APPLICATIONS TO SYNTHETIC DATA - SENSITIVITY TO THE MOHO REFERENCE THICKNESS

We tested the sensitivity to the true Moho reference thickness by keeping constant the isostatic compensation depth (41 km) and show the results of steps 2 and 3. Parameters defining the interpretation model are shown in Table 1. We used the same parameters for inversion used in the synthetic applications of the paper.

Figure 1 and Figure 2 shows the estimated model obtained at the Step 2 and Step 3 of our algorithm with true Moho reference thickness adopted in the applications of the paper (43.2 km).

Figure 3 (test 1), Figure 5 (test 2) and Figure 7 (test 3) show the estimated model obtained at the end of Step 2 where the true Moho reference thickness was defined at 41 km, 45 km and 52 km, respectively. These models presented basement and Moho reliefs closer to the estimated surfaces in the Figure 1. In the same way, these results (Figure 3, Figure 5 and Figure 7) show predicted gravity disturbance and lithostatic stress curves with the same behavior that presented in the Figure 1.

Figure 4 (test 1), Figure 6 (test 2) and Figure 8 (test 3) show the estimated model obtained at the end of Step 3. These models presented basement and Moho reliefs closer to the estimated surfaces in the Figure 2, except for a small basement uplift at the region between 150 and 200 km presented in the Figure 6. These results (Figures 4, Figure 6 and 8) show predicted gravity disturbance and lithostatic stress curves with the same behavior that presented in the Figure 2.

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8 Application to synthetic data (test 3: $S0 + \Delta S0 = 52$ km). Results obtained in Step 3 by using $\sigma = 21$ (equation **??**). The remaining informations are the same shown in the caption of Figure 1.

Geological meaning	$\rho^{(\alpha)}$ (kg/m^3)	$\Delta\rho^{(\alpha)}$ (kg/m^3)	α
water	1030	-1840	w
sediments	2350	-520	1
SDR	2855	-15	2
continental crust	2870	0	cc
oceanic crust	2885	15	oc
mantle	3240	370	m

Table 1: Properties of the volcanic margin model. The model extends from $y = 0$ km to $y = 383$ km, the Continent-Ocean Transition (COT) is located at $y_{COT} = 350$ km and the reference Moho is located at $S_0 + \Delta S = 43.2$ km, where $\Delta S = 2.2$ km. The density contrasts $\Delta\rho^{(\alpha)}$ are defined with respect to the reference value $\rho^{(r)} = 2870$ kg/m^3, which coincides with the density $\rho^{(cc)}$ attributed to the continental crust.

