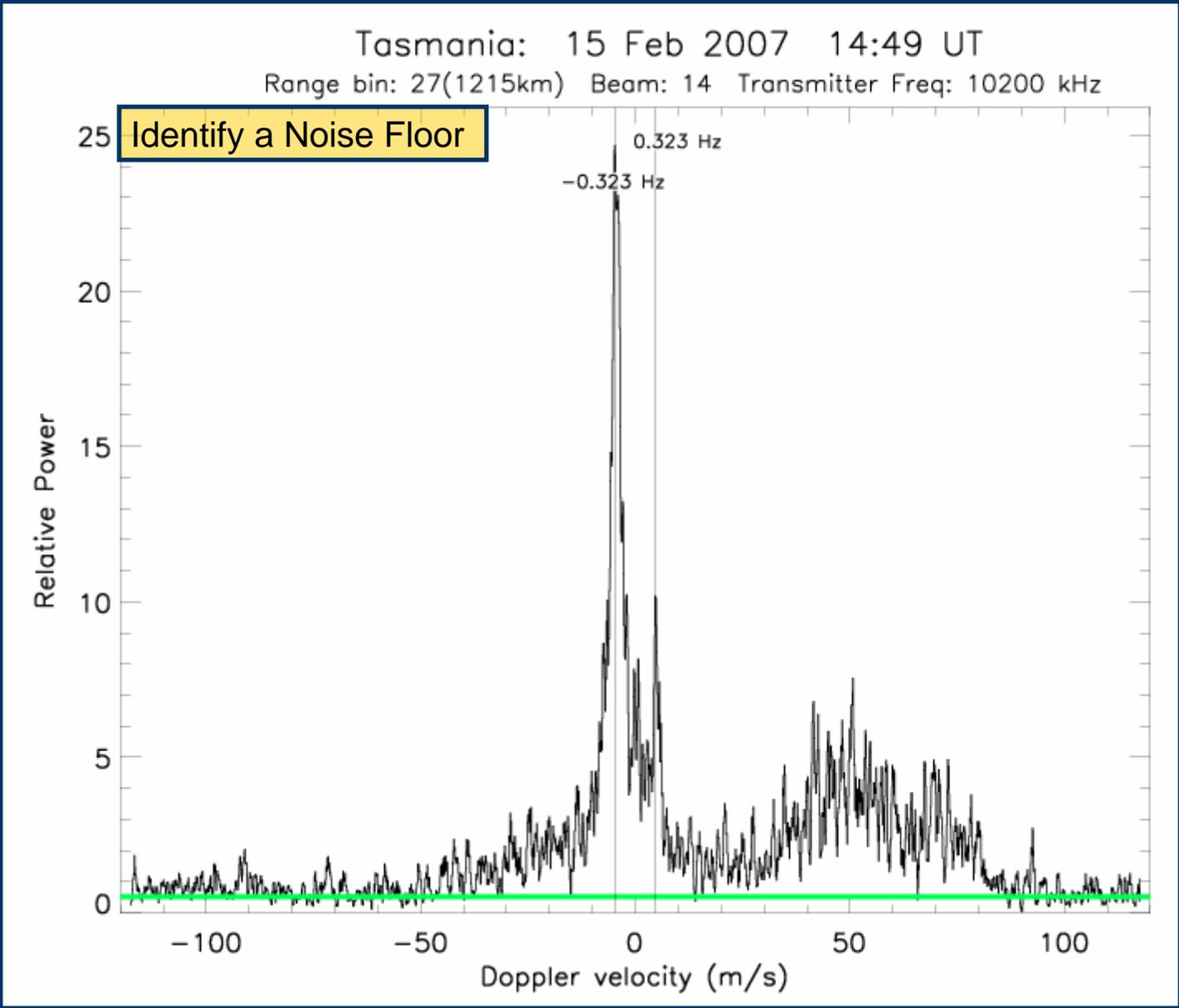
Time Series of Power and Phase

Tasmania: 15 Feb 2007 14:49 UT

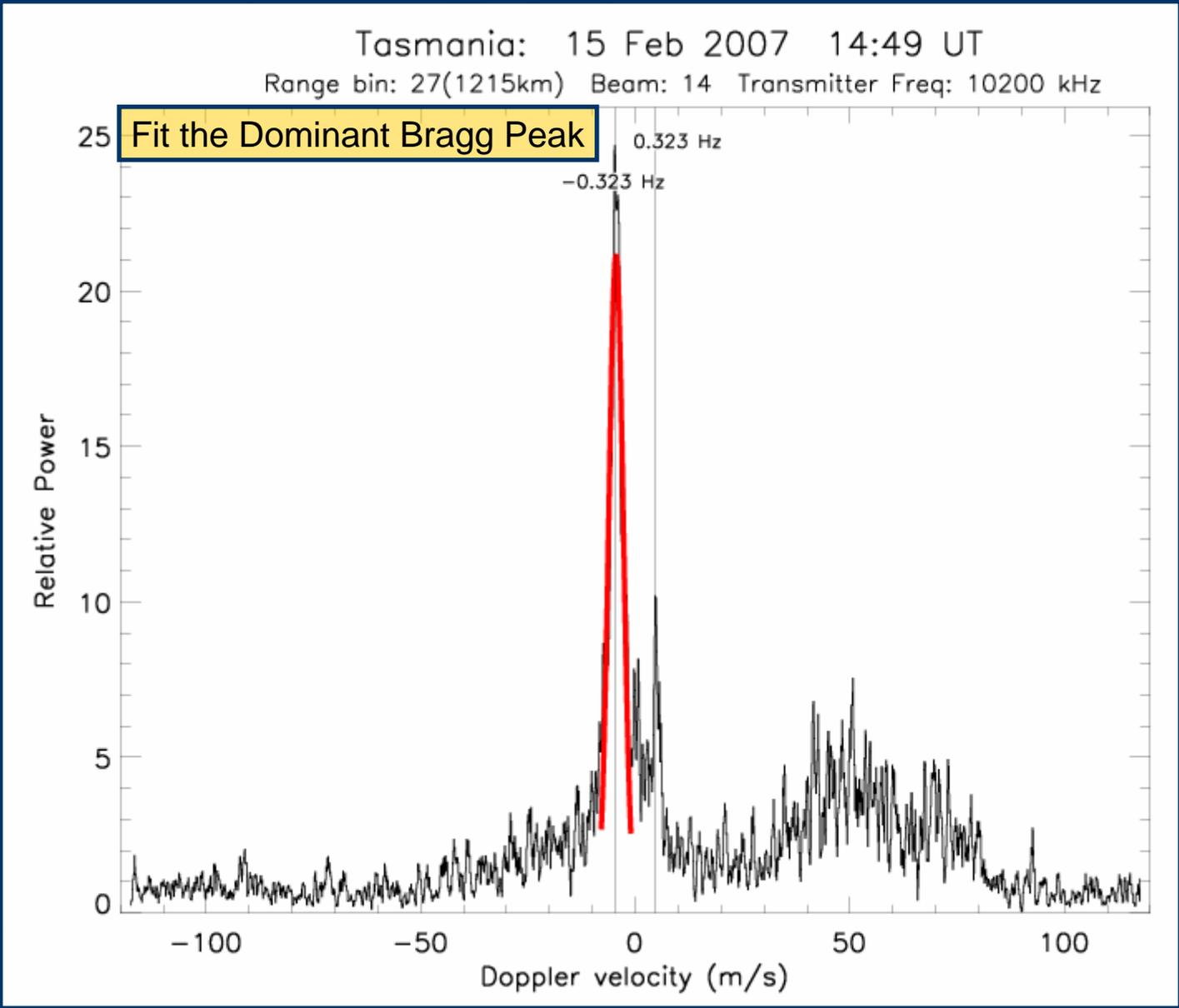
Range bin: 27(1215km) Beam: 14 Transmitter Freq: 10200 kHz



