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Reply Letter

Dear Editor,

We greatly thank to Editor and Reviewers for the effort made in reviewing our manuscript with the constructive concerns. Thank you again for allowing a resubmission of our manuscript, with an opportunity to address the reviewers' comments. In revising the paper, we have tried our best to satisfy the technical points raised by Reviewers and such modifications based on the Reviewers' comments were marked by **red** color in the revised manuscript. We believe that all issues have been addressed. The main revised points are summarized as follows.

1. According to the comment given by Reviewer 1, we added a paragraph discussing on the security aspects of the proposed architecture and also improved English quality of the manuscript. Editorial changes were marked by **light-blue** color in the revised manuscript.
2. According to the comment given by Reviewer 2, we strengthened the presentation of this paper radically, especially the mistakes of figure numbering and cross-references had been resolved. The mistakes of wrong cross-reference were also resolved in the legends of your numerical results' figures.
3. According to the comment given by Reviewer 3, we improved the quality of technical discussions throughout the paper e.g. restructuring the introduction part, adding related works, clarifying our experimental methods/results, and mentioning about our future works including systematic outdoor validation experiment.

For detailed responses and modifications, please refer attached reply letter.

Best regards,

Gia Khanh Tran et al.

Reviewer 2's comments

This paper investigates the use of UAVs (Unmanned Aerial Vehicles) networks to provide data in case of disaster when ground base stations are not working. This study is an extension of the author's previous work. The idea of using UAV networks is interesting and the paper is well presented. However, some issues should be resolved before publication.

Reply to Reviewer 2's comments

Thank you for your positive evaluation of the paper and your constructive comments help us to improve much the quality of the manuscript. Please accept our apology for poor presentation of the manuscript. In the revised manuscript, we had tried our best to enhance the presentation quality based on your precious comments. A point-to-point reply to each of your comments is described below.

1. *The authors should mention in the introduction or conclusion that the focus of this study is access UAV placement, not backhaul UAV.*

Thank you for pointing this out. You are correct that this paper's main focus is about access UAV placement rather than backhaul one. For improving the clarity of the paper, the following paragraphs were added properly to the revised manuscript, to emphasize the main focus of this paper.

Line 33 - 36

In this paper, we focus on the use of access UAVs as temporary base stations for deploying wireless networks (UAV networks) [3], knowing that our investigation on backhaul UAVs were studied in [4][5].

Line 52 - 53

The placement of access UAVs in UAV networks has been studied from various viewpoints.

Line 98 - 99

In summary, this paper deals with the problem of deploying access UAVs to increase the downlink data rate provided to stationary users distributed non-uniformly on the ground.

Line 185 - 186

Since the access UAV provides data directly to the user, its placement has a significant impact on the data rate provided, which is the main interest of this paper.

Line 547 - 548

In this paper, we investigated the use of access UAV networks to provide data to disaster areas where ground base stations have been shut down due to disasters.

2. *The terms like SDN, NFV, and SINR should be expanded where first introduced in the paper like in the abstract or introduction.*

Thank you for pointing this out. Based on your comment, such abbreviations had been expanded explicitly where the terminologies first appeared in the manuscript as follows.

Line 10

NFV/SDN (Network Function Virtualization / Software-Defined Networking)

Line 84

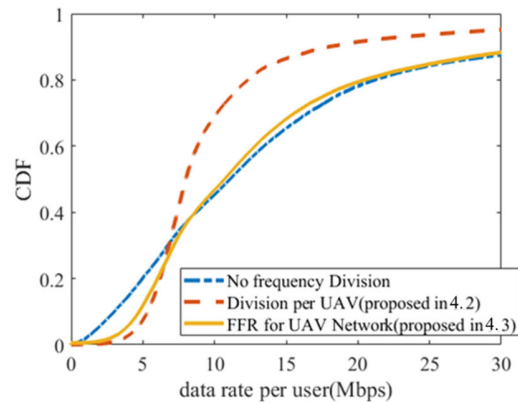
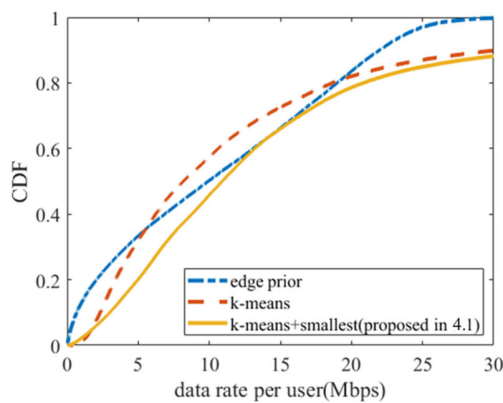
SINR (Signal-to-Interference-and-Noise Ratio)

