

Poststack Inversion

Classic poststack inversion in frequency domain

User Manual

IPLAB

Copyright © 2016 IPLAB. All rights reserved.

This work contains the confidential and proprietary trade secrets of IPLAB and may not be copied or stored in an information retrieval system, transferred, used, distributed, translated or retransmitted in any form or by any means, electronic or mechanical, in whole or in part, without the express written permission of the copyright owner.

Table of Contents

1. Introduction	4
2. Start.....	5
3. Input parameters	6
4. Results	11

1. Introduction

The **Post stack Inversion** IP_Seis plug-in (version: 2016.1.0.0, release date: August 2016) can be used for poststack seismic inversion.

There are several options to use wavelet.

1. Use predefined wavelet.
2. Use statistical wavelet separate for every trace (Recommended option).
3. Coloured Inversion use exponent function like wavelet with alpha parameter to manage smoothing of the wavelet.

In addition, module included frequency-flattening option to extend low and high frequency for seismic cube.

2. Start

Start: Seismic Attributes->

Post stack Inversion

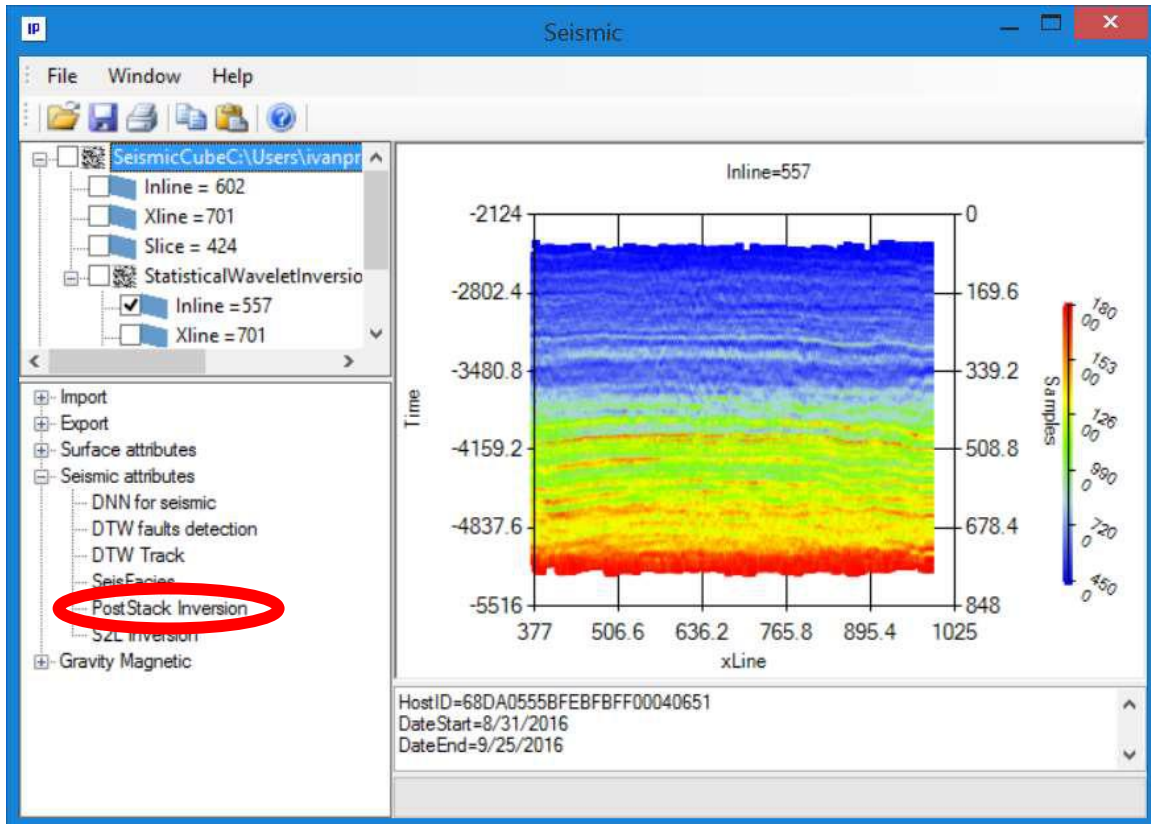


Figure 1: Project tree and programs tree to start **Post stack Inversion**

3. Input parameters

Different tab in the module define calculation options (Figure 2, Figure 3, Figure 4, Figure 5).

The screenshot shows a software window titled 'Simple_Inversion' with a standard Windows interface (minimize, maximize, close buttons). The main content area is titled 'Poststack Inversion (low frequency restoration)'. It features a 'Seismic cube' field with a file path 'C:\Users\ivanpriez\Desktop\Ivan\Vas\cube.segy'. Below this are four tabs: 'Poststack' (selected), 'Statistical wavelet', 'Coloured Inversion', and 'Frequency flattening'. The 'Poststack' tab contains several input fields: 'Wavelet' (empty), 'Tihonov Alpha' (0.01), 'Constant AI' (9000), 'Phase rotation' (0), and 'LowFreq Limit' (0). A 'Polygon' field is also present. Below the polygon field is a table with columns 'Use', 'Surface', 'Use', 'Constant', and 'shift +up/-down'. The table has two rows: 'Top' and 'Bottom'. The 'Top' row has 'Use' set to '-', 'Surface' set to 'null', 'Use' set to an unchecked checkbox, 'Constant' set to '0', and 'shift +up/-down' set to '0'. The 'Bottom' row has 'Use' set to '-', 'Surface' set to 'null', 'Use' set to an unchecked checkbox, 'Constant' set to '-100000', and 'shift +up/-down' set to '0'. At the bottom of the dialog are 'Calculate' and 'Cancel' buttons.

