# Changes in coverage and land use in the Malleco Province in the Araucania Region, Chile.

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# INTRODUCTION

- Usually, the various factors that affect the biodiversity loss are grouped into three categories: habitat modifications, introduction of exotic species and the overexploitation of species (CONAMA, 2008)
- In Central and South America, forest cover was probably about 75 percent of the land area before the arrival of Europeans.
- Forest area had declined to around 50 percent of the land area by the end of the century.

- It is called “soil cover” to the type of biophysical cover observed on the surface of the earth. In contrast, the term “land use” is used to describe the set of activities that society carries out in a territory, to produce, modify or preserve its state (Di Gregorio and Jansen, 2005; Geist et al., 2006)

# CONSECUENCES

- Increased surface runoff and surface temperature
- air pollution caused by emissions from fixed and mobile sources
- reduction of biological diversity.
- On land with agricultural use, modification occurs through the processes of soil erosion and sedimentation
- acidification of aquifers resulting from the use of pesticides
- fragmentation of ecosystems
- loss of habitat for fauna and alteration in reproduction
- overgrazing livestock
- introduction of exotic species

# IMPORTANCE OF FOREST MONITORING AND REMOTE SENSING

- Allows the simultaneously and repetitiveness of territorial spaces
- Useful for monitoring, management and planning

# Araucania Region, Chile

- The Araucania Region has a surface of 3.180.347 ha. The 30,3% of this surface represents the native forest, the 19,88% to forest plantations (principally by *Eucalyptus sp.* and *Pinus radiata*) and the 1,49% to mixed forests (CONAF, 2016).
- The region is characterized by the presence of *Araucaria araucana*
- The Malleco concentrates the forestry industry
- The Cautin province concentrates principally the trade focused on the services destinated to the massive use of the population, the manufactured goods, and the agricultural and livestock production.
- The climate characteristics of the region allowed the development of a true southern jungle

# Malleco Province

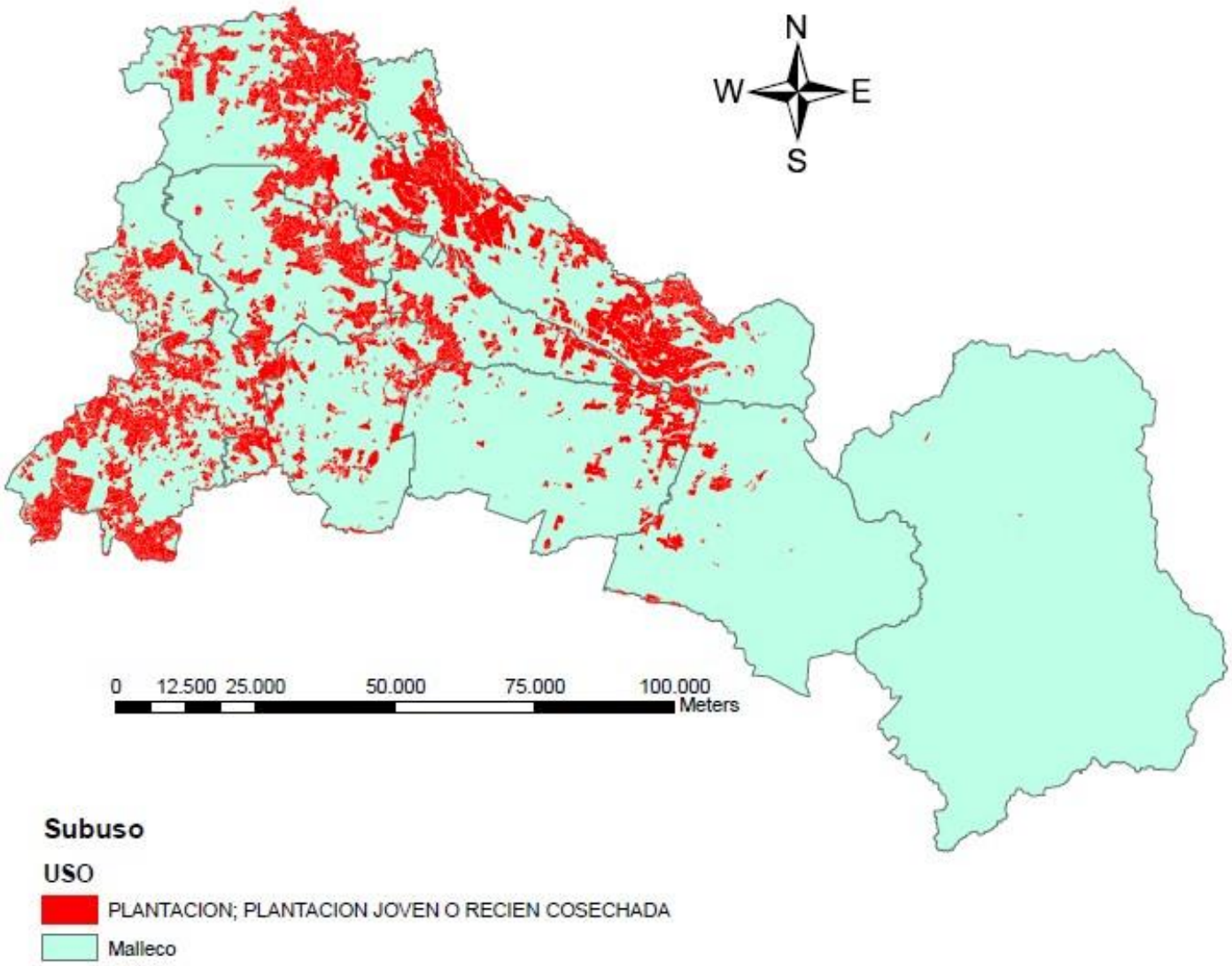
- Malleco has 1.343.265 ha. It comprises 11 communes.
- With the Spanish colonization, began the destruction of native forests to enable land for the agricultural. Also, the timber and firewood extraction, and the production of carbon.
- The coastline of La Araucania has suffered historically hard changes in the original coverage of the soil.

