

***Interactive comment on* “Local models reveal greater spatial variation than global grids in an urban mosaic: Hong Kong climate, vegetation, and topography rasters” *by* Brett Morgan and Benoit Guénard**

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Dear Anonymous Referee 1, Thank you very much for reviewing the manuscript and providing your feedback and concerns. Below we provide point to point responses (AC) to your comments (RC), as well as changes in the manuscript (CM). Page and line numbers refer to those in the submitted manuscript. We also provide an attached pdf document showing tracked changes, new citations, figures, and an appendix added to the original manuscript.

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On behalf of the authors,
Brett Morgan

RC - Referee comment **AC** - Author comment **CM** - Change in the manuscript

RC1.01 The manuscript is not sufficiently organized and confused with no novelty and explicit research question. There are many too short subsections, which should be merged. Methods are not much clear because details and relevant references have not been provided. Consequently, it is not much easy to follow results and discussion.

AC1.01 We agree that improving the clarity and organization of the manuscript is necessary, though challenging because of the large number of data inputs, outputs, and analyses. We have restructured and added to sections (especially Section 3 - Methods and Section 4 - Results and Discussion) to improve clarity. The novelty of the manuscript is the data itself, as stated on Page 1, Line 9: “To our knowledge, this is the first set of published environmental rasters specific to Hong Kong.”; Page 4, Lines 1-3: “Therefore Hong Kong is in dire need of a comprehensive suite of accessible environmental GIS data, at a resolution finer than 1 km, suitable for species distribution modeling and other local applications. To this end, we developed new, 30 m resolution rasters of topography, NDVI, and interpolated climate variables for each month of the year.”; and Page 10, Line 25: “This diverse set of 30 m resolution topography, climate, and remote sensing data include the first published interpolation of long-term climate averages specific to Hong Kong.” Please see AC1.06 for our response regarding a research question. As most readers will likely use only parts of the provided data, we believe that retaining the subsections will help the reader quickly find information of relevance for the data they want to use. Lumping subsections together would likely add to the confusion mentioned.

RC1.02 The Authors have used data associated at support sizes very different. They should take into account the change of support.

AC1.02 We are uncertain what the reviewer means by “data associated at support sizes very different,” and would appreciate further explanation. If the concern is that

input rasters used as model predictors were initially at different resolutions, higher resolution products were resampled to 30 m before model building (Page 4, Lines 15-16).

RC1.03 The title should be made more informative and effective.

AC1.03 We have reformulated the title to make it more informative and better reflect the focus of the manuscript. We welcome additional suggestions on how it could be improved.

CM1.03 Title: New 30 m resolution Hong Kong climate, vegetation, and topography rasters indicate greater spatial variation than global grids within an urban mosaic

RC1.04 The Abstract has not the required structure and does not summarize the whole manuscript. It should be organized better and explain clearly what was done, what was found and what are the main conclusions. Generally, the first sentence should provide briefly the rational of the topic being investigated.

AC1.04 We are not aware of abstract structure requirements that this abstract does not adhere to. In the ESSD manuscript preparation guidelines for authors, it is stated “The abstract should be intelligible to the general reader without reference to the text. After a brief introduction of the topic, the summary recapitulates the key points of the article and mentions possible directions for prospective research. Reference citations should not be included in this section, unless urgently required, and abbreviations should not be included without explanations. Please include the DOI(s) to the referenced data set(s) as well as the citation(s).”

RC1.05 Keywords are missing.

AC1.05 We would happily provide keywords, but we did not find a format for them in the Earth Systems Science Data LaTeX template, and published papers in ESSD do not have keywords.

RC1.06 The Introduction section is confused and not sufficiently organized. Particularly, reading the title, one is expecting to find in the Introduction the presentation of what the title promises, but unfortunately it is not so. The Introduction should be improved and

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the topic being investigated should be explained clearly. The novelty and objectives are missing. A manuscript to be considered a research paper, a research question must be clearly stated. In addition, the Authors should explain the gap in the topic being investigated and how their study fills such a gap.

AC1.06 We hope the changes in the title resolve the stated discrepancy in the introduction. Many of the missing elements (novelty, objectives, research gap, research question) are present in section 2 about the study area, which is meant to be an extension of the introduction. For example, the knowledge gap is that Hong Kong is lacking appropriate resolution data for local applications (Page 4, Line 1). The order of these elements could be rearranged, but it seems less logical to pose this research question and the objective of developing higher resolution rasters before introducing Hong Kong and the existing GIS data available for it. Alternatively, sections 1 and 2 (Introduction and Study Area) could be merged into a single large introduction section. However we believe keeping these sections separate allows the reader to more easily navigate to content of interest. We are skeptical that a central research question is necessary for this manuscript. Much scientific research is indeed hypothesis-driven, but in alignment with the title of this journal, Earth System Science Data, our project is data-driven. In the "About" section of the ESSD website, it is stated "Articles in the data section may pertain to the planning, instrumentation, and execution of experiments or collection of data. Any interpretation of data is outside the scope of regular articles." In agreement with this defined scope, our primary goal in writing this manuscript is to describe the development of the provided data, rather than answering a central question.

RC1.07 A well-organized Materials and Methods section is missing. The sections '2 Study area' and '3 Methods' should be included in a new Materials and Methods section which allows readers to follow the progress of the objectives in the manuscript and support results and discussion. In the methods, how data have been analysed and combined should be explained providing sufficient details. Particularly, the Authors should explain how they have taken into account the change of support problem to have all data associated to the same support size. Details and references on statistical

methods are missing.

AC1.07 We share your concerns on the methods section, which we have improved with various changes in structure, additional statistical details, and references throughout. Specifically we have better explained the meaning of each variable and the reasoning behind their development. We do not believe that merging the methods section with section 2, “Study Area,” would be beneficial. Section 2 is largely descriptive and doesn’t cover any of the materials (data sources) used in the analyses, so the content would be out of place in a Materials and Methods section. As said in AC1.02, we are unsure what is meant by support size, and we would appreciate further explanation.

RC1.08 Results and Discussion sections should be improved and supported by a new Materials and Methods section.

AC1.08 For the Materials and Methods sections, please refer to AC1.07. The results and discussion section has been modified to improve the clarity and content of the manuscript. This has included creation of section 4.5 “Limitations and next steps” and section 4.4 “Value and Utility,” which discusses the results in consideration of how they will enable SDM and other environmental research in this important region.

RC1.09 Conclusions are poor: they should be improved and to show the improvement of our knowledge.

AC1.09 Thank you for this feedback, we agree that improved conclusions are desirable. We believe the improvement in our knowledge is summarized in the first sentence of the conclusions: “This diverse set of 30 m resolution topography, climate, and remote sensing data include the first published interpolation of long-term climate averages specific to Hong Kong.”

Please also note the supplement to this comment:

<https://www.earth-syst-sci-data-discuss.net/essd-2018-132/essd-2018-132-AC1-supplement.pdf>

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Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-132>, 2018.

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