We thank J-F Ritz and an anonymous reviewer for their helpful comments. We largely agree with the points raised and took them into account in the revised version of the manuscript. In the following, our changes are listed next to the points raised in bold font. All the changes are highlighted by blue underlining and red strikeout lines. The line number we use here is the revised manuscript with highlights.

**Point-by-point response to reviewer #1**

Review of Late Holocene structural style and seismicity of highly transpressional faults in southern Haiti by Wang et al., submitted to Tectonics.

In this manuscript, the authors characterize the 10-15 km wide belt of late Holocene transpressional deformation by identifying a family of en echelon thrusts along the trace of the EPGFZ. They compare on of them, the recently active Jimani thrust with the Léogâne thrust fault, which is known to be active during the 2010 Haiti devastating earthquake. Their interpretations are made thanks to new sonar data from two lakes in the south of Haiti and previous geologic and geophysical observations already published.

This is an interesting paper with new observations and data on the transpressive faulting in the south of Haiti, but there are major errors in the interpretation of the chirp sonar profiles used to make the interpretations. My suggestions and questions are listed below and in the annotated manuscript:

In general this manuscript needs reorganization. In many parts, you do interpretations and conclusions before describing the data (see the annotated file), and the figures are cited randomly. In addition I suggest making entire sentences instead of lists over entire paragraphs.

**We reorganize the text and the figures to avoid mixing interpretations with conclusions (the details are shown in the following responses to the annotated file). We cite the figures in the order they first appear in the text. Because the paper covers such large region, sometimes we have to jump back to the previous figures.**

You have to end the introduction with unresolved questions that your study answered, i.e. what is the state of art in your study area and why the new data and your study are important to improve it.

**We laid out the challenges at the end of the introduction. The objectives and the state of art of the paper are stated in the “Objectives and methods” section. We think this is more natural for our paper.**

You say lines 195 to line 203 that there is a strong southwestward backthrusting of the Gonâve microplate in southern Hispaniola in Haiti (southern margin) and in Dominican Republic (Muertos trench) onto the Caribbean plate. In fact, the southern peninsula of Haiti is belonging to the Caribbean plate and the Muertos trench is the boundary between the Hispaniola and Puerto Rico block and the Caribbean plate (see Calais et al. 2016).

**We mention “southwestward backthrusting” twice in two sentences. The first one is talking about the southwestward backthrusting of the Gonâve microplate (southern Hispaniola in Haiti and the Dominican Republic to the southwest onto the Caribbean plate). The next sentence is talking about the southwestward backthrusting of the Hispaniola microplate (manifested by the accretionary wedges present along the Muerto trench south of the Dominican Republic) onto the Caribbean plate.**

I don’t understand the differences between what you call “strike-slip” and “trans- Haitian fold and thrust” models (section 3). All studies in Haiti agree with the fact that there is a fold-and-thrust belt propagating towards the southwest between two major senestrial strike slip faults. In my sense the only one question is about the eastern termination of the EPGFZ in the Cul-de-Sac basin (see fig. 2 of Symithe et al. 2016).

**Both of the models are proposed by previous studies:**

**Strike-slip model interprets the cause of the transpressional deformation is the oblique motion and transpression between Bahamas platform on the North America plate, the Caribbean plate, and the Gonâve plate microplate. In this case, the transpression-related motion of the EPGFZ is the main source of the deformation.**

**The Trans-Haitian fold-and-thrust belt model thinks the propagating of the main Trans-Haitian fold-and-thrust belt itself is the reason of the transpressional deformation in south-central Haiti. In this case, the strike-slip motion of the EPGFZ is inactive. The movement of the EPGFZ is more compressional and normal fault.**

**We also study the eastern termination of the EPGFZ, mainly in Section 4.3.3.**

Moreover, I am confused because you say lines 222 and 235 “as what we are proposing in this paper” and “as we propose in this paper” in the part describing the fold and thrust model, but you say lines 526 to 529 “Our results ... support the strike-slip model ... as opposed to the fold and thrust model ...”.

**In this part, by saying “as we propose in this paper”, we only meant we were proposing the belt of deformation as the “transpressional belt along the northern flank of the EPGFZ”. To avoid the confusion, we delete these two sentences (Indicated by red strikeout lines from Line 244—245 and line 257.).**

Regarding the InSAR data (figs 2, 7 and 10), you should use the quasi-vertical displacement map rather than the descending interferogram, because it’s not helpful for your interpretations. You already use the quasi-vertical displacement scale so use the proper map.

**We appreciate the reviewer’s suggestion and agree that quasi-vertical displacement map would help the interpretation. We replace the previous InSAR images in Figure 2, 7, and 10 with the same images as in Hayes et al. (2010) (courtesy of Eric Fielding at JPL).**

You must definitely improve the interpretations of the chirp profiles (figs 6 and 8). For example in fig. 6A, you identify thrust faults south of Jimani thrust. The thrusts are in fact backwards; the uplift part has to be on the side of the arrow. There are onlaps near the surface that help you.

**We improve the interpretation on Figure 5A (Figure 6A in the last version) and correct the thrust direction on the north of the Jimani thrust. We don’t see any wrong interpretation on the south side of the Jimani thrust.**

On the profile 6B, a near parallel profile from 6A, thrusts located at the base of the fold have disappeared. Where is the major northeast dipping thrust that you map in the other figures and in the fig 3 CC’ cross-section?

**The major northeast dipping thrust in fig 3CC’ (now Figure 5C) is the one in the middle of the fold, which is shown in both Figure 5A and Figure 5B (new version)**

Do you have some better images for the EPGFZ fault trace in the lake Azuey? I am not convince by the profiles of the fig. 6, I do not see any deformation that can be related to a large strike-slip fault boundary.

**The discontinuities similar to Figure 5A, B is cross the southern part of Lake Azuey. In other chirp sessions, we can see the similar discontinuity. We believe this discontinuity is due to the EPGFZ because:**

**1) The chirp sonar has a very high frequency (2 – 15 kHz). This gives us the very high resolution of the sub-bottom. So, the sudden disruption of the subsurface is most likely due to the deformation. On the other hand, one cannot see the “flower structure” as the seismic data because of the penetration is very shallow comparing to the seismic (relatively low frequency, usually 5 – 100 Hz). At this shallow and un-lithified part of the subsurface, there is hardly any classic “flower structure”.**

**2) After putting all the discontinuities from different chirp profiles (not only these two) into map view, they form a linear trend crossing the lake.**

**3) If we extended this linear trend to the west, we could connect it perfectly with the trace of the EPGFZ from Dumay.**

**4) If we extended this linear trend to the east, we can connect it perfectly with the trance of the EPGFZ in the Lake Enriquillo (mapped by Rios et al. (2013)).**

**5) After combining our chirp data and all the previous works as mentioned above, we conclude the trace in the southern part of Lake Azuey is the trace of EPGFZ.**

I suggest that you compare your chirp profiles with the one of Leroy et al. (2015) that shows the EPGFZ trace westward in sea.

**The cross-section of the EPGFZ in Leroy et al. (2015) is seismic data, not chirp sonar. It recorded up to 6 seconds instead of less than 1 second as most of the sonar do (our shot rate was a quarter second). They are similar to the chirp sonar data because they displayed the “envelop” of the seismic data (as most of the sonar data) instead of the analytical signal. Their chirp sonar data looks quite similar to ours. Also, the upper section (about the same depth) of their seismic data is similar to our chirp data.**

You also need to fix the vertical scales and add horizontal ones.

