

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2022-166

Anonymous Referee #2

Referee comment on "The Intelligent Prospector v1.0: geoscientific model development and prediction by sequential data acquisition planning with application to mineral exploration" by John Mern and Jef Caers, Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-166-RC2>, 2022

Dear authors,

Thanks for your interesting contribution. The manuscript is well written and very pleasant to read. The objectives are very clear and the method is rather well explained. I have a few suggestions and questions to clarify some points and facilitate the reproducibility of the work.

Line 56: could you explain what a non-sequential scheme could be in the context of mineral exploration, as it seems to contradict the previous sentence on line 38. It becomes clearer though, when reading the following paragraphs.

Last paragraph of section 1: Which of the mentioned approaches did you select for your demonstration?

Section 4.2: how is the state space initialized?

Line 289: should it be $r(s,a) = -\text{Cost}(s,a)$ or $\text{Cost}(s,a) = -C_{\text{measurements}}$ to be consistent with the subtraction of $C_{\text{extraction}}$ in the profit?

Table 2: where does d come from? Formatting: should it be an algorithm rather than a table object? See e.g. the example in the latex template

Line 356: 'At each time step'

Line 357: 'The full tree is constructed' – in the case of the POMDP ?

Line 359: by trial trajectory, do you mean a branch of the tree or realization of the full tree? How is the (partial) tree generated? What is the prior over the trajectory length , and between the different actions (explore further, mine or abandon)

Line 378: previous visits cumulated over the previous iterations t ?

Lines 423 to 425 and figure 9 bottom right panel: can you clarify the stopping criteria as at $t=5$ the mean of the ensemble decreases and is getting smaller than the extraction cost. Can you also clarify how the value of gained information is assessed?

Figure 13: missing scale for the mean average error