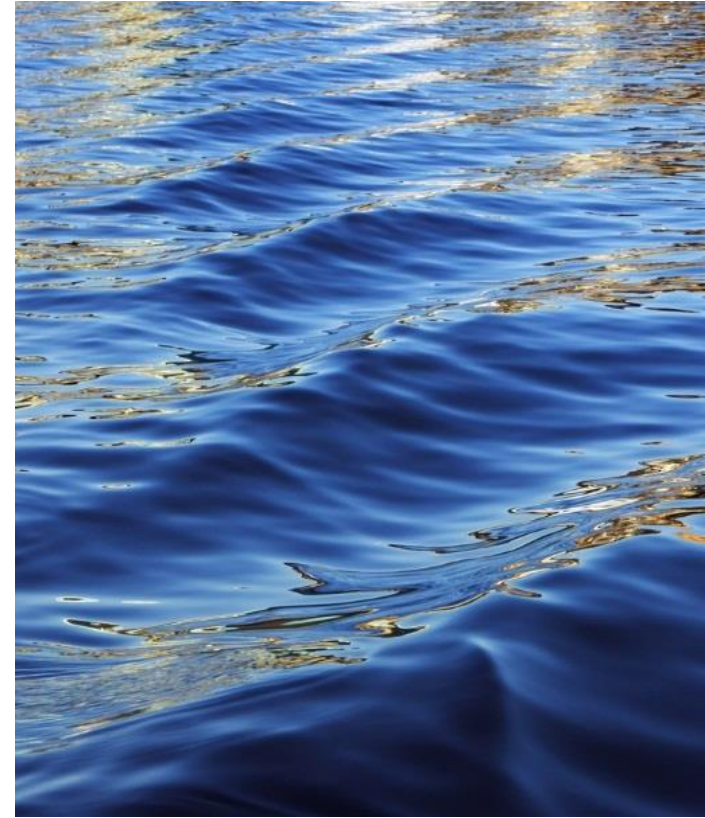


Recognizing the ancestral land and biodiversity conservation efforts of indigenous people in Quinchao municipality using GIS- and participatory 3D- mapping tool

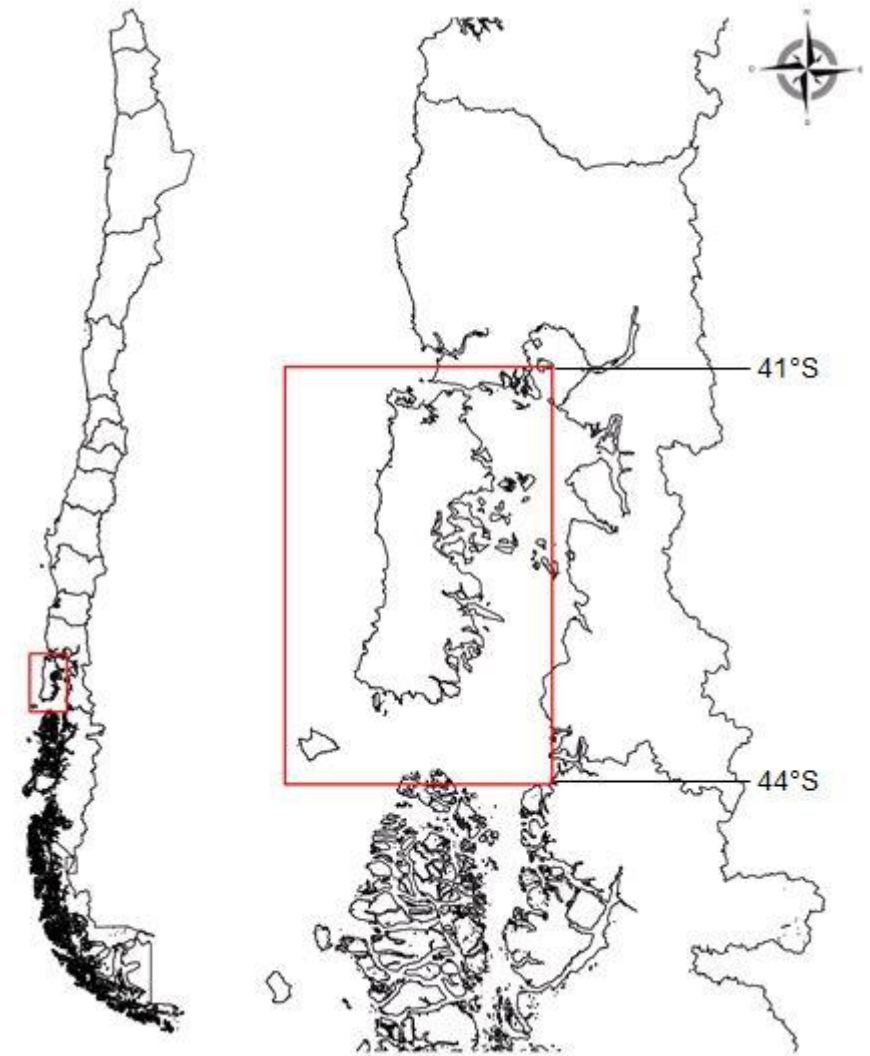
Prepared by: Precious Annie Lopez & Nolwenn Boucher



