Reviewer 1

Reviewer comments: Recommend for major revision.

This paper presents a timely study on using synchronized NOAA-20 and Suomi NPP VIIRS imagery for monitoring the June 2025 Etna volcano eruption, offering intuitive color-coded visualizations of lava flows and severity at multiple spatial resolutions. Its strengths lie in addressing a relevant geohazard problem, leveraging well-established satellite sensors, and proposing forward-looking directions such as vapor flow detection and air quality monitoring. However, the manuscript remains largely qualitative, with unclear synchronization methodology, repeated misuse of "375 nm wavelength" instead of "375 m spatial resolution," inconsistent figure color coding, and no quantitative validation against ground truth or standard fire detection products. To strengthen the contribution, the authors should provide clear details on synchronization methods, correct terminology, use consistent color schemes, include detection performance metrics, and validate results with NASA FIRMS or local monitoring data. With these revisions, the work could evolve from a descriptive case study into a more robust and impactful contribution.

Response to Reviewer 1 Comments

We sincerely thank you for your careful evaluation of our manuscript. We have addressed the comments in the revised manuscript.

Note: The case study presented in this manuscript concerns the NASA FIRMS training "*Introduction to NASA Earth Observations and Tools for Operational Wildfire Monitoring and Management*" leaded by NASA's Applied Remote Sensing Training (ARSET) Program.

1. Page 1 – Abstract

Sentence: “First, the images are processed with the same spectral reflectance at 375 nm.”

Issue: VIIRS sensors do not operate at 375 nm (UV-visible). The number likely refers to 375 m spatial resolution rather than wavelength.

Correction: Change to: “First, the images are processed with the same spectral reflectance using VIIRS I-bands at 375 m spatial resolution.”

Response 1: We agree with the reviewer’s comment. We considered this issue in the revised version.

2. Page 2 – Introduction, Paragraph 2

Sentence: “we propose studying the synchronization of two sensors operating at the same wavelengths to visualization and analyze the data captured over Etna.”

Issues:

Grammatical error: “to visualization” should be “to visualize.”

Ambiguity: “same wavelengths” is misleading; VIIRS sensors cover many bands.

Correction: “We propose studying the synchronization of two sensors operating on equivalent spectral bands to visualize and analyze the data captured over Etna.”

Response 2: The reviewer is right. We tackled theses issues in the revised version. We corrected the grammar error.

3.Page 3 – Table 1 (Sensor Specifications)

Issue: The table lists “Spectral region MIR, TIR” and “Pixel resolution 0.75 km / 0.375 km.” However, the text previously refers to “375 nm,” which is inconsistent.

Correction: Replace all instances of “375 nm” with “375 m (spatial resolution)” to avoid confusion.

Response 3: We agree with the reviewer’s comment. We have fixed this issue in the revised version.

4.Page 3 – Experiments and Results, Paragraph 1

Sentence: “The synchronization of both sensors at the same wavelength provide an accurate visualization of the studied area.”

Issue: “at the same wavelength” is misleading. VIIRS detects in bands, not single fixed wavelengths.

Correction: “The synchronization of both sensors using comparable mid-infrared and thermal infrared bands provides a more accurate visualization of the studied area.”

Response 4: Thanks for this comment. We tackled this issue in the revised version.

5.Sentence: “In our case, the images of the mount is experimented with 375nm wavelength.”

Issue: Again, incorrect reference to wavelength.

Correction: “In our case, the images of Mount Etna were analyzed using VIIRS I-bands at 375 m spatial resolution.”

Response 5: Thanks for this comment. We tackled this issue in the revised version.

6.Page 4 – Figure Captions

Figure 2 Caption (lava flows): Mentions “red = NOAA-20, yellow = S-NPP”.

Figure 2 Body Text: Mentions “green = NOAA-20, blue = S-NPP.”

Issue: Inconsistent color assignments between text and figure captions.

Correction: Ensure one consistent color scheme is applied throughout all figures and descriptions.

Suggested scheme:

NOAA-20 = Red

S-NPP = Yellow

Severity (Low = Green, Medium = Yellow, High = Red)

Response 6: We thank the Reviewer for the careful review. We tackled this issue in the revised version.

7. Page 4 – Experiments and Results, Paragraph 3

Sentence: “It is clearly seen that, the severity of the mountain eruption are regionally labelled from yellow (low) to orange (medium or high).”

Issues:

Grammar: “are regionally labelled” should be singular (“is regionally labeled”).

Ambiguity: Orange typically represents “medium–high,” but here both “medium or high” are used.

Correction: “It is clearly seen that the severity of the eruption is regionally labeled from yellow (low) to orange (high).”

Response 7: We thank the Reviewer for the careful review. We tackled this issue in the revised version.

8.Page 5 – Conclusion, Paragraph 1

Sentence: “The visualization is done at two spatial resolutions (1km and 10km) allowing an accurate data analysis of the volcano phenomena.”

Issue: Overclaim—visualization alone does not ensure “accurate data analysis.”

Correction: “The visualization was performed at two spatial resolutions (1 km and 10 km), which allows complementary perspectives on the volcanic activity.”

Response 8: We thank the Reviewer for the careful review. We tackled this issue in the revised version.

9. Page 5 – Conclusion, Paragraph 2

Sentence: “we plan applying a technique recently cited in [12] and [15].”

Issue: Grammar: should be “plan to apply.”

Correction: “We plan to apply a technique recently cited in [12] and [15].”

Response 9: We thank the Reviewer for the careful review. We tackled this issue in the revised version.

10. Terminology Consistency

Multiple confusions between wavelength (nm) and spatial resolution (m). All references to “375 nm” should be changed to “375 m resolution.”

Response 10: We sincerely thank the Reviewer for the careful review.