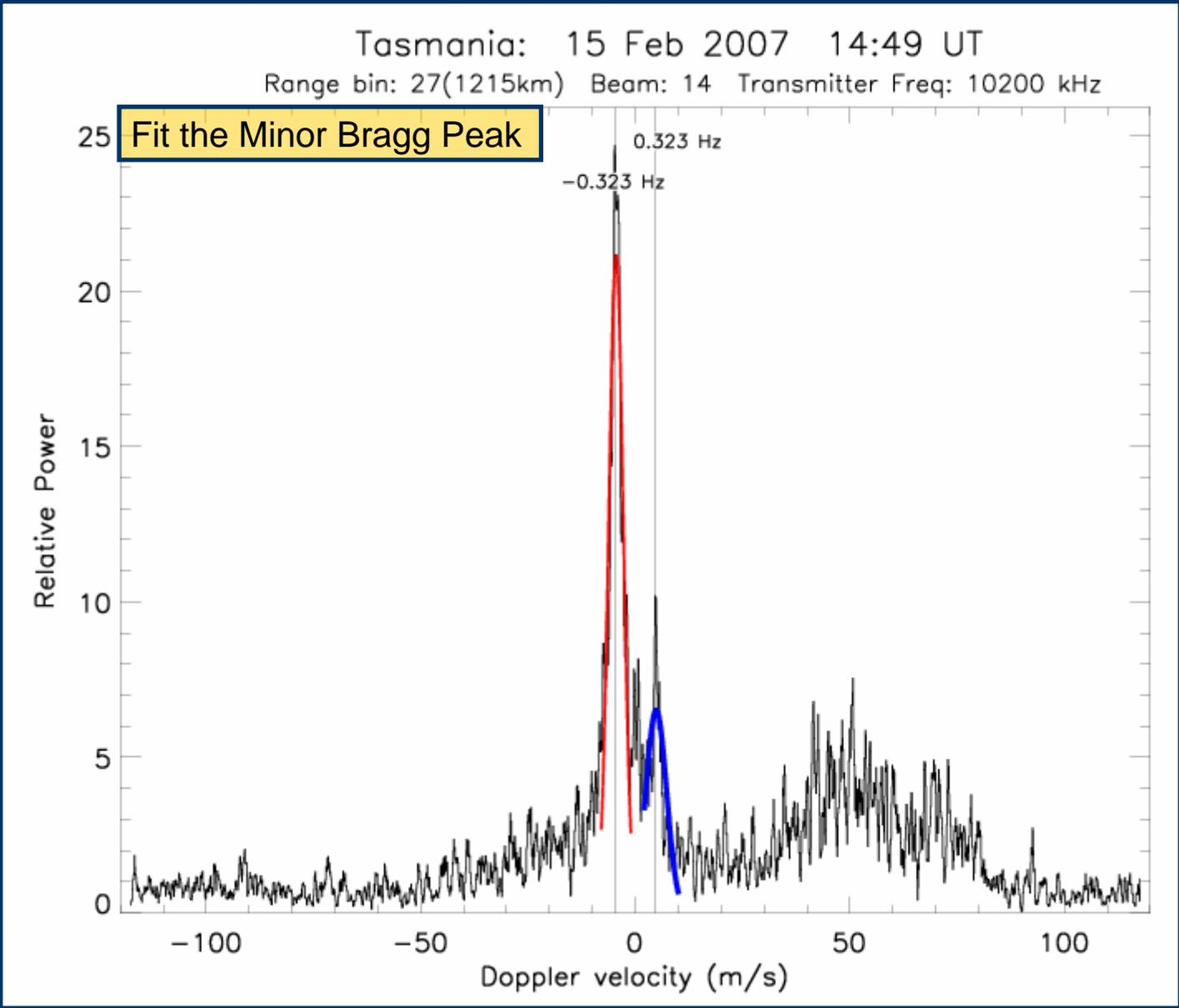
FFT Generated Doppler Spectrum



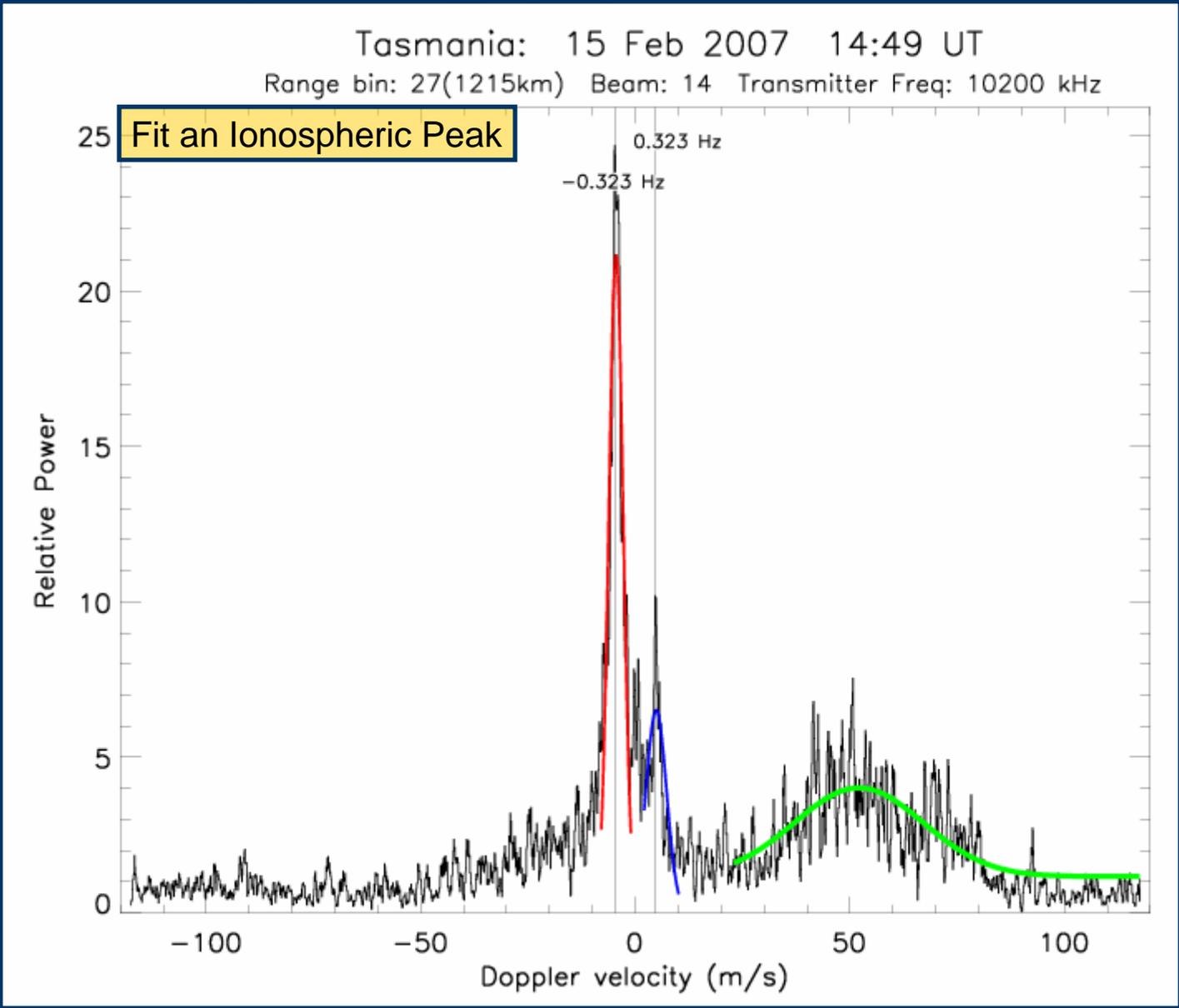
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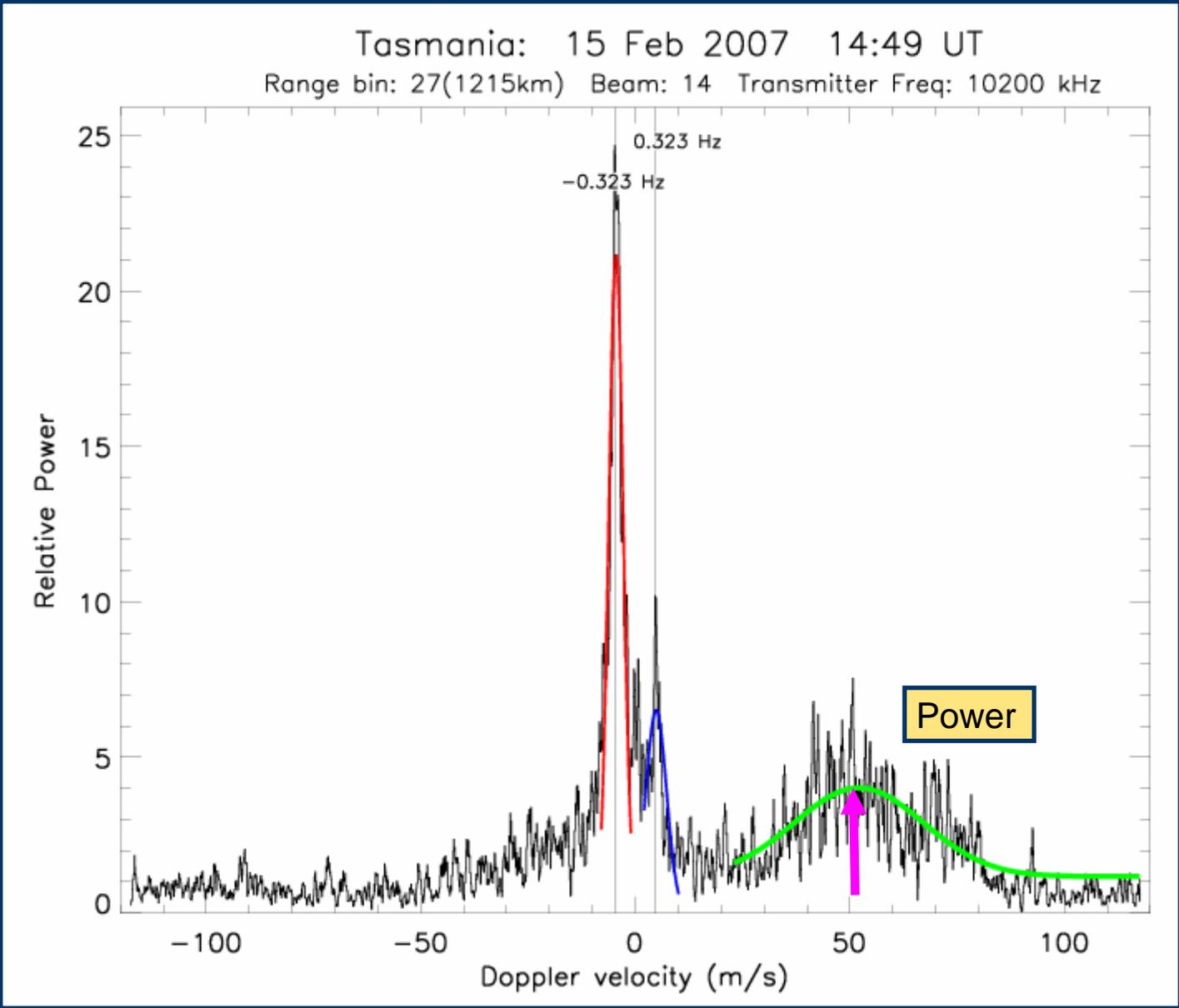