I. Introduction - Background

A. Site Description

The Chiloé archipelago is located in the south of Chile, in the tenth region called “Los Lagos” and forms the province of Chiloé.

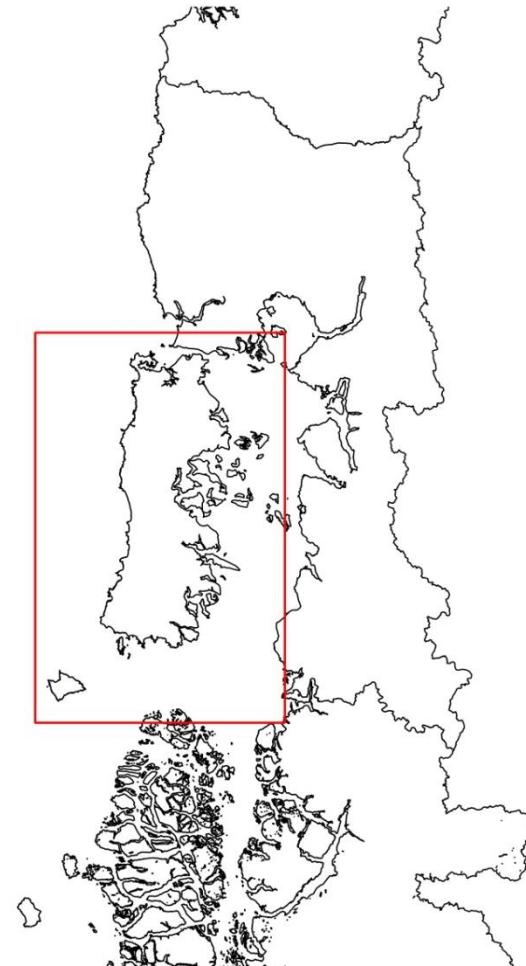


I. Introduction - Background

A. Site Description

The territory is characterized by:

- insularity and distance from the continent
- rural identity in the 10 municipalities of the island



