Welcome and Introduction

2016 Annual Meeting & Technical Review

Banff AB Canada
Nov 30, Dec 1-2, 2016

Special Thanks

Schlumberger (Andreas!)
Icebreaker & Part of Banquet

Announcements

Laura Baird
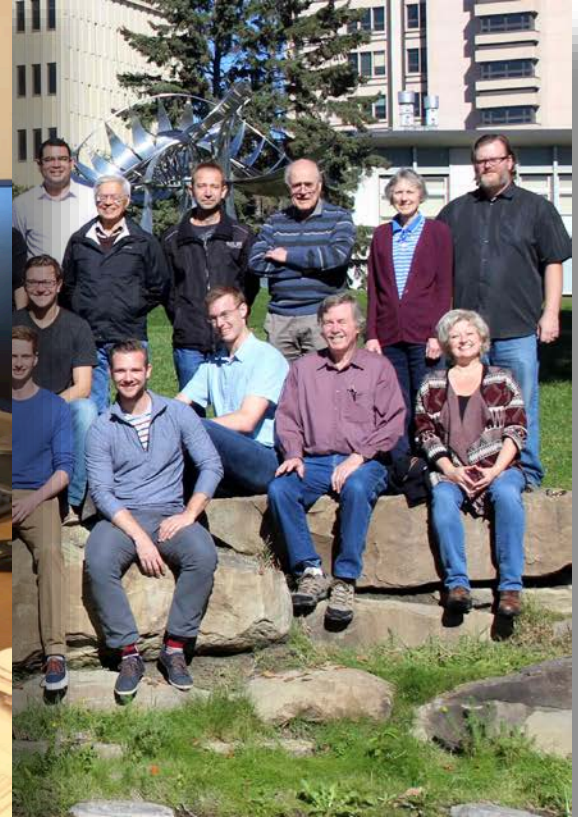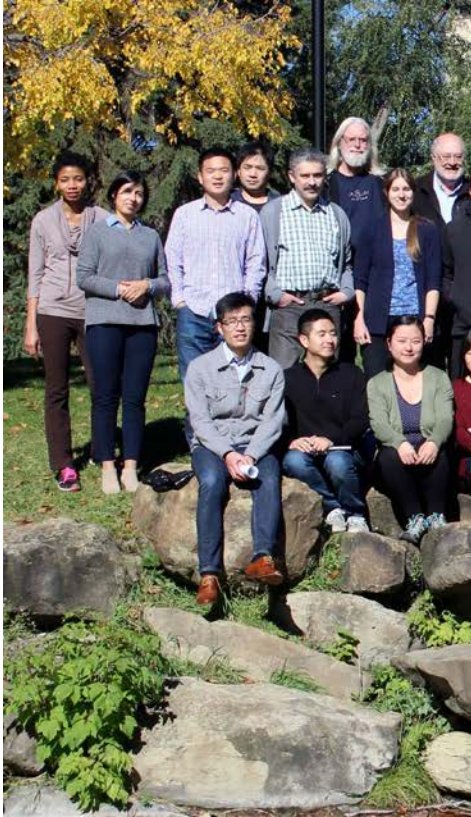
Joe Wong

Pat Daley

# Announcements

Dr. Babatunde Arenrin

Announcements

Newly joined: **Professor Daniel Trad** (chair and CREWES Associate Director). New research initiatives in depth imaging, least squares imaging, RTM, GPU/CPU and computational methods, 5D interpolation / denoising, FWI.

