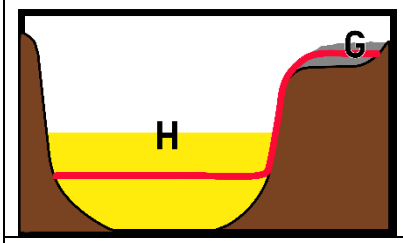
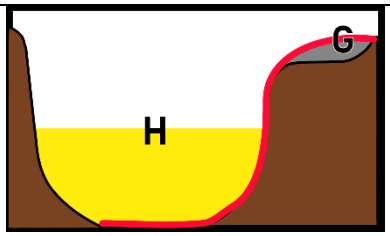
Dear reviewer 3,

We would like to thank you for your thoughtful comments. We have discussed them extensively and reply to them in detail below.

1. *The box model construction illustrated in Figure 1 shows two-way Mediterranean Atlantic exchange. It is widely accepted that this configuration probably only applies to Stage 1 of the MSC, when gypsum was precipitated in the marginal basins of the Mediterranean requiring a high sea-level. Stage 2 and 3 are more likely to have occurred with Atlantic inflow but negligible outflow from the Med, consistent with a base level that was below the level of the gateway. Consequently, the main application of this model configuration is Stage 1. This is mentioned in the abstract but is not made clear in the introduction where a description of all three phases of the MSC (L31-39) is followed by a statement about the challenges of shallow-deep water correlation as a justification for looking at synchronous gypsum-halite precipitation (L50-50).*

This is correct. The model only applies to a Mediterranean that is still connected to the Atlantic Ocean. Our analysis thus focuses on what is referred to as phase 1 in the consensus model and is commonly attributed with only gypsum precipitation. This assumption is often challenged.

Place our study within we will add the phase we are focusing on in lines 40 and following as well as an additional figure to visualize the difference between consensus model and alternative scenario.

	
Alternative scenario of synchronous precipitation of gypsum and halite	**Consensus model**

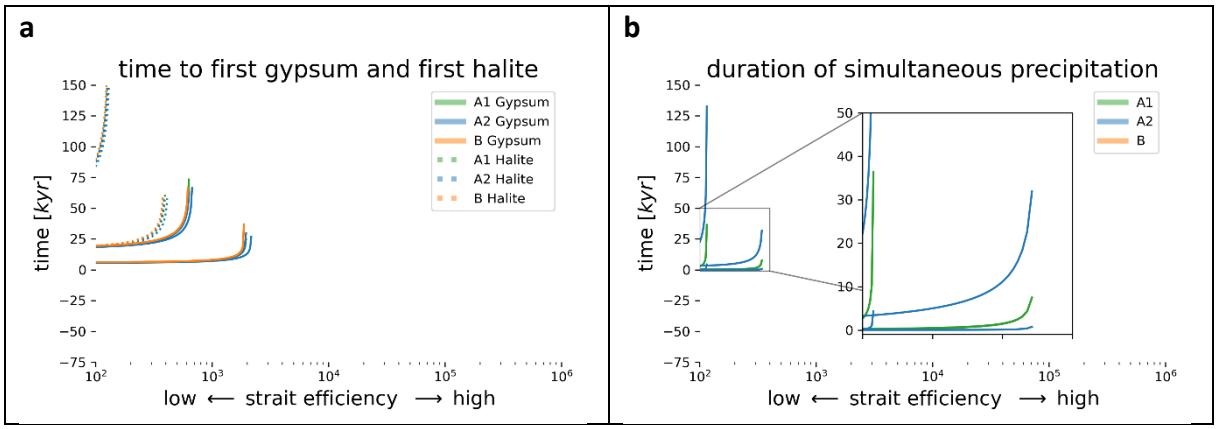
2. The paper concludes that synchronous precipitation of gypsum and halite can only happen in Scenario A when the system as a whole is close to halite saturation. While I accept the statement in the first paragraph of the discussion (L334-339) that the model is not meant to represent "the complexity of the Mediterranean Sea", none the less, it is possible at least to point out the episodes within the MSC that are closet to the model configuration used and consider the implications. For example, some discussion about when within Stage 1 reaching near halite saturation is most likely would enhance the applicability of the results. The strait efficiency required to generate synchronous gypsum-halite precipitation could be evaluated

against the Sr isotope ratio data for Stage 1 which progressively diverges from the ocean water curve. This might then enable them to evaluate the duration of the potential overlap between Stage 1 and 2 mentioned in L417-20.

Comparing model results to strontium values is indeed an interesting idea, that we are addressing by developing a model that accounts for spatial differences (east vs. west, central vs. marginal), the influence of a non-constant freshwater balance (FWB), river chemistry, and the role of the Paratethys in the evolution of strontium isotopic ratios and the formation of evaporite deposits. Without a more detailed analysis of these factors, any comparison to strontium values appears futile, as their average remains relatively stable throughout stage 1.

In our discussion we already state that conditions of simultaneous precipitation likely occurred toward the end of stage 1 of the consensus model. To elaborate on this our analysis will include new aspects, such as the timespans required for the model to reach gypsum and halite saturation, as well as the duration for which synchronous precipitation of gypsum and halite conditions are maintained during each model run. Those new results (see below) will be added to the current Figure 2.

Figure a describes the time the model takes to reach gypsum (solid line) or halite concentration (dashed line). The vertical asymptote of each curve intersects the x axis at the restriction parameter that would just not yet lead to gypsum or halite. Figure b shows the timespan during which a model run would meet the conditions as defined in the manuscript. This time the vertical asymptote of each curve marks those runs that meet the conditions once they have reached stability. i.e. the duration goes to infinity. Left from this singularity, the model meets the conditions only for a short amount of time during the stabilizing phase.



3. Section 3.2.3 (Scenario B) – this section needs a little more explanation of the chemistry and particularly some more information about the chemistry of the rivers that are modelled in Fig. 4 so that the reader can see how their different compositions result in different consequences.

We will add a reference to the table with the raw values in Gaillardet et al. (1999) and expand on how this information is used within our simplified description of salinity.

To not only make our approach easier to follow but also add depth to the results, we will add a brief discussion on how those compositions influence the results.

name	***NaCl***	***$CaSO_4$***
No ions	0	0
Rhone	0.03	0.07
Po	0.03	0.09
Nile	0.07	0.07
Ebro	0.12	0.19
Mediterranean Sea	271.1	5.25

technical issues

Title – suggested tweak "A model approach to the synchronous precipitation of gypsum…."

We have decided to change the title to
Title- A question of time and space: A model approach to the synchronous precipitation of gypsum and halite deposits during the Messinian Salinity Crisis

Abstract L9 – "different configurations". A little more clarity about what those configurations are would help here
We will clarify that we talk about precipitation patterns in the abstract and elaborate on this in the introduction.

Figure 3 – both the caption and the text in line 244 state that there should be an "x" showing the present-day Mediterranean on Fig 3a, but I can't see it.
It is indeed very small (almost on the x axis, right above 70 cm/yr), we will make it more obvious.

Section 4.2 L405 – the thickness of the lower Tripoli Unit in the Lorca basin is used to illustrate the likely sedimentation rates resulting from step 3, but that isn't helpful if you don't know how thick that unit is…. and I don't!

This is a very good point. We will rewrite this argument by adding this information.

The interval in question is 5m thick and has been attributed to an interval of 400kyr. The resulting precipitation rate, however, is questioned since the base of this sediment cannot be defined due to a gap in sedimentation **(Rouchy et al., 1998).**