- In 1974 promulgated the Decree of Law N°701 on Forest Development, that besides considering tax incentives to the forested land.
- The forestry practices like clear felling of exotic species have caused the decreased of the soil productivity because of the erosion associated.

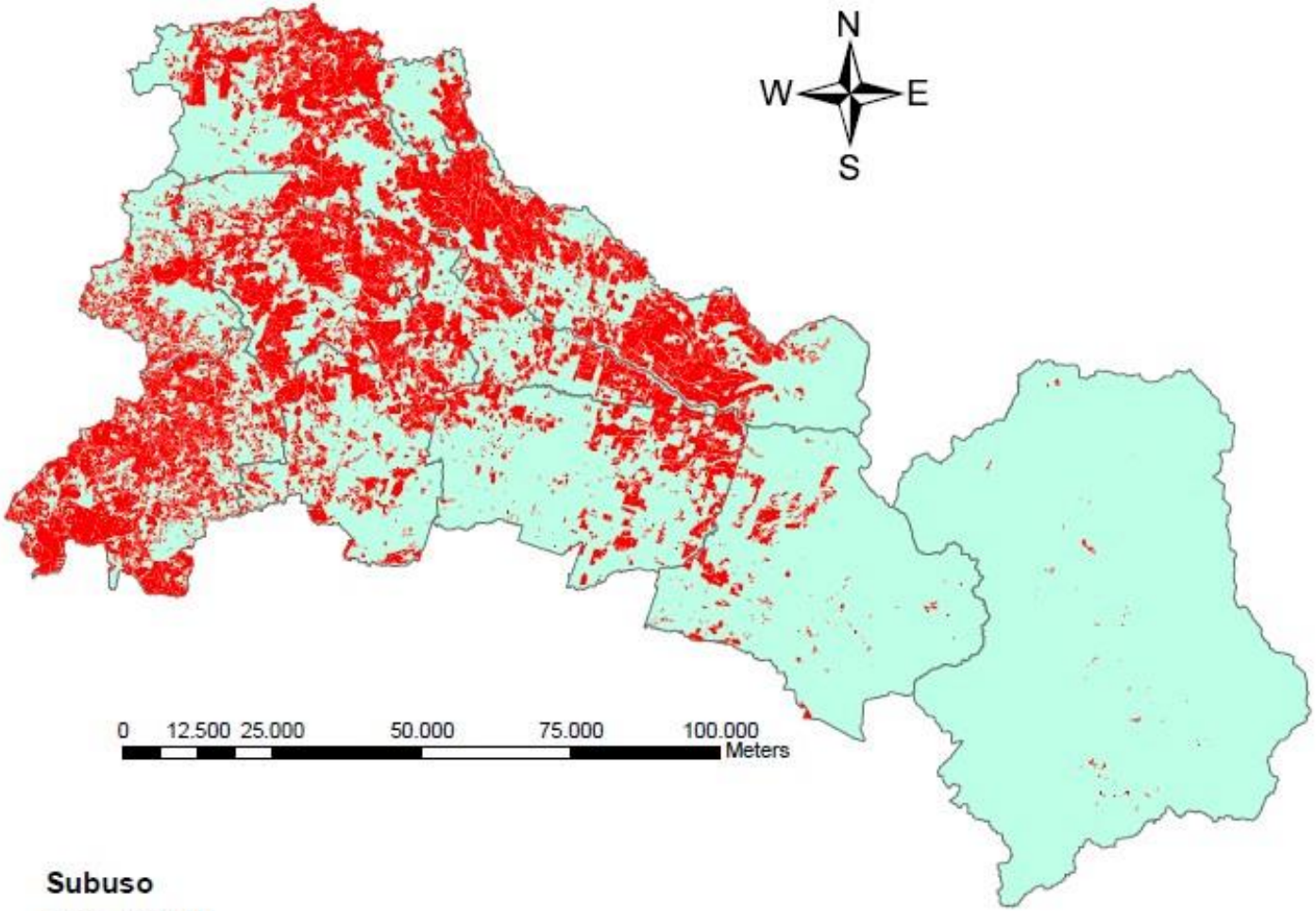
- The province is mostly entirely covered by forests plantations except by the east because of the presence of the Cordillera de Los Andes. The most affected communes are Lumaco, Los Sauces, Ercilla, Collipulli and Angol