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Research Themes
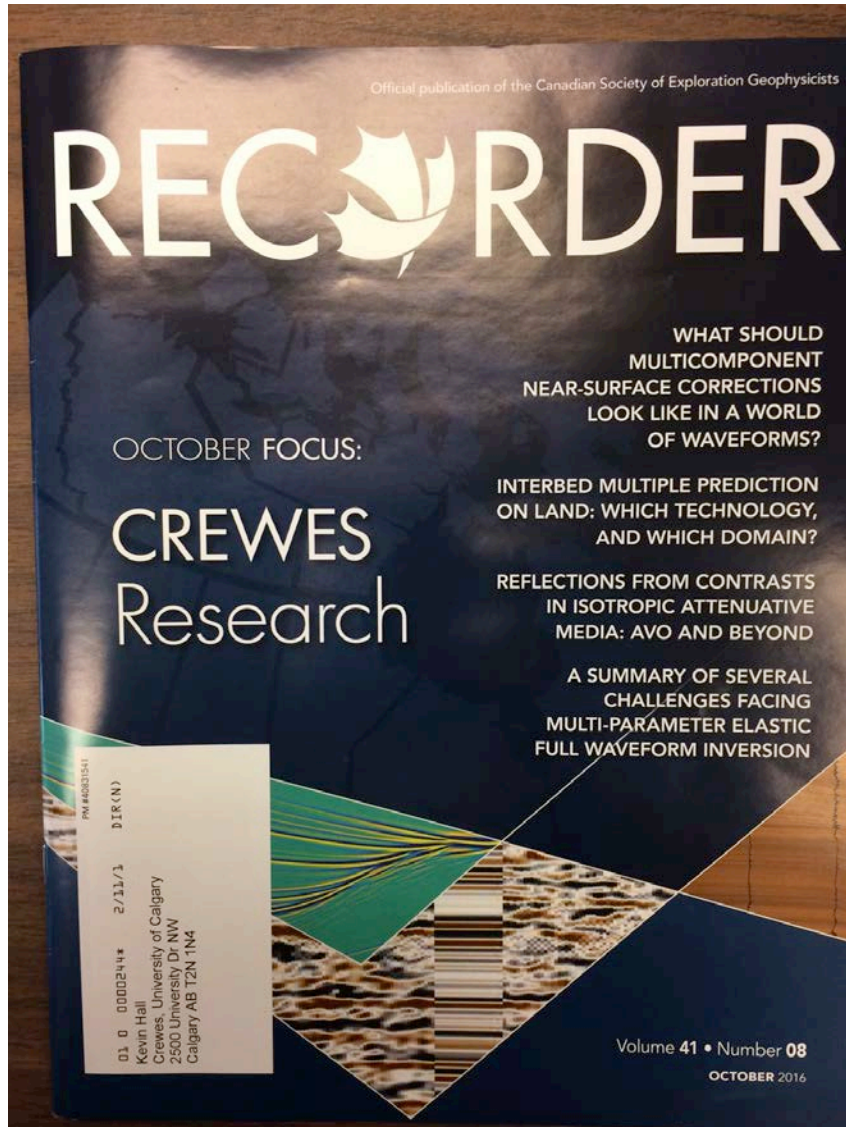
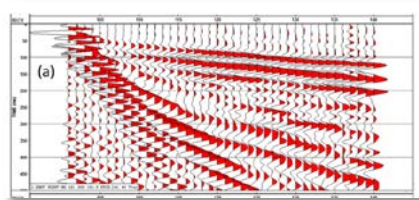Wave field consistent processing

Know your residuals!

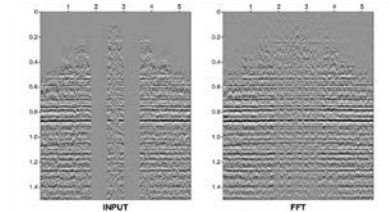Seismic amplitudes and the completeness of physics model

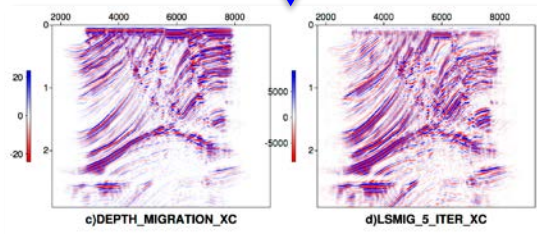FWI in the reservoir – beyond velocity model building
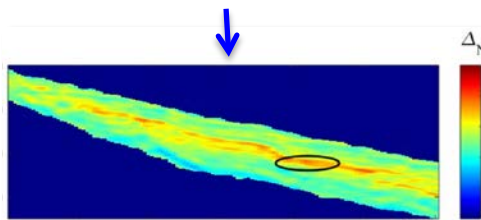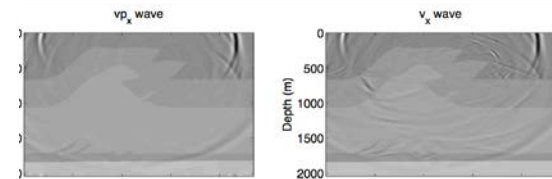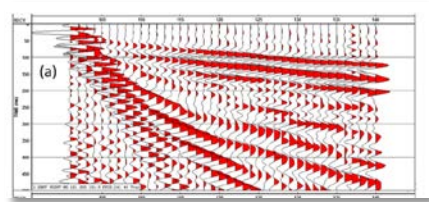
Instrumentation