Images from <http://www.turismoruralchile.cl>

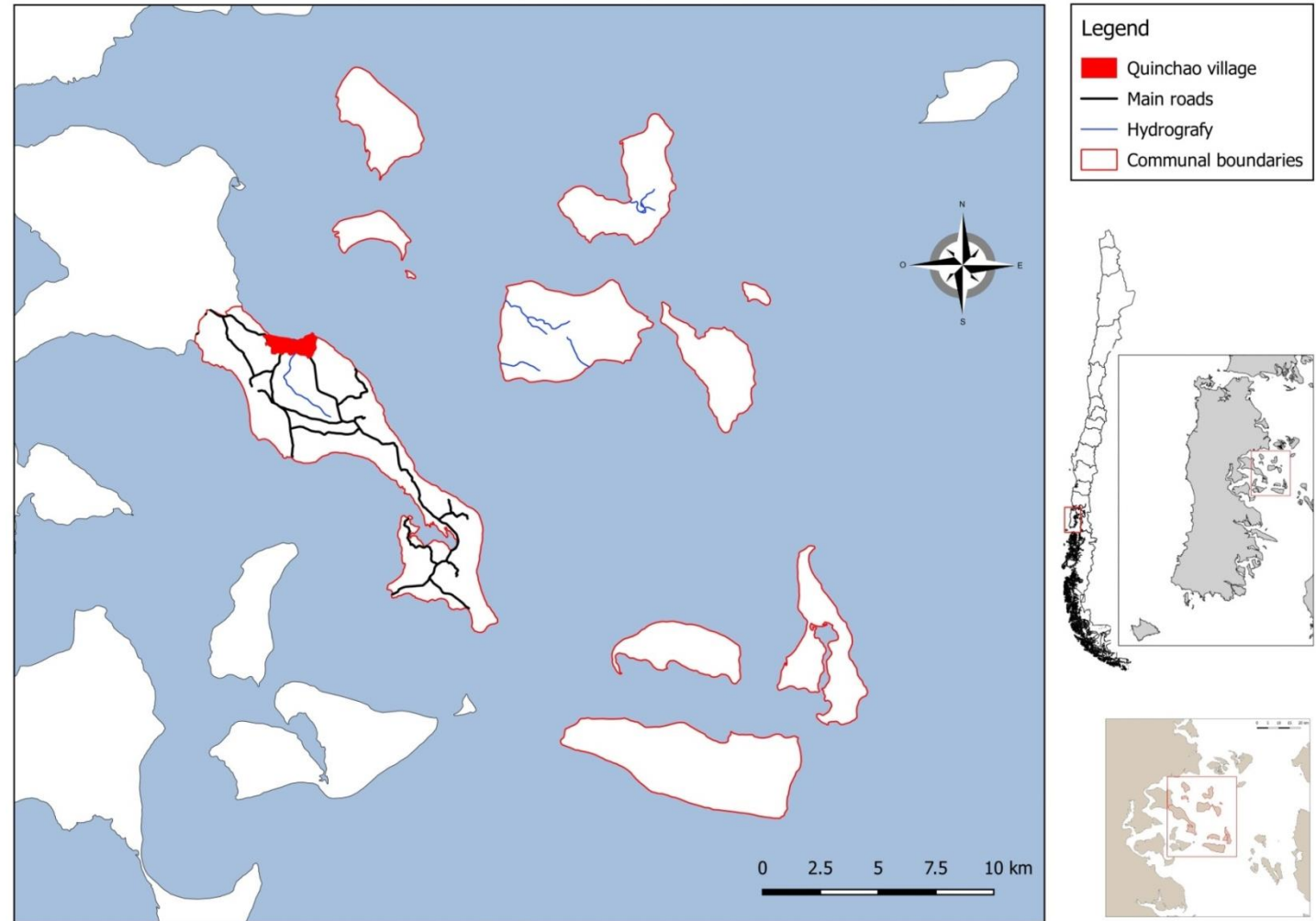
I. Introduction - Background

A. Site Description

Quinchao is one of the most isolate municipality of the archipelago.

- 20th of Chile
- 3rd of Chiloé

Quinchao have its own insular characteristics



B. Objectives

To evaluate the possibility of creating a 3-dimensional and GIS-generated map to recognize the ancestral land and biodiversity conservation efforts of indigenous people in Quinchao municipality

II. Relevance of integrating Indigenous People of Quinchao Island in national conservation policies

- In the ultimate 2002 official census Quinchao register 8.932 of inhabitants

17,6 % of the population considers themselves as Indigenous peoples.

Problematic?

- In this territory few local economic activities allowed the inhabitants generate work
- Reduction of native forest for the profit of agricultural land-use or forestry plantations with exotic species.