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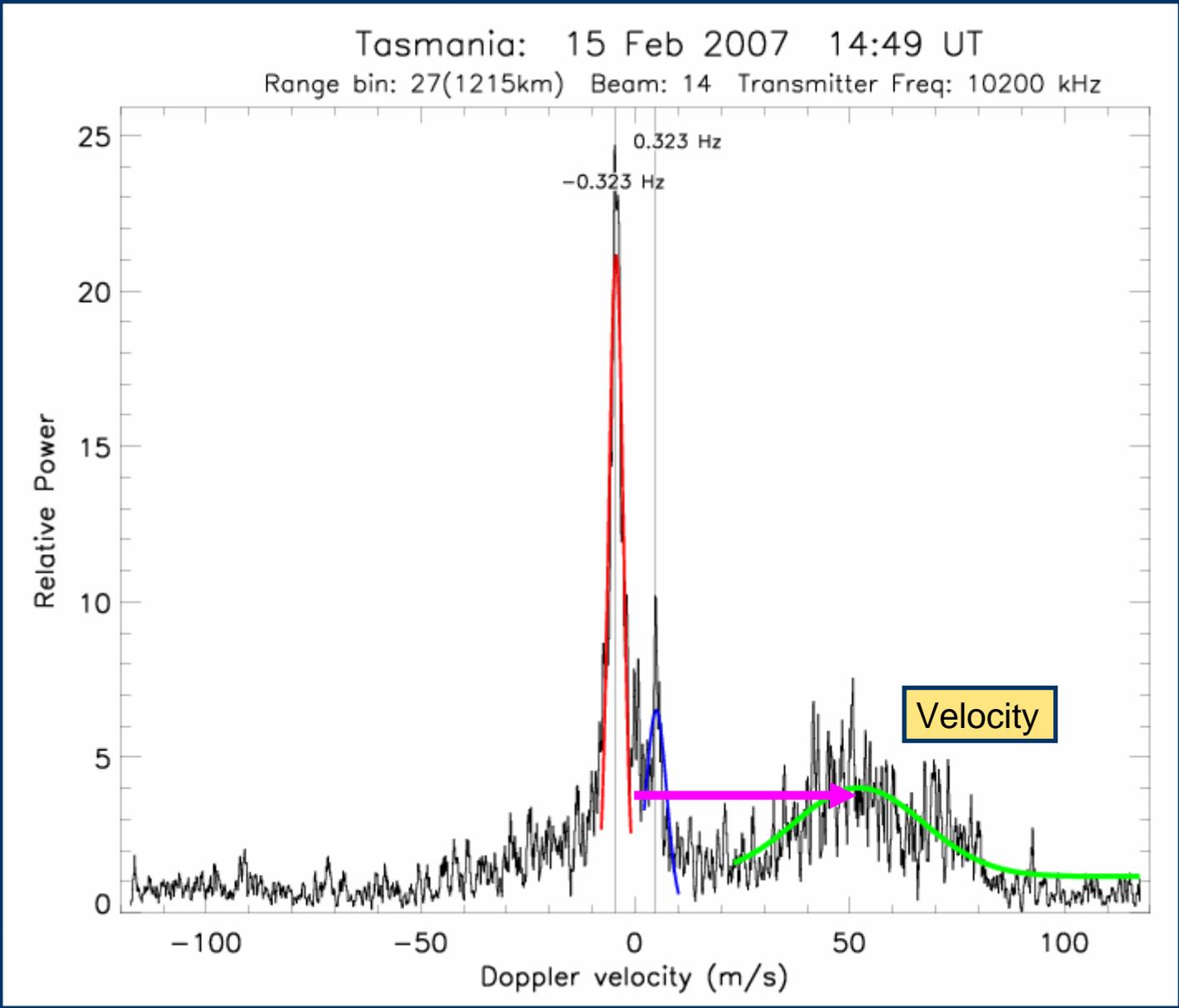
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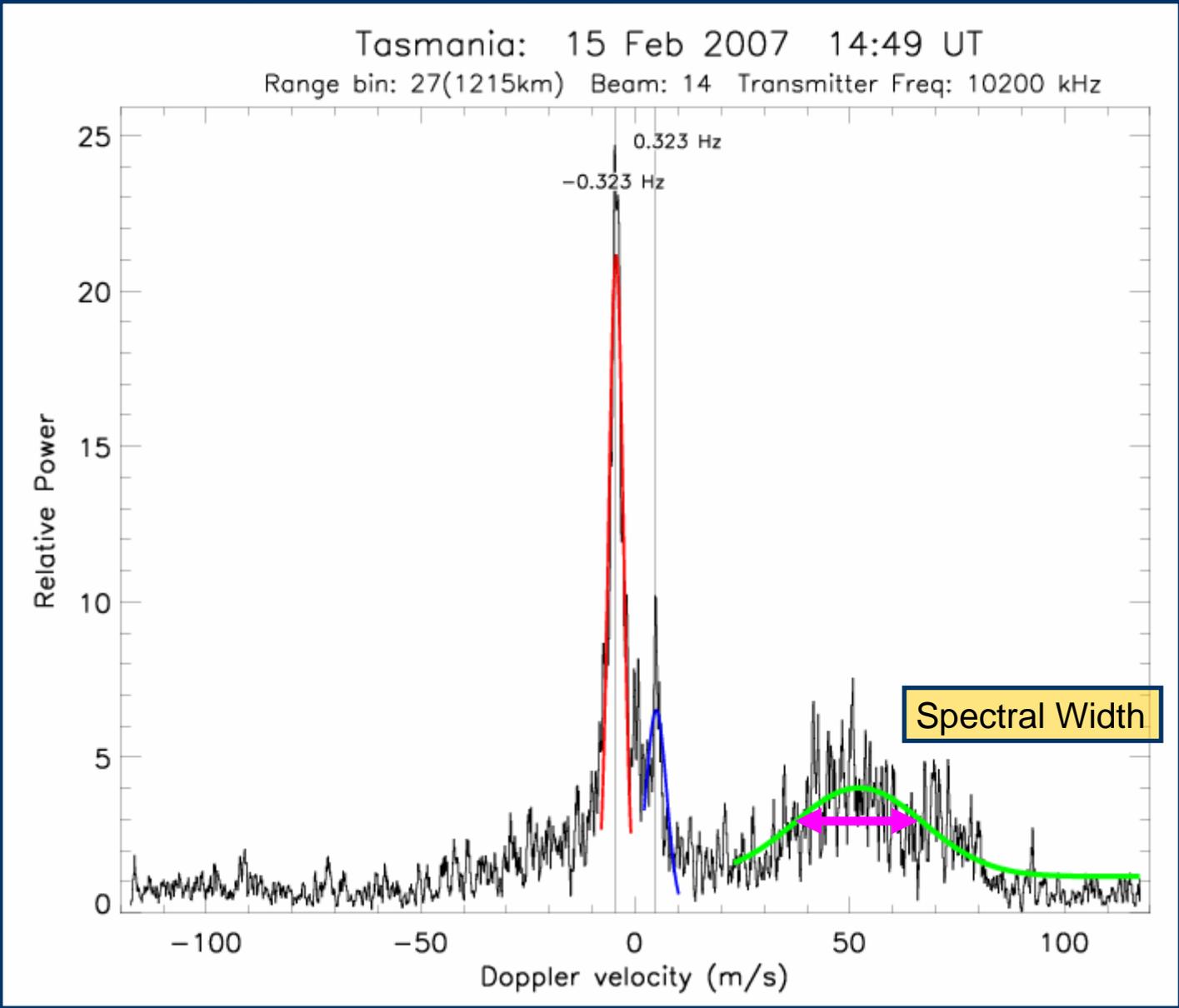
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FFT Generated Doppler Spectrum