Acquisition

Processing

Imaging
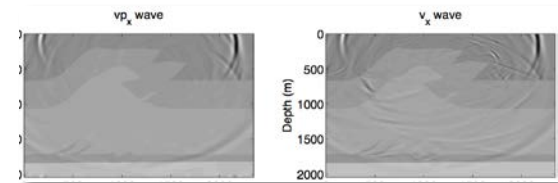
Modeling
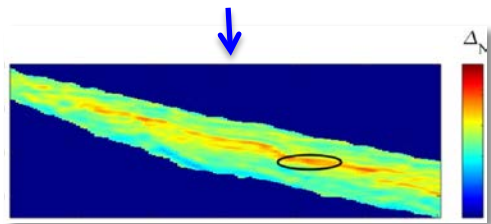
Amplitudes

Instrumentation
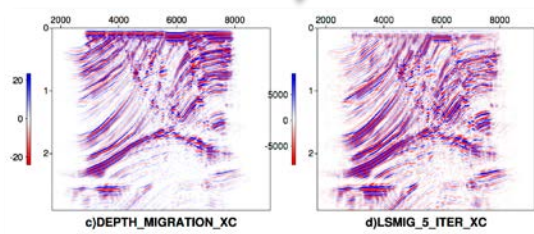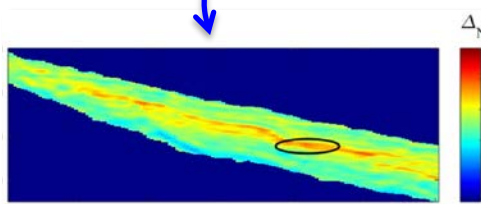
Acquisition

Processing

c)DEPTH_MIGRATION_XC   d)LSMIG_5_ITER_XC

Imaging

vp_x wave v_x wave

Modeling

Δ_N

Amplitudes

Instrumentation

Acquisition

Processing

1-parameter FWI

vp$_x$ wave

v$_x$ wave

Modeling

c)DEPTH_MIGRATION_XC

d)LSMIG_5_ITER_XC

Imaging

Δ_N

Amplitudes

Instrumentation

Acquisition

Processing

1-parameter FWI

Imaging

Modeling

Multiparameter FWI

Amplitudes
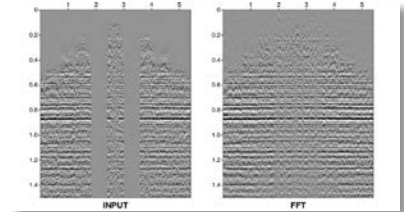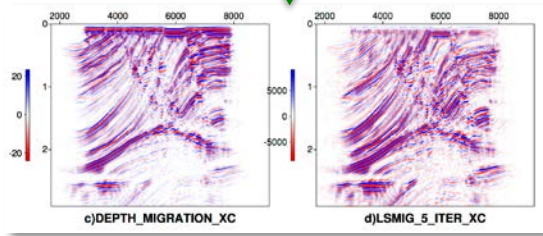
Instrumentation