II. Relevance of integrating Indigenous People of Quinchao Island in national conservation policies

Solution? improve the low attractiveness of isolated communes", who will be a "one of the responsibilities of the State" (Arenas and al., 1999)



Creates natural conservation area as a response to make the territory more attractive

II. Relevance of integrating Indigenous People of Quinchao Island in national conservation policies

The new natural conservation area needs to integrate different approaches:

- keep the traditional use of the native forest;
- free access to the forest to develop new sustainable activities.

FIRST STEP

One technique of the initial step of creating a protected area will use participatory 3d-mapping.

III. Participatory 3D-mapping (P3DM)

A. Description:

1. Construction of a physical 3-dimensional model of an area; and
2. Created jointly by a large group consisting of different stakeholders;
3. Elements included in P3DM (Rambaldi, G., 2010) are:
 - Physical;
 - Administrative;
 - Environmental;
 - Cultural;
 - Socio-economic; and
 - Territorial disputes.



Photo by Rambaldi, G. (2013)

III. Participatory 3D-mapping (P3DM)

B. Benefits:

1. Facilitates dialogue among local stakeholders, external institutions and agencies;
2. Facilitates inter-generational knowledge exchange;
3. Eliminates communication barriers and provide common understanding of the area; and
4. Enhance awareness and recognition of authority of their spatial knowledge.

III. Participatory 3D-mapping (P3DM)

C. Limitations:

1. Requires large space during the process;
2. Location and extent of the elements are based only on knowledge of the participants;
3. Needs to ensure first a good relationship between facilitators and participants and among every stakeholders;
4. Availability of all involved stakeholders is hard to find; and
5. Needs a secured place for storage.

III. Participatory 3D-mapping (P3DM)

D. Process (*Rambaldi, G., 2013*):

PHASE I – Preparation of resources:

- Participants, their knowledge and skills;
- A venue to conduct mapping activities and store the map;
- A strong table made of local materials;
- Two copies of topographic map
- Mapping materials; and
- Training materials.

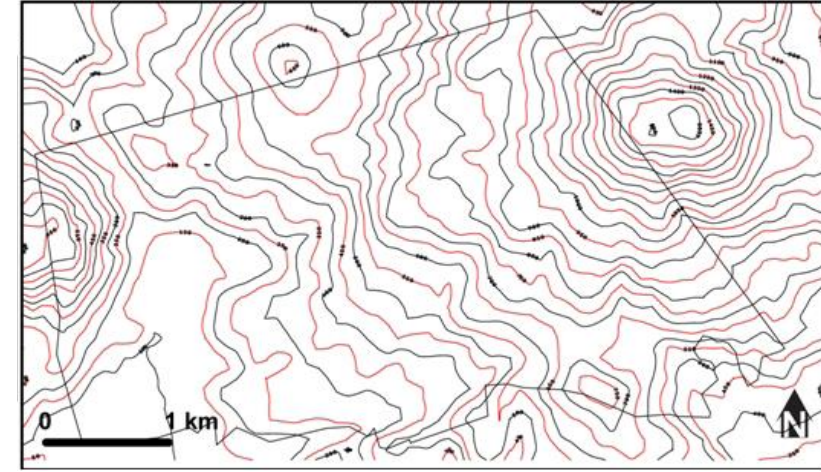
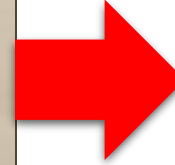


Photo by Rambaldi, G. (2013)



