



SDI Review Form 1.6

Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_45815
Title of the Manuscript:	Origin and Early Evolution of Terrestrial Planet Atmospheres and Oceans
Type of the Article	Interplanetary atmosphere

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	<p>I think the authors did well. I have a bias on this subject and it Might be unfair to consider these views. I would like to suggest To the authors to look at these points and reconsider some of Your views/considerations.</p> <p>If the figure and table were inside of the text and if a conclusion Statement was included, I would accept the paper at face value. However, I believe these comments below are value added...</p> <p>Abstract:</p> <p>1. I look forward to why: <i>Both Mercury and the Moon are not massive enough to hold any gas species to form an atmosphere</i></p> <p>2. Moreover, I believe differently about Mars in that nuclear isotopes are all over the surface and these exist only after nuclear explosions. In other words, there was a nuclear catastrophe that blew away the Martian ocean and atmosphere. But then this is my bias... See papers/books by J.E. Brandenburg...</p> <p>Text:</p> <p>3. <i>If a gas species is not available in the nearby areas of a planet, it is not possible to form the atmosphere of a planet.</i> How are these species created?</p> <p>4. <i>The surface temperature and/or pressure of a planet determine the states whether a volatile species exists as a solid, liquid, or gas on the surface of a planet.</i> The Goldilocks zone should exist on both the Earth and Mars. Why such a difference?</p> <p>5. <i>The higher the temperature, or the lighter the gas species, the faster a gas species escapes from an atmosphere.</i> Why? Using your comments, higher altitudes result in colder temperatures so this is competing...</p> <p>6. Somewhere along the line, I got the impression that the gaseous bodies such as Jupiter and Uranus Have no atmosphere. This is not true. Maybe it is my problem and not the author's...</p> <p>7. In this correlation, there should also be considerations for electric and magnetic fields on all of these Bodies as well...</p> <p>8. Table I should appear near line 181...</p> <p>9. <i>It has been suggested that nearly all the H₂O of Venus is still entrapped</i> This is hard to accept because of the temperatures being so high that should have caused chemical reactions that would release the sold material.</p> <p>10. <i>Then, how did the more than 95% CO₂ vanish from the Earth's proto-atmosphere?</i> One could argue that this was due to photosynthesis with plants which do not exist On any other planets.</p> <p>11. Regarding the impact of the Moon, if gravity is a driver, than the presence of the Moon would reduce gravity and remove the local atmosphere. This does not happen...</p> <p>12. <i>Earth's bigger iron core, relative to its rocky mantle.</i> This impacts magnetic fields as well. Moreover, the higher density increases the gravity at the surface. This may also be a worthwhile correlation.</p> <p>13. Line 269. Regarding temperature, you may also want to correlate with the daily temperature variation considering night and day.</p> <p>14. <i>This speculation provides no explanation as to why Venus and Mars</i></p>	<p>The kind and objective comments of the reviewer are highly appreciated. Following his/her suggestions, I have added a conclusion (highlighted by yellow colour) in the revised manuscript. Point by point, his/her minor comments are replied as follows:</p> <p><i>Abstract</i></p> <p>1. It is clearly shown in Table 1 that the masses of both the Moon and Mercury are smaller than the lower bound of CM for CO₂. Hence, it is not possible for either the Moon or Mercury to hold an atmosphere.</p> <p>2. The nuclear isotopes on Mars might be added to Mars after accretion and solidification due to meteorite bombardments.</p> <p><i>Text</i></p> <p>3. They have to be in primordial planetesimals. Please read 3. THE SOURCES OF VOLATILES AND IMPACT PROCESSES.</p> <p>4. The mass and the surface pressure and temperature are so different between Earth and Mars. These make the difference.</p> <p>5. This is the fundamental molecule kinetics. The colder the temperature, the less a gas species can escape from a planet. It is a competing factor, but is less important relative to the gravitational force.</p> <p>6. As concluded by the reviewer, it is his/her problem. In Table 1, I have shown that Uranus' mass is much greater than the lower bound of CM for both He and H₂. Thus, Uranus has a He and H₂ atmosphere, and so have all other major planets.</p> <p>7. This is beyond the scope of the present manuscript.</p> <p>8. I leave this to the editor.</p> <p>9. The reviewer has totally ignored the pressure effects. Please see reference [15] Liu 1987.</p> <p>10. See reference [20] Liu 2004.</p> <p>11. I have no comment on this statement.</p> <p>12. Of course, this has impacts on Earth's magnetic field and gravity.</p> <p>13. The daily temperature variation between night and day is too small to be significant here.</p> <p>14. I have no comments on a nuclear war.</p> <p>15. A conclusion has been added in the revision. I leave the insertion of Figure and Table to the editor.</p>



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	<p>were not bombarded with “dirty snowballs” after accretion. As mentioned my view and Brandenburg differ from the conventional wisdom. If there was a nuclear war, where? The asteroid belt between Jupiter and Mars would have been a planet slightly smaller than Mars. It may have been the aftermath of a nuclear war between this planet or Phaeton and Mars. Asteroids and other meteors would be all around During this situation and depending upon the planet’s orientation and Location, some of these effects might or might not be prevalent.</p> <p>15. Figures and tables should be in the text. Needs a conclusion statement.</p>	
Minor REVISION comments		
Optional/General comments		

PART 2:

	Reviewer’s comment	Author’s comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	<p><u>(If yes, Kindly please write down the ethical issues here in details)</u></p> <p>No other than my own bias on this subject. They are in accordance with the conventional wisdom.</p>	No comments.