**We add the horizontal scale bars to Figure 5 A, B (Figure 6 A, B in the last version). We think our vertical scale is OK (if we divide vertical scale bar more, the figure will be busier and harder to see).**

The fig. 8 has the same interpretations errors: for example the thrust in the eastern side of the line M5 fold is backward (see onlaps top of the fold). Where are located the two majors normal faults that appear on fig. 7? How did you identify them? You need to better explain the extension that is mapped in the lake because it is not well observable on the sonar profiles.

**We do not agree with the reviewer on this point. We still think our interpretation in Figure 8 is correct. The two major normal faults are the on cross-section M1 (Figure 8B). Both of the normal faults are shown in the cross-section. The location of the Line M1 is also shown in Figure 7B, and so are the locations of the faults. We think they are evident and well observable to see from our cross-section in Figure 8B.**

Line 472 you say that the upper 7m of the Miragoâne lake was dated to 10ka and extrapolating to the observed thickness of 30m give an age of 33ka. I found 42.8 ka, can you explain your method of calculation?

**We applied the average sedimentary rate from the core data to the chirp sonar trace. We correct our estimation error and update the text.** **They are highlighted with red underline from line 533 – 536. The corrections are also highlighted with red strikeout lines.**

You need to explain more how you can relate the most recent rupture of the 1770 historic earthquake with the variation of the acoustic impedance shown in fig. 9 (line 490). Is it because of discontinuities in the stratigraphy or composition of the layers?

**The ruptures can are in both Figure 8B and C. They are buried about 0.5 m deep. Link the deep with the core dating result from Higuera-Gundy et al., 1999, we can estimate the rupture is about 300 years old, which is around 1714 A.D.. In the historical record, there was earthquake happened in this area at 1770 A.D., so we infer that the ruptures in the chip sonar data are the result of 1770 rupture of the earthquake. We rewrite the sentences and highlight them with the underline. The explanation of this part is highlighted from line 552 – 559.**

Your abstract and conclusion have paragraphs that are exactly the same. Please make an effort to reformulate your sentences.

**We rephrase the conclusions as while correct the errors as the reviewers pointed out. All the changes are highlighted with blue underlines or red strikeout lines.**

Overall:

There are some similar superficial conjugate thrusts, oriented in the same direction, in the Gulf of Gonâve. These active thrusts have been interpreted as the termination of the Haitian fold and thrust belt, and thought to accommodate the current compressional component of the transpression along with other distributed structures over the entire plate boundary (see Corbeau et al. 2016). Moreover, the zone of compression linked to the major strike-slip fault is much wider than the narrow swath mapped in this paper. For example, the 50 km wide southern peninsula of Haiti is a zone of linked transpression to the EPGFZ. So identifying the current deformation in the few kilometers wide valley of the main strike-slip fault zone would underestimate the current distribution of the transpression.

It is not obvious that the sonar profiles in the two lakes can discriminate if the transpression in this area is partitioned by en echelon thrusts adjacent to the major strike-slip rather than distributed on the overall plate boundary. I think the paper needs supplementary discussion about the origin and the role of the identified en echelon thrusts faults.

[*Annotations*](https://tectonics-submit.agu.org/cgi-bin/main.plex?form_type=annotate_pdf&j_id=286&ms_id=822470&ms_rev_no=0&ms_id_key=ftdhfX2sATCQ9eYS67IvkuIw&object_id=5266379)

*Key Points:*

*Line 9—10: Estimates of relative ages of deformation of major strike-slip faulting and en echelon thrusts from deformed and undeformed lake sediments.*

Ages? You don't detail that in the conclusion, is this a key point of the article?

**The session 4.4 is talking about the relative timing of recent earthquakes on the EPGFZ and secondary, en echelon thrust faults. In the revised paper, we delete this part from the key points and highlight the change with red strikeout lines from line 10 – 11.**

*Abstract:*

*Line 15 – 16: located 5 km north of the main, Caribbean-Gonâve plate boundary, a 1200 km-long, left-lateral, Enriquillo-Plantain Garden fault zone (EPGFZ).*

The EPGFZ is not the Caribbean-Gonâve plate boundary: the EPGFZ cross cuts the Southern Peninsula of Haiti, which is part of the Large Igneous Province belonging to the Caribbean plate. Replace by: one of the main Northern Caribbean plate boundary strike-slip faut.

**We delete the phrase of “main, Caribbean-Gonâve plate boundary” and highlight the change with red strikeout line (line 16).**

*Line 18 – 19: formed a boundary between a coseismically uplifted lowland north of the EPGFZ and a subsided area in the highlands south of the fault.*

The transition between uplifted and subsided areas is not really the EPGFZ trace (see Hayes et al. 2010 paper).

**We agree that it is the Léogâne fault. But the Léogâne fault is blind and very close to the EPGFZ. So, from the map view, the EPGFZ does form the boundary between uplift and subsidence. We are not trying to say that the EPGFZ is the cause. The similar phrase can be found in Hashimoto et al., [2011], as we cited in the paper.**

*Line 25: than the adjacent, newly discovered, northwest-striking, northeast-dipping Jimani thrust fault*

This thrust appears on several published tectonic maps. Maybe say newly imaged?

**We don’t see it on any of these maps. We are the first group that conducted lake chirp sonar profiling in Haiti, and also so far, the first to publish the results. So, we believe the thrust is newly discovered.**

Line 26 “transpressonal” to “transpressional”

**We correct this typo and highlight it with an underline in line 26.**

*Line 38: Multidisciplinary, geological and geophysical studies of the 2010 epicentral area of south-central Haiti including:*

Where is the end of the phrase? What are the main conclusions of these studies? We have to look at an other paragraph, maybe you should reorganize this part.

**We merge the next paragraph to this paragraph. The change is highlighted with blue underline in line 42.**

*Line 40 – 55:*

Please rewrite this part with entire sentences.

**The list of previous studies gives similar results. We state the result at the end of the list. IF we write them as sentences, the text will look deprecated. So, we think our writing represent our thoughts the best and insist on our way of writing.**

*Line 56: The consensus from these previous, on- and offshore, multidisciplinary studies*

You have not cited the offshore study of Leroy et al. (2015) which imaged the EPGFZ, the SOFZ and the Gulf of Gonâve with bathymetric and seismic reflection data.

**Leroy et al. (2015)'s paper focuses on the west of the Hispaniola Island, which is not our study area.**

*Line 61: “These two thrust are”*

“thrusts”

**We correct this typo and highlight it with underline in line 63.**

*Line 92 – 99: “Oblique,en echelonthrusts spacing at distances of 1-8 km along the main strike-slip fault, obliquely intersect the main strike-slip fault at angles of 30 – 45 and strike northwestward away from the EPGFZ with individual oblique, fault lengths extending into the deeper basins at distances of 4-29 km (Figure 2A, Figure 3). As a result of this distinctive and regular intersecting fault geometry between these oblique thrusts and the linear and continuous EPGFZ, earthquake rupture initiating on an oblique thrust, as seen for the Léogâne fault in 2010, is likely confined to that vicinity and may not connect with other oblique thrusts or even the EPGFZ itself [Douilly et al., 2013, 2015].”*

It is your results/interpretations. It is not appropriate in this introductory part.

**These are not our results. They are from the previous studies.**

*Line 110 – 101: “Coseismic deformation along a large transpressional strike-slip fault, such as the100EPGFZ and Septentrional”*

The Septentrional fault zone (SOFZ) is not transpressive but almost pure senestrial strike-slip (see GPS and offshore studies).