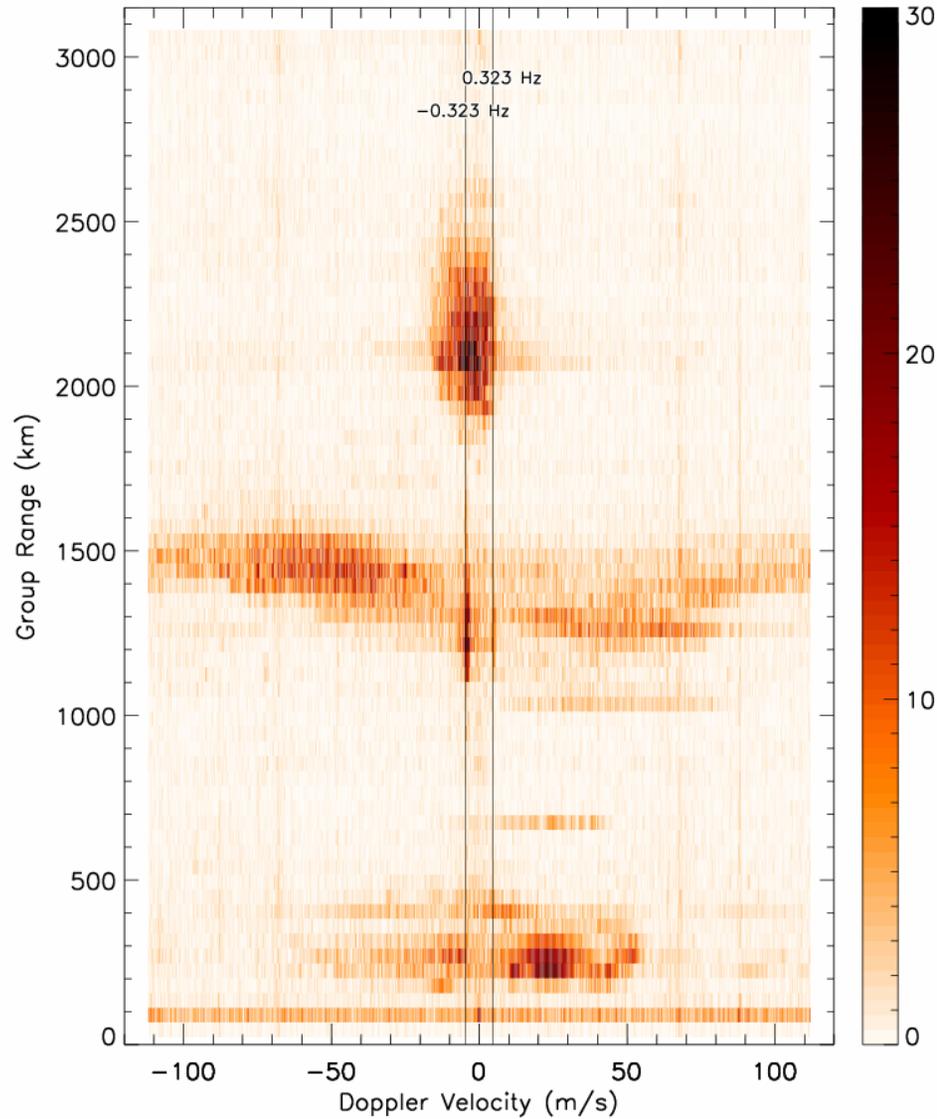
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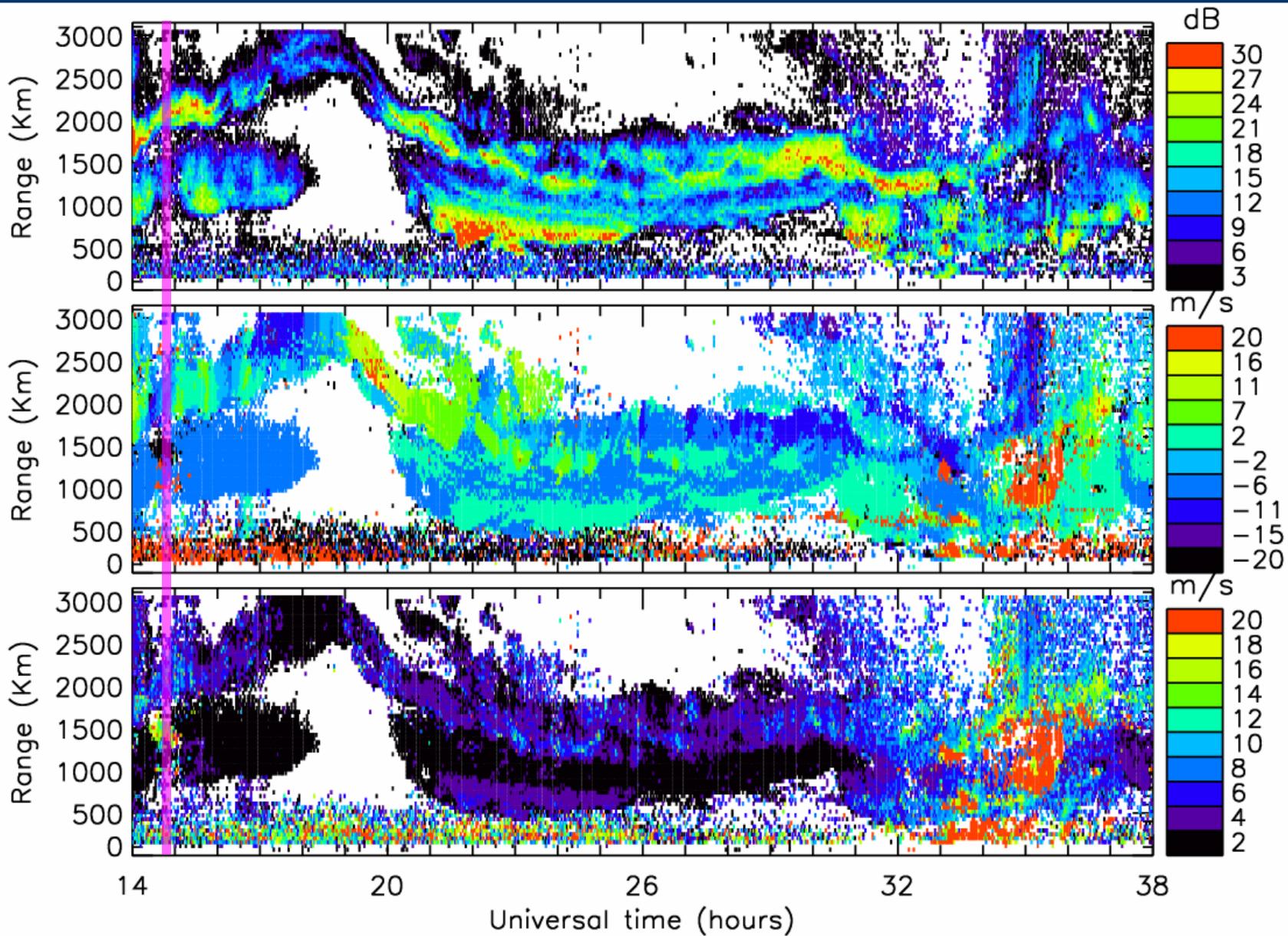
Range Doppler Map