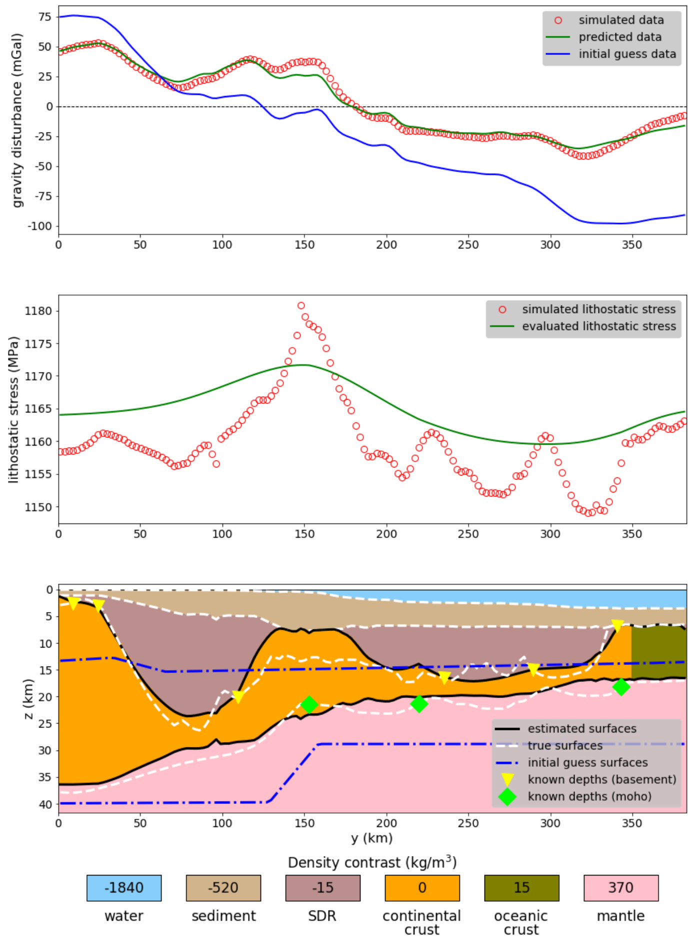

Figure 1: Application to synthetic data. Results obtained in Step 2. (Bottom panel) Estimated and true surfaces, initial basement and Moho used in the inversion (initial guess) and known depths at basement and Moho. (Middle panel) True and estimated lithostatic stress curves computed by using equation **??**. The values are multiplied by a constant gravity value equal to 9.81 m/s^2. (Upper panel) Gravity disturbance data produced by the volcanic margin model (simulated data), by the estimated model (predicted data) and by the model used as initial guess in the inversion (initial guess data). The contour of the prisms forming the interpretation model were omitted. The density contrasts were defined according to Table 1.

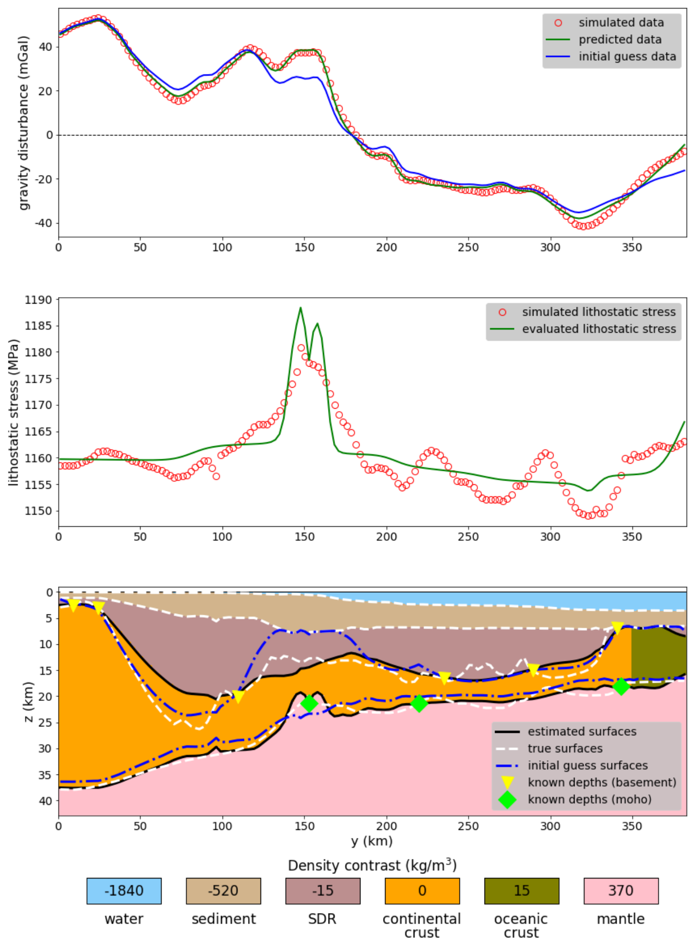

Figure 2: Application to synthetic data. Results obtained in Step 3 by using $\sigma = 21$ (equation **??**). The remaining informations are the same shown in the caption of Figure 1.

