



# LOGGING AND EXTRACTION MONITORING UNIT (LEMU)

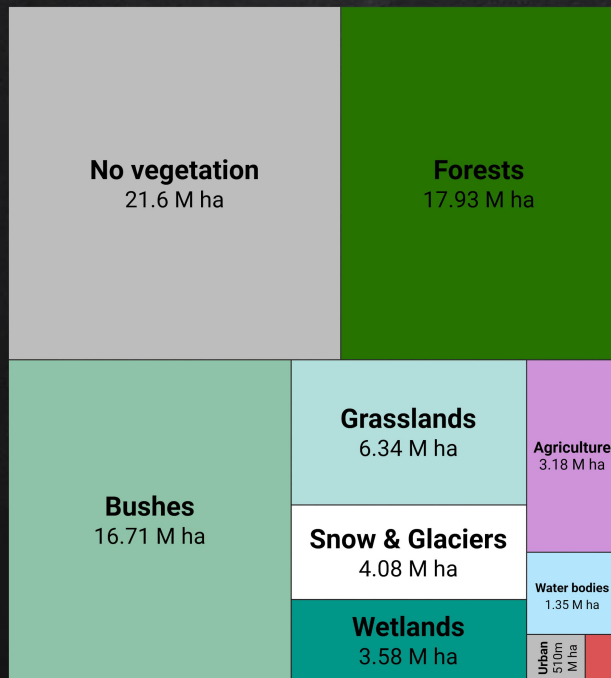
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GONZALO TAPIA KOCH

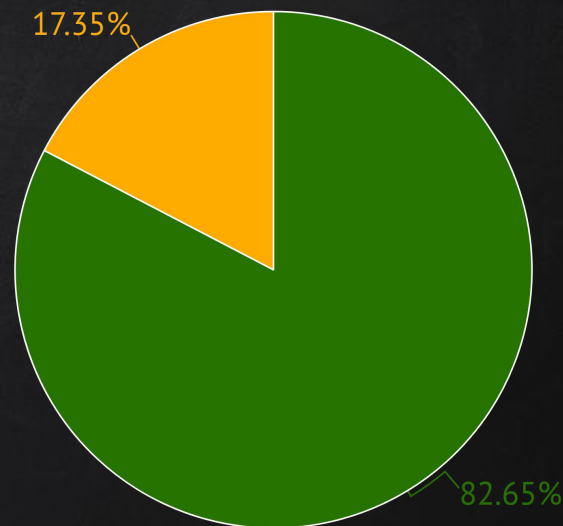


# FOREST RESOURCES IN CHILE

75.6 M HA



17.9 M HA



Native forest Forest plantations

# KEY PROBLEMS



LOW SCALE OF  
ILAT  
ACTIVITIES



CLIMATIC  
CONDITIONS



GEOGRAPHICAL  
COVERAGE



RESTRICTED  
ACCESS



IT MEANS...

'FOREST' IN MAPUDUNGUN (INDIGENOUS LANGUAGE)  
AND ALSO LOGGING AND EXTRACTION MONITORING UNIT

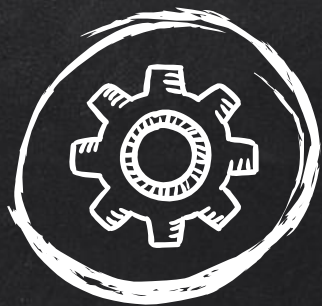


# OBJECTIVES



EFFECTIVENESS





How LEMU WORKS?



# GEE

## ADVANTAGES

- ☐ OPEN ACCESS
- ☐ INTERNET BASED
- ☐ CLOUD COMPUTING

## DISADVANTAGES

- ☐ REQUIRES PROGRAMMING SKILLS

# COVER CHANGES (LOSSES)



SEARCH



DATE 1

DATE 2



SATELLITE



LOCATION



BANDS  
COMBINATION



CLOUD COVER



PROCESSING



IMAGE 1

IMAGE 2



LAND  
USE



VEGETATION  
INDEX



THRESHOLD



MIN AREA



PRODUCTS



POLYGONS OF  
CHANGE



TREND GRAPH





# SEARCH



## DATES



## SATELLITE



## LOCATION



## RGB



## CLOUD COVER

Google Earth Engine Search places and datasets...

UNIDAD DE MONITOREO DE EXTRACCIÓN Y COSECHA FORESTAL (LEMU) PARA LA DETECCIÓN DE CAMBIOS DE COBERTURA VEGETAL

INDICAR FECHA INICIAL: 01-01-2017

INDICAR FECHA FINAL: 19-10-2018

SELECCIONAR SATELITE: SENTINEL 2

ST2 - COLOR VERDADERO (B04, B03, B02)  
ST2 - FALSO COLOR (B08, B04, B03)  
ST2 - ANÁLISIS DE VEGETACIÓN (B11, B8A, B04)  
ST2 - VEGETACIÓN SANA (B8A, B11, B02)  
ST2 - PENETRACIÓN ATMOSFÉRICA (B12, B11, B8A)

BUSCAR IMÁGENES DISPONIBLES PARA EL PERÍODO

ST2\_19HBB - IMÁGENES DISPONIBLES SEGUN NUBOSIDAD (%)

