We thank Angelica Alberti-Dufort for her insightful review. Below, we respond (in black) to the comments (in blue):

I will start by saying that this review was very insightful. I'm both surprised and disappointed by the lack of literature regarding this subject and I agree that this should be better understood and studied, as I work everyday with climate scientists to help them better communicate.

We thank the reviewer for this supportive comment on our manuscript.

Here are some comments. I hope this can help you improve your paper.

I suggest that you dig a little deeper into the literature about scientists as communicators in general, not just in the field of climate science. I know that there is a lot of literature that delves into this more general issue.

The reviewer is right that there is a very extensive literature on scientists as communicators, including a suite of academic journals and dedicated toolboxes focussing on the topic. We feel that an overview of the general topic would never be exhaustive and would thus not do the field justice. We thus prefer to focus on climate scientists as communicators, also because the challenges in communicating about climate science are different from many other fields of science. Climate change is abstract and emotive (scary) for many people, so in this study we want to focus on effective ways in which climate scientists can communicate about this topic.

For instance, in Section 1.1, it is mentioned that research shows that scientists are seen by the public as trusted information producers and that they should increase their communication efforts, which is true, but a limited description of scientists as communicators. This positive aspect about scientists can sometimes be counterbalanced by recurring shortcomings such as the difficulty in simplifying scientific information or the sense of inferiority that non-scientific target audiences may feel towards them. Additionally, scientists generally lack the necessary skills and tools to communicate effectively based on their target audience, just because they weren't trained to do so.

This is a good point by the reviewer. In the revised manuscript, we will add a sentence that insufficient training makes scientists hesitant to engage in climate communication activities, and refer to Rozance et al (2020; https://dx.doi.org/10.1088/1748-9326/abc27a).

These observations about scientists, in general, could also be discussed in section 5, where it is mentioned that care should be taken in concluding that climate communication activities by scientists have a positive impact.

The reviewer is right that communication activities by scientists might not always have a positive impact. All studies in our sample did report a positive impact, but this may be due to publication bias, where only 'positive' results tend to be published. One of the key messages of our manuscript is that also non-positive impacts should be evaluated and published. We will further clarify this point in the revised manuscript.

The emergence of "knowledge brokers" in the last decade is something worth exploring to enhance scientific communication. These brokers are particularly present in various health science fields. They may or may not be scientists, but they possess the technical skills to communicate science and engage their audience while maintaining scientific rigor. They are an important tool to scientists who need to communicate. https://journals.sagepub.com/doi/abs/10.1177/1075547009359797

We thank the reviewer for this comment; but feel that knowledge brokers are a bit out of scope for this review. We would like to keep the focus on the climate scientists as communicators. The role of knowledge brokers could very well be the topic of another review analysis, and we will in the revised manuscript add it to a new paragraph in the discussion section about possible future research directions.

This brings me to suggest to add some words about who are the main climate communicators. Except for scientists, who else is talking about climate change and what can we say about them (these include knowledge brokers).

Again, we prefer to keep the focus of our manuscript on the scientists, as this was the original aim of our research. We want to avoid 'research creep', by extending the aims beyond what we set initially. While it would be very interesting to see an overview of all players in the climate communication space, that would be beyond this manuscript. We will thus mention this in the new paragraph in the discussion section about possible future research directions.

Along these lines, in Section 2.2 : You mention "scientists" and "science communicators" which for me, are very different source of information with different sets of skills and different impacts on the target publics. I get that these two types are described in the dialogue model, but when you read the paper it feels like these two are the same. If you have better presented the different communicators somewhere between the introduction and the theoretical framework, it will be less confusing.

We understand that this indeed was confusing in the original version of the manuscript. In the revised version, we will remove 'science communicators' from this paragraph on the dialogue model and only refer to scientists; also to emphasize the scope of our article.

I feel like the fundamental goal of the review, or what the conclusions will lead to, could be more specific. For instance, if there are so few research papers on this subject what should we do about it? If the deeper goal is to have effective communications that reach as many people as possible and have the greatest impact on their engagement in the climate change crisis, regardless of the communicator's status, I believe one of the main conclusions should be the need to explore the possibilities offered by knowledge broker or other types of communicators in collaborating with climate scientists.

We do not entirely agree with the reviewer's suggestion that the goal of our manuscript is to have effective communications that reach as many people as possible and have the greatest impact on their engagement in the climate change crisis. Instead, the goal is to improve the quality of the science communication by scientists, by evaluating the impact of

communication activities. As we also responded above, we prefer to leave knowledge brokers to a dedicated article.

Helping climate scientists become better communicators is also a worthwhile goal but very different to me. Both could be discussed in the paper. https://link.springer.com/chapter/10.1007/978-3-319-50398-1_22

We thank the reviewer for this reference; and agree that it is a useful addition. We will add it to the conclusion section of the revised version of our manuscript.

Training for professionals, outside the academic setting, is an important part of climate change communication activities, but there is little evidence of its effectiveness in changing perceptions and behavior. This type of communication is perhaps more often associated with scientists and could be interesting to explore in future research. « Il n'existe aucune preuve de l'impact d'une formation de sensibilisation aux enjeux climatiques sur les comportements » (lemonde.fr)

We feel that teaching for professionals is a bit outside the scope of our research, so prefer not to explicitly discuss it in this manuscript. It might be relevant for a follow-up study, though. We will add it to the new paragraph in the discussion section about possible future research directions.

Section 4.2: The audiences accessing climate information could be something better documented in other types of papers who might have been excluded from your review because of your methodological choices. I'd end this section by opening on what we could find elsewhere on this matter, like the fact that these conclusions can vary greatly across the world. For example, here in Canada, scientists and climate communicators are aiming to a very large public as a lot of them are government employees who have the "mandate" to inform practitioners and the population in general, about climate mitigation and adaptation. But this couldn't be more false in other countries.

We don't intent to provide an exhaustive list of audiences reached by *all* climate science communication in section 4.2, which is about the results of our analysis. Instead, we aim to give an overview of the audiences reached by those seven articles that pass our selection criteria. We thus think that including a comment here about other audiences might confuse readers.

Finally, it might be interesting to add a few words about the different target audiences for climate change-related information and their levels of knowledge and engagement. This would help support the argument presented in section 1, line 25. https://www.nber.org/system/files/working_papers/w30265/w30265.pdf

We thank the reviewer for this useful reference, and will add it to the introduction of our revised manuscript.

In the conclusions, you talk a lot about communication frameworks (which is ok, because it is what you chose to research about) but you could also suggest more research on tools that could help climate scientists to communicate. One important tool is to clearly define the target

audience. For example, this survey is prepared each year by a marketing communication research lab in Laval university in Quebec, Canada. It is a tool to help Quebec's climate communicators get to know their audience better and prepare their interventions (french paper). https://unpointcinq.ca/wp-content/uploads/2023/11/Barometre-Action-Climatique-2023.pdf

To keep the focus of our manuscript clear, we would prefer not to digress into a discussion of tools. That would warrant its own review (which would be very useful to the field!) but we wouldn't be able to do that justice within the scope of this manuscript.