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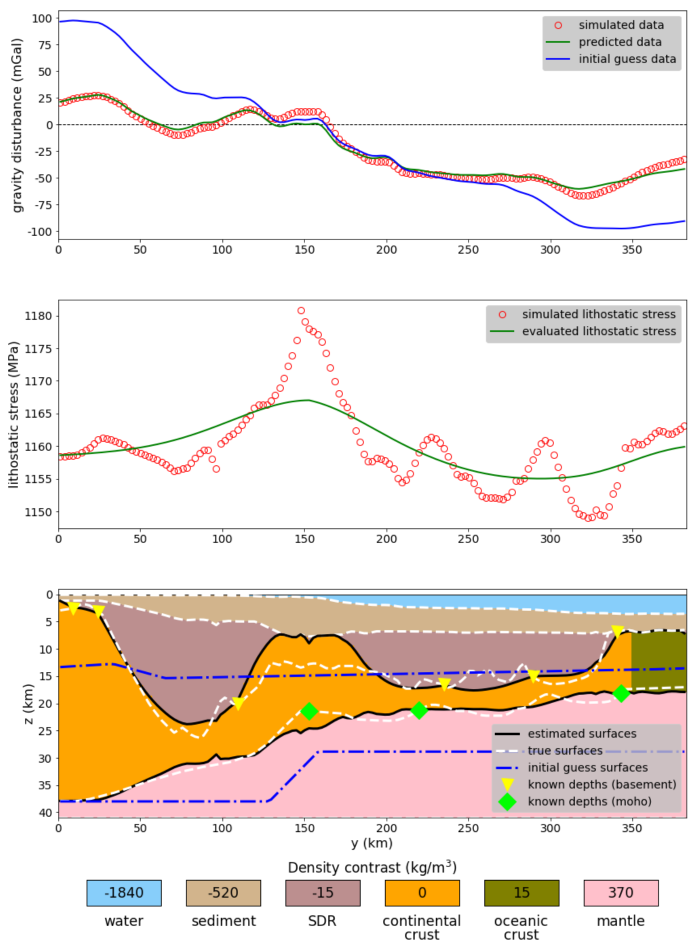

Figure 3: Application to synthetic data (test 1: $S0 + \Delta S0 = 41$ km). Results obtained in Step 2. The remaining informations are the same shown in the caption of Figure 1.

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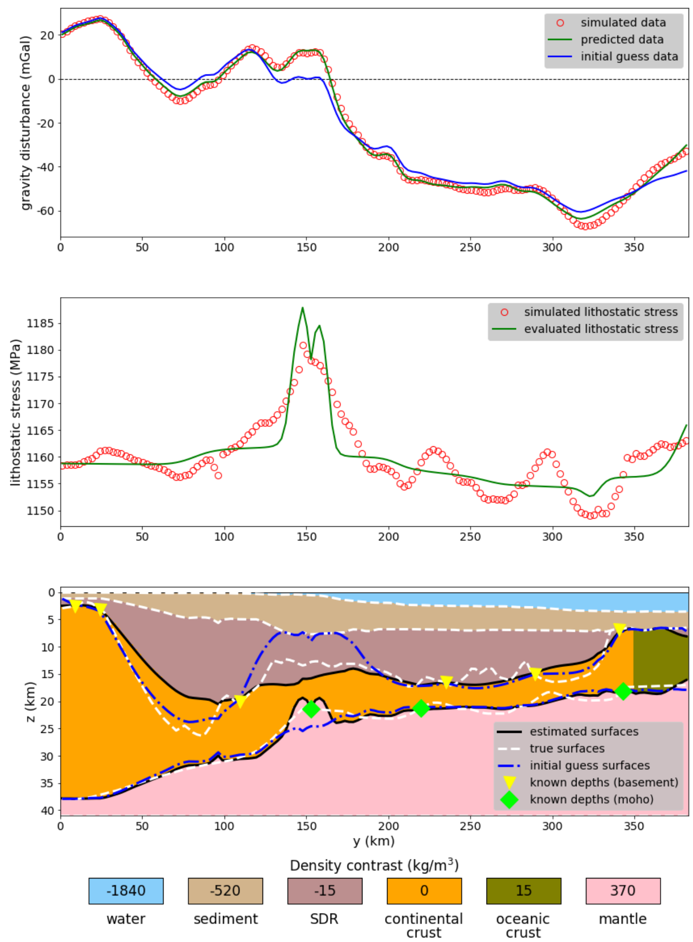

Figure 4: Application to synthetic data (test 1: $S0 + \Delta S0 = 41$ km). Results obtained in Step 3 by using $\sigma = 21$ (equation **??**). The remaining informations are the same shown in the caption of Figure 1.