Tasmania: 15 Feb 2007 14:49 UT

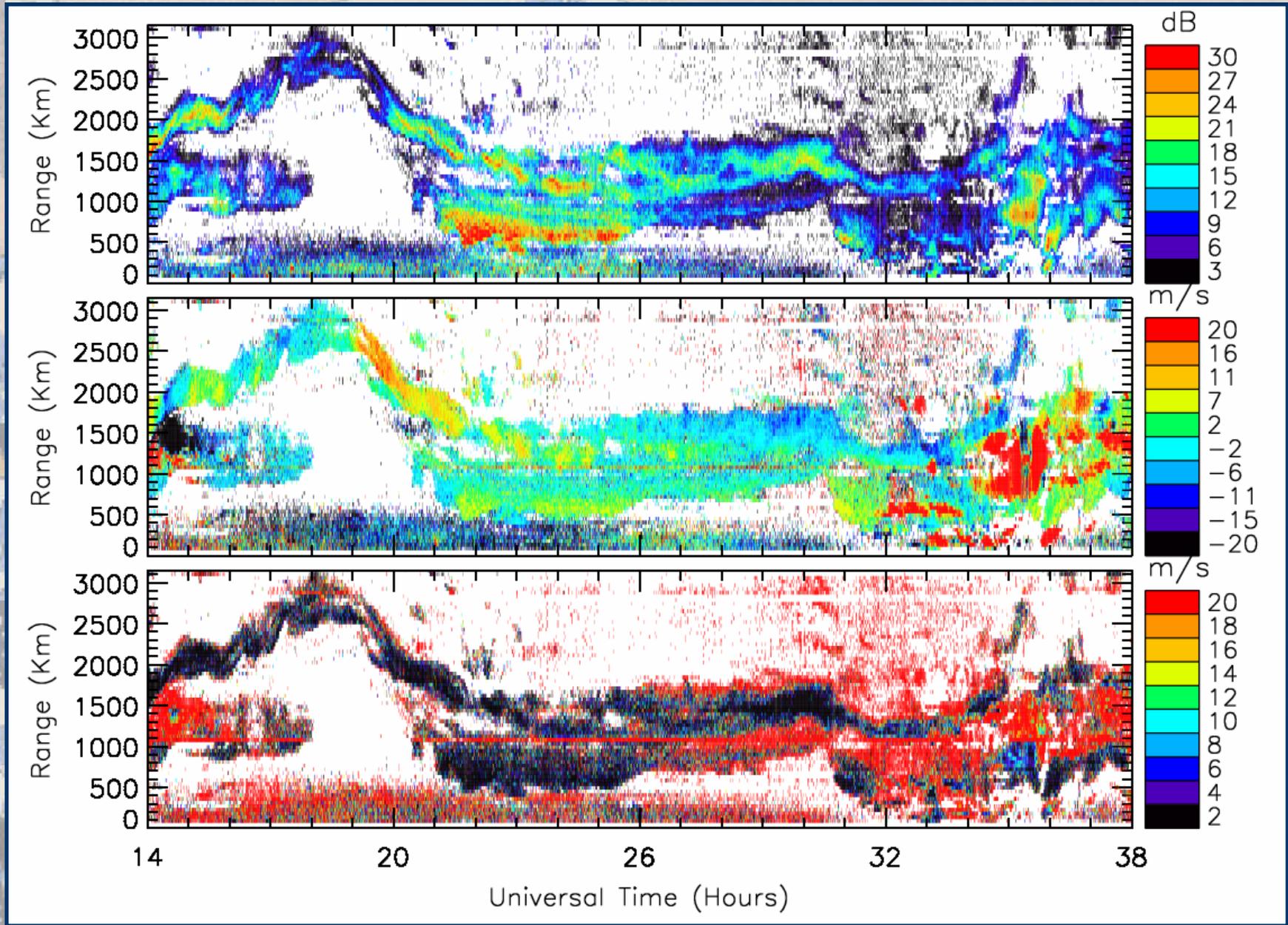
Beam:14 Transmitter Freq: 10200 kHz



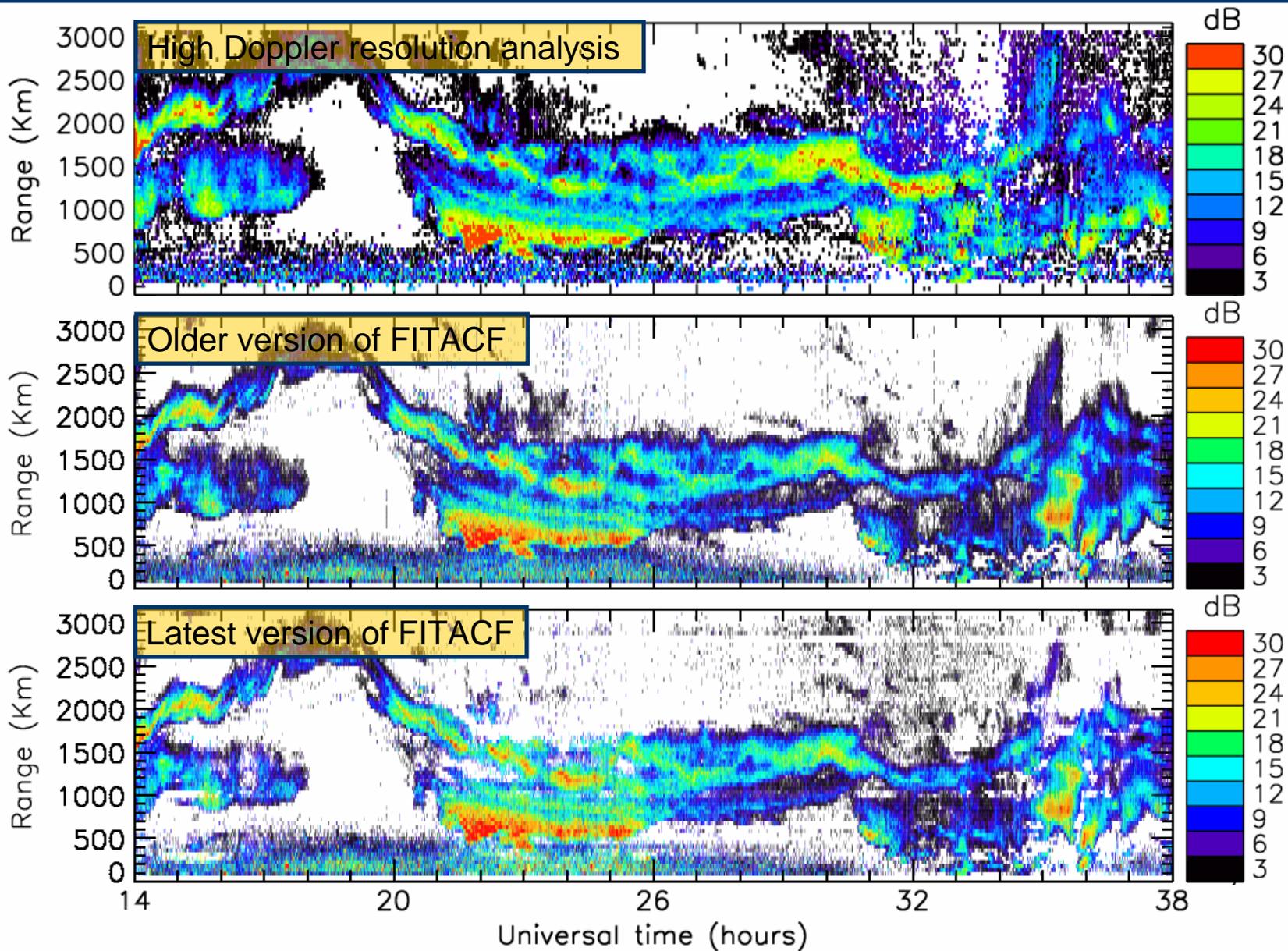
High Doppler Resolution Summary Plot



FITACF Generated Summary Plot



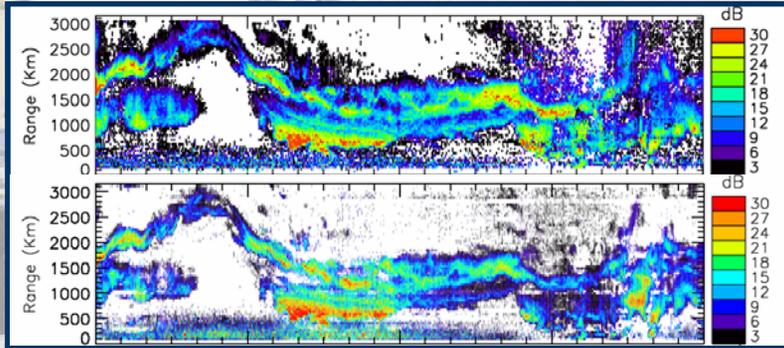
Summary Plot Comparisons



Range-Time Cell Comparisons

Sea Scatter

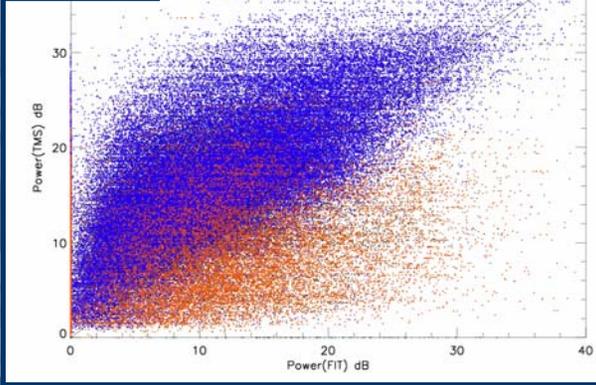
Ionospheric Scatter



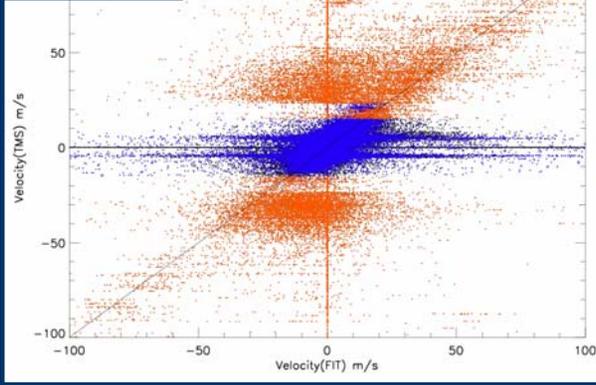
HIGH-DRA

FITACF

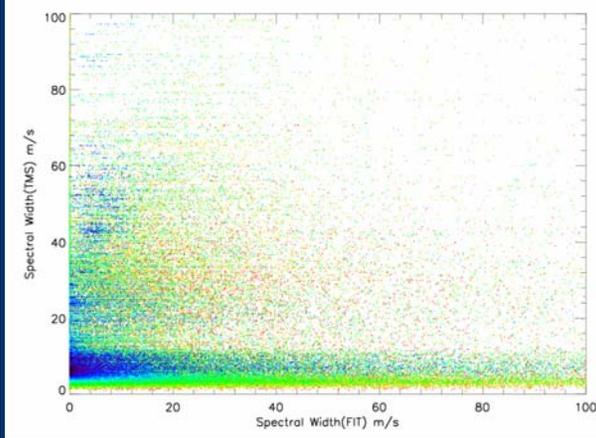
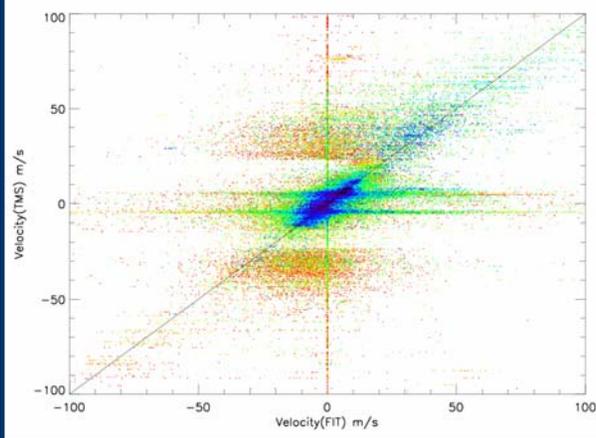
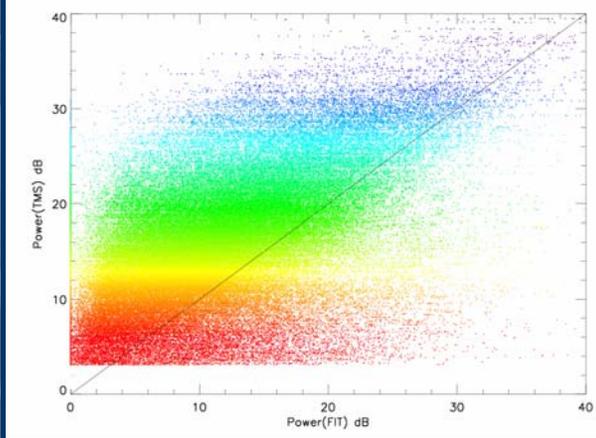
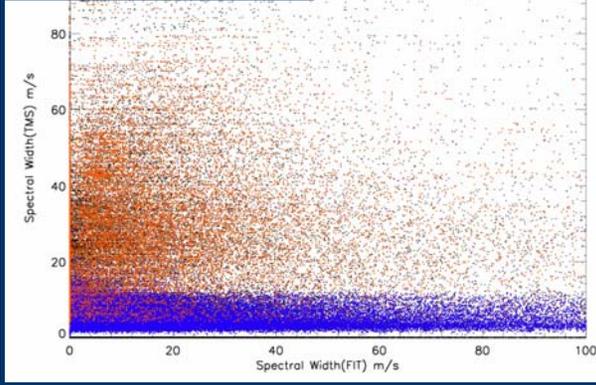
Power