Acquisition

Processing

1-parameter FWI
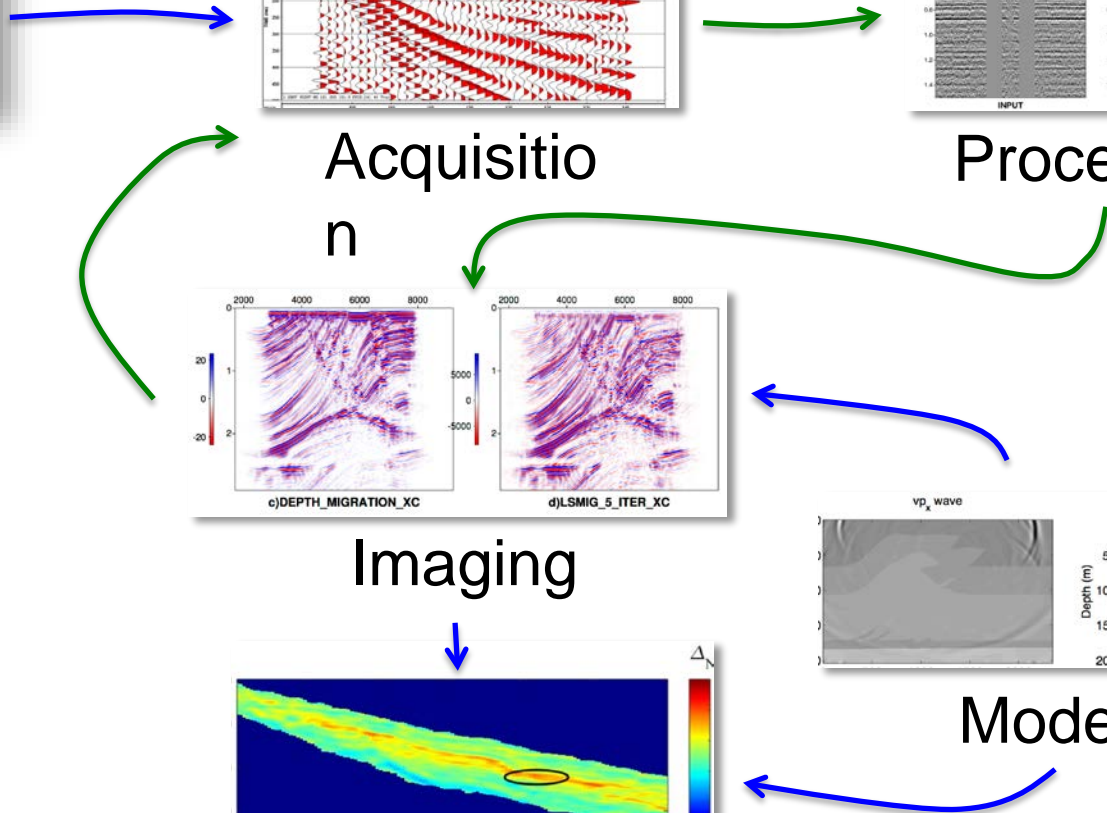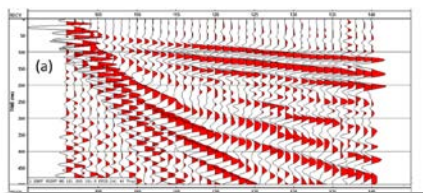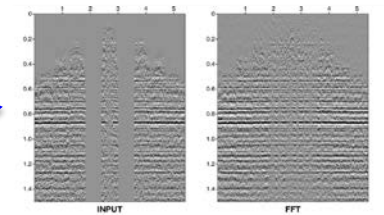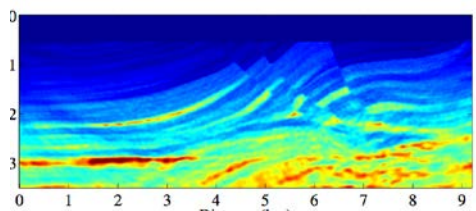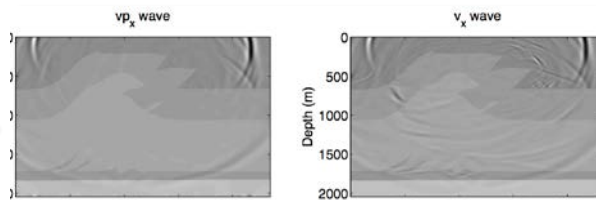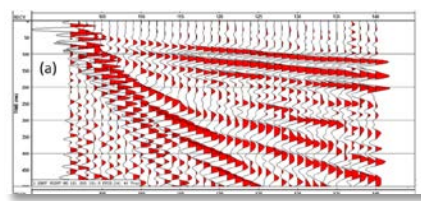