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Web links to the author's journal account have been redacted from the decision letters as indicated to maintain confidentiality

2nd Feb 24

Dear Professor Ghoneim,

Your manuscript titled "The Ahramat Nile Branch: A Hidden Ancient Waterway of the Egyptian Pyramid Chain" has now been seen by our reviewers, whose comments appear below. In light of their advice we are delighted to say that we are happy, in principle, to publish a suitably revised version in Communications Earth & Environment under the open access CC BY license (Creative Commons Attribution v4.0 International License).

We therefore invite you to revise your paper one last time to address the remaining concerns of our reviewers. In particular, please consider adding discussion of the possible cause of channel abandonment and analyzing additional data to ensure your conclusions are robustly supported. At the same time we ask that you edit your manuscript to comply with our format requirements and to maximise the accessibility and therefore the impact of your work.

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Please review our specific editorial comments and requests regarding your manuscript in the attached "Editorial Requests Table".

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We hope to hear from you within two weeks; please let us know if you need more time.

Best regards,

Patricia Spellman, PhD
Editorial Board Member
Communications Earth & Environment

Joe Aslin
Deputy Editor
Communications Earth & Environment

REVIEWERS' COMMENTS:

Reviewer #1 (Remarks to the Author):

The delineation of the paleochannels using geospatial techniques and the validation of the same through field studies has been very well catered in the manuscript. However, following recommendations can be incorporated.

1. The manuscript does not mention the probable cause of channel deflection/diversion.
2. Considering more core logs can give better understanding of the floodplain and the buried paleochannels.
3. Data on groundwater levels in the region can be used to further validate these delineated paleochannels.
4. The technical writing can be improved upon.

Reviewer #2 (Remarks to the Author):

The paper combines newly acquired deep borehole data with satellite remote sensing using radar waves to convincingly demonstrate the position and behaviour of the western branch of the Nile that has been postulated by Lehner and others. The authors combine their new results with historical and archaeological materials to confirm and contextualise the conclusions of previous

authors working along the branch. The results also show, for the first time, that this Amrahah branch was wider and more vigorous than its successor, the Bahr Yusuf/ Libeni but that, after the end of the Old Kingdom the flow became more sluggish and the channel moved eastwards.

The way in which the authors link the position and heights of the pyramids to the positions of inlets and the heights of the corresponding pyramids is a striking new result, that will be of interest to many Egyptologists.

I recommend that this paper be published - I do not think that it requires any revisions.

Author Responses to Questions Raised by the Reviewers (COMMSENV-23-2011)

Reviewer #1

The delineation of the paleochannels using geospatial techniques and the validation of the same through field studies has been very well catered in the manuscript. However, following recommendations can be incorporated.

1. The manuscript does not mention the probable cause of channel deflection/diversion.
Agree: A section has been included to address the probable cause of channel deflection/diversion (Pages 7 and 8, lines 308 – 329 & 385 – 392)
2. Considering more core logs can give better understanding of the floodplain and the buried paleochannels.
Agree: A paragraph has been added to address this suggestion (Pages 7 and 8, 350 – 375)
3. **Data on groundwater levels in the region can be used to further validate these delineated paleochannels.**
Agree: A paragraph has been added to address the groundwater in the area (Pages 4 and 8, lines 171 – 173 & 371 – 376)
4. The technical writing can be improved upon.
Done (Text has been thoroughly checked)

Reviewer #2

The paper combines newly acquired deep borehole data with satellite remote sensing using radar waves to convincingly demonstrate the position and behaviour of the western branch of the Nile that has been postulated by Lehner and others. The authors combine their new results with historical and archaeological materials to confirm and contextualise the conclusions of previous authors working along the branch. The results also show, for the first time, that this Amrahat branch was wider and more vigorous than its successor, the Bahr Yusuf/ Libeni but that, after the end of the Old Kingdom the flow became more sluggish and the channel moved eastwards.

The way in which the authors link the position and heights of the pyramids to the positions of inlets and the heights of the corresponding pyramids is a striking new result, that will be of interest to many Egyptologists. I recommend that this paper be published - I do not think that it requires any revisions.

Editor' Suggestions:

The manuscript's Title and Abstract have been revised as suggested by the editors. The revised version of the manuscript has been edited to comply with the journal format requirements.