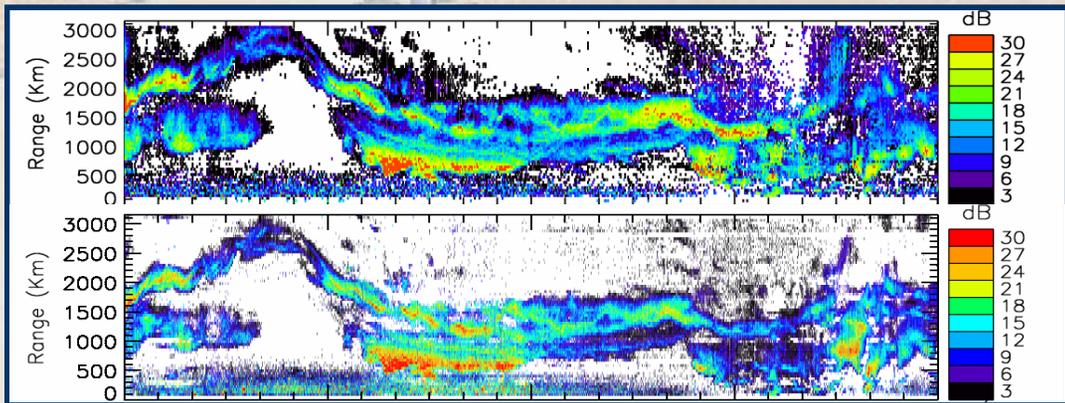
Velocity



Spectral Width



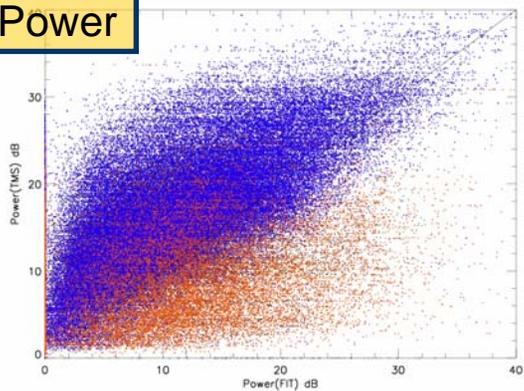
Range-Time Cell Comparisons



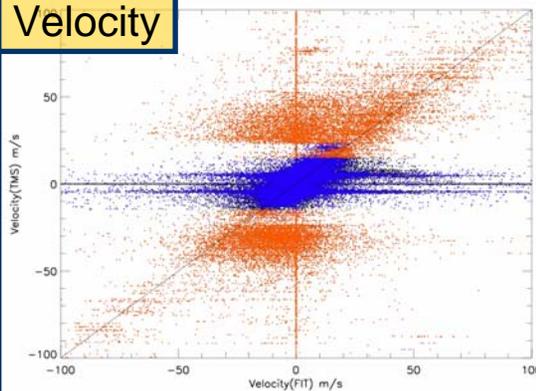
HIGH-DRA

FITACF

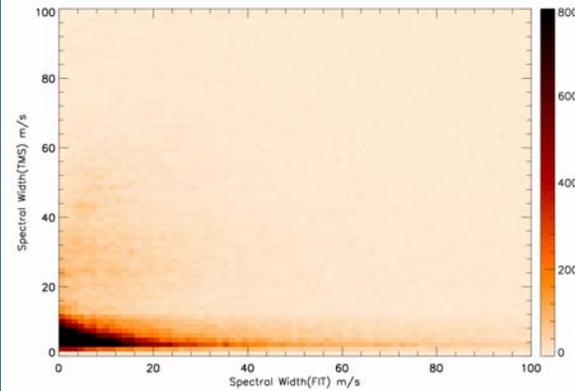
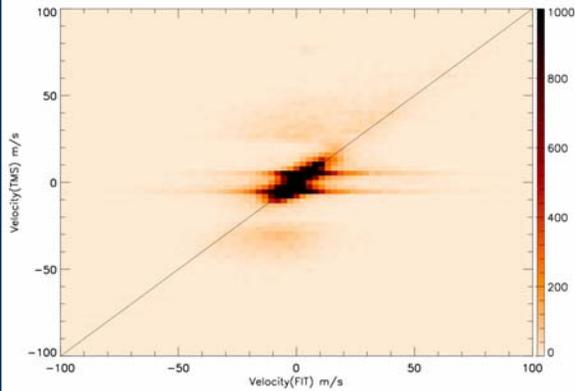
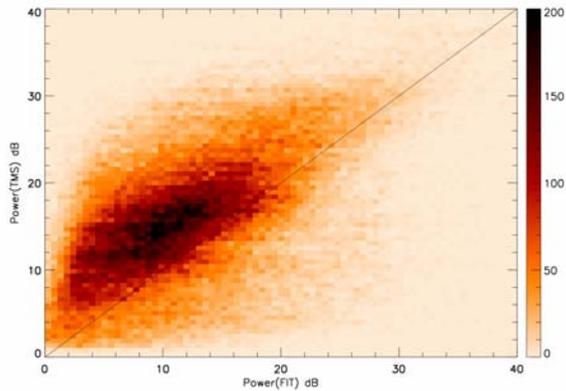
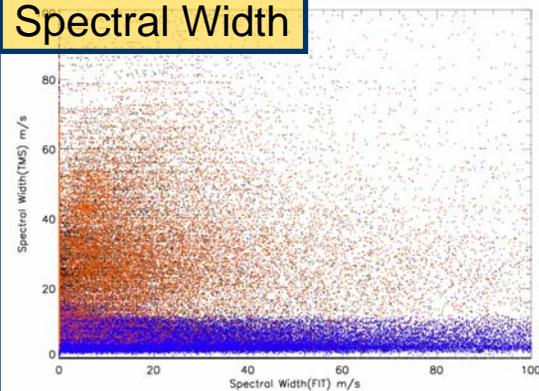
Power