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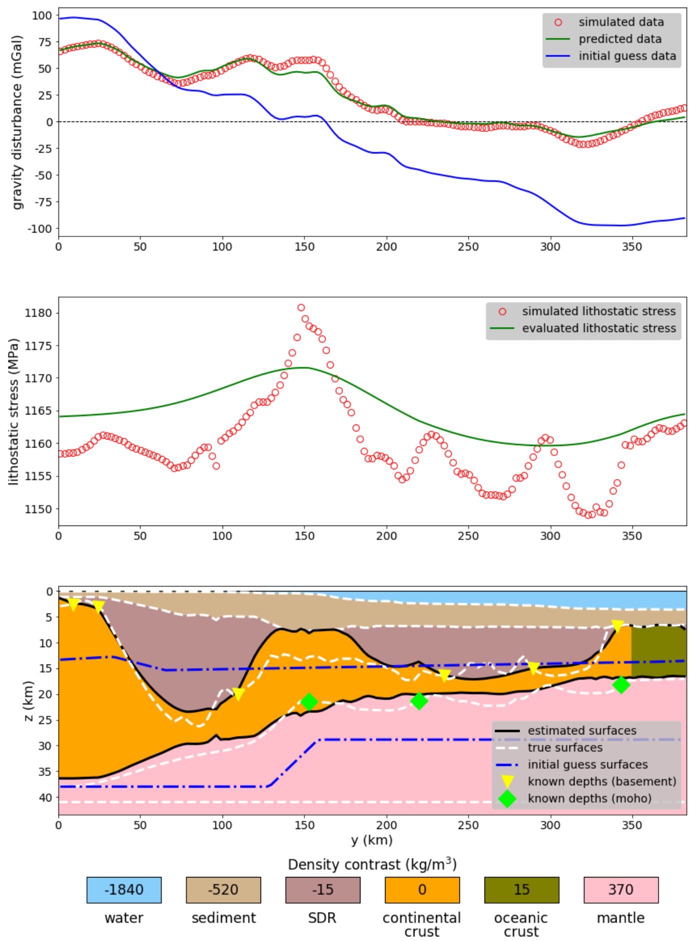

Figure 5: Application to synthetic data (test 2: $S0 + \Delta S0 = 45$ km). Results obtained in Step 2. The remaining informations are the same shown in the caption of Figure 1.

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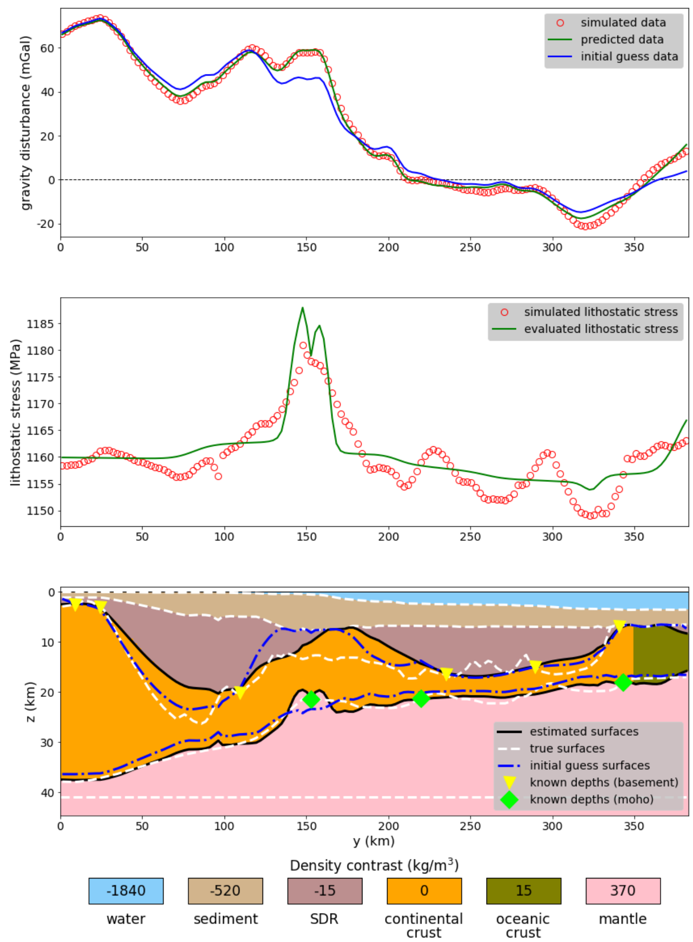

Figure 6: Application to synthetic data (test 2: $S0 + \Delta S0 = 45$ km). Results obtained in Step 3 by using $\sigma = 21$ (equation **??**). The remaining informations are the same shown in the caption of Figure 1.

