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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "One second vector and scalar magnetic measurements at low latitude observatory, CPL" *by* Phani Chandrasekhar Nelapatla et al.

Anonymous Referee #2

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The article "One second vector and scalar magnetic measurements at low latitude observatory, CPL" presents a detailed description of the recent upgrades of CPL observatory site, including new magnetic sensors, data loggers and internet connectivity to ensure prompt and reliable 1-second magnetic data. It presents the data acquisition system and baseline operations. It is highly informative, but sometimes the text is not very clear and some part contain too many details, for instance on software description. I therefore recommend minor revisions. I include a list of points that should be addressed.

Some acronyms are not explicitly defined in the text (e.g. on page 1 line 28: CSIR; on page 7, line 2: MT, page 12, line 12: OFC ...)

page 1, line 24: I think that the BCMT yearly bulletin, that does not discuss the instruments developments for 1-second acquisitions, is not the more suitable citation here. I suggest to cite instead: Chulliat, A., J. Savary, K. Telali, and X. Lalanne (2009), Acquisition of 1-second data in ipgp magnetic observatories, in Proceedings of the XIIIth IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition, and Processing, edited by J. J. Love, Open-File Report 2009–1226, pp. 54 – 59, U.S. Geological Survey.

page 1, line 31: for the GEOMAG-02MO sensor, the manufacturer was indicated, I suggest to do the same for the MAGREC-4B.

page 2, line 3: I suggest to add INTERMAGNET to the list of keywords.

page 2, line 8: I suggest to indicate explicitly that the data are Earth magnetic field data

page 2, lines 9-12: most of the institutes cited operating many observatories they do it in collaboration with other institutes. I suggest to modify this list (for instance USGS, GSC, GFZ, EOST are also contributing with a large number of observatories) or to remove it.

page 2, line 14: I prefer the use of the word "data" as plural word: I suggest to replace "is" with "are".

page 3, figure 1: the upper panel includes axes label indicating latitude and longitude values, but the numbers shown are constant on the small area shown. The lower panel contains many annotations that are written with a small font, that is not easily readable on print. I suggest to incread the fonts and use colours that are contrasting with the background image.

page 3 line 19: I suggest to revise the sentence to make it more straightforward: "The CPL observatory is located 60 km. . . and was developed . . .".

page 3, lines 20-23: I suggest to revise the description of the observatory setup to give some more information aimed at readers not familiar with magnetic observatories.

page 4, lines 4-14: I think it would improve clarity to describe the history of CPL instrumentations, indicating briefly the reasons behind the installation of additional instruments etc.

page 5, figure 2: correct “Lightning” on the figure description. I again suggest to increase the fonts and make text more easy to read.

page 5, line 28: ‘Y’ component indicates the East (geographic) component of the magnetic field. I think here the recorded component should be indicated either as E or D.

page 6, figure 3b: The graph contains many details, but there is no indication about the GPS receivers used for time stamping. It could be useful to add this information.

page 6, line 18: I suggest to add the INTERMAGNET technical note in the Reference list, removing its title from this sentence.

page 6, line 19: I suggest to use the word “issues”, instead of “problems”

page 7, figure 4: an indication about the experimental conditions when these graphs were computed, could be useful. Did they were acquired at CPL? How long was the acquisition?. . .

page 7, line 6: the text within brackets is reproduced form INTERMAGNET technical note, but it not easily understandable by a reader: I suggest to write “Phase response, maximum group delay”).

page 10, line 9: I suggest to indicate the manufacturer of Magrec-4B.

page 10, line 26: I would suggest to use a different expression than “raw GPS data”, since the position solution is not a raw GPS measurement. Raw GPS data would be the pseudorange and phase values of each satellite acquired, before computing a position solution.

page 11, figure 6: this figure contains too many screen-shots that are rendered in a

small space. I suggest to reorganise it to have more readable panels. I do not think all 9 panels are necessary for the publication.

page 12, line 10: I would suggest to use a different word than “establishment”, e.g. “institute” or “campus”.

page 12, line 14: since it was already indicated that the Hyderabad computer is a Windows machine, there is no need to repeat it.

page 13, lines 1-17: I think that this description provides too many operational details that are not needed for this publication.

page 15, figure 9, page 16, figure 10 and relevant text in the manuscript: I think that using low pass filter to despike the data is not the best approach, since it filters out also many other geophysical signals. It would be preferable to flag the data points that are affected by unwanted noise and remove them when producing quasi-definitive data by substituting their values with the “missing value” used in INTERMAGNET.

page 20, lines 4-12: I suggest to add some additional information to recall the upgrades of CPL observatory presented in the article.

page 21, line 27: the complete citation of Turbitt et al., 2012 should be: Turbitt, C.; Matzka, J.; Rasson, J.; St-Louis, B.; Stewart, D., An instrument performance and data quality standard for INTERMAGNET one-second data exchange. [Poster] In: XVth IAGA Workshop on Geomagnetic Observatory Instruments and Data Processing, Cadiz, Spain, 4-14 June 2012.

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