

## ***Interactive comment on “Database of global glendonite and ikaite records throughout the Phanerozoic” by Mikhail Rogov et al.***

**Anonymous Referee #2**

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The review paper collects comprehensive data of glendonite/ikaite over the Phanerozoic time from worldwide localities. The collection is worth and appropriate to being released by the Earth System Science Data. Before the formal publication, moderate revision is necessary to be done for the MS. MS structure – the organization of sections is confusing. I suggest an improved structure like that 1. Introduction, 2. Background of ikaite and glendonite (2.1 Mineralogy and petrology, 2.2 Morphology, 2.2 Isotopic signatures), 3. Method of data compilation (3.1 Data mining, 3.2 Database content), 4. Results and discussion of data compilation (4.1 Temporal and spatial distributions of glendonite, 4.2 Glendonites as palaeoenvironmental indicators), 5 Conclusions. The content of Data availability is presented as Supplementary material in the end of text part). Note: the cathodoluminescence properties should be included in the section

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about mineralogy and petrology. The language of the MS needs to be further sharpened. Line 84: cementation and diagenesis occur in sediments related to porewater not seawater. Line 110: Mg and Fe-depleted. Line 112: cement in different morphology. Line 160: Supplementary material. Line 171: in contrast to other geological periods. Line 181: The occurrence of glendonite over geological time is patchy possibly due to challenges in preservation. Some periods in addition to Cretaceous lack glendonite record. I think it does not mean anything based on the lack of glendonite. It is OK to describe limited existence of glendonite in greenhouse-prevailed periods like Cretaceous. In section 5.1. Temporal distribution of glendonite seems not simple. I suggest the periods can be reorganized into three categories including frequent occurrence, occasional occurrence, and absence. Line 223: experiments results in the last few years suggest. .... Line 225-235: I think the discussion should be extended regarding to the paradox between glendonite occurrence and non-low-T settings from both nature and labs. I suggest the discussion can be basically according to temporal and spatial distributions of glendonite summarized in this study. The importance of different environmental factors in glendonite/ikaite formation can be evaluated related to specific scenario and background of glendonite existence.

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