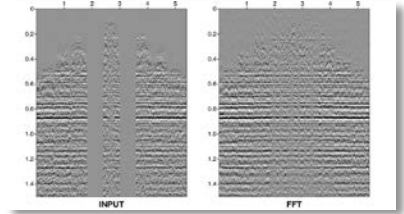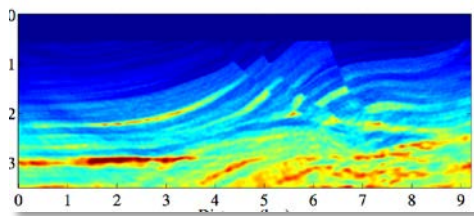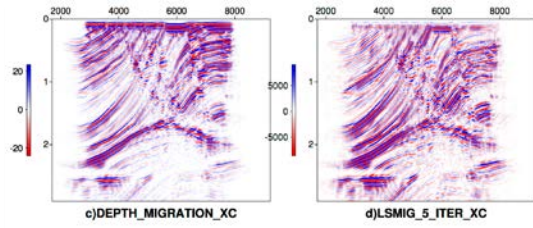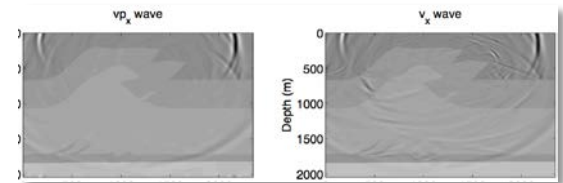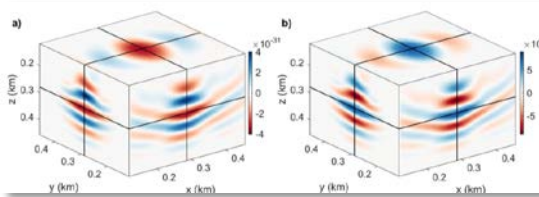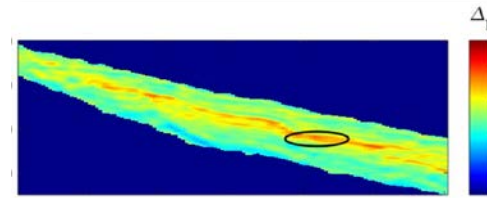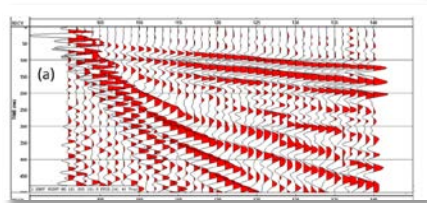