

## ***Interactive comment on “Low titanium magmatism in northwest region of Paraná continental flood basalts (Brazil): volcanological aspects” by F. B. Machado et al.***

**Anonymous Referee #2**

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Review of the manuscript entitled "Low titanium magmatism in northwest region of Paraná continental flood basalts (Brazil): volcanological aspects", by F.B. Machado, E.R. Viana Rocha-Júnior, A.J. Ranalli Nardy, and L. Soares Marques, submitted for publication in Solid-Earth.

This manuscript describes the petrology and geochemistry of a low-Ti basaltic magmatism in the NW part of the Paraná Continental Flood Basalts (PCFB) volcanic province. The authors highlight the differences between LTi (Ribeira) and HTi (Pitanga) magmas in that part of the PCFB and estimate the temperature of mineral crystallization based on some geothermometers.

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First of all, I recommend a general revision of the English writing. I'm not native but I think that English needs to be strongly improved to make the manuscript clearer; in its actual form it is hard to understand. Another important question is the aim of the study. It is not really clear for me, maybe due to the writing of the manuscript. A general reorganization of the text, separating results from interpretation in a (new) discussion section, could help to a better understanding of the study. Section 3 (Geological setting and sediment lava interaction) can be separated into two sections (e.g. "Geological setting of the studied area" and "Field description of the magmatism"). The new order of sections could be as follows: 1. Introduction, 2. Geological setting, 3. Samples and methods, 4. Field occurrence of the magmatism, 5. Petrography and mineral composition (including geothermometric estimations), 6. Whole-rock composition, 7. Discussion (about the main differences between LTi and HTi magmatism in this part of the PCFB: petrological, mineralogical, geochemical and crystallization aspects), 8. Conclusions.

Major comments: 1) Regarding section 2 (Materials and methods), I think that more information about the studied samples (e.g GPS location of all samples, geological unit) is required. Another important question is the analytical technique used to perform the mineral analyses (EMPA?). Please, specify the technique, the laboratory and the equipment and the conditions of analysis.

2) Geological setting of... (section 3). The authors have good examples of peperites and other sediment-lava interactions and an independent section for their description could strengthen the paper. Separating clearly field description from implications or interpretation to the discussion section is recommended.

3) Whole-rock geochemistry is quite surprising. Analytical data do not show Loss on Ignition (LOI) values. So, I interpret that the values from table 1 are recalculated values on anhydrous basis (total sum 100 wt. %). This is not acceptable, in my opinion. Authors have to provide original data of the analyses although they used recalculated data for classification purposes in TAS diagram. This recalculated values show high

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contents in TiO<sub>2</sub> and alkalis (wt. %) for subalkaline basalts even for the high-titanium basalts of Piccirillo and others. Moreover, authors separate the studied basalts into two groups depending on their TiO<sub>2</sub> content and some rocks of the low-Ti group have higher content of TiO<sub>2</sub> than samples of the high-Ti group. There are some inconsistencies in the data between text and table that need to be checked. Another question is the samples represented in the figures. Figures 7-10 show only one group of samples plotted ("studied basalts") whereas figures 11-17 show the two groups of magmatic rocks (Ribeira and Pitanga)... why?. I think would be more interesting for the readers to separate samples in all figures.

Other minor comments: Authors use an unusual terminology for some petrological and geochemical descriptions and there are a lot of misspelled words. These problems can be solved with an important revision of the redaction and the reorganization of the paper.

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Interactive comment on Solid Earth Discuss., 6, 2215, 2014.