1. Construct a base table with exactly the size of the base map.



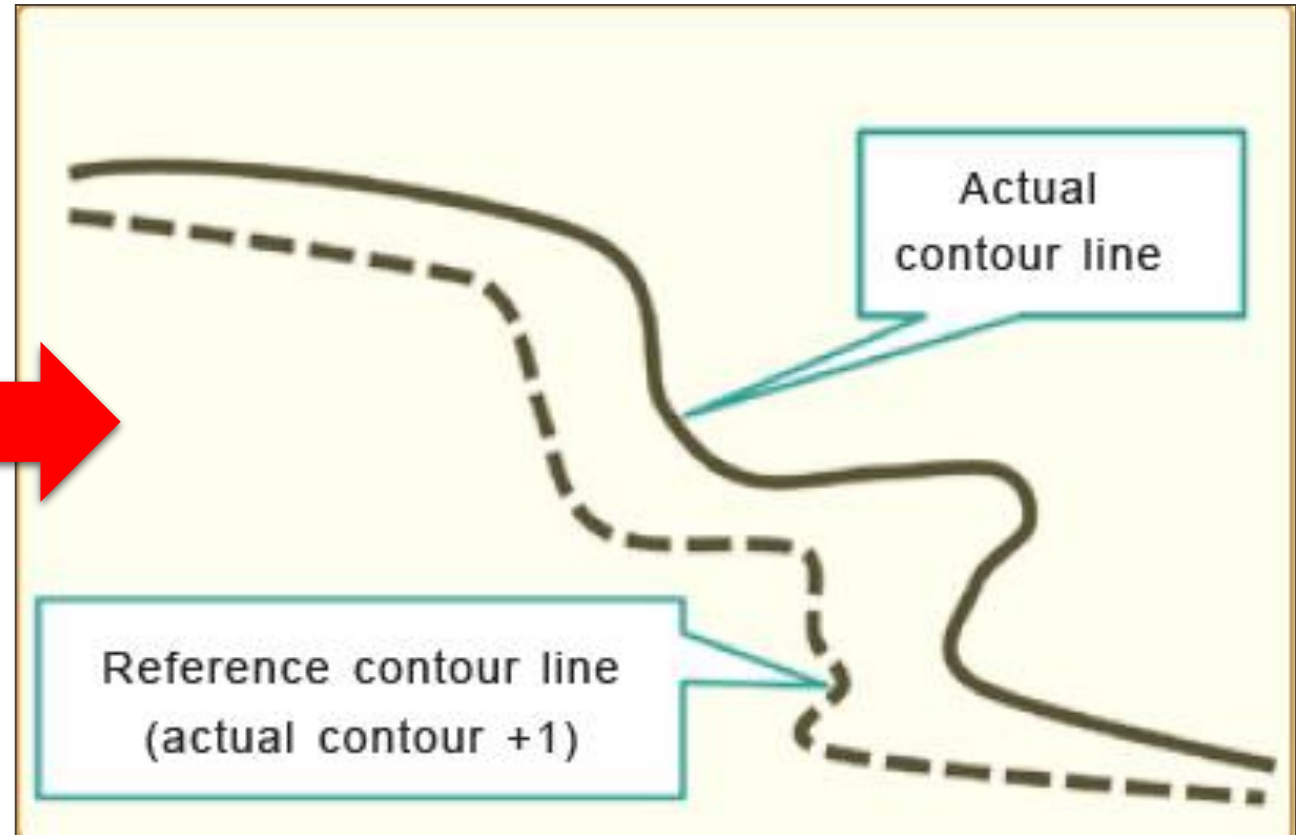
2. Glue one base map on the table.



3. Stick the second base map on a carton board with carbon paper in between using clip, staple wire or adhesive tape.

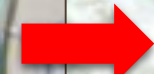


PHASE II – Assembling the model



4. Using a pencil, trace the first contour line with solid line then broken line for the second contour line starting from the lowest elevation in one corner (reference corner).

Photo by Rambaldi, G. (2013)



5. Cut out the layer using scissors, cutters or coping saws.

Each contour is traced and cut separately.

6. Each contour cut out is pasted on top of the previous layer.

7. It is also desirable to independently assemble the selected portions of the model then join them afterwards.



Phase III Output

Photo by Rambaldi, G. (2013)

PHASE III – Depicting the information



1. Sort the colors according to agreed legend.



2. Identify the landmark.



3. Delineate the boundaries using pushpins and yarn.

IP can validate the extent of their lands here.