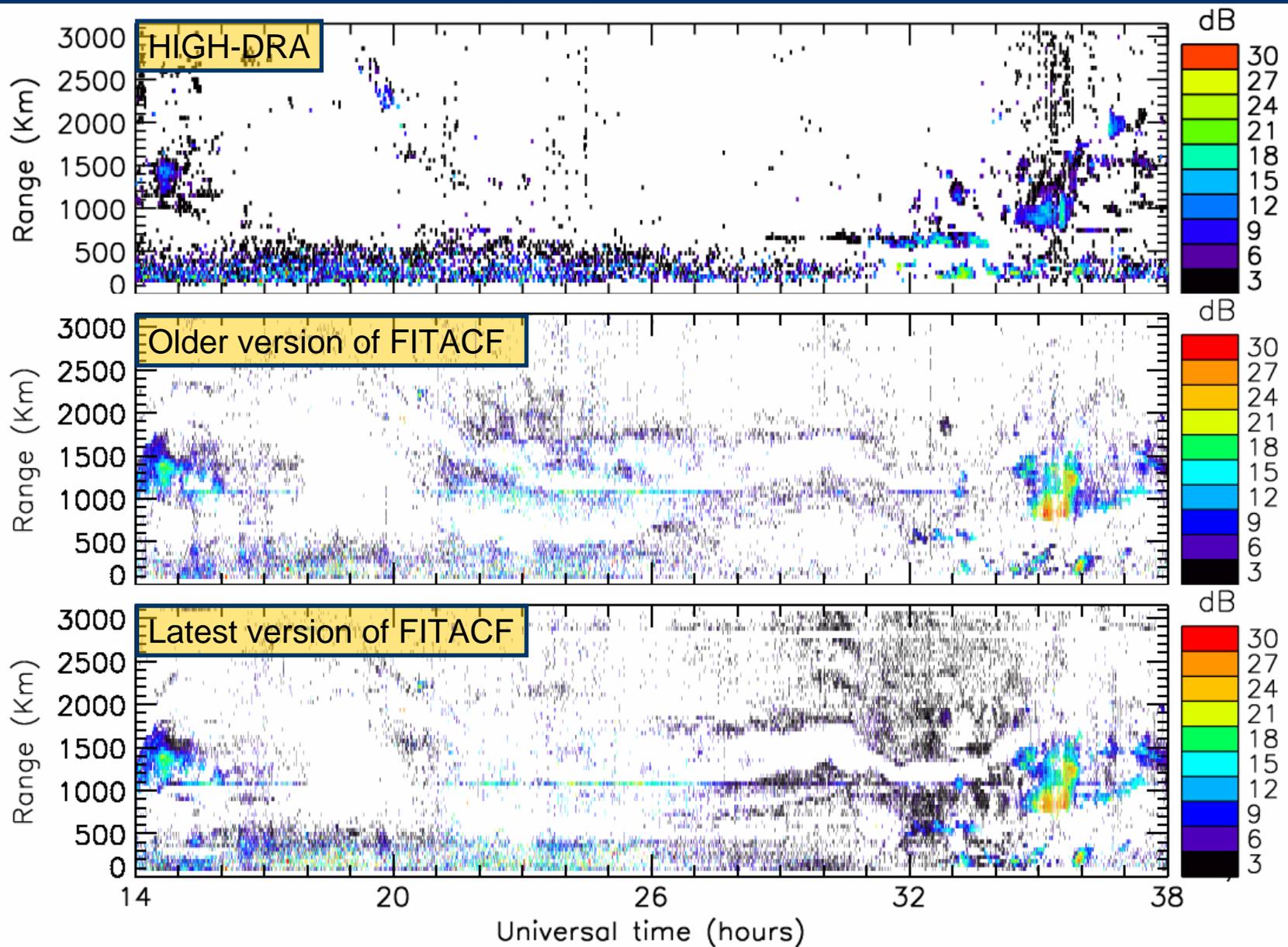
Velocity



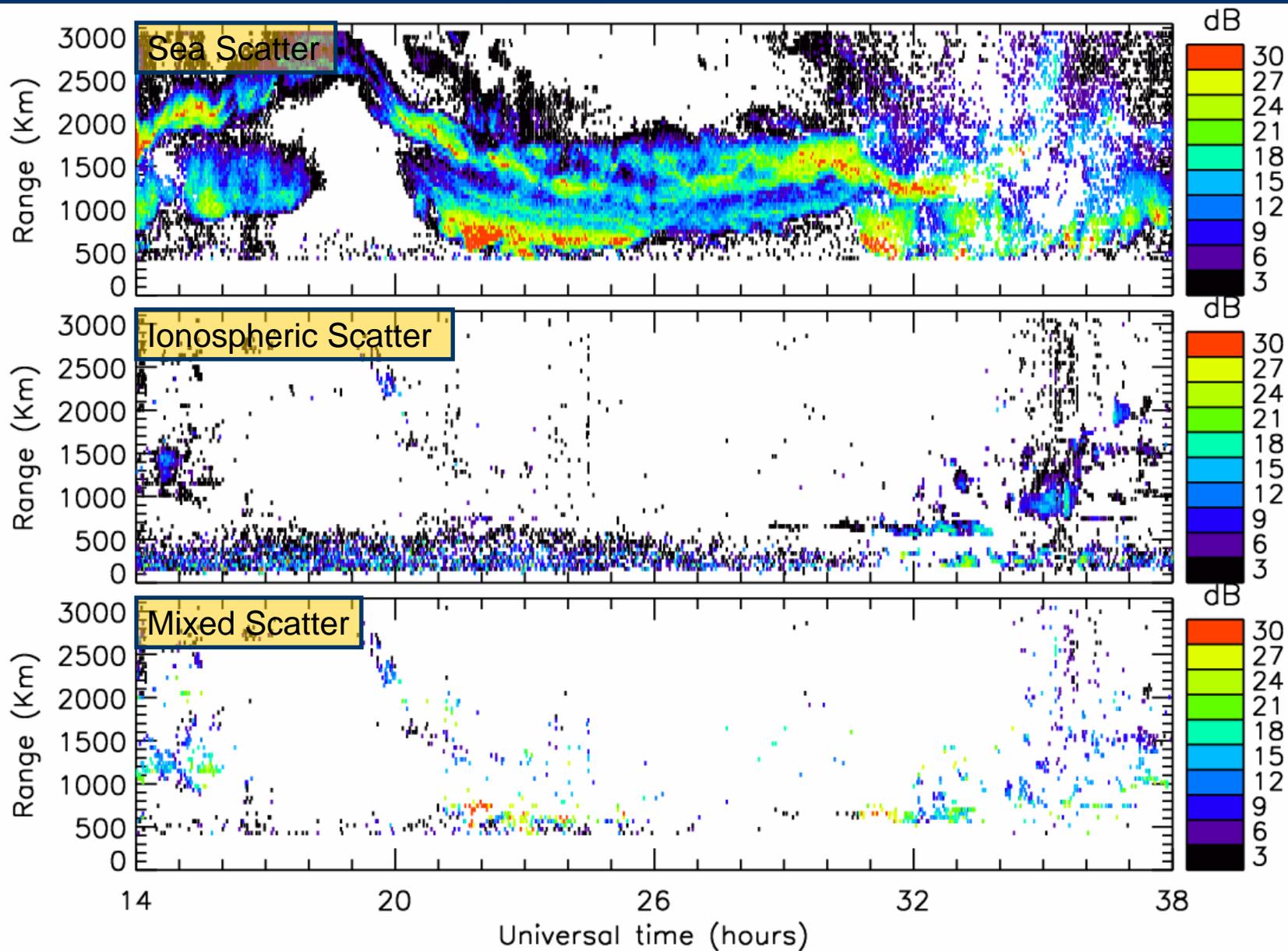
Spectral Width



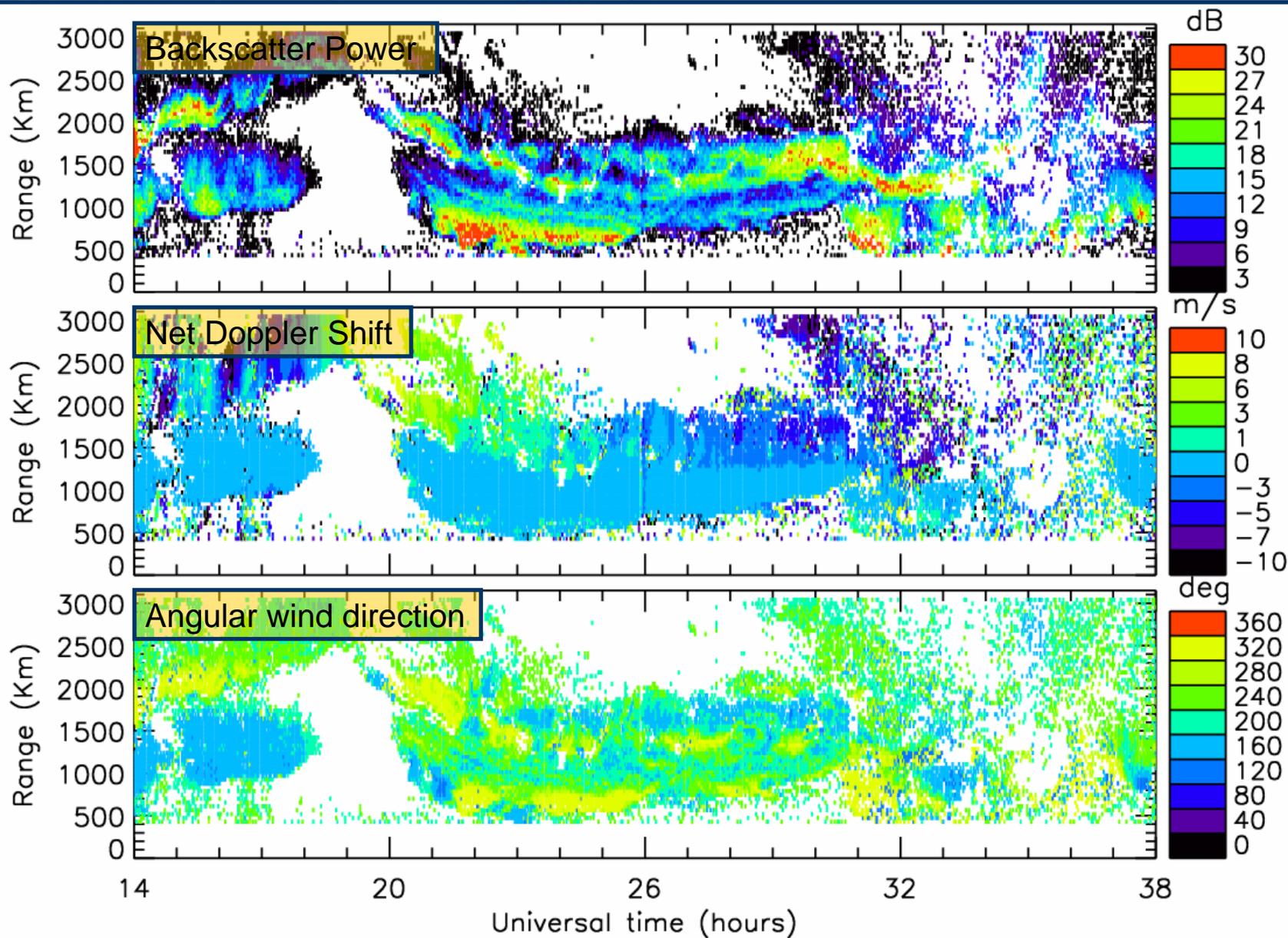
Summary Plot Comparisons of Ionospheric Scatter



High Doppler Resolution Scatter Type Comparisons



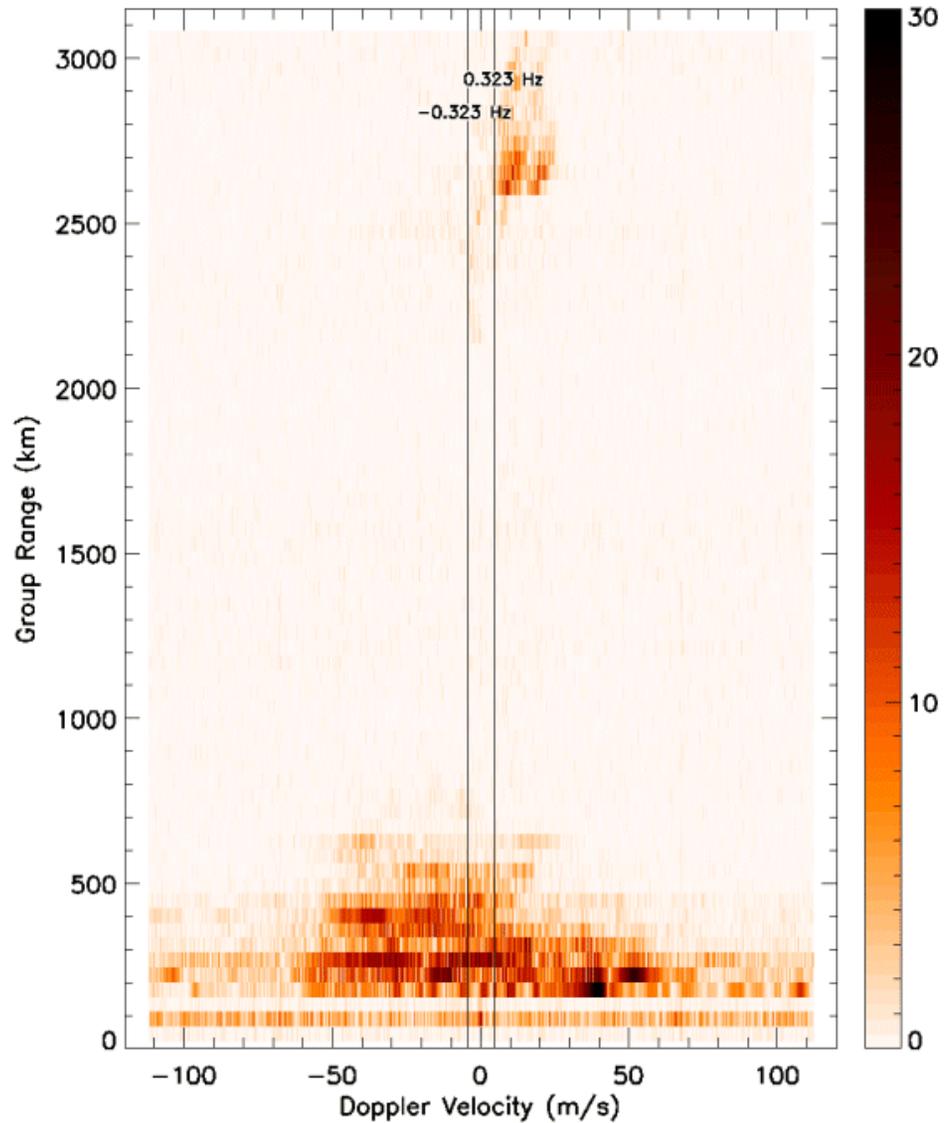
High Doppler Resolution Summary Plot of Unique Parameters



Range Doppler Map Movie

Tasmania: 15 Feb 2007 19:07 UT

Beam:14 Transmitter Freq: 10195 kHz



Summary

- More scatter is detected with the HIGH-DRA approach
- HIGH-DRA is able to resolve mixed mode scatter
- Net Doppler shifts and angular wind directions can be obtained with HIGH-DRA
- HIGH-DRA facilitates the identification of different scatter types

Acknowledgements

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