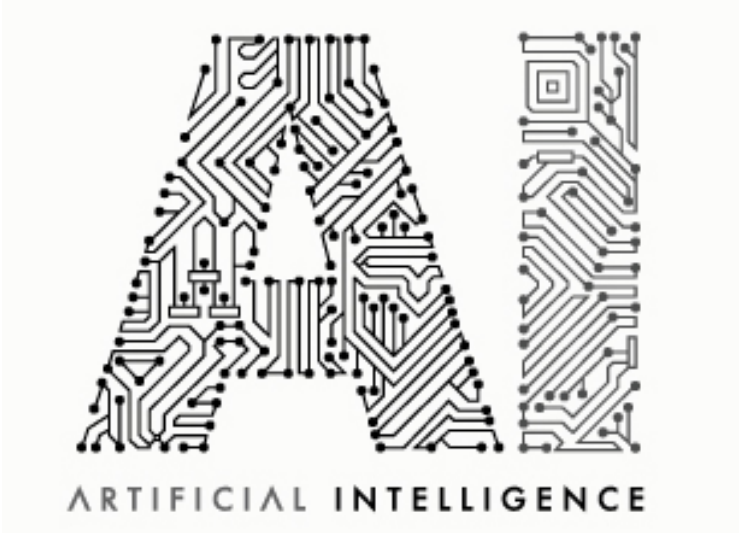
geo euskadi

UDA IKASTAROAK
CURSOS
DE VERANO
UPV/EHU

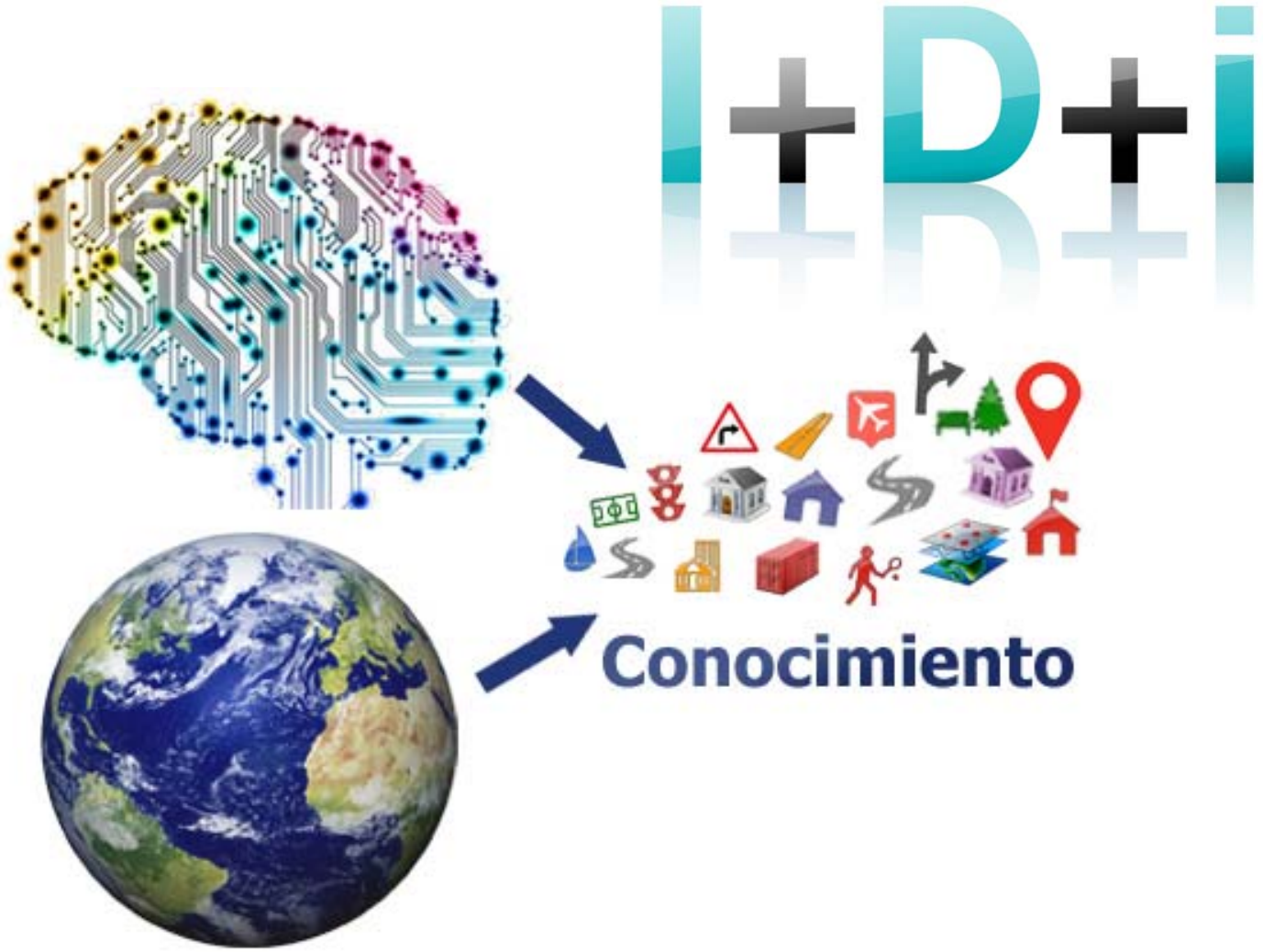
Inteligencia Artificial y Segmentación. Aplicación al territorio.