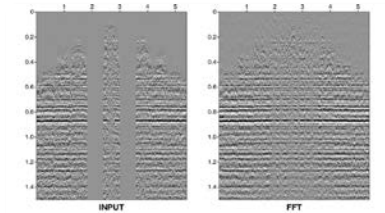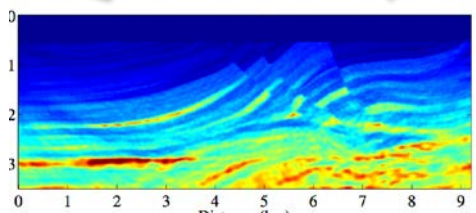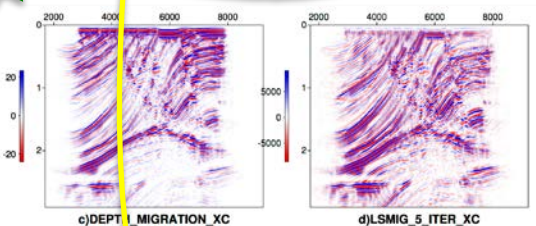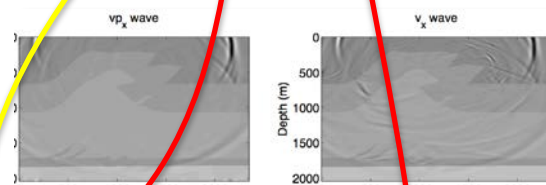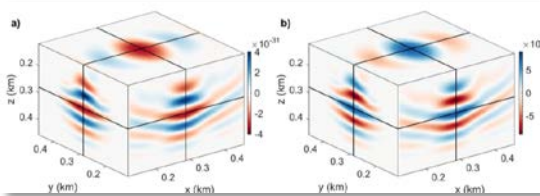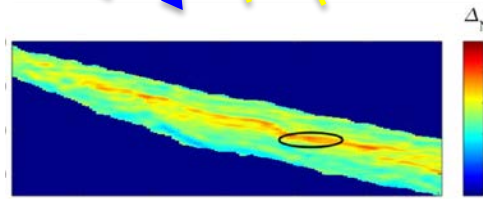
Imaging
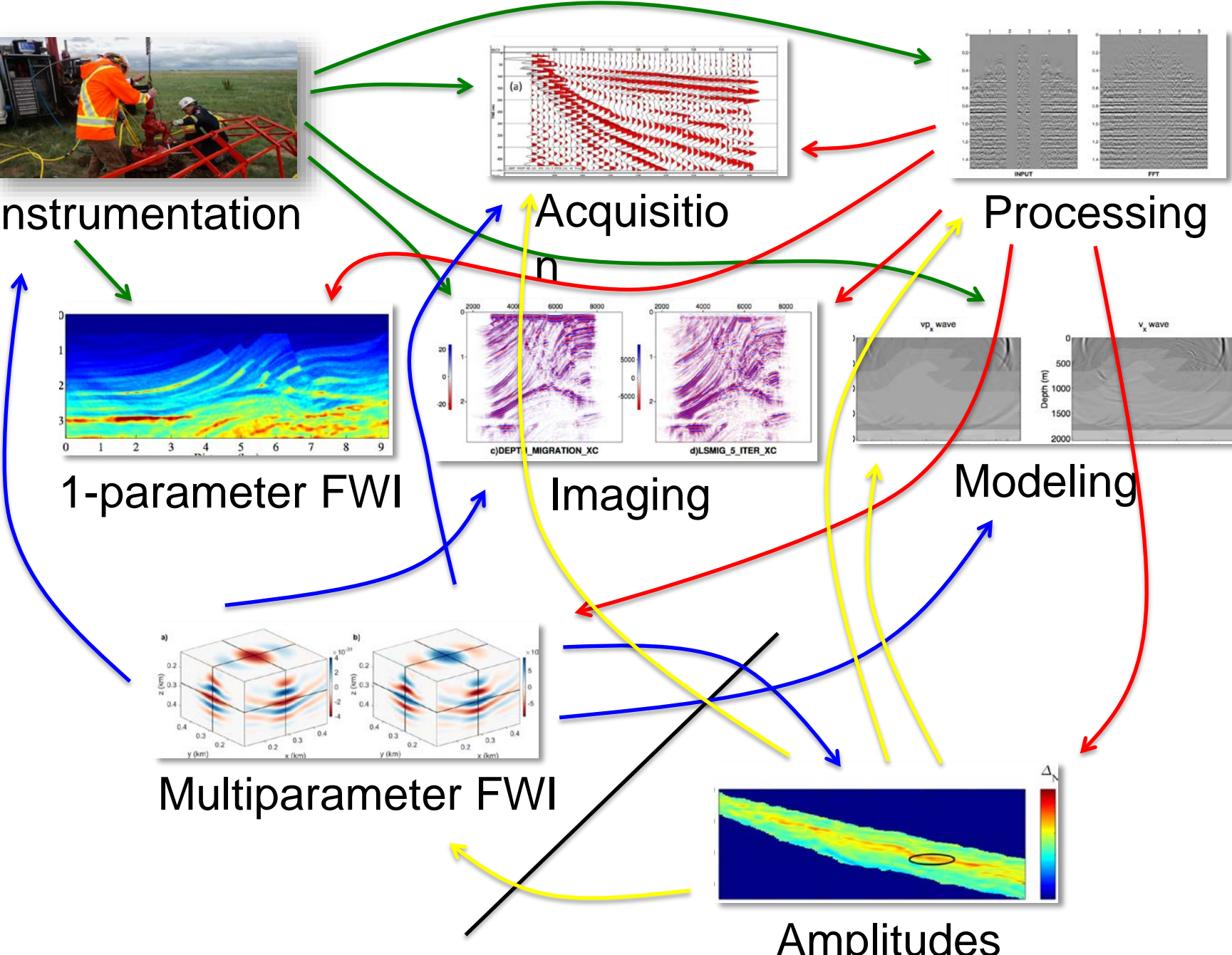
Modeling

