Referee Comments:

Strategies for improving the communication of satellite-derived InSAR ground displacements

General Comments:
This paper investigates the distribution and sharing of open access InSAR data products amongst scientists and non-scientists on Twitter and other platforms. Researchers also explore potential issues with the sharing of this type of data, responses to existing InSAR data outlets and their use for different types of hazards. They briefly discuss a web portal they developed and feedback from the international community on what is needed. This paper has the potential to be a valuable contribution to the literature to better understand how different groups use InSAR data and to provide useful recommendations for the future.

However, before I can recommend publication, I encourage the authors to distil their key messages and remove extraneous information, perhaps even splitting the information provided here into two papers. The first paper could examine aims 1 and 2, "to evaluate (1) who interacts with disseminated InSAR data, (2) how the data are used" and the second paper could explore aim 3, "to discuss strategies for meaningful communication and dissemination of open InSAR data" where authors could explore issues with interpretation of InSAR products and outline recommendations. Combining all three aims into this one paper makes it hard for the reader to pull out important insights as there is so much information presented here.

Specifically, there are too many multi-part figures included in this manuscript. As a reader, it was hard to determine which were most relevant for the findings and where to focus. I would encourage the authors to do a thorough review of the figures to determine which are most necessary to make their main points. Below I have included some suggestions for doing this.

I would also encourage the authors to include "road map" sections at the beginning of the major sections where you summarize what is coming in the following section to help orient readers. You employed several different avenues for investigating this topic. By including more roadmap sections readers can be more aware of what is coming and how the paper is organized. I found myself getting lost at times.

This is important work and I commend the authors for using novel methods to better understand how SAR data and products are being used and by whom. I hope the comments below are helpful in considering how to best communicate the valuable research you are doing.

Specific Comments:

Title: I recommend the authors reconsider their title and narrow the scope. The abstract mainly focuses on the investigation of Twitter posts and online InSAR data portals and the title should reflect that. Given my previous recommendation to split the paper in two, a revised title could focus on the data mining from Twitter and other platforms while the second could focus more on barriers and recommendations. See below for recommendations.

- Current title: Strategies for improving the communication of satellite-derived InSAR ground displacements
- Example title for paper 1: Examining the Use and Users of satellite-derived InSAR data for natural hazard events through Twitter and online data portals
- Example title for paper 2: Assessing barriers to the communication of satellite-derived InSAR data use and recommendations for improvement

Abstract:
As it is written, the abstract summarizes some of the content of the paper related to data mining from twitter and other platforms. However, it leaves out key results of aim 1 – who is interacting with InSAR data? What types of information are they sharing? I recommend adding this information to the abstract.

Introduction:
1.1.
A general comment for this section is to simplify it. There is a lot of fine detail and discussion about the history and specifics of SAR and other satellite data. I think you can summarize it more concisely to include what SAR and InSAR data are, how they are different than previous sat imagery, and their uses.

Line 36. *"[The] availability of open access Sentinel-1 data over the last ~8 years, in addition to other emerging SAR satellites, creates an opportunity for making SAR and InSAR data accessible and useable to non-experts."*
I recommend moving this sentence to be the opening sentence of this section as it better summarizes this section than the current intro sentence.

Line 40-42. *"Optical…(Fowler, 2013)"* I am not sure you need this level of detail. I recommend jumping right into specifics about interpreting SAR data as it compares to other satellite imagery.

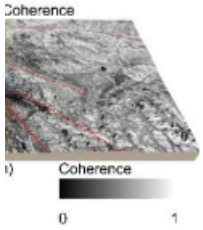
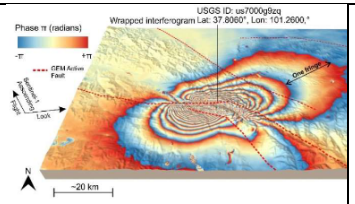
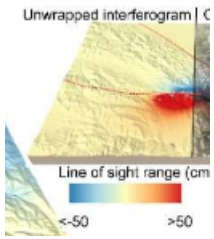
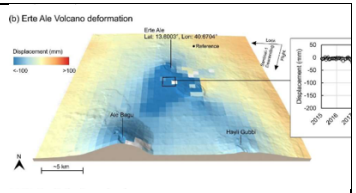
Table 1 and Figure 2.
- How were the interpretation challenges determined? Were these from personal experience? Assumed? Please clarify how you came to these conclusions.
- It would be helpful if the interpretation challenges were simplified/connected with implications for users. Right now, it is not clear what the implications of these challenges are. For example, under Coherence, one challenge is, "The magnitude of coherence change is a function of time." Can you explain why this is an issue? What would this cause a non-expert user viewing this information to do? Could you revise this column to include this information?
- Additionally, I believe Table 1 would be more powerful if it were combined with the images in Figure 2 so readers can look at the images while they read about the potential issues. I recommend using the same landscape area with the four different products, if

possible, to allow viewers to easily compare across product types. (see example of Combined Table 1 and Figure 2. on next page)

Line 121. Newhall, 1999 reference should be in addition to newer references on this topic. See West et al., 2021 and references section for additional literature.

Line 137. You provide examples of “outreach,” but because this paper is using the term in a specific way and for analysis, it would be helpful to provide a specific definition of ‘outreach.’ For example, “In the paper we use the term “outreach” to represent interactions where individuals we classify as scientists do x, y z… (be explicit with what you classified as outreach and why).

Combined Table 1 and Figure 2.