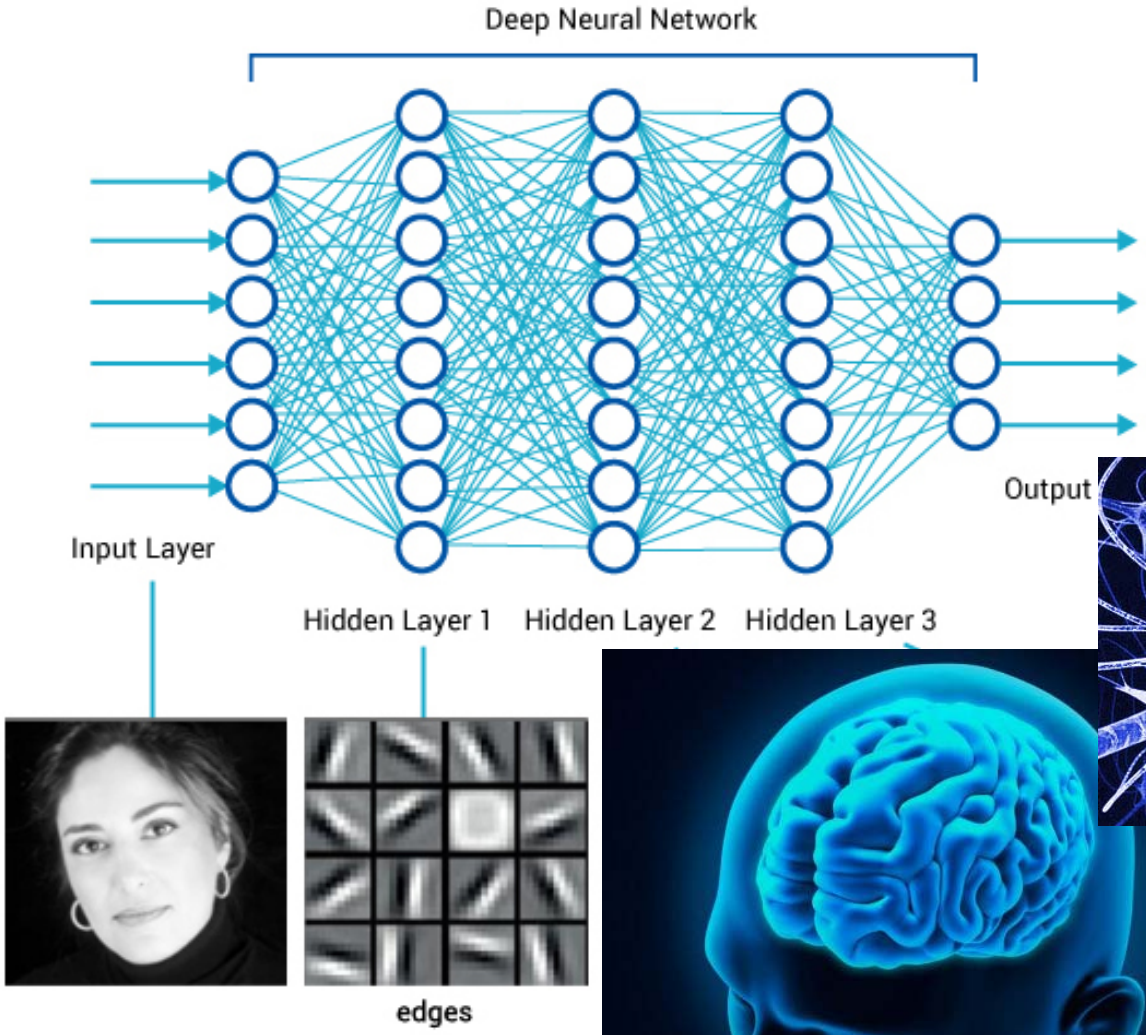
GRAFCAN

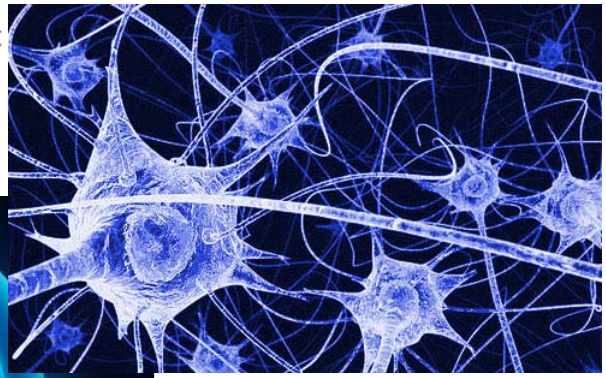

ARTIFICIAL INTELLIGENCE
Early artificial intelligence stirs excitement.
MACHINE LEARNING
Machine learning begins
DEEP LEARNING
Deep learning breakthroughs drive AI boom.
1950's
2010's
Since an early
deep learning,
intelligence – first machine learning, ther
sruptions.
Published as a conference paper at ICLR 2015
VERY DEEP CONVOLUTIONAL NETWORKS FOR LARGE-SCALE IMAGE RECOGNITION
Karen Simonyan* & Andrew Zisserman*
ABSTRACT
1 INTRODUCTION
arXiv:1409.1556v6 [cs.CV] 10 Apr 2015


mite
container ship
motor scooter
leopard
mite
black widow
cockroach
tick
starfish
container ship
lifeboat
amphibian
fireboat
drilling platform
motor scooter
go-kart
moped
bumper car
golfcart
leopard
jaguar
cheetah
snow leopard
Egyptian cat
grille
mushroom
cherry
Madagascar cat
convertible
grille
pickup
beach wagon
fire engine
agaric
mushroom
jelly fungus
gill fungus
dead-man's-fingers
dalmatian
grape
elderberry
ffordshire bullterrier
currant
squirrel monkey
spider monkey
titi
indri
howler monkey

