Comments for the manuscript: "Earth's radiation belts ions: Patterns of the spatial-energy structure and its solar-cyclic variations" by A. S. Kovtyukh

I think that the manuscript now is much linear and easy to read. I have just a few more corrections though, mostly concerning the fluency of the text and no more technical questions. The list is reported below.

Line	Comment
12	"[...] in the inner regions of the ERB, fluxes [...]
24-25	"The ERB consist mainly of electrons and protons, but there are also helium nuclei and other [...] "
33	"[...] geomagnetic trap, drift conserving [...] and populate [...] "
34-35	"This layer is called the drift shell. "
37	"For the dipole magnetic field, L is [...] "
42	"[...] along a certain magnetic field line [...] "
43-44	"This dependence is described [...] "
45	"[...] the same magnetic field line, respectively [...] "
48-49	"[...] of radial diffusion of ions towards [...] "
53	"The inner belt ($L < 2.5$) of protons with $E > 10$ MeV is formed by [...] "
55	"For protons with $E < 10$ MeV, this mechanism [...] "
56	"The inner belt of ions with $Z > 4$ is formed [...] "
58-59	"In the intermediate region ($2.5 < L < 3.5$), the mechanism of a ion capture from the Solar Cosmic Rays takes place during strong magnetic storms [...] "
62	"However, for a comprehensive verification [...] "
76-77	"[...] the possibility to create sufficiently complete and reliable empirical models [...] "
79-83	"In the following sections, the spatial-energy structure of the ERB in the {E, L} space for protons, helium and CNO group ions are considered (Sect. 2), together with possible physical mechanisms of formation of these structures and their solar-cyclic variations (Sect. 3). Finally, the main conclusions of this work are given (Sect. 4). "
89	"According to this criterion and to the theory of [...] "
91	"[...] represents this very boundary [...] "
93-94	"A significant number of these discrepancies can be connected to the [...] "
107-108	"[...] to separate fluxes of ions by their charge. Moreover, for the ions [...] "
114-115	"[...] the results of every experiment can be compared to the others [...] "
119	"Figures 1–6 show the spatial-energy distributions [...] "

120	I suggest removing entirely the quote “hese figures united in pairs: ” and just leave the part describing odd and even Figures
123-124	“The markers are connected by lines of equal intensity [...] ”
132	I suggest removing the quote “In this place, it is need to say a few words about the method of constructing these figures.[...] ”
147	“[...] corresponding set of experimental points (icons); then it was transferred [...] ”
185	“Figure N sums up results from [...] ”
188-189	“21^{st} / 22^{nd} / 23^{rd} [...] ”
190	See line 185
198	See lines 188-189
205	“From a comparison of Figs. 1 and 2, one can see [...] ”
210	“[...] (2016a,b), which have been constructed from Figs. 1 and 2 confirm [...] ”
214	“[...] J $\propto$ $E^{-\gamma}$, where the index γ = [...] ”
219	I would remove the “of the magnetic field” part here, magnetic field lines already describe everything
223	“Segments of iso-lines, that are parallel to the red line, also correspond to [...] ”
227	“at L = 3–6, $\gamma = 4.8 \pm 0.5$. [...] ”
228	“between these iso-lines increase with L [...] ”
239	“[...] helium ion fluxes, averaged for quiet periods (Kp $<$ 2), are presented [...] ”
240	See line 185
244-245	See lines 188-189
246	See line 185
250	See lines 188-189
251	“with Figs. 3–4, one can see that [...] ”
253-254	“[...] E $>$ 1 MeV practically do not change, and [...] ”
255	“Figures 3 and 4 show the same patterns [...] ”
258	“[...] because there are no experimental data for helium ions in these regions. [...] ”
266	“For helium spectra [...] ”
270	“[...] the red line (i.e. in the region of power-law spectra) substantially deviate from [...] ”
278	“[...] CNO group ions fluxes, averaged for quiet periods (Kp $<$ 2), are [...] ”
280	See line 185
283-284	See lines 188-189
285	See line 185
286-287	“[...] period of activity [...] ”
289	“[...] nd its configuration differ [...] ”
291	“[...] Figs. 5–6 one can see that, for ions of CNO group, the [...] ”
297	“[...] This means that, for ions of the CNO group, the ionization [...] ”
300	“[...] have not been obtained by the experiments collected in [...] ”
304	“[...] especially large at the peak of solar activity (Fig. 6): during these times, the slope of iso-lines [...] ”
306	“At the same time, at L $>$ 4 in Fig. 5 and at L $>$ 3 in Fig. 6, the iso-lines [...] ”
316	“[...] at the minimum of solar activity [...] ”
319	“[...] following the results obtained [...] ”

324	"[...] and are reduced rapidly with [...] "
328	"[...] have not been considered in these works [...] "
329	"In quiet periods, only the mechanism of ionization loss is significant [...] "
330	"[...] trapped in small L [...] "
331	"[...] the ERB protons are determined, in this mechanism, by the density [...] "
336	"[...] the proton supply rates to the inner belt, under the action of the CRAND mechanism, remain [...] "
338	"[...] with decreasing solar activity [...] "
341	"A proton lifetime on [...] "
352	"[...] this was noted in sections [...] "
357	"[...] where $L^{\star}$ corresponds to the L shell of protons of the same energy [...] "
362	"[...] remains unchanged [...] "
363-364	"[...] in fact, these protons form mainly under the action [...] "
369	"[...] of radial diffuson of ions during the [...] "
377	"[...] values of L, these fluxes begin [...] "
384	"[...] highly turbulized region, but [...] "
387	"[...] must be generated in the outer [...] "
389	"The high-energy part of the ion [...] "
390	"[...] has a power-law shape and the exponents [...] "
394-395	"[...] along logarithmic axes E and J in a J(E) plane [...] "
424	"[...] decreases rapidly with [...] "
426	"Then, the lower boundary [...] "
429	"Using B_s [...] "
434-435	"[...] as a result of their interactions with the current layer [...] "
439	"It has been found that in the outer belt [...] "
438-439	"[...] in the near equatorial plane [...] "
443	"[...] radial diffusion which conserves μ [...] "
448	"This kind of dependence of the amplitude [...] "
461	"[...] the extensive gaps in $Z \geq 2$ ion data do not allow [...] "
640-644	For what concerns all the Figures, the captions are very similar, so I suggest a modification in the first one (Figure 1) that should be repeated for all the others: "[...] J, which is given in units of $(cm^2$ s ster MeV$)^{-1}$, is the differential flux of protons [...] ". Also "associated with " and "[...] the power-law tail of the proton spectra, while green line corresponds to [...] "