PÁRAMETROS DE PROCESAMIENTO

Fecha y hora de captura: 20-03-2017 11:51:59

Layers Maps Satellite

Google

Imágenes de Google © 2018 Imágenes de Google © 2018 TerraMetrics | 2 km

Terminos de uso | Notificar un problema de Mapa



# PROCESSING



IMAGES



LAND USE



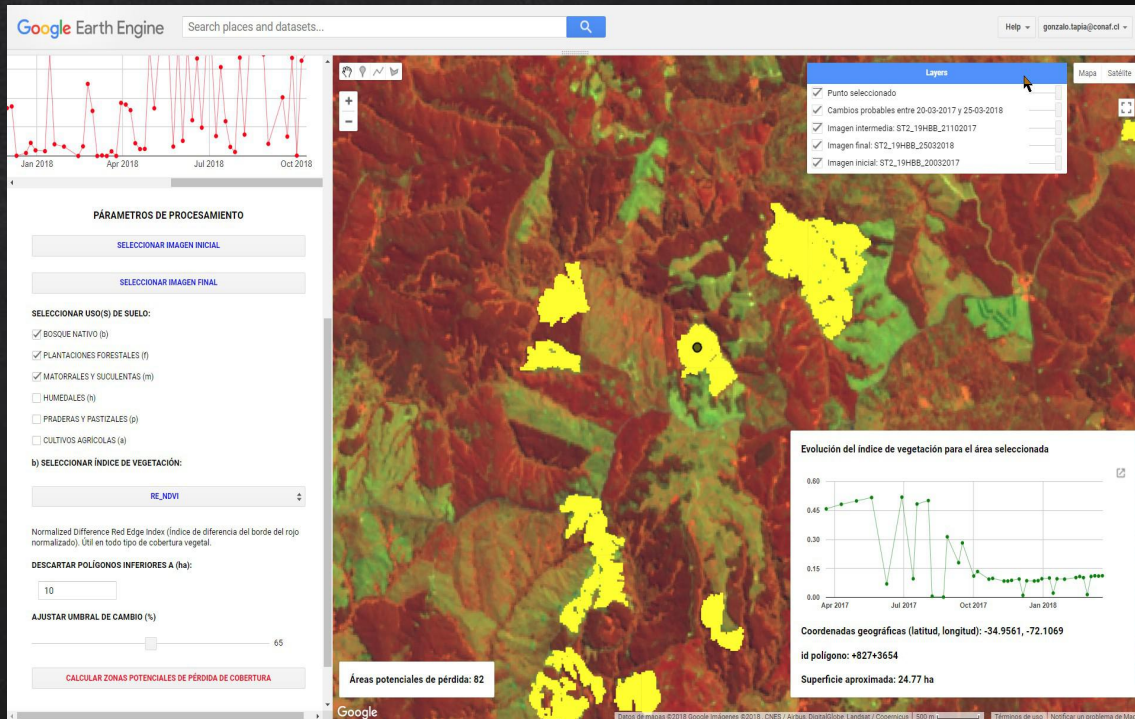
VEG INDEX



MIN AREA



THRESHOLD





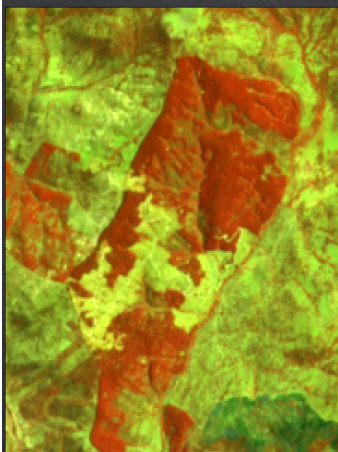


# PRODUCTS

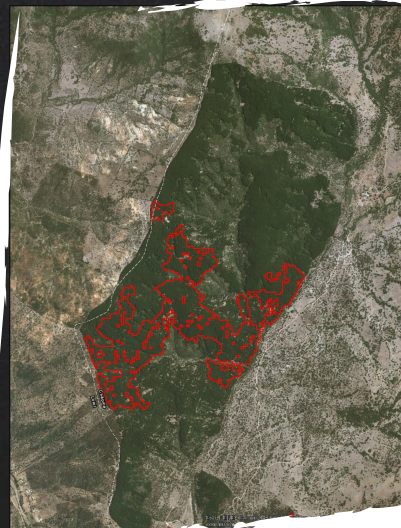
BEFORE



AFTER



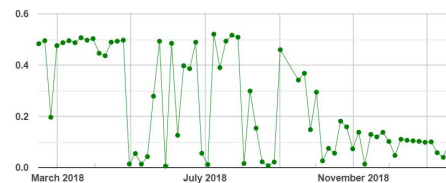
.GEOTIFF



.KMZ, .KML

.SHP, .GEOJSON

Evolución del índice de vegetación para el área seleccionada



Coordenadas geográficas (latitud, longitud): -34.8307, -71.5618

Superficie aproximada: 79.64 ha

id polígono: +3268+2912



.CSV, .SVG

.PNG

# CHALLENGES



- ✗ CLOUD COVER
- ✗ USABILITY
- ✗ ENGAGEMENT
- ✗ WORKFLOW







# CLOUD COVER



JUL 2018

WINTER



FEB 2019

SUMMER

✕ 5 DAY MOSAICS

✕ N - MONTHS

MOSAICS



# USABILITY



- ✗ USER CENTERED DESIGN
- ✗ FAST PROCESSING AND RESULTS



LESS THAN 1 MIN





# ENGAGEMENT

- ✗ USERS GOT INVOLVED  
SINCE START
- ✗ ONE INSTRUCTOR ON  
EACH REGION
- ✗ TRAINING SESSIONS  
AND USER MANUAL



120 USERS



# WORKFLOW



✗ FITS WITH PROCEDURES ON  
PLANNING STAGE

✗ IT'S COMPLEMENTARY  
WITH UAV



# 2018 RESULTS



100% REGIONS – 66% PROVINCES

2,990 HA – 305 AREAS

93%  
EFFECTIVENESS





THANKS!

LEMU.FISCALIZACION@CONAF.CL