**We delete Septentrional fault zone and highlight it with the strike-out line in line 105.**

*Line 115 – 123: “These oblique anden echelonthrust faults in transpressional settings, including115large restraining bends like Hispaniola, potentially nucleate “uncharacteristic earthquakes”116of varying recurrence intervals and sizes that are distinct from the recurrence intervals117and sizes of the adjacent but independent strike-slip fault [Fielding et al., 2013]. Restrain-118ing bend areas like Hispaniola can lead to the generation and increased activities on more119favorably and obliquely oriented folds and thrusts whose coseismic rupture might alter-120nate with much longer ruptures along the adjacent strike-slip fault. The number of these121en echelon, thrust faults can be large at observed spacing of 5-10 km along strike-slip122faults that may be hundreds of kilometers in total length.”*

It seems that you confuse restraining bend and en echelon fault. Hispaniola is compared to a restraining bend because of the fold-and-thrust belt between the two major strike-slip faults (restraining bend = deformation at a step between two strike-slip). En echelon folds are restricted around only one fault trace.

**We are trying to talk about the en echelon shape faults in the restraining bend setting. To avoid further misleading, we rewrite this part and highlight the changes with underlining from line 119 – 128.**

*Line 136: “to the west 1B”*

Figure 1B?

**We correct this typo and highlight it with an underline. The whole paragraph now is in the new location. The correction of this typo is in line 170.**

*Line 141 – 150:*

This paragraph is descriptive so its place it's not in the objectives and method part.

**We separate this whole session into three sub-sessions. This paragraph is moved into the "Study area" sub-session.**

*Line 145: “the shallow (33 m)”*

the shallow (33m deep)

**We correct the writing accordingly and highlight it with underline in line 150.**

*Line 151 – 156:*

Idem, it is a descriptive paragraph.

**We separate this whole session into three sub-sessions. This paragraph is moved into the "Study area" sub-session from line 162 – 174.**

*Line 159 – 163: “we collected a total of 94 km of high-resolution (2-10 kHz) sonar profiles in 2014 from the 138 km2, brackish Lake Azuey (Figure 2A, B) and 37 km of profiles from the 14 km2, fresh-water Lake Miragoâne (Figure 1B). The EPGFZ strikes through both of the lakes, so 80% of our grid on Lake Azuey and 90% of our grid on Lake Miragoâne was dedicated to the across fault-strike, north-south profiles”*

When? Name of the survey? Is there any previous communications with this data?

**As we state in the text, in 2014 (in line 179). There is no official name of this survey. Also, we had shown part of the data set during the 2014 AGU (Poster).**

*Line 166 – 167: “These surveys were the first sonar surveys in Haitian lakes. Both lakes straddle the active trace of Haiti’s EPGFZ and its adjacent,”*

The fact that the lakes straddle the active trace of EPGFZ is your result/interpretation, you can't tell that in this part.

**We rewrite this part as “Both lakes straddle the projected active trace of Haiti's EPGFZ and its adjacent, transpressional fold-thrust belt,” and highlight the change with underline in line 186.**

*Line 176 – 178: “There are two regional structural models to explain the present-day structure of the broad, 250 km-wide zone of transpression spanning the entire width of the island of Hispaniola.”*

I think you should better explain the differences between what you call strike-slip and thrust belt models, because you talk about transpression in both.

**We explain them in the following subsections. To better explain the differences, we add "regarding the driving force and the movement along the EPGFZ" to the sentence and highlight it with the underline. We don't add more detail of description to this part to avoid duplication.**

*Section 3.1.1*

please do not a list over entire paragraph

**We rewrite the whole paragraph. Now it is not in the form of the list.**

*Line 181: “thick and buoyant Bahama platform”*

Bahamas

**We correct this typo and highlight it with underline in line 200.**

*Line 184: “transpresssiona”*

transpressional

**We correct this typo and highlight it with underline in line 203.**

*Line 187 – 189: “as a result of transpression, the central Hispaniola has the highest topography, up to 3 km, in all of the northern Caribbean region;”*

And what about the Presq'île du Sud of Haiti? (Pic de la Selle at 2680m high).

**We don't see the conflict with our text.**

*Line 193:*

add Leroy et al., 2015

**We add Leroy et al., 2015 in line 214 and highlight it with underline.**

*Line 194 – 196: “a strong, south-westward, backthrusting of the Gonâve microplate, in southern Hispaniola in Haiti and Dominican Republic to the southwest onto the Caribbean plate”*

There is no Gonâve microplate in Rep Dom

**There is a little bit, for example, the Lake Enriquillo.**

*Line 197: “backthusting”*

Backthrusting

**We correct this error and highlight it with underline in line 219.**

*Line 200: “along the southern margin of Haiti”*

idem, not on the Gonâve microplate

**Here, we are not saying the southern margin of Haiti is on Gonâve microplate.**

*Line 219 – 223: “The thrust front of this feature was thought to be actively propagating from the main Trans-Haitian fold-and-thrust belt, located in the Chaîne des Matheux, southwestward into the area of the Léogâne plain and the Cul-de-Sac basin, further more, emerging into, as what we are proposing in this paper, the transpressional belt along the northern flank of the EPGFZ”*

where do you propose and discuss this point?

**We strike out "as what we are proposing in this paper" and highlight the change in line 244 – 245.**

*Line 235 – 236: “as we propose in this paper based on the geologic data compiled on Figure 2A, B”*

Again you can't say that you agree a study before explaining and interpret your results.

**We strike out "as what we are proposing in this paper" and highlight the change in line 257.**

*Line 287 – 303:*

Again it's a very long list...

**We rewrite this paragraph. Now it is now in the form of the list.**

*Line 299 – 303:*

You can't talk about the results before describing the data.

**We move this part to the sonar section 4.3.3 from line 378 – 399.**

*Line 304 – 305:*

You interpret the data before describing them...

**We move this part to the sonar section 4.3.3 in line 378 – 399.**

*Line 310 – 313:*

Idem, you conclude before describing.

**We move this part to the sonar section 4.3.3 in line 378 – 399.**

*Line 339 – 341: “A similar pattern of deformation is observed in Port-au-Prince urban where the central and northern edge of the Cul-de-Sac basin is undeformed [Massoni, 1955;Cox et al., 2011;McHugh et al., 2011;Saint Fleur et al., 2015] (Line B-B’ in Figure 3).”*

You talk about undeformed basin by citing the line B-B' but on this line all the sedimentary layers are folded?

**We are trying to say that the north part is mostly uncompressed. We added "almost" to the sentence and highlighted it with underline in line 362.**

*Line 353: “Port-au-Prince are”*

Port-au-Prince area

**We correct this typo and highlight it with underline in line 375.**

*Line 357 – 361: “Structural cross-sections (Figure 3) from this and the previous works [Massoni,1955;Bourgueil et al., 1988;Cox et al., 2011;Douilly et al., 2015] (Line A–A’ and B–B’ in Figure 3) along this 120 km-long zone of deformation adjacent to the EPGFZ show–12–”*

Because careful when you compare cross-sections that have not the same orientation. Actually the thrusts are northeast dipping in majority.

**They are not in the same direction, but mostly northeast. This agrees with the transpressional setting in general. We change “north-dipping” to “northeast-dipping” and highlight it with underline in line 367.**

*Line 380 – 384:*

You describe this in the following section.

**We merge the next section into subsection 4.3.3 (between line 381 – 400 and line 410 – 417) and highlight with underlines. The “Mapping of the EPGFZ trace from sonar data in deformed lake sediments of Lake Azuey, Haiti” subsection is removed and highlighted with strikeout lines from line 459 – 474.**

*Line 387: “Line B1 and Line L19 correlate convincingly”*

In figure 4, there are lines B6 and L19. I am not convinced by this correlation: your discontinuities cut reflectors and the bigger ones imaged in the B6 line are not at the same depth than the ones of the line L19.