Example				
Product	Coherence	Wrapped interferogram	Unwrapped interferogram	Time series
Description	A measure of stability of the scattering surface through time.	Ambiguous measure of apparent surface deformation in cycles of phase (fringes).	Cumulative measure of apparent surface deformation in the satellite line of sight.	Temporal deformation change derived from a network of interferograms.
Key Potential/ Observed Interpretation Challenges/ Implications	• …			

Data and Methodology:
I recommend adding a "roadmap" paragraph after section 2 and before 2.1 where you describe the various methods you used and what they were for. Then in the subsections you can expand on the finer details.

2.1.

Line 145. I recommend adding a topic sentence to summarize the different analyses and data types pulled from Twitter before jumping into specifics of analysis packages.

Line 146. "Twitter data are increasingly used in scientific analysis." I don't think this is needed since data mining in Twitter are common practice these days.

Line 165. In your description of how you classify scientists and non-scientists, can you clarify where government agencies that focus on science would be classified? I am guessing as "science," but government agencies are listed under the "non-scientist" category.

2.2
2.2.1 – I like that you included ethical considerations for Twitter users, but perhaps this can go toward the end of the paper in a "limitations and other considerations" section?

Lines 1 189-190. *"Responses were also solicited by COMET members through peer networks and existing partnerships. COMET membership was asked as a survey question to distinguish these responses."*
Did you send COMET members the feedback survey directly? Were they asked only one survey question? Was this upon signing up for membership or for current members? Please be more explicit here with how you collected this information.

2.4
The content in this section seems beyond the scope of this paper as it is not summarizing users of InSAR but rather gathering and providing recommendations as well as discussing a new tool that address those recommendations. With only 10 survey responses, I am not sure it is worth reporting the results here. These responses are valuable, but would carry more weight if there were more and solicited from both developing and more established countries to see similarities and differences in their data needs. Since this paper examines general use of InSAR, I am not sure if this narrowing of users to developing countries/overseas territories is appropriate in this paper. Additionally, authors go into a specific tool they developed with these recommendations which also seems to be outside the scope of this paper. I recommend removing this section.

Line 216. This is getting into results from the 10 questionnaires and should not be in the methods section.

Results:

3.1
Line 264. Missing comma between 2021 and respectively.

Figure 3. Recommend adjusting caption into to read “Timeline of InSAR tweets from September 2020 to February 2022….”

Figure 4. Though interesting, I think word clouds a.- c. are unnecessary and can be removed. Bar graphs d and e are more helpful for understanding.

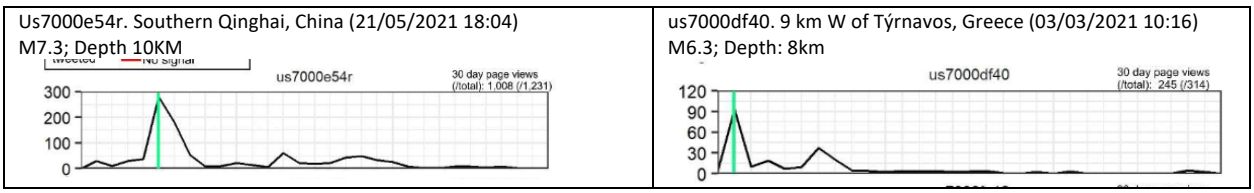
3.2
Figure 7. This figure is very busy and hard to see what the most important aspect is. It seems like 7c is most relevant for this paper. I am not sure a. and b. are helping readers interpret results. If they are interested in what the portal looks like, they can go to the website.

Line 362. I am guessing the data frame is the region a user is pulling the data from. Can you please briefly describe what this is here for those who may be less familiar?

Figure 8. Pie charts are best for responses with 3 or less categories. I recommend adapting this into bar charts similar to a-c for easier interpretation.

Figures 9 and 10. Are these full images needed? This paper has many figures and I wonder if they are all necessary for in-text reference? Could these be added as supplements or paired down to only include the most important pieces? As a reader, it is somewhat overwhelming to tease out important aspects of these multipart figures.

Figure 11 and Table 4: Similar to a previous comment. Could the text from Table 4 be added to the top of the panels in Figure 11 so readers could easily identify the event that ties to the page view count without having to flip between the table and figure? See example below:



3.2.3.
This section goes into detail of a specific portal and changes made from recommendations from a small sample of colleagues. Again, I think because this goes into such specifics it is beyond the scope of the paper outlined in the abstract and should be included in a separate manuscript.

Discussion:
4.1
Line 434 – 437. Nice topic sentence for this section.

In your research did you find that non-expert users were misinterpreting the data or information given the potential interpretation challenges for the SAR/inSAR data products? It would be nice to see some discussion of this.

4.2
Line 491 – 512. This discussion may be outside of the scope of this paper or could be reduced in size as it gets a bit into the weeds.

4.3
Figure 12. I would recommend updating this figure. To make clear how the stages of disaster management relate to InSAR data product. Right now, they are sitting on the outside of the figure and it is not clear what their placement means or how it relates to the SAR information.

4.4
Should this section name also include InSAR, "4.4 Future design and dissemination of LiCSAR **and InSAR** products" since the recommendations apply to both?

Line 585-600. I would recommend bolding each recommendation so it stands apart from the description of the recommendation.

Conclusion:
What is written in the conclusion summarizes part of what is discussed in the paper. Apart from analyzing Twitter, authors also looked at surveys, and other analytics from data platforms, and discussed a portal that was developed, as well as international feedback they received. If all of this is to remain in the paper, it should also be mentioned in the conclusion. However, my recommendation remains to refine the paper to fit what is currently in the conclusion and take out the additional pieces to develop a second paper.

I recommend including a limitations section for this paper. The Twitter ethics statement can also be included with this section.