Photo by Rambaldi, G. (2013)



4. Paint the model with the agreed color after validation of the information identified in step 3.



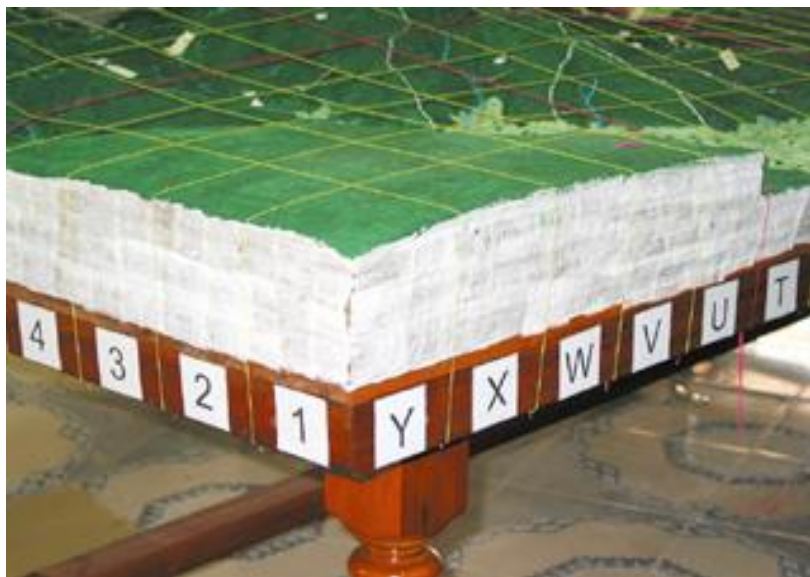
5. Put label using the color-coded pins.



6. Place grid on the model using yellow yarn starting from the reference corner.

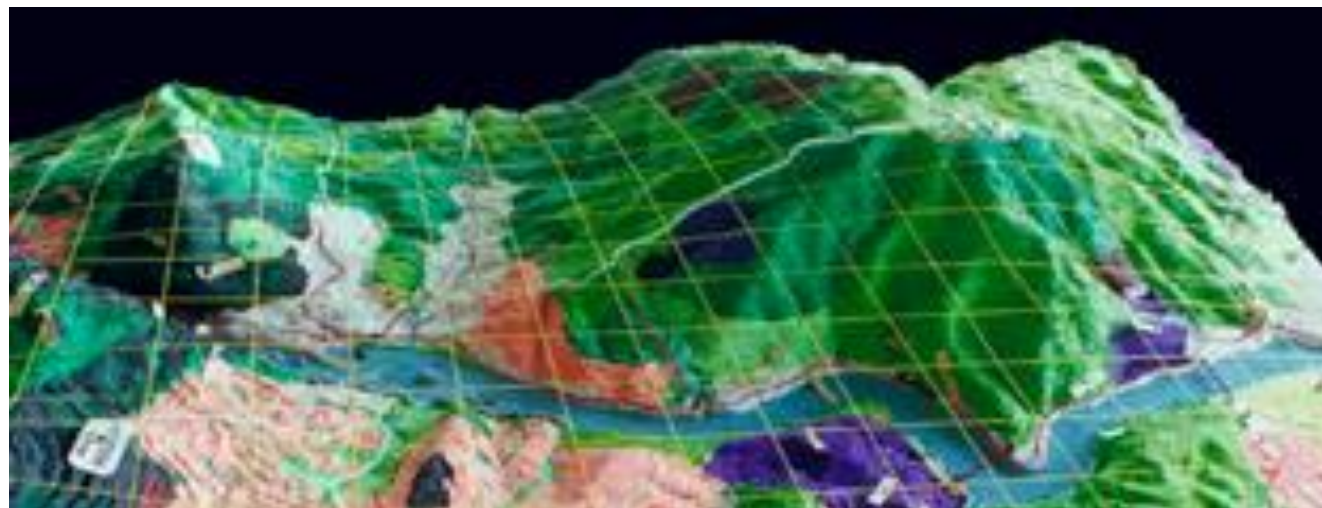
Note: For 1:10,000-scale model, 10cm-interval is used, corresponds to 100 hectares.

Photo by Rambaldi, G. (2013)



7. Label the grids using number and letter to symbolize the coordinates.

Note: Adding this to the model will make the issues visible, hence it will set basis for addressing them.