**As we said in the paper, the data from two lakes were acquired with different pieces of equipment at different times. The frequency range, source wavelet, the sampling rate, and so on. All these factors will cause the differences in the data. So, naturally, there will be differences between our data and Rios et al., 2013’s data. But the similarity is appealing, even when there are so many factors that could cause the sonar image looks different. So, we believe this is not simply a coincident but similar geological process.**

*Line 389: “the same amount of sediment above the EPGFZ”*

Where do you describe the amount of sediment above EPGFZ in lake Enriquillo or Azuey? It's confusing.

**This part is largely re-organized. Now, the amount of sediment is described from line 395 – 400.**

*Line 389 – 392: “… it is reasonable to suggest that Lake Azuey and Lake Enriquillo share the same sedimentation history as well as the same structural style and seismicity related to the EPGFZ and its oblique, thrust faults”*

You discuss your observations but we are not in the discussion part...

**We think this is our analysis instead of a result or discussion. There are too many components in this paper if we leave everything but data description to the Discussion part, the discussion section will be very confusing. We still think it is better to keep it this way.**

*Line 397: “EPGFZ would be dated some 270 years ago”*

Why it is 250yr in the legend of the fig. 6?

**We correct the error in the caption of Figure 6 and highlight it with the underline.**

*Line 401: “4.5 Mapping of the EPGFZ trace from sonar data in deformed lake sediments of Lake Azuey, Haiti”*

Should be before the 4.4 section.

**We merge this section into subsection 4.3.3 (between line 381 – 400 and line 410 – 417) and highlight with underlines. The “Mapping of the EPGFZ trace from sonar data in deformed lake sediments of Lake Azuey, Haiti” subsection is removed and highlighted with strikeout lines from line 459 – 474.**

*Line 403 – 404: In the Lake Azuey area (Figure 2A), we mapped a linear and east-west striking fault trace in deformed Holocene sediments along with its landfall (Figure 4A, B and Figure 5).*

There is no fault in the lake Azuey on the figure 4B.

**This section is removed and merged into subsection 4.3.3 (line 380 – 400). The EPGFZ in Lake Azuey is in Figure 5A, B (cross-section) and the zoom-in insert of Figure 2A (map view), respectively.**

*Line 408: “eastward”*

Westward

**We correct this typo and highlight it with underline in line 386. We rewrite the whole subsection. So, the blue highlighting underlines are mixed.**

*Line 410: “shown in Figure 2A”*

What is shown in fig. 2A? I don't see the stream channel offset.

**We meant the location of Dumay. We rewrite this part to avoid confusion. The new sentence is highlighted with the underline on line 387 – 390.**

*Line 413 – 418: “(Line B–B’ in Figure4). Sonar profiles from the southernmost area of Lake Azuey (Figure 6) show that the most recent rupture of the EPGFZ is covered by about 0.7 m of Holocene sediment, suggesting that there has been no recent activity of the EPGFZ. We project this trace of the EPGFZ along a prominent fault valley at the town of Jimani that separates Lakes Azuey and Enriquillo (Figure 2A and Figure 5).”*

You cite fig. 3 then fig. 6 then fig. 2 and fig. 5. It's very confusing and difficult to read.

**We rearrange the position of Figure 4 – 6. Now it looks more continues.**

*Line 427: (Figure 1B)*

Figure 4A is better here.

**Figure 4 now is Figure 6. We add Figure 6A here and highlight it with underline in line 483.**

*Line 432: “Figure 1B and Figure 4A”*

There is no overthrust structures in the southern edges of the lakes in fig. 4A but only folds. Be precise.

**We move “Figure 1B and Figure 4A” forward to avoid the confusion. The new location is highlighted with underline in line 487.**

*Line 436 – 438: “The sonar results from both lakes show that the EPGFZ extends to at least to the eastern tip of Cabritos Island in the center of Lake Enriquillo, Dominican Republic [Mann et al., 1995]”*

Why did you cite a paper of 1995 here? Is it your results or is it already published? You should say "as previously proposed by".

**We strikeout this citation and highlight it with strikeout line in line 495.**

*Line 440: “Therefor,”*

Therefore

**We correct this typo and highlight it with underline in line 497.**

*Line 441 – 442: “where the recently documented uplift of the Holocene reef fringes Lake Enriquillo [Mann et al., 1995].”*

idem as previous comment about the citation. 1995 is not recently by the way.

**We move the citation forward to make it clear that the “documented uplift” is from the citation, not our sonar data. We also change “recently” to “previously.” We highlight the new sentence with underline in line 499.**

*Line 443: “in the western study area”*

Where? Name of the area?

**We add the study areas into the title and highlight them with underline in line 502.**

*Line 445: “Canal du Sud”*

Please place it on a map.

**We add it to Figure 1 and label it as CS (also explain it in the figure caption).**

*Line 456 – 458: “One of the most intense zones of coseismic, aftershock, and coastal uplift separates the oppositely-dipping Léogâne and Trois Baies faults, and may represent complex deformation at a transfer zone between the two faults (Figure 7A).”*

I don't see uplift between the two fault on this figure. The most intense zone of coastal uplift is near Léogâne, but it's not between the two faults (see Hayes et al., 2010).

**The Léogâne plain was uplifted (Hashimoto et al., 2011), and the shore of Petit Goâve was subsidence (Prentice et al., 2010). To avoid confusion, we rewrite this sentence and highlight it with underline in line 514 – 515.**

*Line 458 – 460: “The aftershock study of the Trois Baies fault [Symithe and Calais, 2016] shows that it is comparable to the cross sections of the eastern area in Figure 3”*

This sentence needs to be completed: what is comparable to what?

**We rewrite this sentence as “The aftershock study of the Trois Baies fault [Symithe and Calais, 2016] shows that its geological structure of thrust faulting and special oblique relationship with the main EPGFZ is comparable to the cross-sections of the eastern area in Figure 3” and highlight it with underline in line 518 – 519.**

*Line 460 – 462: “The overall structure of this western part of the study area mirrors the same geometry of the oblique thrusts and the main EPGFZ described at the eastern part of the study area (Figure 2).”*

Idem, describe in what the two areas are the same.

**We rewrite this sentence as “this western part of the study area mirrors the same geometrical relationship between the oblique thrusts (such as the Trois Baies thrust fault)” and highlight it with underline in line 520 – 522.**

*Line 486: “…with the adjacent Tapion du Petit Goâve restraining bend 12 km to the east…”*

Please add this place to a map.

**We add this label to Figure 7B.**

*Line 468: “which makes this actively faulted lake the deepest”*

I think you should explain why we can consider this lake as actively faulted. Is there any onlaps in the upper layer?

**In the sonar profile, we find the most recent rupture in the lake is buried by about 0.5-meter sediment. We explain this later in line 558 – 559. To avoid giving conclusion before observation, we delete “actively faulted” from this sentence (highlighted with strikeout line in line 529).**

*Line 469 – 470: “The 30 m of recognizable stratigraphy (Fig-469ure 8A, B)”*

Figure 8B and C

**We correct this error accordingly hand highlight it with underline in line 531.**

*Line 472 – 473: “The upper 7 m of the lake sediment was cored and dated as 10 ka at the bottom of the core”*

By who? When? Are the results of this study is published? If yes add a reference.

**We add the citation of Higuera-Gundy et al., 1999 and highlight it with underline in line 535.**

*Line 473 – 475: “Extrapolating the sedimentation rate to the observed thickness of 30 m in the lake allows a minimum of 33 ka to be calculated for the age of the pull-apart basin on the EPGFZ.”*

Detail your calculation.

**We applied the average sedimentary rate from the core data to the chirp sonar trace. We rewrite this sentence and highlight it with underline from line 535 – 538.**

*Line 490 – 493: “Considering the historical document record [Bakun et al., 2012], the dating of the core and sonar interpretation in Lake Miragoâne suggest that the most recent rupture in this lake is likely related to a historic earthquake in 1770 [Bakun et al., 2012].”*

This part needs more explanations. How you can relate the core with the most recent rupture? Did you image a discontinuity in the stratigraphy?