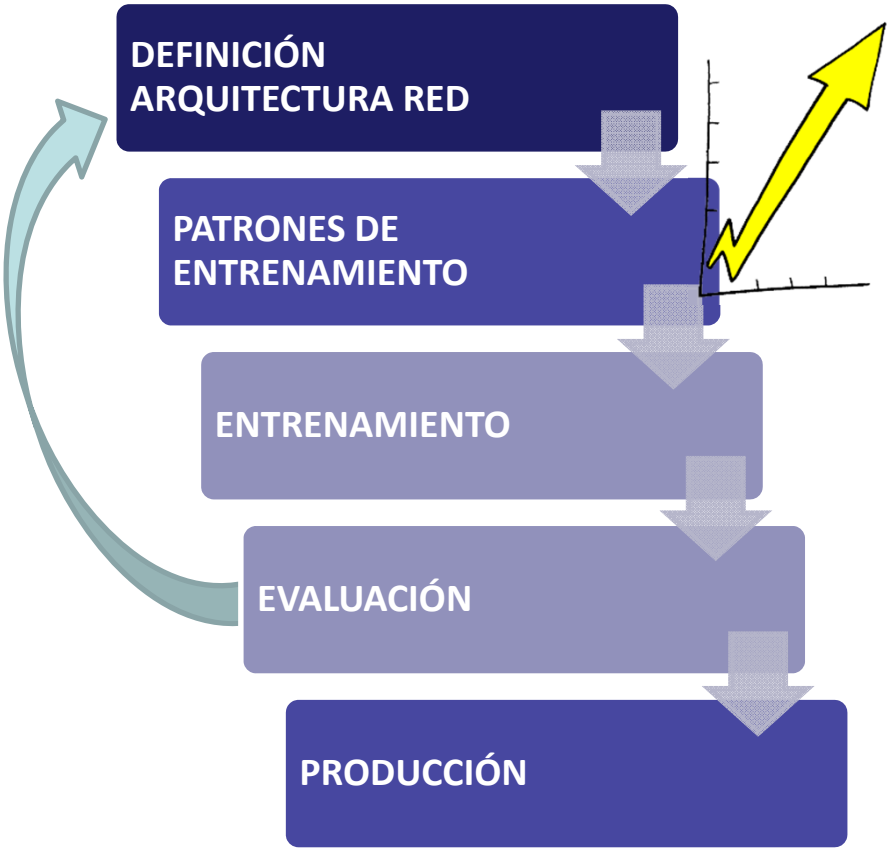

I+D+i
Conocimiento

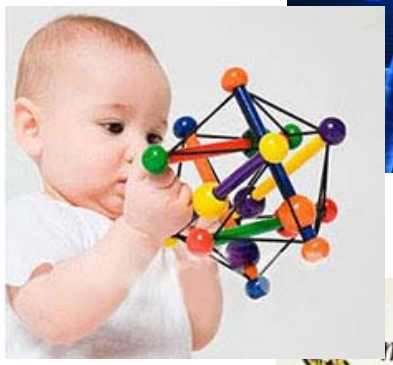
Redes Neuronales (deep learning)…





Flujo de trabajo IA





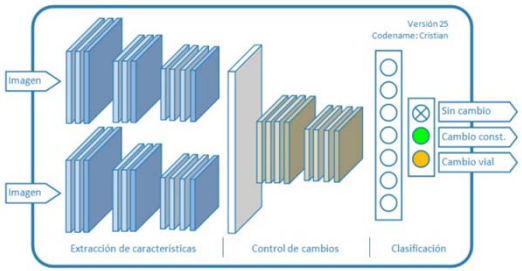
ADN

APRENDIZAJE

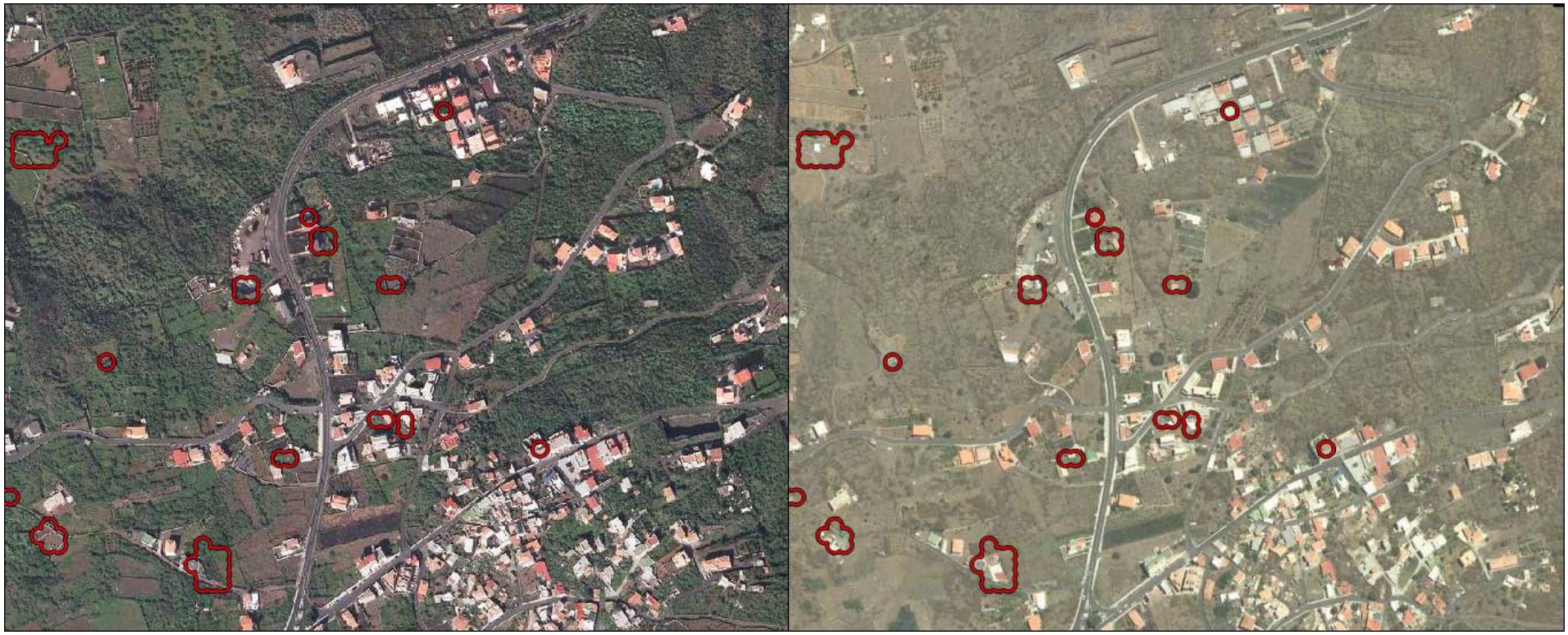
Proyectos IA

Piloto I+D

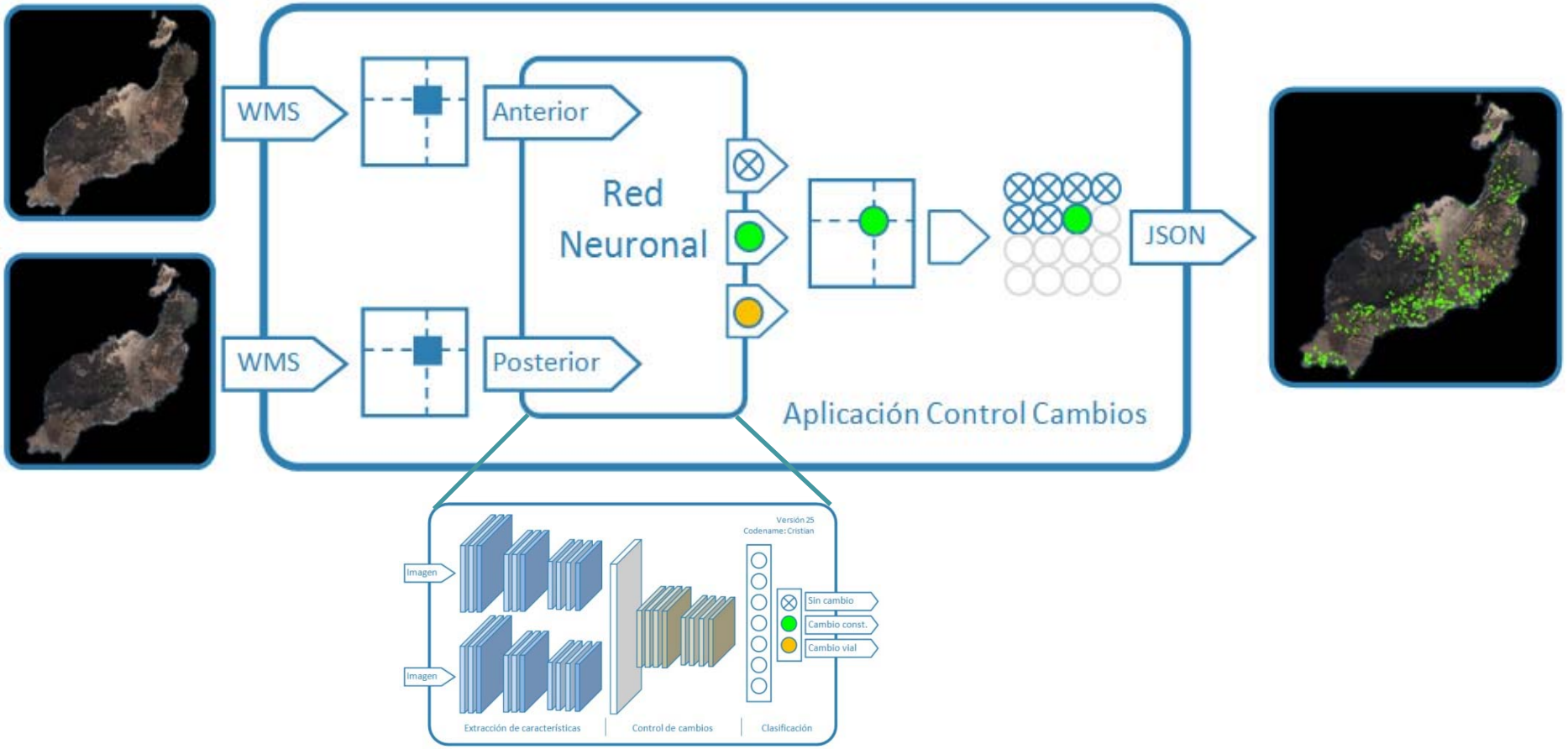
- Control de cambios en Ortofotos
- Mejora de resolución en imágenes
- Segmentación
  - Medio ambiente
  - Agricultura
- Futuro…



