

## ***Interactive comment on “Digital map of the Coral Triangle: An online atlas for marine biodiversity conservation” by Irawan Asaad et al.***

**Irawan Asaad et al.**

i.asaad@auckland.ac.nz

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### 1. Referee comments

This paper represents a very useful contribution to information base for the Coral Triangle countries. The work of Asaad et al. appears to be the development of an online "atlas" rather than just "digital maps" and it could thus be labeled as such.

### 2. Response

We have revised the title to: “An Atlas of marine biodiversity conservation in the Coral Triangle”

### 1. Referee comments

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But, one consideration is how the current work as described by Asaad et al. interfaces with the Coral Triangle Atlas as developed by the Coral Triangle Support Partnership and is currently housed in the WorldFish Center in Penang Malaysia and under the direction of the Coral Triangle Initiative Secretariat based in Manado, Indonesia. In this regard, the current paper/work of Asaad probably needs to make mention of the CT Atlas and how a partnership might be considered or suggested as a recommendation.

### 2. Response

We have added a paragraph in the Discussion section to describe the previous CT Atlas and how to link our atlas to the CT Atlas

### 3. It is now read:

“In the CT level, this atlas should be linked to the previous Coral Triangle Atlas developed by Cros et al. (2014) that are currently managed by the Coral Triangle Initiative Secretariat. These atlases are complementary in design and applications, and may provide an alternative options to the stakeholders to retrieve reliable Coral Triangle data. Here, our atlas provides a supplement and enriches the previous atlas by provide an access to explore area of biodiversity importance within the coral Triangle and a set of priority areas to designate new MPA within the region”.

### 1. Referee comments

What are the gaps in the datasets used in terms of coverage of the coastal and marine areas in the CT? I would doubt there is continuous information for all of the coastline and thus a data layer that shows gaps would be very useful to see. This would help addresses bias introduced by present/absence of data for different geographical areas.

### 2. Response

One of the data gaps of this atlas is related to habitat distribution maps. We have added paragraph in the discussion section to explain about the limitation of this atlas, including gaps in the habitat distribution maps.

C2

### 3. Amended paragraph

In this atlas, the biogenic habitat distribution map was retrieved from three types of coastal habitats (coral reefs, seagrass, and mangroves), that may generate a biased toward coastal region. In the absence of other habitats data (e.g. soft sediments, rocky inter-tidal zones and other sub-tidal habitats), this atlas introduces layer of benthic terrain rugosity as a proxy of habitat heterogeneity. This benthic rugosity layers covers the entire CT region (beyond the coastal areas, for which distribution data were available). However, a detailed habitat maps and a defined list of habitat types are needed to develop a comprehensive biodiversity conservation programme”

#### 1. Referee comments

The authors might consider including the threat/climate data layers created by Reefs@Risk for Coral Triangle or at least explain why this data is not included?

#### 2. Response

We used recent datasets of climate data from Hooidonk et al. 2016. The Hooidonk dataset provide more details dataset and cover entire regions (not only in coral area).

Van Hooidonk, R., Maynard, J., Tamelander, J., Gove, J., Ahmadi, G., Raymundo, L., Williams, G., Heron, S.F., & Planes, S. (2016). Local-scale projections of coral reef futures and implications of the Paris Agreement. *Scientific reports*, 6, 39666

#### 1. Referee comments

Metadata: There is very little information about the data data used apart from the publications they come from which introduces biases and credibility issues that should at least be mentioned.

#### 2. Response

We have added the metadata in the supplementary sections. For your considerations, we have attached the metadata file.

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#### 1. Referee comments

The mention of the Coral Triangle MPA Network (which doesn't really exist) should be clarified with reference to the Coral Triangle MPA System and Action Plan as described by the Coral Triangle Initiative publication of 2014.

#### 2. Response

We have amended the paragraph and replace all of the MPA network to MPA system, and we added a paragraph to explain the the current MPA system within the CT.

#### 3. It is now read:

"One of the objectives of the Coral Triangle Initiative is to establish and effectively manage MPA within the region. This objective has supported by a target: to develop a fully functional region-wide Coral Triangle MPA System (CTMPAS) (CTI-CFF, 2009). The CTMPAS is a system of MPA within the CT which include a range of MPA types and MPA network. This system comprises of individual MPA or MPA network that form local ecological and/or governance networks that are nested within larger-scale of social networks. The MPA systems has introduced due to the expanse of the Coral Triangle, thus it is not considered feasible to develop a regional ecologically connected network that cover all of the Coral Triangle region (CTI-CFF, 2013)"

#### 1. Referee comments

People interested in this type of atlas/information are not average users but planners doing GIS at a broad scale who may want to access the raw data layers that the authors created. Thus making this available requires cleaning the data sets, filling in metadata and getting authorization which might be suggested for future work/recommendations?

#### 2. Response

We agree that one of the potential users of this atlas is advanced GIS user. We have provided a metadata to all of the dataset, including information on the data sources of

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raw data.

1. Referee comments

Use of the word "biogenic" is not common and needs explaining.

2. Response

We have explained the term "biogenic" in the Methods. Biogenic habitat refers to the habitats that are created by plants and animals.

1. Referee comments

Details of data such as species lists would be useful to expose.

2. Response

As all of the data are part of our previous paper that are published in the different journal, to fully access and to explore the raw species data, we have provided a full citation of original data in the Table 1. We also provide a complete information in the metadata.

1. Referee comments

Differences of scale of data need to be noted in some cases because scale makes some data layers not very compatible.

2. Response

We have noted the spatial resolutions of each dataset in the table 1.

1. Referee comments

Finally, I suggest the the conclusion be rewritten to include real "conclusions" and recommendations for the future work. As it stands, it is a brief summary of the work. Also, the sustainability of such an atlas is always difficult because they require resources to update and make them usable through time. In this regard the authors could make

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some suggestions about the main audience and how this will be updated and maintained. Also, partnerships with the CTI and CT Atlas could be suggested and pursued / recommended.

2. Response

We have revised and removed the conclusion section and folded it into Discussion and Future Directions. The last section of Discussion has explained about the future directions.

3. Amended paragraph:

"There are opportunities to improve and advance the geospatial functionality of this Coral Triangle atlas. An envisioned future version of this atlas is a dynamic online database which provides tools to add, upload and store new biodiversity data (e.g., species occurrence data). The growing trend of citizen science opens an opportunity to collect and integrate potentially massive amounts of data to fill gaps in the biodiversity data records. In addition, the availability of options to run online spatial analysis tasks such as identifying priority areas or delineating protected reserves in a defined geographic extent or for a specific dataset may offer an opportunity to further enhance the performance of this digital map.

In addition, the next step is to develop a network and connection to global initiative such as IODE-ICAN (International Coastal Atlas Network), the Global Health Ocean Index ([www.oceanhealthindex.org](http://www.oceanhealthindex.org)), the GEO-Marine Biodiversity Observation Network ([boninabox.geobon.org](http://boninabox.geobon.org)), UNEP-WCMC Network ([data.unep-wcmc.org](http://data.unep-wcmc.org)) and others network related to the UN SDG 14 goal and the upcoming UN Decade of Ocean Science. This type of atlas potentially fills regional gaps data within such global initiatives and provide more details information that can be used to develop a region based biodiversity conservation strategy"

Please also note the supplement to this comment:

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<https://www.earth-syst-sci-data-discuss.net/essd-2018-80/essd-2018-80-AC2-supplement.pdf>

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Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-80>, 2018.