**The ruptures are in both Figure 8B and C. They are buried about 0.5 m deep. Link the deep with the core dating result from Higuera-Gundy et al., 1999, we can estimate the rupture is about 300 years old, which is around 1714 A.D.. In the historical record, there was earthquake happened in this area at 1770 A.D., so we infer that the ruptures in the chip sonar data are the result of 1770 rupture of the earthquake. We rewrite the sentences and highlight them with the underline. The explanation of this part is underlined from line 554 – 561.**

*Line 497 – 500: “In summary, our lake studies, along with previous work, favor a model of a 10 – 15 km-wide transpressional zone that deforms thick, loosely-consolidated, Miocene to recent clastic rocks in coastal, marine, and lake settings as shown in three dimensions (Figure 10).”*

It is better to favor a model after discussing your results... There is an inconsistency between the legend of the fig. 10 and this sentence: the transpressional zone is 10-15km wide or 40km wide?

**We still think stating our model at the beginning, then giving detail about the model is better and more intuitive. The 10 – 15 km is not the whole 3D schematic block, just the width of the transpressional belt we propose. Also, we add “three-dimensional block diagram” to the sentence to make it clearer. The changes are highlighted with underline in line 571.**

*Line 514 – 516: “more consolidated carbonate rocks and basalts exposed in the highlands south of the EPGFZ515(Figure 2).”*

add references.

**We add the citation of Mann et al., 1991 to the text hand highlight it with underline in line 588.**

*526 – 529: “Our results, including the eastward extension of the EPGFZ into Dominican Republic, support the “thick-skinned” strike-slip model for the deformation of Hispaniola region as opposed to the southwestward propagation of the Trans-Haitian fold-and-thrust belt proposed by Pubellier et al.[2000].”*

Move this part to the conclusion.

**We move this part to conclusion part 6 and highlight it with the underlines in line 683 – 686.**

*Line 536 – 542:*

Maybe this part will be better in the legend of the fig. 11.

**We add part of this paragraph into the caption of Figure 11. Also, we rewrite the paragraph and merge it into the previous paragraph. The wrote parts are the highlight with underlines in line 610 – 623.**

*Line 547 – 551: “As in the 2010 Mw7.0 Haiti earthquake, a secondary, blind thrust fault beneath the surface trace of the Sargent fault that, and oblique to the main San Andreas strike-slip fault, played a major role in the 1989 fault rupture and resulting pattern of regional uplift show in red color to the southwest and regional subsidence shown in green color to the northeast [Olson, 1990].”*

Where? Place it on the map.

**It was placed in the inset map of Figure 11. We add more cross-reference to the text to make it clearer. The changes are highlighted with underlines in line 626.**

*Line 550 -- 551: “show in red color to the southwest and regional subsidence shown in green color to the550northeast [Olson, 1990].”*

Subsidence is in blue color on your map.

**We correct this error and highlight it with underline in line 628.**

*Line 571: “conclusion”*

conclusions

**We correct this typo and highlight it with underline in line 649.**

*Line 572 – 578:*

It is not a result shown by your study.

**We strikeout this paragraph and highlight it with strikeout lines in line 650 – 655.**

*Line 595 – 598: “Our survey confirmed the pull-apart origin of Lake Mirogoâne and the lack of historical deformation on this western segment of the EPGFZ. Integration of the geologic data across the study area show an alternation in dip along nine northwest-striking, thrust faults at spacing of 5 to 40 km.”*

What about the active folds imaged at the lake bottom?

**We rewrite this sentence as "lack of deformation on this western segment of the EPGFZ during the 2010 Mw 7.0 earthquake" and highlight it with underline in line 674 – 675.**

*Line 800: Figure 2.*

Add the zoom of the figure 2B on the figure 2A. Describe what are cross-sections A, B and C in the legend. Correct the number of the figures for the lake azuey.

**We modified the figure accordingly and updated the caption. The change is highlighted with the underline.**

*Line 810: “Aftershocks of the 2010 earthquake”*

Reference?

**We add citations of Douilly et al. [2013, 2015] and highlight them with underline in line 905.**

*Line 811 – 814: “B-B’:Cross section based on surface mapping showing north- and south-dipping reverse faults deforming Plio-Pleistocene sedimentary rocks. C-C’: Cross section based on both sonar survey and the surface mapping showing north- and south-dipping, reverse faults deforming Plio-Pleistocene sedimentary rocks.”*

References for the cross-sections and the substratum ages?

**We add citations of [Massoni, 1955; Cox et al., 2011; McHugh et al., 2011; Saint Fleur et al., 2015] and [Mann et al., 1991] into the caption and highlight them with underlines in line 908.**

*Figure 4.*

The colors must be the same between the profile and its enlargement.

**They are the same color. We use the “eyedropper tool” to copy the color, so they must be the same. Maybe because of they are on top of the sonar profile, so they seem different from the pure colored boxes.**

*Line 831 – 832: “The EPGFZ beneath Lake Azuey forms a 10 m-wide zone that can be traced as a lineament to the east and west of Lake Azuey (Figure 2).”*

Be careful and coherent: the deformation of the stratigraphic layers in the northern part of your two enlargements are the same, but you trace an inverse fault on the 6A and a normal fault on the 6B.

**We correct this error on the figure.**

*Line 833: “The two strands of the EPGFZ”*

You show three faults on the fig 6A enlargement.

**The extra fault on the north is a belong to Jimani fault system. It is not a strand.**

*Line 836: Figure 7.*

Add the water depth unit.

**We add it to Figure 7A.**

*Figure 7: Legend “2010 coseismic”*

Precise that there is an extensional surface fracture.

**We reduce the size of the fracture line in Figure 7B.**

*Line 837: “Structure [Prentice et al., 2010]”*

Prentice does not represents the EPGFZ curved onland south of the Trois Baies fault. The EPGFZ trace "disappears" east of Tapion ridge and "reappears" in Goâve.

**We correct the figure, and add reference of Cowgill et al., 2012. The change is highlighted with the underline in line 936.**

*Line 837: “[Douilly et al., 2015]”*

Douilly et al. 2013

**We correct this error and highlight it with underline in line 937.**

*Line 842: Figure 8.*

Add the horizontal scale of your profiles.

**We already have the “100 m” scale bar in both profiles.**

*Line 845: pull-apart basin*

Explain how you can say that there was a pull-apart basin with the stratigraphic discontinuities. Explain how it is folded now. Where are located the two main extensional faults on the profiles? You trace them on the map but not on the profiles.

**We talk about this in the text. But since we are not showing the northern edge in this figure, we strikeout this sentence and highlight it with strikeout line.**

*Line 847: “East-west trending line M5 (location shown on Figure 7B).”*

Check your thrusts faults. You have forgotten the most important thrust at the origin of the bigger fold of the profile.

**We add it to the Figure 8C.**

*Line 854: “Black arrows show southwest direction of the Gonâve microplate relative to the Caribbean plate”*

Reference

**We add the reference and highlight it with underline in line 958.**

**Point-by-point response to reviewer #2 (Formal Review (shown to authors)):**

Tectonics Paper # 2017TC004920 :

"Late Holocene structural style and seismicity of highly transpressional faults in southern Haiti"

by Jiannan Wang, Paul Mann, and Robert Stewart

Review by J-F Ritz

General comments:

The objective of this article is to summarize the geological, geophysical, GPS, radar interferometry, seismic replication and modeling data collected since the 2010 Haiti earthquake to better understand and model the transpressive area, parallel to the trace of the EPGFZ. The article appears as a review article about the question of the structural style within the EPGFZ (question of the geometry and the kinematics of Holocene/active faulting).