8. Adding additional information from existing cartographic map is included by georeferencing using the base map.



9. Identifying the coordinates on the base map corresponding on the grids on the 3D model.

Photo by Rambaldi, G. (2013)



10. Finishing touches

- Finalize the legend;
- Include numerical scale used and corresponding bar scale;
- Put North-labelled arrow;
- Include acknowledgement plate; and
- Date at which the model was last updated.

Photo by Rambaldi, G. (2013)

PHASE IV – Handling over of the Model

1. During the handling over ceremony, all the participants should be present.
2. A custodian of the model is nominated by the participants.
3. A custodian must have commitment to safeguard and maintain it.

Photo by Rambaldi, G. (2013)

IV. Participatory mapping using GIS software

A. Description:

This is the process of extracting and digitizing data from a 3D model into a GIS software by participatory approach.

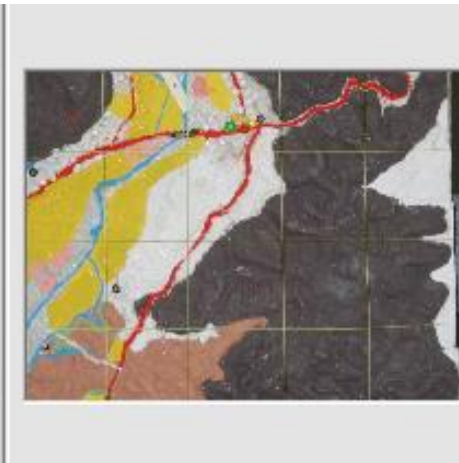
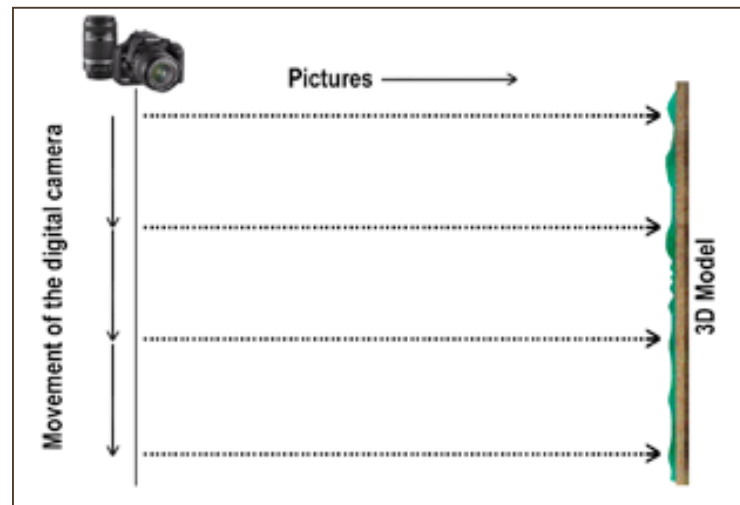
B. Advantages: Easy to distribute; store and compare with other existing maps;

C. Limitations (*Gaillard, J.C., 2013*):

- It is unfamiliar to most people;
- It requires an external facilitator to train the participants; and
- Flexible only to those who master the technology.

D. Process:

1. Extracting the data with digital photography



2. Georeferencing the photo in GIS software

- Write down four control points from the base map of the model and enter the coordinates in GIS software;