- From 2007 to 2013 the forests plantations have increased in 9,3% due to the change of land use from agricultural lands, grasslands and shrubs and native forest (Sandoval V. et al., 2014)

# Plantations in the Malleco Province in 1997



# Plantations in the Malleco Province in 2007

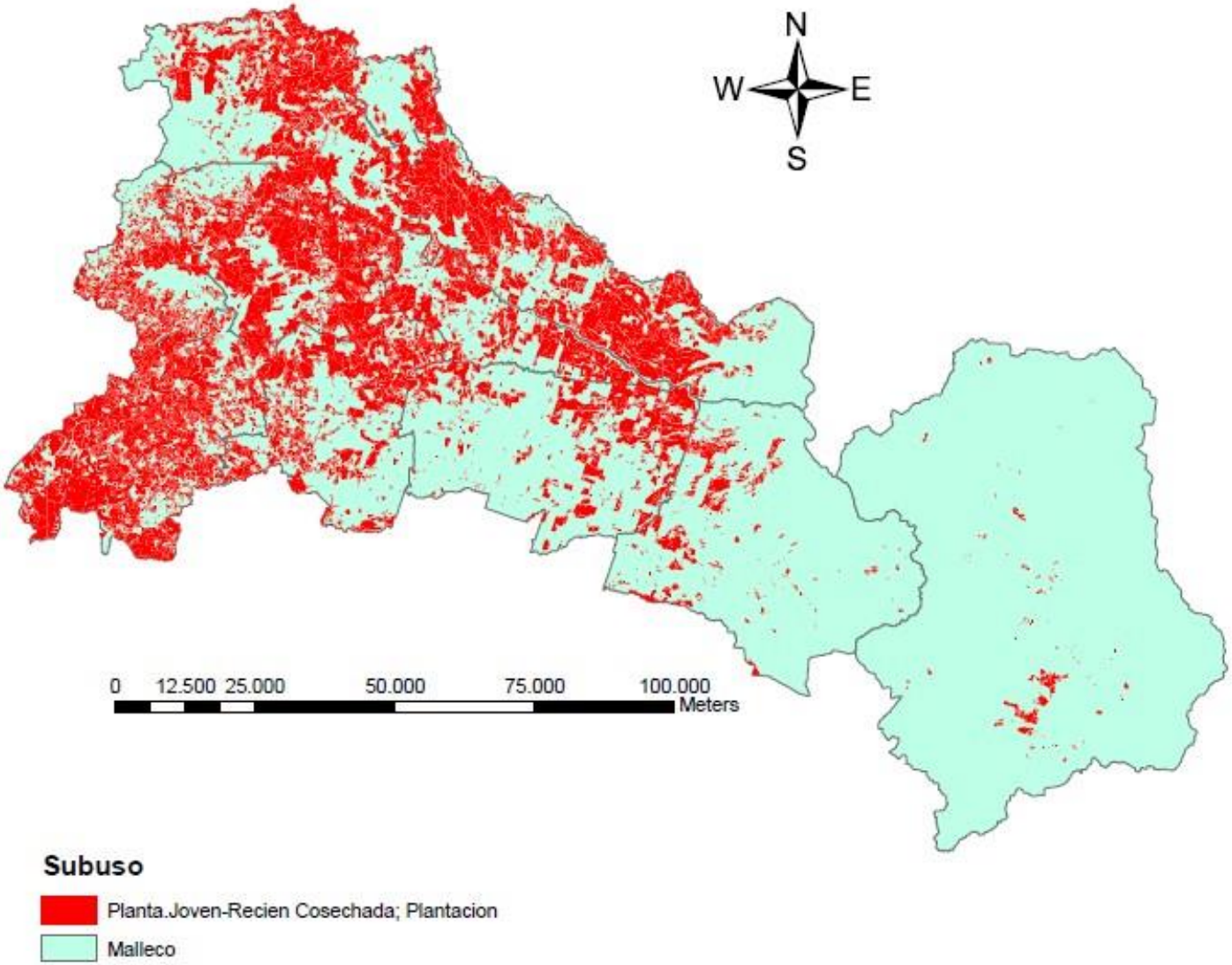



**Subuso**

USO_ACTUAL

- Planta.Joven-Recien Cosechada; Plantacion
- Malleco

# Plantations in the Malleco Province in 2013



# CONCLUSION

- Forests plantations have increased very fast
- It afected to soil productivity and ecosystemic services as habitat.
- Destruction and reduction it's a part of the visible result of the land uses
- Araucania region has suffered  historically hard changes in the original coverage of the soil. Initially by the effect of the enable of land for livestock farming, and recently by the impact of forests plantations.