

Full Waveform Inversion - FWI-

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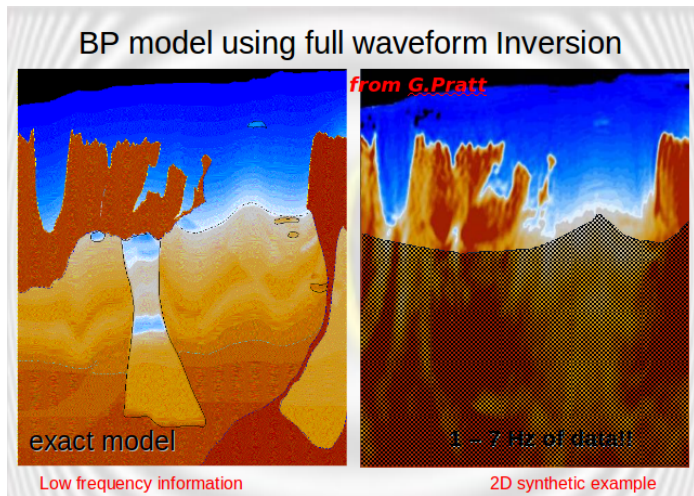
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ISTerre, Université Joseph Fourier, Grenoble, France
SEISCOPE Consortium

12th International Congress of the Brazilian Geophysical Society
Short Course on Full Waveform Inversion
15 August 2011

Full Waveform Inversion : re-birth

Sparse frequency formulation



Blind test performed by G. Pratt on synthetic data provided by BP

Late nineties : the rebirth of FWI initiated by A. Tarantola in the eighties

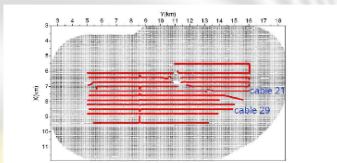
Full Waveform Inversion : Real application in 3D

Sparse frequency inversion but forward modeling in time

Industrial Context

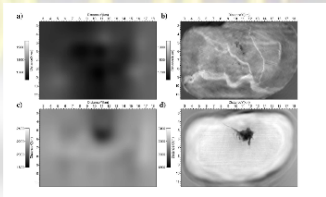
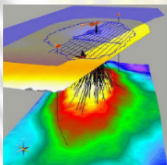
The present-day scientific challenges

Valhall oil field in North Sea (Norway BP)



More than 55000 sources and 2700 nodes (OBS)

3D high-resolution imaging



(Sirgue et al, First break, 2010)

Acoustic FWI on real data from Valhall field (Sirgue et al, 2010)

Outline of this short course

Full Waveform Inversion

Morning session

- ① Full Waveform Inversion : little bit of theory (JV)
- ② Full Waveform Inversion : practical handling (RB)

Afternoon session

- ① Full Waveform Inversion : elastic case, SEG/EAGE overthrust model (JV)
- ② Full Waveform Inversion : selection of the misfit function (RB)
- ③ Full Waveform Inversion : anisotropic impact, Valhall case (RB)