I found the article very interesting to read although it is written in an "unsual" style, with for instance the objectives of the study in a separate section, and not at the end of the Introduction, or with long sentences containing several interlockings ("emboitements" in French). For instances phrases at lines (73-78), (100-106), (197-203), (547-551)... Being a not native English-speaker, I find this style of writing not always easy to follow. I think that shorter sentences would help to better follow what authors are telling.

**We understand they are long and difficult to read. The objective of this paper relates to many previous works, which makes hard to avoid writing such long list. We rewrite these paragraphs and hope there are easier to read. The details are shown in the following point-by-point responses.**

I found the observations well described and their interpretations pertinent in general (see detailed comments), which give at the end - at least for reader who is not familiar with the studied area (which is my case), a very good synthesis of its recent and active tectonics.

However, it is a long article, which I did not read at once, and I get the feeling that there were a few repetitions in the manuscript. Also, described objects (folds, faults, kinematics, localities, profiles) mentioned/described in the text are not always easy/straightforward to find in Figures. I suppose this is partly due to the fact that figures are small and containing many things (except figure 2A where, in contrary, few things could be pointed out (see below)). Figures contains many mistakes (as the authors did not downloaded the last version of their figures..).

**We agree with the reviewer. In the revised version, we rewrite the text extensively and rearrange the order of some figures and sections. Underlines and strikeout lines indicate the changes. The details are shown in the following point-by-point responses.**

Detailed comments:

Abstract:

Line 18: ".., although, .." ?

**We break this long sentence into two and replace “although” with “However.” The changes are highlighted with underlines in line 18 – 19.**

Manuscript:

Line 39: ...include:

**We add … “have been done,” in front of “including.” The change is highlighted with underline in line 42.**

Line 68: ...quiescent and..

**We correct this error accordingly and highlight it with underline in line 70.**

Line 70: Please show the CMT in Figure 1

**We add the CMT to Figure 1B. The figure caption has also be updated and highlighted with underline accordingly.**

Line 75: .. of the northeast-southwest compression..

**We correct this error and highlight it with underline in line 77.**

Line 78: delete "show"

**We delete “show” and highlight the change with strikeout line in line 81.**

Line 84: .., north-dipping, Léogâne fault..

**We correct this error and highlight it with underline in line 87.**

Line 85: southwest-dipping Trois Baies fault..

**We correct this error and highlight it with underline in line 88.**

Line 87: delete "motion"

**We correct this error and highlight it with the strikeout line in line 90.**

Line 93: ..30{degree sign}-45{degree sign}. These structures strike..

**We rewrite this sentence as recommended and highlight it with underline in line 97.**

Line 130: ..include

**We correct the typo and highlight the corrected word with underline in line 164. The whole paragraph is moved to the new location, so we highlight the whole paragraph along with other changes in this paragraph.**

Line 136: ...to the west (Figure 1B).

**We correct the error and highlight it with underline in line 170.**

Line 143: ...Miocene to Recent

**We change “recent” to “Recent” and highlight it with underline in line 148.**

Line 160: delete "(Figure 2A, B)"

**We delete "(Figure 2A, B)" and highlight the new sentence with underline in line 179.**

Line 162: Which grids ??

**By saying grid, we meant our survey lines (they are layout as grids). They are not plotted on the figure because the figure is getting too busy. To avoid the future misunderstanding, we change the “grids” into “survey lines” and highlight it with underlines in line 181 – 182.**

Line 163: delete "(Figure 1B)"; We don't see the profiles in Fig. 1B

**We delete "(Figure 1B)" and highlight the change with the strikeout line in line 182.**

Line 182: .. the Gonâve microplate..

**We change the “plate” into “microplate” and highlight it with underline in line 201.**

Line 185: "Septentrional ss fault" ? Where in Fig. 1 ?

**It is the plate boundary between North Hispaniola microplate and Hispaniola microplate along the north side of the Hispaniola island. We add all the major fault-zone labels in Figure 1A. Also, we explain it more in the text and highlight it with underline in line 206 – 208.**

Line 192: idem

**We add a label of Septentrional fault zone to Figure 1A and some more detail in Line 185. The changes in the text are highlighted in line 213 – 214.**

Line 221; "Chaîne des Matheux" ? Where in Fig. 1 ?

**We add the label of Chaîne des Matheux into Figure 1B and Figure 2A. We also update the text and highlight it with underline in line 243.**

Lines 222-223: "as we are proposing in this paper...(Figure 2A,B)." It is a kind of discussion > should not be in the Tectonic Setting section.

**We delete this phrase and highlight it with the strikeout line in line 244 – 245.**

Lines 234-235: "rather than being... on Figure 2A, B)" . Idem (this should not be in the Tectonic Setting section).

**We delete this phrase and highlight it with the strikeout line in line 257.**

Line 248: delete "the" in ".., derived by the Mercier de Lépinay..".

**We delete this “the” and highlight it with the strikeout line in line 270.**

Line 270: "Massif de Selle" ? Where in Figure 2 ?

**We add a label of Massif de Selle and update the text with highlight as underline in line 292.**

Lines 290-295: 2) the fold axes along the southern margin of the Cul-de-Sac basin are asymptotic, or gently curve into east-west parallelism with the main trace of the EPGFZ along the southern edge of the Cul-de-Sac basin, as typical broad zones of shearing on thick, sedimentary rocks (see the inset of Figure 2B; modified from Odonne and Vialon [1983]).

**We rewrite this part accordingly and highlight it with underline in line 313 – 319.**

Line 305: "the Canadian Superior 2D" ? What does it mean ? What is it ?

**It is the name of the seismic data set. The data was acquired by a Canadian company and name as it. We write the sentence to avoid confusion. The new sentence is highlighted with underline in line 418 – 422.**

Line 309: delete "north"

**We rewrite this sentence and highlight it with the underline in line 423.**

Line 317: ...related to the activation of two conjugate thrust faults..(add "the", delete ",")

**We correct this sentence and highlight it with the underline. Right now, it is in line 339 – 340.**

Line 321: Aftershocks indicate that the ..

**We correct this sentence and highlight it with the underline. Right now, it is in line 343.**

Line 332: delete "to the south"

**We delete “to the south” and highlight it with the strikeout line. Now it is in line 354.**

Line 334: basal (rather than "basinal", no ?)

**We think it should be “basinal” since the Léogâne plain is a “basin-ish” area.**

Line 337: delete greater

**We delete the “great” and highlight the change with the strikeout line in line 359.**

Line 339: add "area" after urban

**We add “area” to the text and highlight it with the underline in line 361.**

Line 354: add "probably" after ..phenomenon would

**We add “probably” into the sentence and highlight it with the underline in line 377.**

Line 357: replace "this" by "Lake Azuey area"

**We change this part accordingly and highlight it with the underline in line 410 – 411.**

Line 361: "All three.." ? Recall the names

**We list the names of these three thrust faults and highlight them with the underline in line 414 – 415.**

Line 370: delete "in the highlands south of the EPGFZ."

**We delete it and highlight the change with the strikeout line in line 409.**

Line 378: "... have established the late Holocene to include .." uncorrect style

**We rewrite the whole sentence and highlight it with the underline. The new sentence is between line 435 – 439.**

Line 399:...the EPGFZ correspond to the historical events of October or November 1751."

**We correct the sentence accordingly and highlight it with the underline. Now it is in line 457 – 458.**

Lines 399-400: delete ", and the deformed sediments in Lake Azuey are Holocene age" or put it before the last sentence of the paragraph.