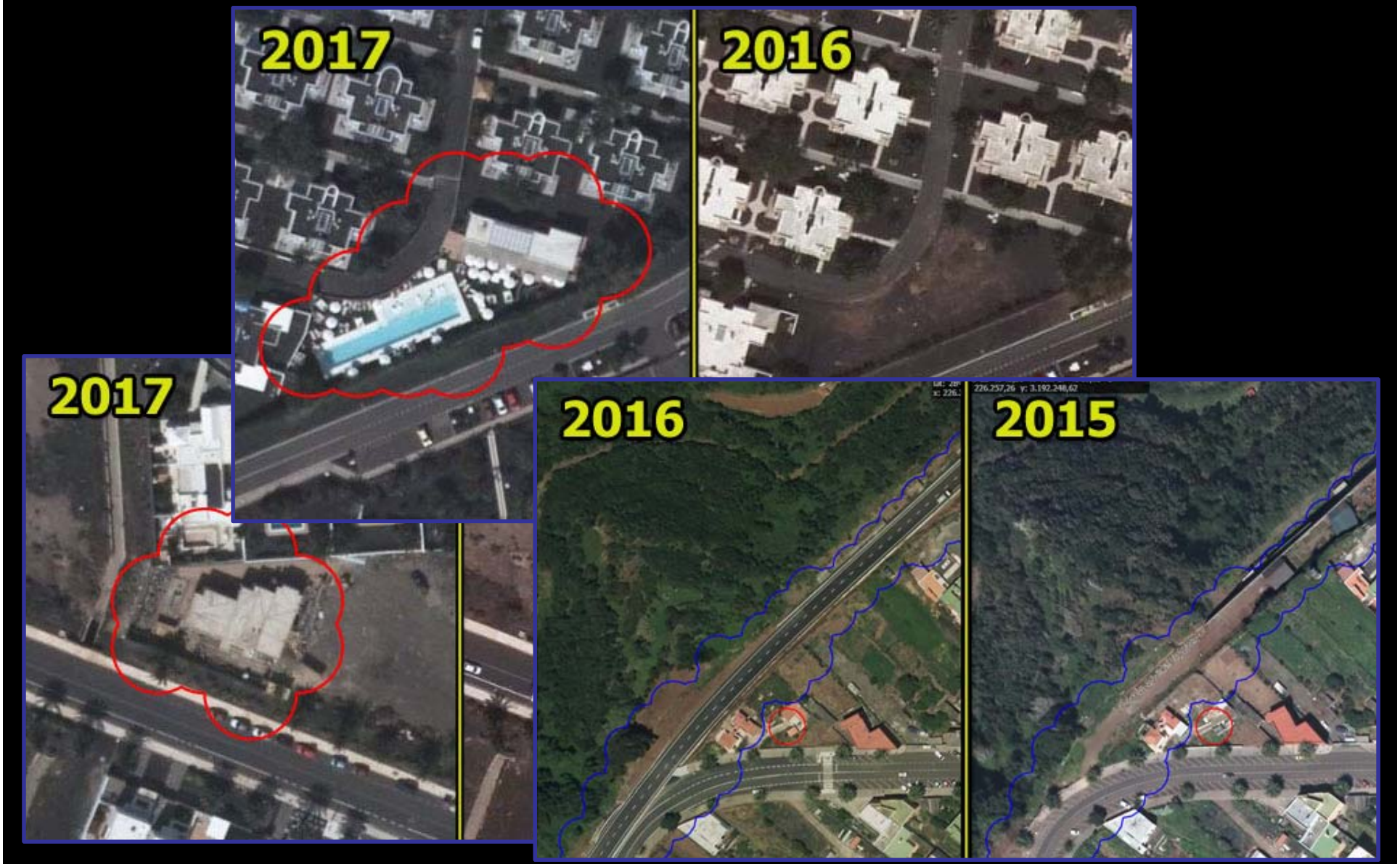
Detección de cambios en Ortofotos



Desarrollo => Producción



Ejemplos control de cambios



Líneas de trabajo: Mejora resolución

Mejora resolución imágenes Sentinel2 => 5m/pixel

http://visor.grafcan.es

Comparativa

S2 original 10m/pixel

Photoshop (conservar detalles 2.0)
5m/pixel

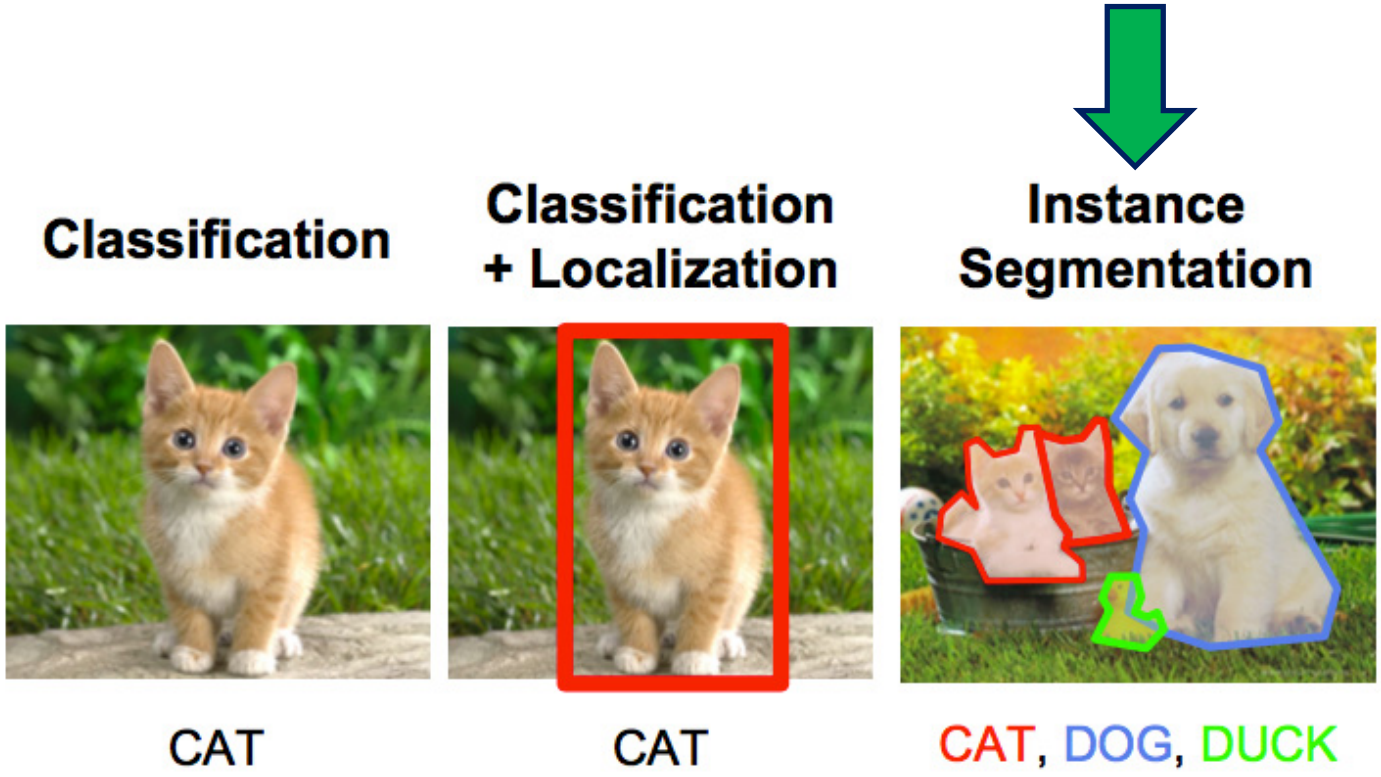
GRAFCAN mejora resolución IA
5m/pixel

Aplicación (entrenamiento):

- -Bandas individuales
- -RGB+IR
- -Multiespectral
- -20m=>10m, 10m=>5m

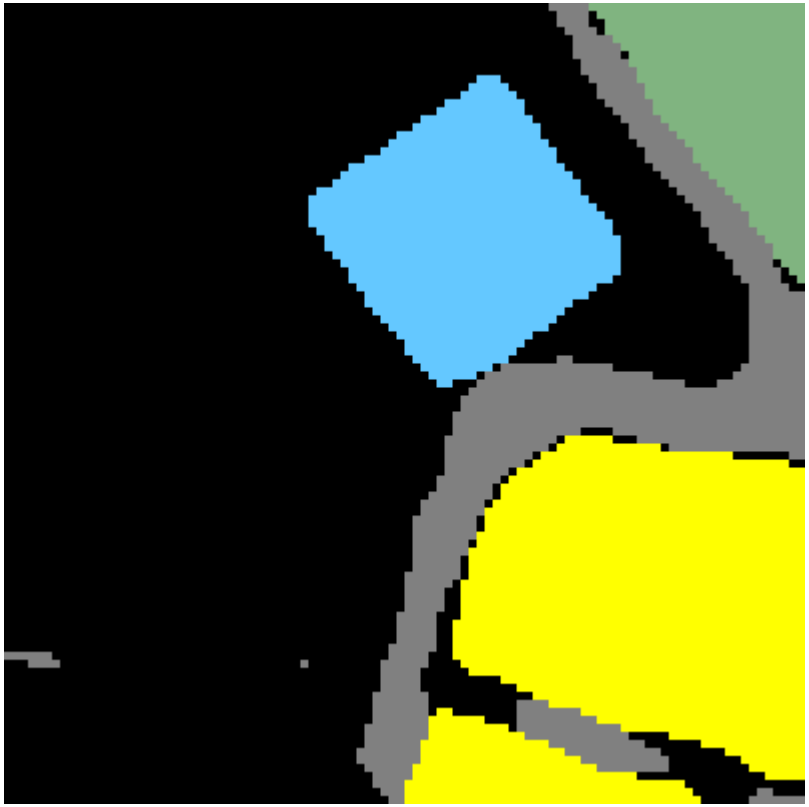
Mejora resolución imágenes (Ortofotos)