Multiparameter FWI

Amplitudes

Today and Tomorrow

Thursday Dec 1

Time	Session Moderator	Title	Speaker	Abstract Page #
8:15	**Session 1** Kris Innanen	Welcome, New developments at CREWES	Kris Innanen	
8:30	Michelle Montano*	3C from helical fibre: tools for estimation and appraisal	Kris Innanen	32
8:50		Always finding faults: New Zealand 2016	Kevin Hall	29
9:10		The promise of 3C-3D for Alberta oil sands	Bobby Gunning	28
9:30		Walkaway S-wave VSP at Priddis and update on DAS fibre installation at Brooks	Don Lawton	41
9:50		*Break*		
10:20	**Session 2** Daniel Trad	Five-dimensional interpolation: exploring three different Fourier operators	Daniel Trad	74
10:40	Tim Cary*	Q and cumulative attenuation in VSP data	Gary Margrave	51
11:00		Processing ground roll to analyze Rayleigh dispersion	Andrew Mills	54
11:20		PS-wave traveltime difference inversion for near-surface characterization in the tau-p domain	Raul Cova	13
11:40		Internal multiple prediction: high resolution and 3C	Jian Sun	71
12:00		*Break – Lunch*		
1:00	**Session 3** Gary Margrave	Rock physics and time-lapse seismic analysis of thermal heavy oil production	Evan Mutual	58
1:20	Nadine Igonin*	VVAZ analysis of 3D prestack seismic data	Khaled Al Dulaijan	2
1:40		Azimuthal anisotropy in elastic and equivalent media	Sitamai Ajiduah	1
2:00		Fluid terms and fracture weaknesses from AVAz	Huaizhen Chen	10
2:20		*Break*		
2:40		Feasibility study of time-lapse monitoring of CO_2 sequestration	Marie Macquet	48
3:00		Seismic interpretation of 4D data from the Brooks FRS	Davood Nowroozi	60
3:20		VSP azimuthal travel time analysis at the Field Research Station near Brooks, AB	Adriana Gordon	25
3:40		Geostatistical simulation with multi-variable co-kriging	Hong (Kiki) Xu	81
4:00 5:30	**Session 4**	Posters		

Friday Dec 2

Time	Session Moderator	Title	Speaker	Abstract Page #
8:15	**Session 5** Kris Innanen	SH waves and rays in FWI	Larry Lines	45
8:35	Andy Iverson*	FWI sensitivities in transversely isotropic anelastic media	Shahpoor Moradi	56
8:55		Parameter resolution kernels in elastic/anisotropic FWI	Wenyong Pan	64
9:15		Viscoacoustic FWI and the problem of model type	Scott Keating	36
9:35		Formulation and testing of nonlinear FWI	Yu Geng	24
9:55		*Break*		
10:25		Evaluating the potential of RWI	Khalid Almuteri	5
10:45		Next steps in IMMI: the role of well-calibration in the context of high geological complexity	Sergio Romahn	66
11:05		PSTD wave field simulation and gradient calculations for anisotropic FWI	Junxiao Li	44
11:25	**Session 6** Larry Lines	Nuts and bolts of least-squares Kirchhoff migration	Daniel Trad	75
11:45	Tyler Spackman*	*Break - Lunch*		
1:00		Model-based near surface corrections for depth imaging	Dennis Ellison	21
1:20	**Session 7** Don Lawton	Grid algebra in finite difference methods	Michael Lamoureux	39
1:40		2D viscoacoustic finite difference modelling and RTM	Ali Fathalian	22
2:00		Jean Morlet and the continuous wavelet transform	Brian Russell	68
2:20		*Break*		
2:40		Multiantenna GPR data acquisition design	Raul Cova	12
3:00		Information measures for intrinsic and stratigraphic Q	Siming Lv	47
3:20		Predicting oil-sands viscosity with well-logs	Eric Rops	67
3:40		Wrap up		

Acquisition	Processing	Fluids, fractures & viscosities	Posters	FWI	Imaging/VSP	Modeling & prediction

Poster session code demos

Internal Multiple Prediction

Jian Sun
Matt Eaid[*]
Scott Keating
Penny Pan
Melissa Hernandez

1D frequency domain
1D time domain
1.5D f-K domain
1.5D t-K domain
1.5D τ-p
L_1 adaptive subtraction

Full waveform inversion

Wenyong Pan[*]
Yu Geng
Scott Keating

2D acoustic 1 parameter
Frequency domain
2nd order optimization
methods

[*]Presenter