**Same as last one. We correct the sentence accordingly and highlight it with the underline. Now it is in line 458.**

Line 403: delete "(Figure2A)".

**We rewrite the sentence and highlight the change with the underline in line 381.**

Lines 409-410: Where in Figure 2A ? not clear.

**We add more details to the description and highlight them with the underline. They are in line 387 – 393.**

Lines 414-416 : Repetition with Line 393-394. Choose where you want to leave it.

**We rewrite the whole paragraph and move it to line 410 – 427.**

Line 423: ..of the basal and topographic..

**We think it should be “basinal” instead of “basal”.**

Line 429: These studies further have proposed that ... (time concordance).

**We change the writing accordingly and highlight it with the underline in line 485 – 486.**

Line 434: "Cabritos Island". Please point it out in Figure .

**New label of Cabritos Island is added into Figure 4.**

Line 440: Therefore

**We correct this typo and highlight it with the underline in line 497.**

Line 445-446: The Troies Baies thrust fault,...: the termination structure for the 2010 earthquake.

**We correct this part and highlight it with the underline in line 503.**

Line 466: "Tapion du Petit Goâve" where in Figure ?

**We add the label of Tapion du Petit Goâve in Figure 7. Also, we refer Figure 7 in line 527 and highlight it with the underline.**

Line 471: at depth

**We correct this type and highlight the change with the underline in line 533.**

Lines 472-473: ...7 meters of the lake sediments were cored and dated at 10 Ka...

**We correct this part accordingly and highlight the change with the underline in line 534.**

Line 474: ...allows a minimum of 43 ka (NOT 33 ka ; 30m x 10ka / 7m = 43ka)

**We correct this error and highlight the change with the underline in line 538.**

Line 478: .. reveals that the.....sediments are lacustrine and Holocene to the latest Pleistocene in age..

**We rewrite this sentence accordingly. The new sentence is highlighted with the underline in line 541 -- 543.**

Lines 481-490: This paragraph is not usefull concerning the main issue of the paper.

**This paragraph is for combining the correlation between the pollen log and the acoustic reflections from the chirp sonar data and extend the age estimation of the upper 7 meters from the log data to entire sonar data set. We add more explanation and highlight the change with the underline in line 554 – 561.**

Lines 490-493: I was not clear to me what is shown in Figure 9B and how it is used to suggest that the most recent rupture in the Miragoâne Lake is related to an historical event in 1770 AD.

**Figure 9 is used to demonstrate the correlation between pollen log and acoustic property (reflectivity). From the log, we find the correlation between pollen log (which essential is the humidity environment when sediments were formed) and the reflectivity. We then use this correlation to extend this humidity-reflectivity relationship to the whole sonar data we acquired from the lake and then estimate the age of the rupture in the sonar profile in Figure 8B, C (even though there is no log data at the exact location). We explain this part more, combining with the last comment, in line 554 – 561 and highlight it with the underline.**

Line 499: ..as illustrated in ..

**We change “shown” to “illustrated” and highlight it with the underline in line 571.**

Lines 510-513: ...have broader folding wavelengths from 1 to 8 km and a weak seismogenic deformation. On the other hand, InSAR images of the 2010 earthquake indicate smaller folds and more seismogenic deformation in the 10 - 15 km belt north of the EPGFZ.

**We rewrite the sentence accordingly and highlight the change with the underline in line 581 – 585.**

Line 530: Analogy between the 2010 coseismic transpressional... and the1989 Loma Prieta...

**We rewrite this title and highlight it with the underline in line 602 – 603.**

Line 535: ..the south-dipping fault plane. (If speaking about Figure 11)

**We correct the error and move this sentence to line 621 – 623.**

Line 546: surface breaks.

**We change from “ground” to “surface” and highlight it with the underline in line 621.**

Line 550: ..shown in red color..

**We correct this typo and highlight the change with the underline in line 628.**

Line 560: 2 events is a small number to speak about earthquake recurrence cycle, I think.

**Our results agree with the previous study done by Bakun et al. [2012]: The earthquake recurrence cycle along the EPGFZ is about 250 years. We add this explanation and highlight it with the underline in line 636 – 637.**

Lines 576-578: I don't understand what authors want to mean.

**We are trying to say that the EPGFZ was mostly unruptured during the 2010 earthquake, but it still causes the surface uplift on the north (the lowland Léogâne plain) and the subsidence on the south (the highland mountain). This agrees with the geometry of the Léogâne fault. We delete this paragraph from the conclusion part since they’re mainly previous works. We highlight them with the strikeout lines in line 650 – 655.**

Line 579: 2 High-resolution sonar data....northern flank demonstrate the presence...

**We rewrite this sentence accordingly and highlight it with the underline in line 656 – 657.**

Figures:

Figure 1:

Leogâne fault (LF) is not indicated in Fig.1B

**We add LF label to Figure 1B**

In Fig. 1B, put the fold axes in white instead of black (confusing with GPS vectors)

**We change fold axes accordingly.**

In Fig.1C, the fault that separates PAPB and CS is indicated as normal fault, whereas it is mapped as thrust fault in Fig.1B.

**The normal fault in Figure 1C is the interpretation from the Canada company. The thrust fault in Figure 1B is most of the papers agree. Because we don’t have our data of our own, we just respect both of their results.**

Captions :

Line 786 : (BP) is not mentioned in Figure 1A.

**We label it as Bahamas platform in Figure 1A. We change the “Bahamas carbonate platform” in the caption to “Bahamas platform” and highlight the change with the strikeout line.**

Line 787: NHM is not mentioned neither; is it NPM instead ?

**It should be NHM in the Figure 1A. We correct this part.**

Line 791: The Cul-de-Sac-Enriquillo basin is not indicated in Figure

**It is the combination of Cul-de-Sac and Lake Enriquillo. To avoid confusion, we change it to Lake Enriquillo and highlight it with the underline.**

Line 791: " ..to the eastern tip of the southern peninsula." You mean western tip ?

**Yes. We correct this typo and highlight change with the underline.**

Line 793: PAP is PAPB in Figure 1A.

**We correct this error and highlight the new one with the underline.**

Line 793: Could'nt find CS (Canal du Sud) in Figure.

**We add “CS” to the Figure 1B.**

Line 794: LA is LM in figure 1B

**We correct this typo and highlight the correct “LM” with the underline.**

Line 795: "Figure 3A" is in fact Figure 7A.

**We correct this typo and highlight it with the underline.**

Line 795: What is/means and where is "Canadian superior" ?

**It is the name of the company who did the survey. To avoid confusion, we change it to “Canadian Superior Energy Inc.” and highlight the change with the underline.**

Line 797: "..offshore Cul-de-Sac-1 well": where is it (could'nd find it) ?

**It is on the left side of Figure 1C. We change the label to “Well : Cul-de-Sac-1” to avoid further confusion.**

Figure 2:

Profiles A-A', B-B' and C-C4 should be in yellow or white instead of red (given the size of the figure, we cannot distinguish them well).

**We change the lines as white with black outline.**

The mentions about Fig.3A and Fig.3B in Figure 2A do not match with Figure 3, but Figure 6.

**We correct this type and change it to Figure 6.**

Figure 2B: The main faults should pointed out with white arrows.

Add the frame corresponding to 2B in figure 2A.

**We add the main fault as red line (to be consistent with the insert diagram) and frame of 2B in Figure 2A.**

Captions:

PapT is PaP in Figure 2A.

DT is DFZ in Fig. 2A ?

Jac > JFZ ?

Gan T > GFZ ?

**We correct all these errors and highlight the change with the underlines in the caption.**

Line 806 : ...extending from north-northwest from the EPGFZ" . You mean "... striking west-northwest obliquely with respect to the EPGFZ"?