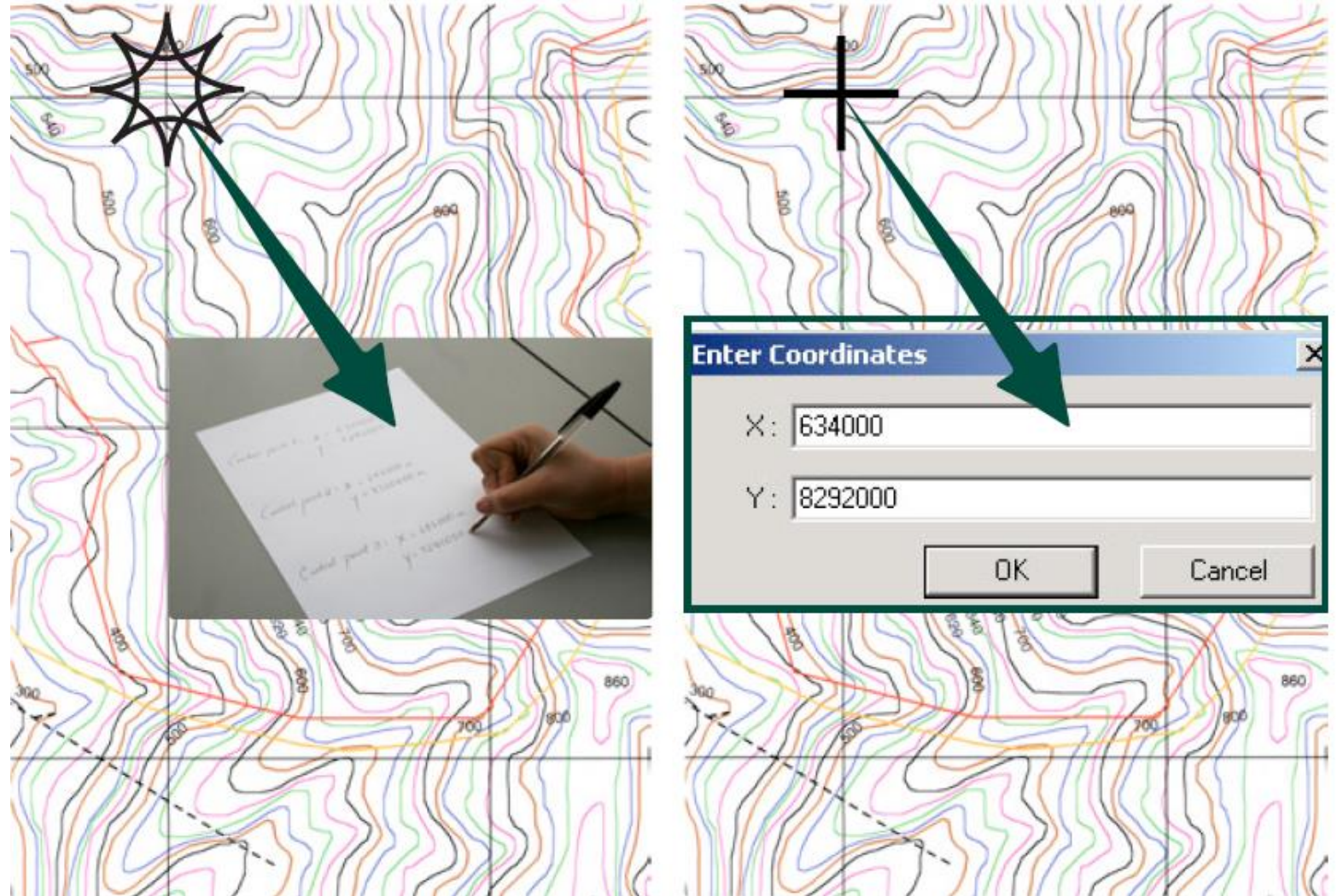


Photo by Rambaldi, G. (2013)

3. Comparison with other existing spatial data or cartographic information

- Integration of other information obtained from official and other sources, like administrative and political boundaries.
- In case of inconsistencies, the participants will negotiate and try to reconvene in the 3D model.
- Legend to be used is still upon the agreement of the participants.

V. Conclusion

The participatory 3d and GIS mapping tool

- > usually great for dealing with relatively large and remote conservation areas
- > created by all stakeholders with influence on the protected area
- > negotiation is being mediated during the process
- > holistic view of the whole conservation area that enable the government sector and other stakeholders to understand the current situation of Quinchao Island issues
- > gives external stakeholders a better perspective of the indigenous communities' territory and their contribution to the resources in Quinchao Island

These tool can help Quinchao Island, especially indigenous communities, to be recognized, and solve in part their isolation in Chiloé province



Thank you