Segmentación…



Segmentación sobre Ortofotos

Proceso de aprendizaje Red Neuronal de Segmentación

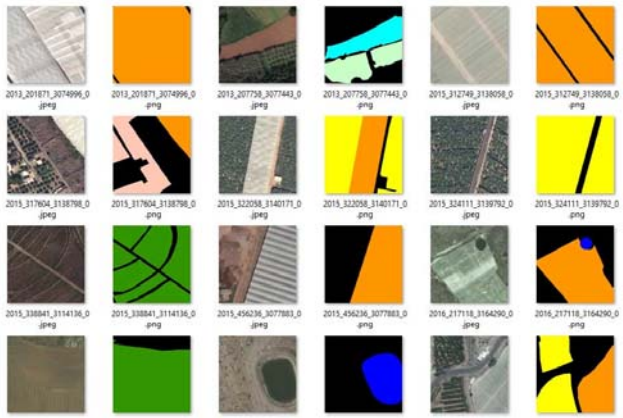


Comparativa de tecnologías

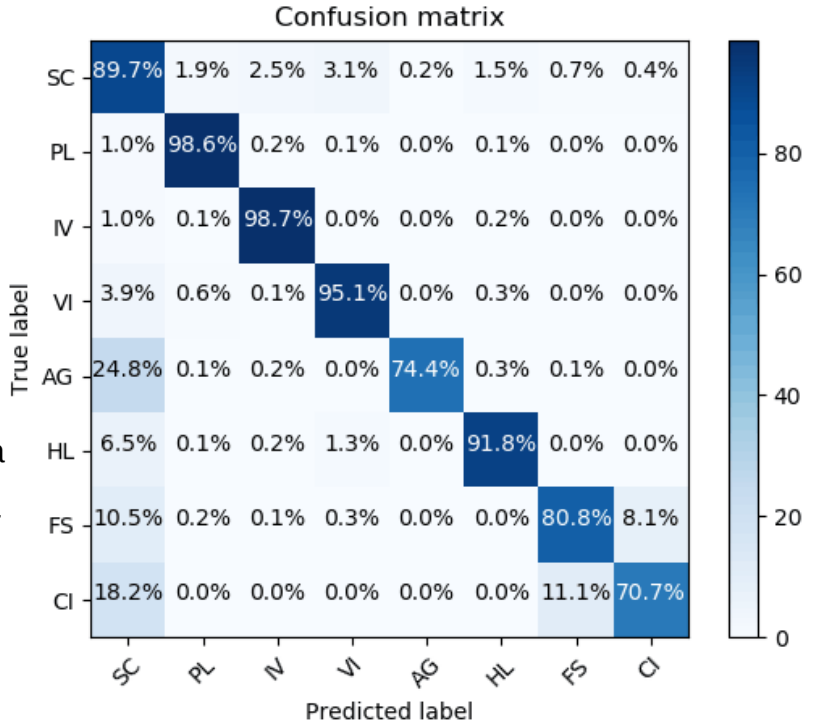
Sentinel2
(Teledetección)
[Bands(10)+ Lidar(4)]

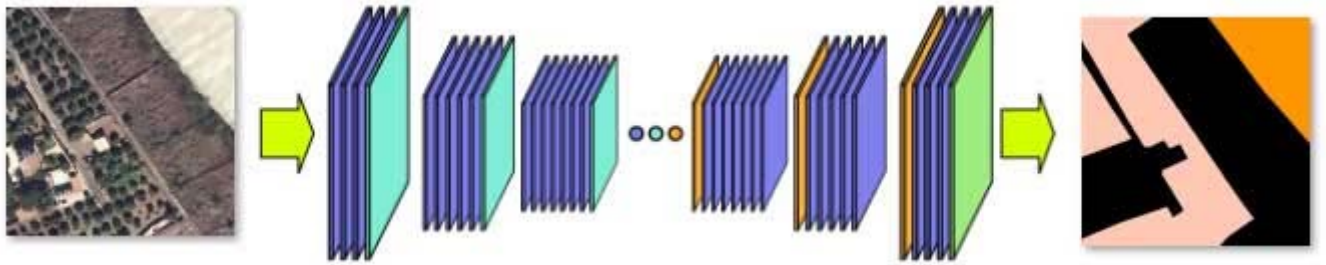
Segmentación IA
(Deep Learning)
[Ortofoto RGB]

Redes neuronales de segmentación



Sin Cultivo
Plátano
Invernadero
Viña
Aguas
Huerta Limpia
Frutales subT
Cítricos
+Papa (86%)