**Yes. We write this sentence accordingly and highlight it with the underline.**

Figure 3:

Put orientation (N and S) in Figure 3A.

**We add orientation to Figure 3A.**

Put Cretaceous in green, and Late Quaternary in light blue or light yellow or beige (to keep the classic international color chart for geological formations). Keep consistent colors throughout the different figures

**We change the colors accordingly.**

What is the red triangle (city I guess) ?

**It is the city. We also add description in the caption and highlight it with the underline.**

What means VE (vertical exaggeration ? > useless in Fig.3A since you put the H and V scales)

Put H scales in Fig.3B and C instead of VE=1.

**It is the vertical exaggeration. We think leaving VE in there is better and making the figure less busy.**

In Figure 3B, change the colors for purple, orange and yellow units. If there're all Quaternary, choose light colors.

**They all belong to Quaternary. We change they into blue palette.**

Are you sure the sub-horizontal orange and yellow units, separated by gentle fold in profile 3B are not the same ? Given the fold geometry and their respective altitudes, they look the same age (maybe not the bottom part of the yellow unit).

**We got this result by citing Massoni, 1955.**

Laurentin Thrust should (LT ?) should be mentioned in Figure 3B.

**Figure 3B doesn’t cross Lamentin thrust.**

Unless you've got arguments for it, I would'nt place the Dumay thrust on the northern side of Dumay fold, but in inside it.

**We got this result by citing Massoni, 1955.**

What is the red dot in Fig.3C ?

**We delete the mistake from Figure 3C.**

Captions about geological unit in Fig.3C should be consistent with other figures captions + referring to classic international colors chart for geological formations.

**We correct the color palette.**

Captions:

Lines 809-810: delete "on the map".

**We delete them and highlight the change with strike-out line.**

Add A, B and C for profiles A-A', B-B' and C-C' ; and replace A-A', B-B' and C-C' with Figs. 3A, 3B and 3C in Figure 2A.

**We use A-A’ instead of A is because A-A’ also indicates the direction of the cross-section. Using A doesn’t clarify the starting point and ending point of the cross-section.**

Line 810: Léogâne thrust fault or Léogâne fault (LTF or LT) ? Be consistent.

**We change it to Léogâne fault.**

Figure 4:

Figure 4A: Put Lines B6 and L19 in white or yellow instead of black lines (invisible)

**We change the color of these two lines into dark yellow with black outlines.**

(NB : in Google Earth satellite images (2018 Digital Globe image / Quick Bird image), immediatly east of the island (I. Cabritos ?), which is in the middle of Lake Enriquillo, we can see 2 clear en echelon features (folds?) aligning in the E-W direction > This attests of the eastwards extension of the EPGFZ).

**Thank you for the reminder.**

Indicate in Figure 4A where are the profiles presented in Figure 6.

**We already indicate these two profiles in Figure 2A. We do not show them here because of the duplication and crowdedness.**

Figure 4B: I understand what you want to point out (the same depositional environment for both L. Azuey and Enriquillo), but I would leave a space between the 2 lake Chirp line profiles. As it is, we could understand that you want to mean that there are parts of the one same object that has been offset- which does not make sense of course!

Keep consistent colors for lake formations (see my suggestions above).

**We add a white gap between the two chirp profiles. The color we use in this figure is different from the previous ones: it is the different stages divided by Rios et al. [2013].**

Captions:

Line 816: .... Lake Azuey (surface 15 m ASL) and Lake Enriquillo (46 m BSL) are presently...

**We rewrite this sentence and highlight the change with underline.**

Line 818: Replace "this own" by "our".

**We correct this part accordingly and highlight with underline.**

Figure 5:

I find these 2 figures not very useful. I would be more informative to show (at least to add) field pictures of the Lake and its geological environment taken from the mountains, or oblique views of Google earth satellite image pointing out the different features (faults, geological units, etc..).

**We have these two photos just for supporting the transpressional setting of the late. Since we already have the DEM in other figures, it would be duplicate to have google image.**

Put orientations (E-W) and (N-S) in Figures A and B, respectively.

**We add West axis to both figures.**

Figure 1A (if kept): remove the transparent patch indicating the fault scarp. Point it out with arrows.

However, after you put the fault in the Lake, so this is not the fault scarp ..

**We have the normal fault symbol at the foot of the fault scarp. The transparent patch can better indicate the location and area the fault scarp is covering. We tried to use the arrow, but the transparent patch is the better option for us.**

Delete the dot (.) after A.

**We delete dot from Figure 5A.**

Figure 6:

I am not sure to "see" what point out the EPGFZ fault on the profile: is it the variation of the depth of the red horizon? If so, or whatever it is, explain more please.

**EPGFZ cause the discontinuities of the red and green horizon. Because the nature of the strike-slip fault, there is no elevation change of the horizons, just discontinuities.**

In the same order of idea, how can you be sure of the dip direction of the fault you're pointing out in Figure 6B, north of the EPGFZ. You're interpreting a north-dipping fault, making it a normal fault given the morphology of the offset horizon. But how can you be sure this is not a reverse south-dipping fault? (This would be more consistent with the regional kinematics ...).

**We think this is a misunderstanding: The north dipping fault we are proposing in this paper is the on the north of EPGFZ (in Figure 6B), the Jimani thrust fault, which is more obvious to interpret.**

Captions:

Line 830: Cross sections indicated in Figure 2A are Fig.3A and Fig.3B. As already mentioned, these indications are not correct and too small (you need a lens to see them!). They should be deleted and should be indicated in Figure 4A instead.

**We add a zoom-in view of that part to Figure 2A (the yellow box).**

Figure 7:

In Figure 7A: replace Depth of seismicity by Depth of aftershocks

**We make the change accordingly.**

In Figure 7B: red dot for PG is a city (could be confused with the core location)

**The core location is red dot with cross inside. To avoid confusion, we increase the linewidth of the cross.**

Put lines M1 and M5 in red, white or yellow (invisible in black).

**This is a tough choice. The bathymetry includes almost all the colors, so maybe black is still the best choice (we did try other colors). To increase visibility, we increase the linewidth and make them as white with black outlines.**

Figure 8:

Figure 8A: Thicken the white arrow pointing out the core location.

**We make the arrow thicker.**

Captions:

Line 844: ... the cumulative topographic scarp associated to the southernmost...

**We change this part and highlight the change with underline.**

Figure 9:

Captions:

Line 849: .. EPGFZ at 1770. ? 1700 what ?

**We change it to “in 17700 A.D.” and highlight it with underline.**

Line 851: "Red bar ....location". This sentence should be in Figure 8 captions.

**We change the writing as “The chirp sonar profiles are from the location of the red bars in the Figure 8B, C.”, highlight it with underline.**

Figure 10:

Use different color scales to better distinguish the topography from the co-seismic elevation change

**We got the InSAR image as it is. We cannot change it. Also, this color scale is very common for InSAR image.**

Captions:

Line 860: Structural map of the southern San Fransisco Bay region...

**We add southern to the title and highlight it with underline.**

SAF: San Andreas Fault; SF: Sargent Fault.

**We add these key to the caption and highlight them with underline.**

Figure 10:

Captions:

Lines 852-853: "aftershock expression of the late Holocene strain partitioning": this means nothing ! Please revise.

**We rewrite this part as “the structural, aftershocks, and the late Holocene strain partitioning” and highlight it with underline.**

Line 854: "Black arrows" ? The two black arrows in the Figure show the westward wrenching of the Gonâve microplate along the Caribbean plate (not its southwest direction!).

**Probably because of the 3D view, but they are pointing at southwest direction …**

Line 854: ..plate. 2010 InSAR....show a large component...

**We change the writing of this part and highlight it with underline.**