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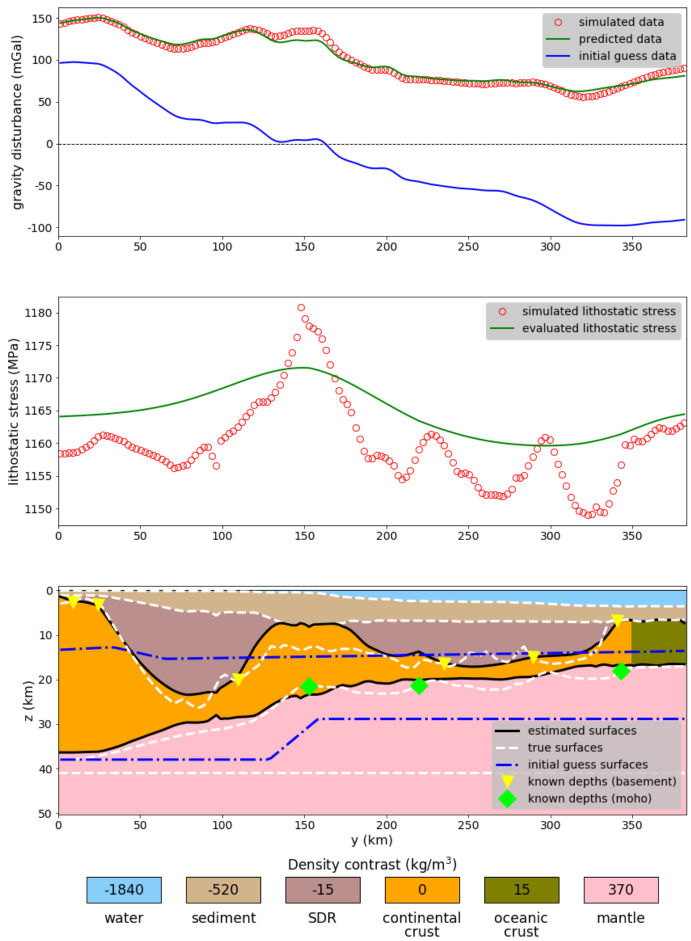

Figure 7: Application to synthetic data (test 3: $S0 + \Delta S0 = 52$ km). Results obtained in Step 2. The remaining informations are the same shown in the caption of Figure 1.

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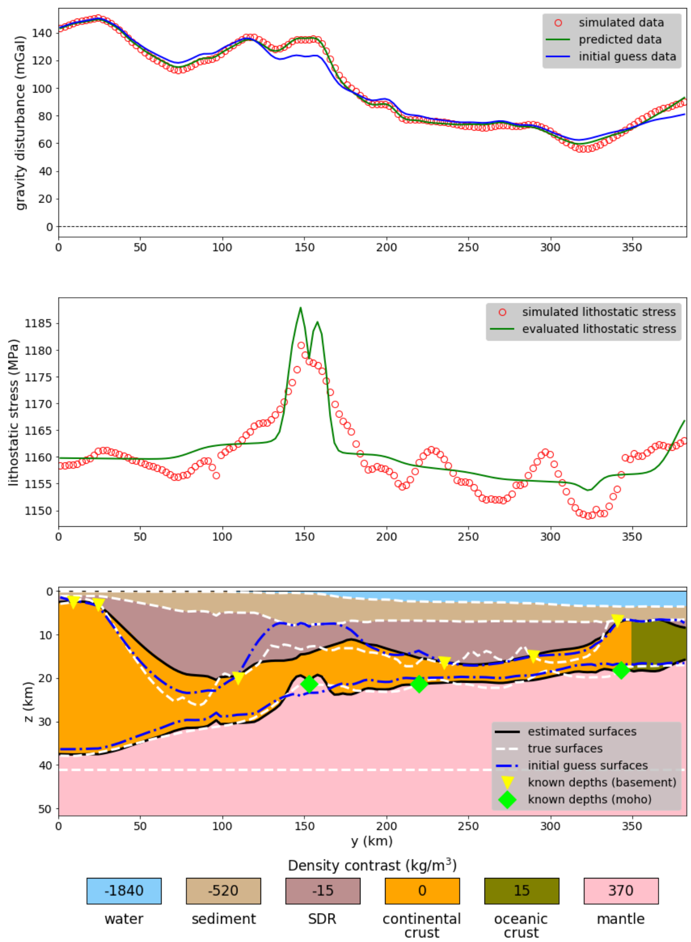

Figure 8: Application to synthetic data (test 3: $S0 + \Delta S0 = 52$ km). Results obtained in Step 3 by using $\sigma = 21$ (equation **??**). The remaining informations are the same shown in the caption of Figure 1.

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