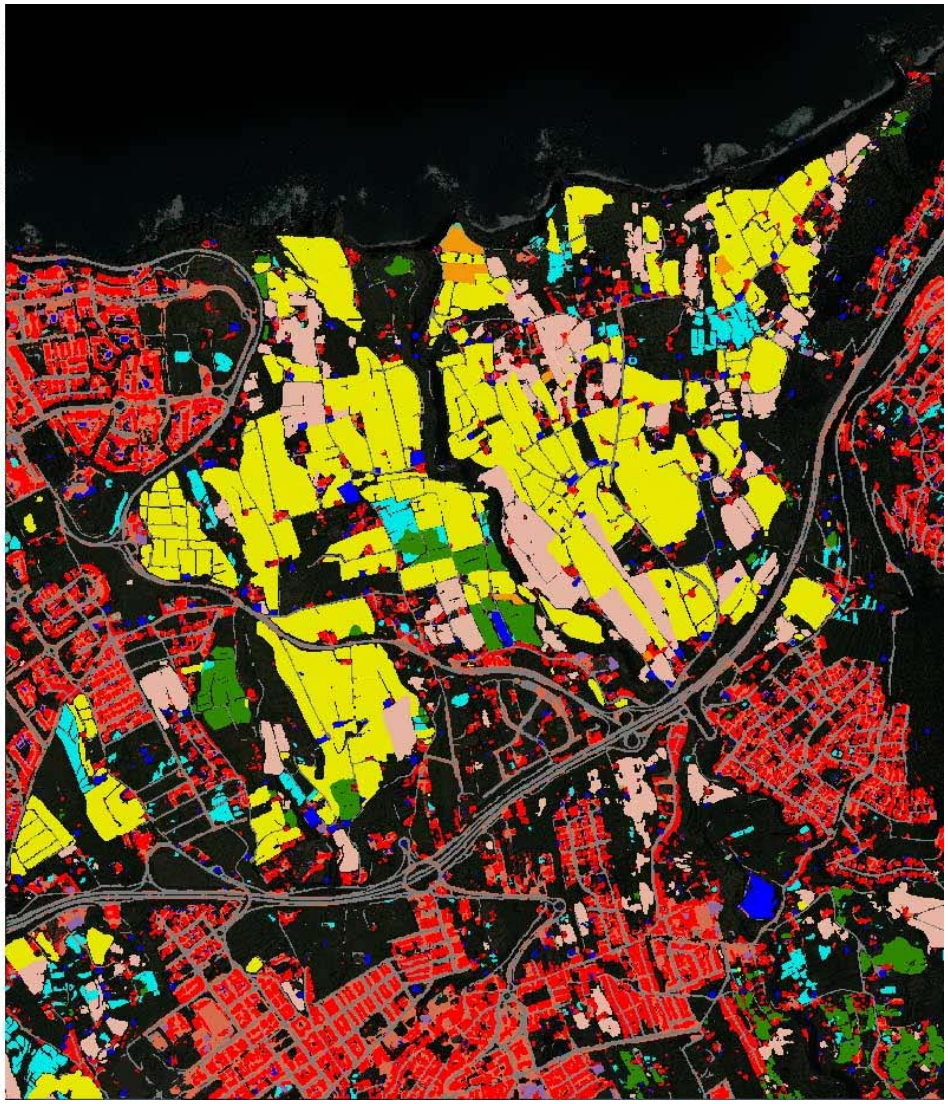


Ejemplos

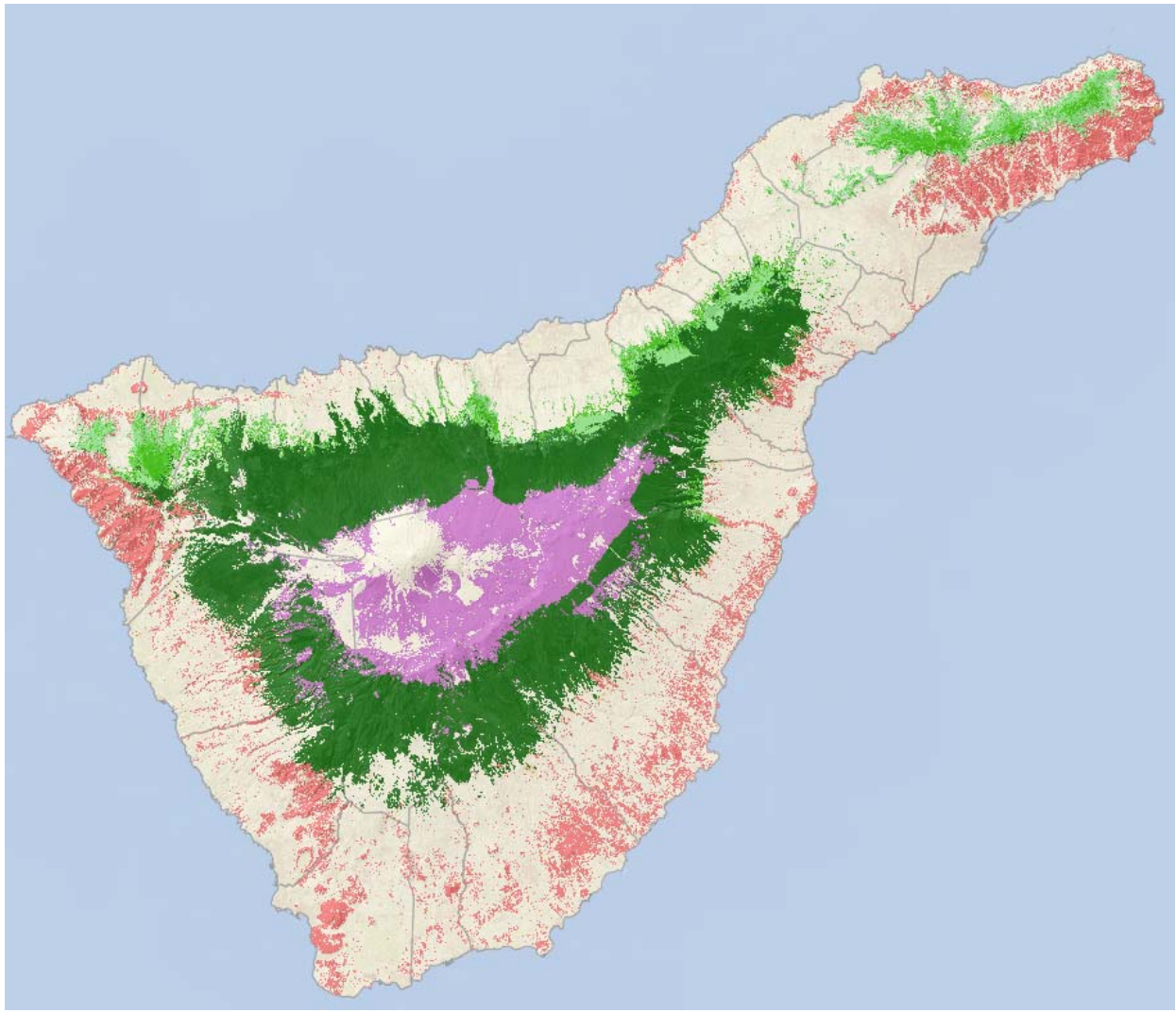
Ejemplos

Ejemplos

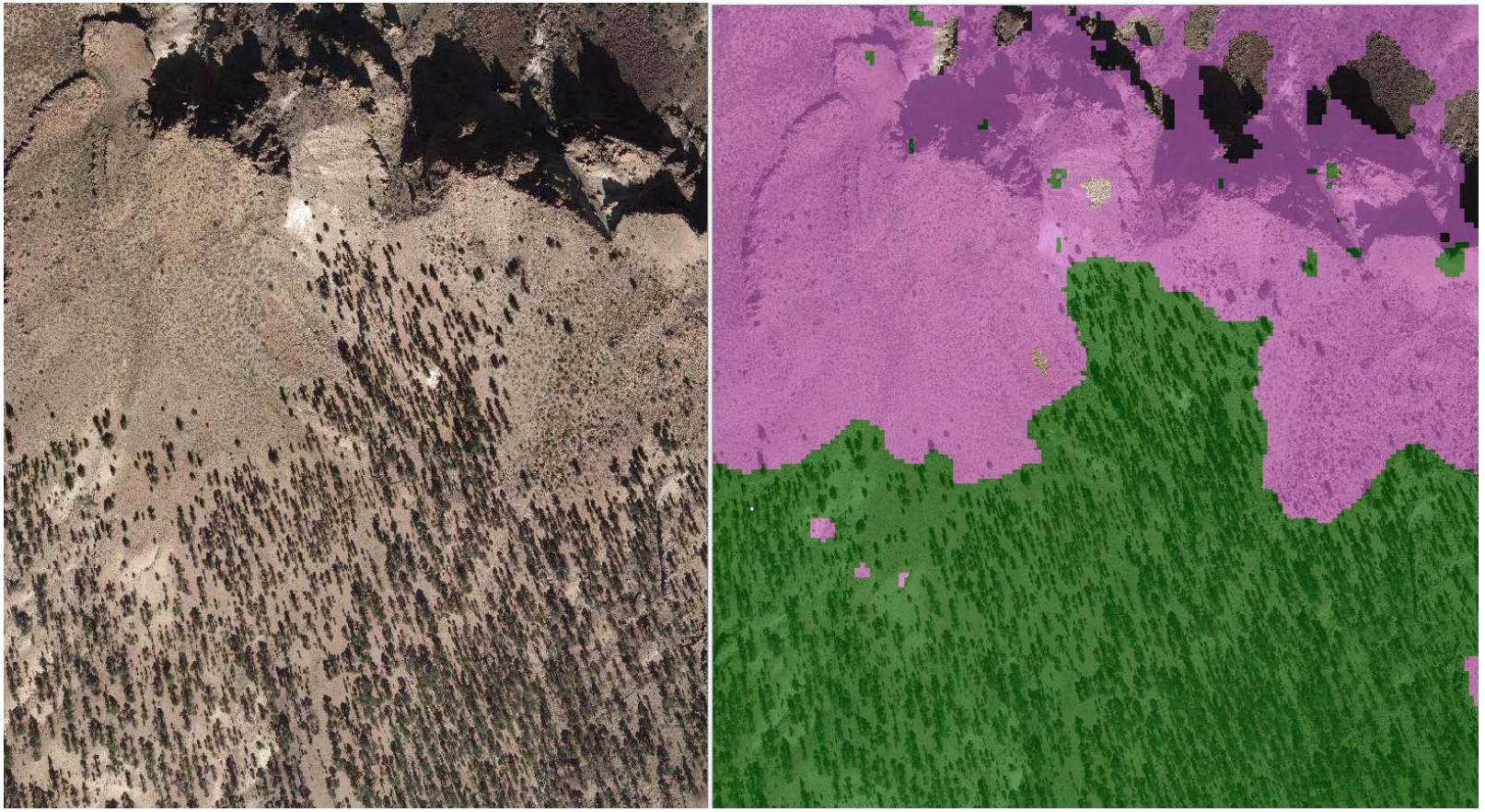
Ejemplos



Segmentación: Hábitats…

