# GEOPROCESSING TECHNIQUES APPLIED TO VEGETATION MAPPING OF ICE-FREE AREA OF HOPE BAY, ANTARCTIC PENINSULA

**André Medeiros de Andrade[1]; Carlos Ernesto R. Schaefer[1]; Thiago Torres C. Pereira[1] ; Lucas Marinho Poeiras[1] ; Everton Luís Poelking[1]**

[1]Departamento de Solos (www.dps.ufv.br), Universidade Federal de Viçosa . E-mail: andremedeiros1985@yahoo.com.br

## INTRODUCTION

Geoprocessing is a fast and efficient way to quantify and localize different ecosystems in landscape, resulting in thematic maps of scale and toponymy appropriated for researches in Antarctica (Simões *et al.* 2001). The tools of geoprocessing allows generate a georeferencied data, that contents a large number of information, the fast exposition of these information, and the monitoring, avaliação de impactos and planning of protected areas (Arigony-Neto, 2001).
The present study shows the vegetation map of Hope Bay, Maritime Antarctica.

## MATERIAL AND METHODS

Hope Bay is localized in extreme north of Antarctica Peninsula. In an area of approximately 4 km² the flora is sparse and randomly distributed. The behavior of vegetable communities at Hope Bay is similar to typical opened Tundra, compound distinct units in the field, of delimited size and localization. This area is one of the small group of regions in Antarctica that allows the development of communities of moss and lichens.

The mapping of vegetal communities was carried out in a Quick Bird image by ArcGis 9.3 (ESRI, 2008), registered in 8th 2005, January, with spectral band 1, 2, 3 and 4. Image has spatial resolution of 2.44 m at bands 1, 2, and 3 and spatial resolution of 0.61 m at panchromatic band 4. After the georeferencing and fusion of bands, the image was classified by control points technique georeferencied during the field work **in summer 2009**. Was delimited 13 vegetable classes and 2 classes contend lakes and glaciers. All classes are delimited at Hope Bay.

| VEGETATION CLASS | ÁREA (m²) |
|---|---|
| Aquatic Algae | 123.947,76 |
| Terrestrial Algae | 66.373,31 |
| Crustose lichens + Mosses cushion | 73.231,20 |
| Crustose lichens *Acarospora* + Lichens leafy *Rhizoplaca* | 53.413,94 |
| Crustose lichens *Acarospora* | 11.404,50 |
| Crustose lichens *Caloplaca* + *Acarospora* | 15.868,82 |
| Crustose lichens *Caloplaca* + *Buellia* | 9.310,60 |
| Crustose lichens *Caloplaca* + Moss Cushion + Moss on carpet | 3.092,53 |
| Leafy lichens *Umbilicaria* + Mosses Cushion | 138.389,81 |
| Frutucosos lichens *Usnea* + Mosses Cushion | 18.346,24 |

## RESULTS

The mapping of vegetable communities was produced in scale of 1: 5.000 (Figure 1). This cartographic data will can accessed in site of TERRANTAR Centre (www.terrantar.com.br), a laboratory of the National Science and Institute of the Cryosphere (INCT Criosfera), Brazil.

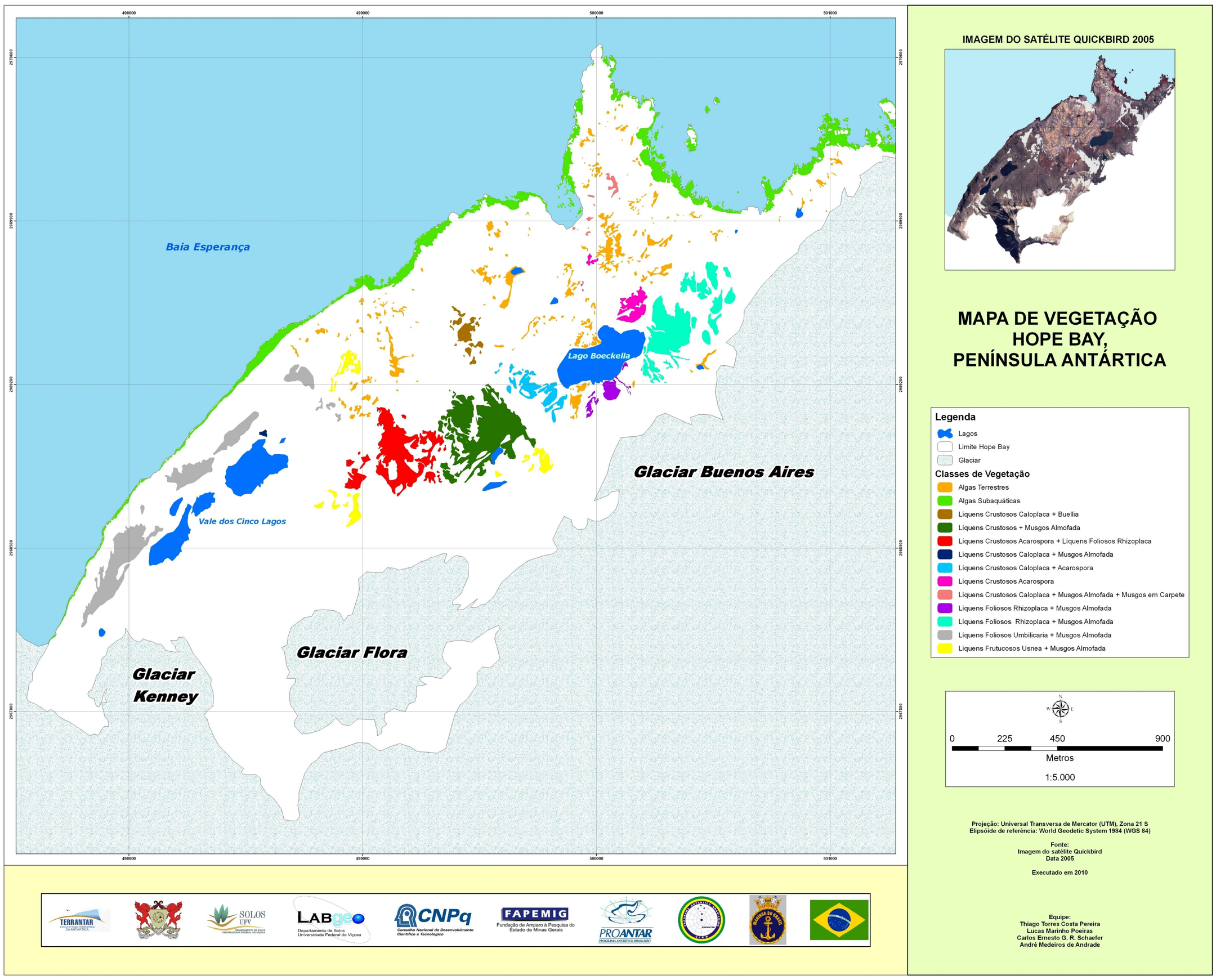


Figura 1: Vegetation Map of Hope Bay, Antarctic Península .

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