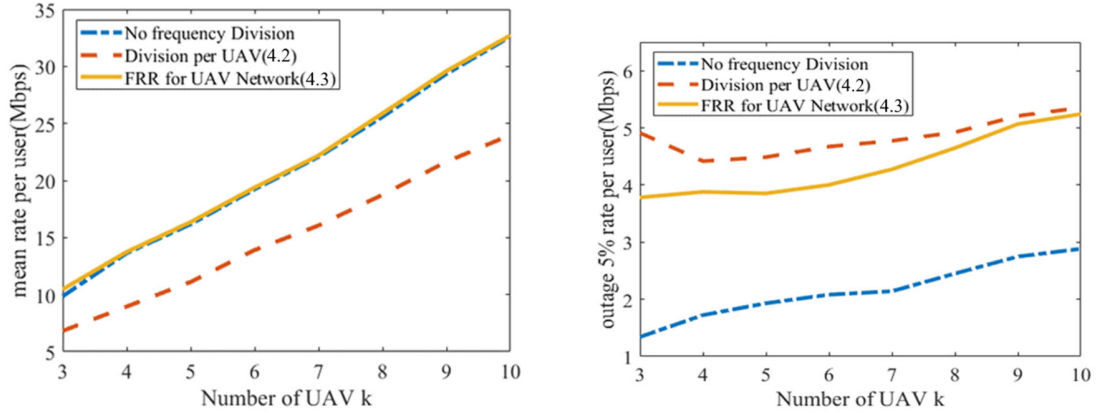
Line 153

NOMA (Non-Orthogonal Multiple Access)

3. *In the paper, the same number is assigned to two figures i.e., 8. It reduced the reader's understanding. Authors should check that all the figures are correctly referenced where the corresponding text is discussed. In many places figure numbers are missing, such as on lines 432, 436, and 457 which creates difficulties in understanding the text properly.*

Please accept our apology for such careless mistakes. After revisiting our editorial process, we found out that such mix-ups of figure numbers were caused by the improper operation of our PDF conversion software. Thanks to your comments, in the revised manuscript, we have checked carefully if all figures had been assigned a unique sequence number and if they are cross-referred correctly together with their explanation texts in the manuscript even after the conversion process. Especially, the issue of missing figure numbers at your indicated locations had also been resolved. Owing to your indication, we also found that there were wrong cross-references inside the legends of our analysis results in Figs. 9-12 and these mistakes are also fixed in the revised manuscript as shown in below figures. Thank you again for the careful check of the manuscript.





4. It is written that “For this purpose, the four following schemes were investigated and shown in Fig. 13”, however, I have not found Figure 13 in the paper.

Please accept our apology for such careless mistakes. Related to your previous comment, the reason is due to improper operation of our PDF conversion software such that it replaced the original figure number 13 with another one. Owing to your careful comment, all the figures’ numbers had been correctly put and cross-referred properly in the revised manuscript. The corresponding Fig. 13 is therefore redisplayed as follow.

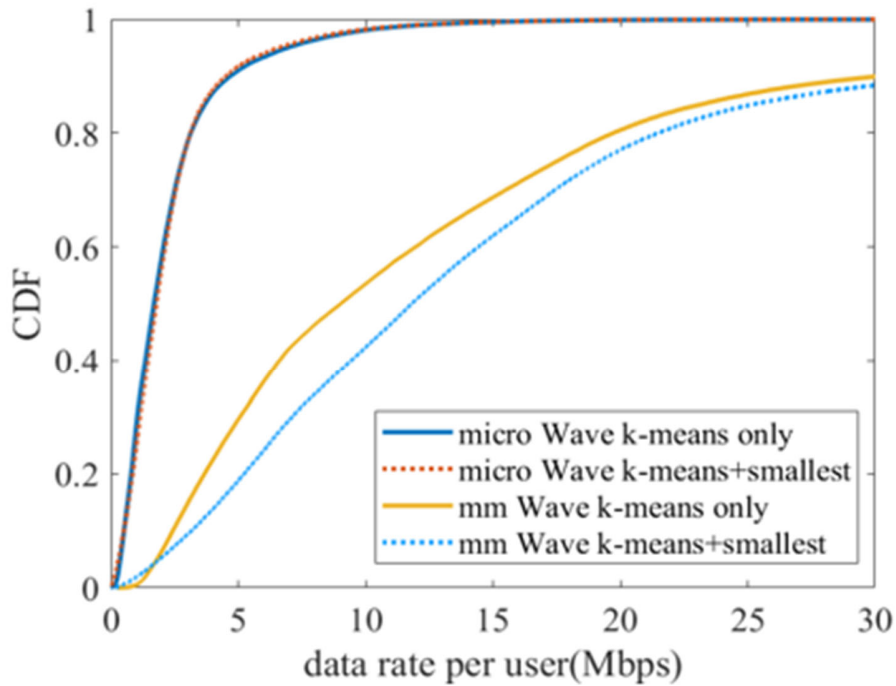


Figure 13. Comparison with microwaves⁴