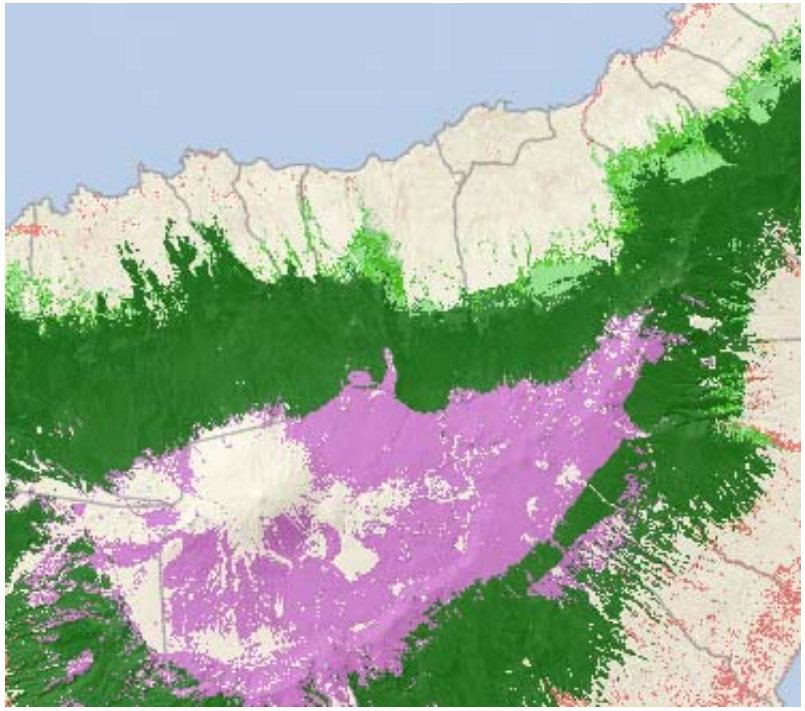


Segmentación: Hábitats…

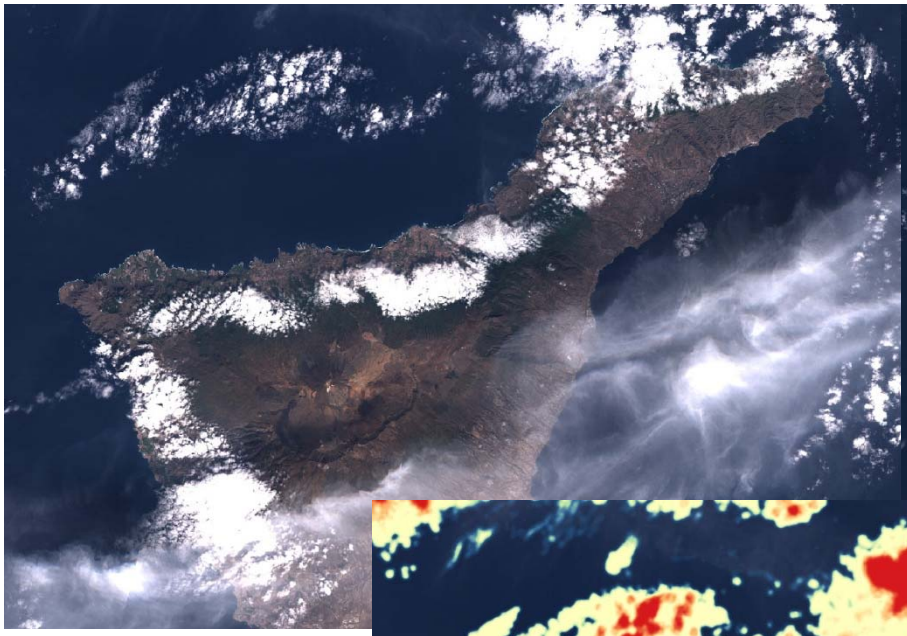


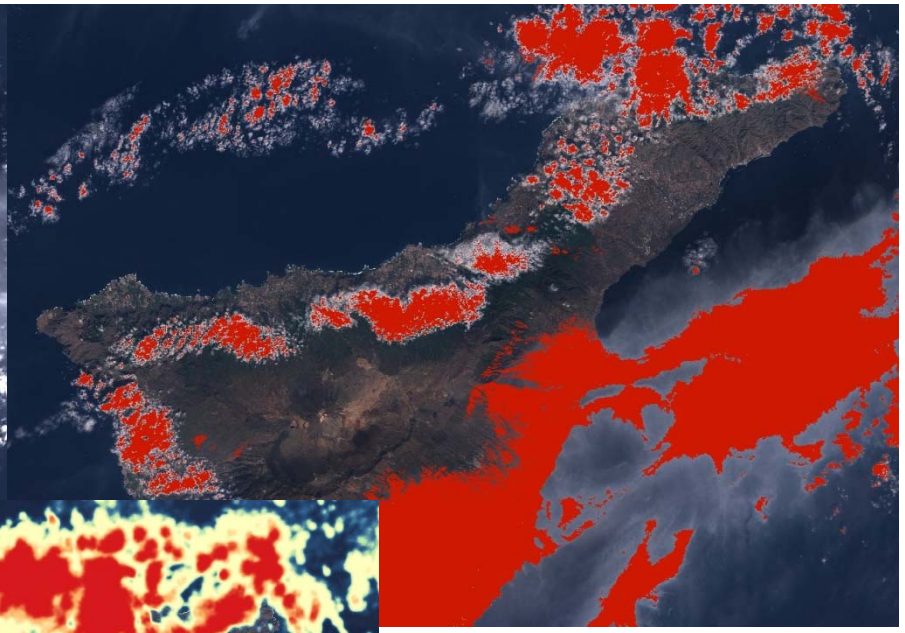

The Future
NEXT EXIT

Mapas ocupación suelo