	Use	Surface	Use	Constant	shift +up/-down
Top	-	null	<input type="checkbox"/>	0	0
Bottom	-	null	<input type="checkbox"/>	-100000	0

Figure 2: Input dialog view **Poststack Inversion** for tab Post stack wavelet

Simple_Inversion

Poststack Inversion (low frequency restoration)

Seismic cube -> C:\Users\ivanpriez\Desktop\Ivan\Vas\cube.segy

Poststack Statistical wavelet Coloured Inversion Frequency flattening

Tihonov Alpha 0.01

Constant AI 9000

Phase rotation 0

LowFreq Limit 0

Polygon ->

	Use	Surface	Use	Constant	shift +up/-down
Top	-	null	<input type="checkbox"/>	0	0
Bottom	-	null	<input type="checkbox"/>	-100000	0

Calculate

Cancel

Figure 3: Input dialog view **Poststack Inversion** for tab Statistical wavelet

Simple_Inversion

Poststack Inversion (low frequency restoration)

Seismic cube -> C:\Users\ivanpriez\Desktop\Ivan\Vas\cube.segy

Poststack Statistical wavelet **Coloured Inversion** Frequency flattening

Coloured Inv alpha -0.91

Constant AI 9000

Phase rotation 0

LowFreq Limit 0

Polygon ->

	Use	Surface	Use	Constant	shift +up/-down
Top	-	null	<input type="checkbox"/>	0	0
Bottom	-	null	<input type="checkbox"/>	-100000	0

Calculate Cancel

Figure 4: Input dialog view **Poststack Inversion** for tab Coloured Inversion

Simple_Inversion

Poststack Inversion (low frequency restoration)

Seismic cube -> C:\Users\ivanpriez\Desktop\Ivan\Vas\cube.segy

Poststack | Statistical wavelet | Coloured Inversion | **Frequency flattening**

LowFreq Limit: 0

HighFreq Limit: 120

Tihonov Alpha: 0.01

Phase rotation: 0

Polygon ->

	Use	Surface	Use	Constant	shift +up/-down
Top	-	null	<input type="checkbox"/>	0	0
Bottom	-	null	<input type="checkbox"/>	-100000	0

Calculate [] Cancel

Figure 5: Input dialog view **Poststack Inversion** for tab Frequency flattening

Parameters have to be defined before calculation:

Seismic cube: allow select cube for inversion. It have to only real cube (not virtual).

Wavelet: allow define wavelet for inversion.

Tikhonov alpha: defined Tikhonov regularization parameter. If this parameter bigger then the result will be smoother.

Constant AI: define average value of the result. We use only constant value like low frequency model and the algorithm allow restore some low frequency close to zero frequency.

Phase rotation: define angle (-180, 180) to phase rotation of the result cube.

Low frequency limit: define low frequency limit for the result cube.

High frequency limit: define high frequency limit for the result cube.

4. Results

Inversion result will be added like virtual cube (sub tree node to source cube). Virtual cube allow edit same parameters ON-FLIGHT with visualization inline or crossline or slice.
To do it need to push left mouse bottom and start the dialog (figure 6).

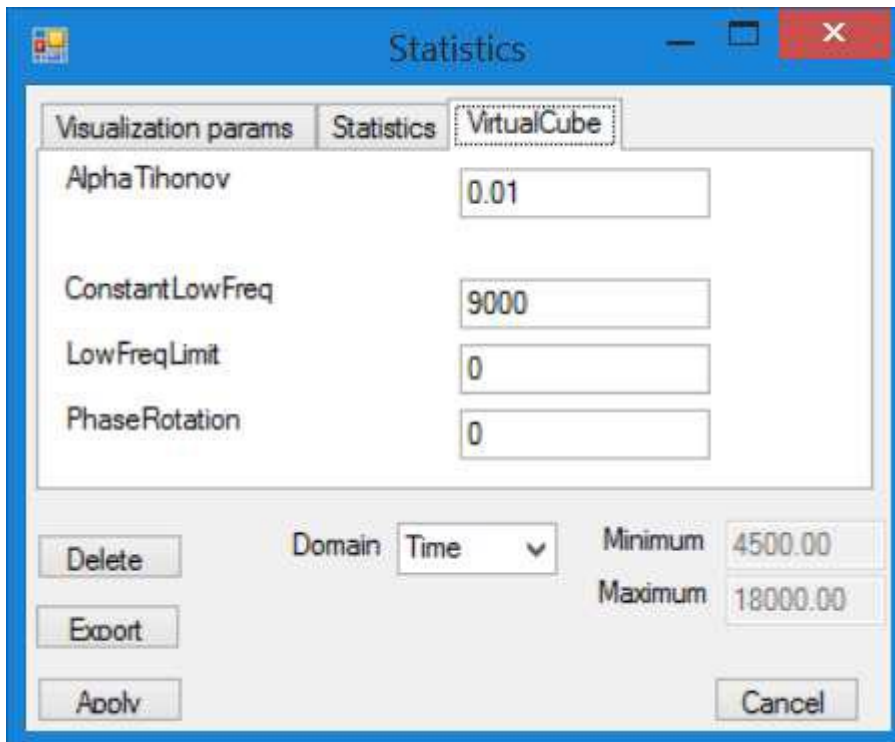


Figure 6: Statistic dialog view after left bottom pushing for virtual cube.