

Accepted Manuscript

Seismic imaging of simultaneous-source data using constrained least-squares reverse time migration

Yangkang Chen, Jiang Yuan, Shaohuan Zu, Shan Qu, Shuwei Gan

PII: S0926-9851(15)00011-7
DOI: doi: [10.1016/j.jappgeo.2015.01.004](https://doi.org/10.1016/j.jappgeo.2015.01.004)
Reference: APPGEO 2667

To appear in: *Journal of Applied Geophysics*

Received date: 16 December 2014
Revised date: 5 January 2015
Accepted date: 6 January 2015



Please cite this article as: Chen, Yangkang, Yuan, Jiang, Zu, Shaohuan, Qu, Shan, Gan, Shuwei, Seismic imaging of simultaneous-source data using constrained least-squares reverse time migration, *Journal of Applied Geophysics* (2015), doi: [10.1016/j.jappgeo.2015.01.004](https://doi.org/10.1016/j.jappgeo.2015.01.004)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Seismic imaging of simultaneous-source data using constrained least-squares reverse time migration

Wed Jan 07 16:26:46 2015

, Yangkang Chen[1], Jiang Yuan[2], Shaohuan Zu[2], Shan Qu[2] and Shuwei Gan[2] [1]Bureau of Economic Geology

John A. and Katherine G. Jackson School of Geosciences

The University of Texas at Austin

University Station, Box X

Austin, TX 78713-8924

Email: ykchen@utexas.edu

[2] State Key Laboratory of Petroleum Resources and Prospecting

China University of Petroleum

Fuxue Road 18th

Beijing, China, 102200

Chen et al. Simultaneous-source data imaging

Simultaneous-source acquisition can help obtain better-sampled seismic data with a tremendously faster efficiency. However, the interference caused between simultaneous sources will cause strong artifacts in the migrated image. We propose to directly migrate the blended data without deblending. We treat the imaging for blended seismic data as an least-squares inversion problem, and use preconditioned conjugate gradient algorithm to iteratively solve it. The constraining operator is chosen as the structural smoothing operator, which helps to smooth the seismic image along the local structure. Compared with other available approaches, the proposed approach can obtain a true-amplitude and much cleaner image.

1 Keywords

Simultaneous-source acquisition, least-squares reverse time migration (LSRTM), constrained LSRTM, preconditioned conjugate gradient

2 Introduction

Simultaneous-source acquisition allows more than one sources shot at the meantime regardless of the interference between each other. It has attracted much attention from the industry because it can help tremendously reduce the acquisition cost and improve the quality of the acquired seismic data [1], which intrigues an extensive research interest from the academia [4].

There are two main ways to deal with simultaneous-source data. One is by using a first-separate and second-process strategy [13], [5], which is also known as "deblending" [8]. Another approach is by imaging and inversion directly on the blended simultaneous-source data [15], [11], [7], [16], [3]. Deblending has achieved convincing results with either numerically blended data or field blended data [18], [2], [14], [6]. However, successful application of direct imaging on blended data has been barely reported. Researches on direct imaging on the blended

Download English Version:

<https://daneshyari.com/en/article/6447229>

Download Persian Version:

<https://daneshyari.com/article/6447229>

[Daneshyari.com](https://daneshyari.com)