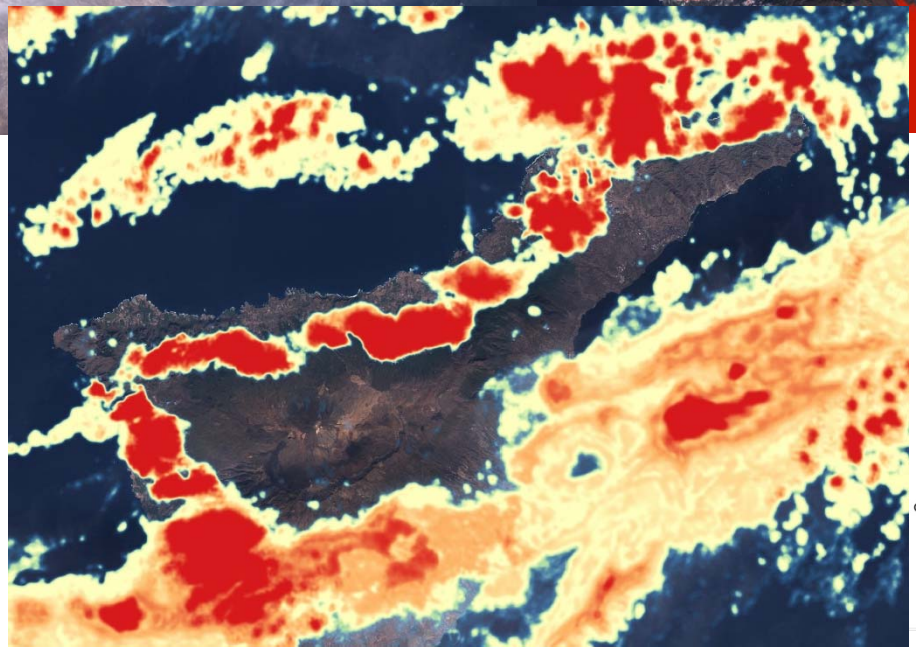


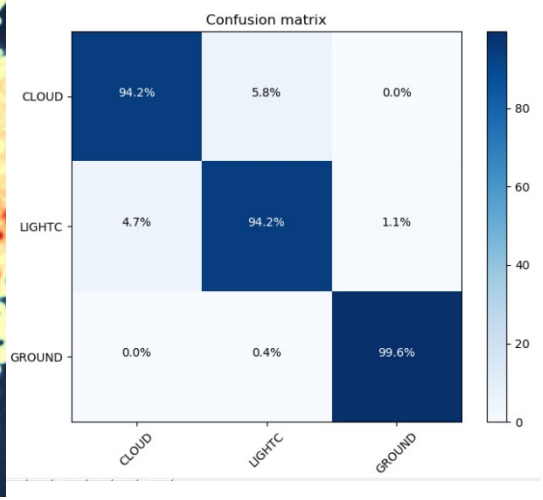
Detección nubes Sentinel2



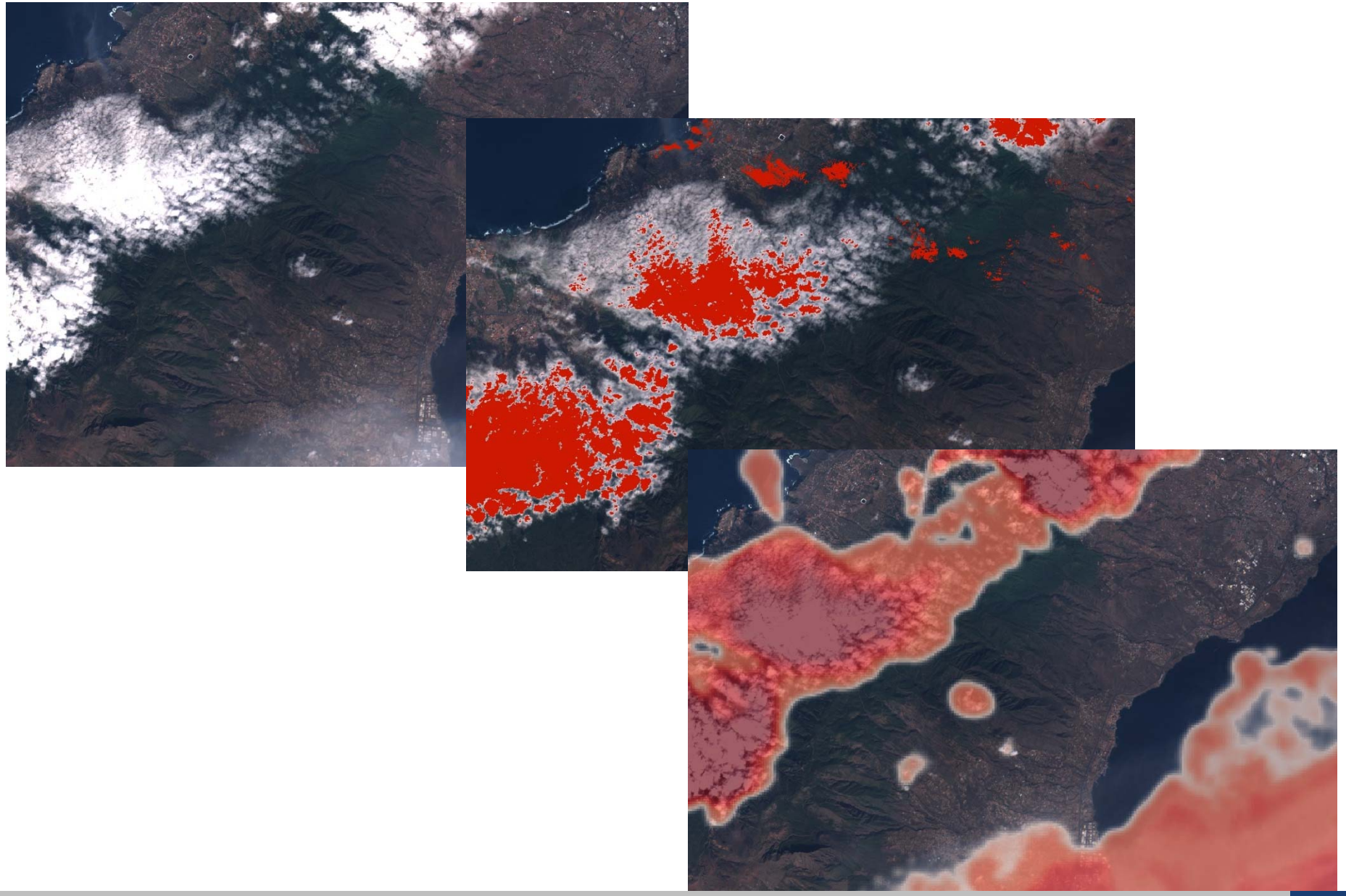


Deep Learning

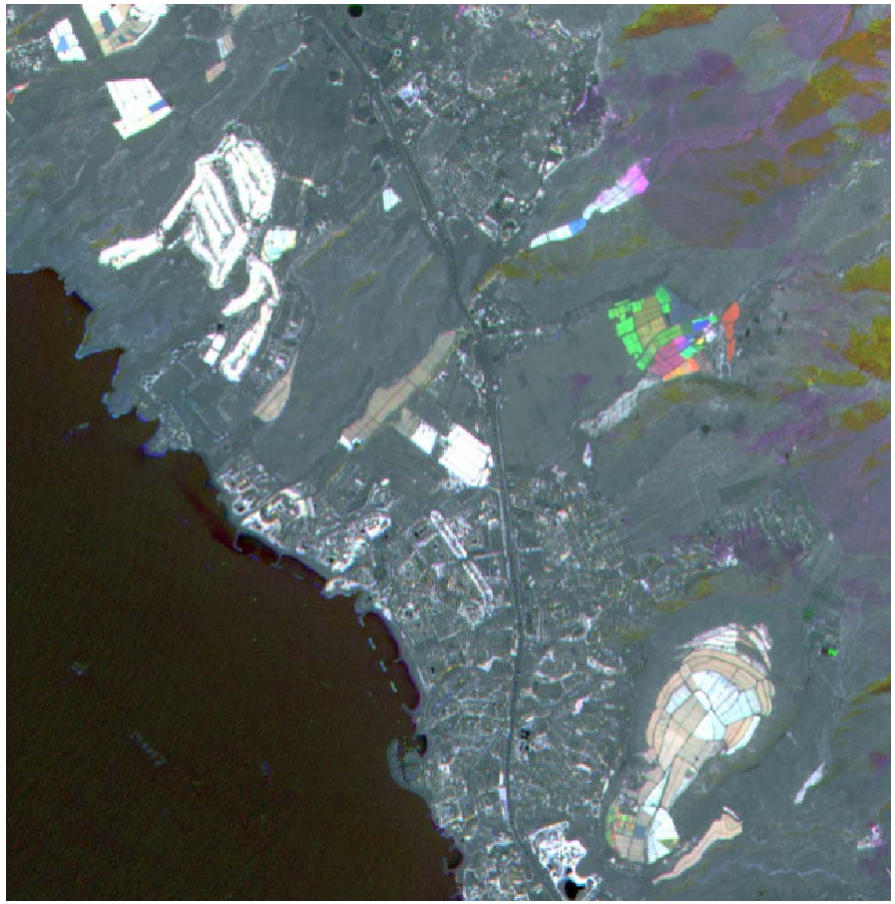


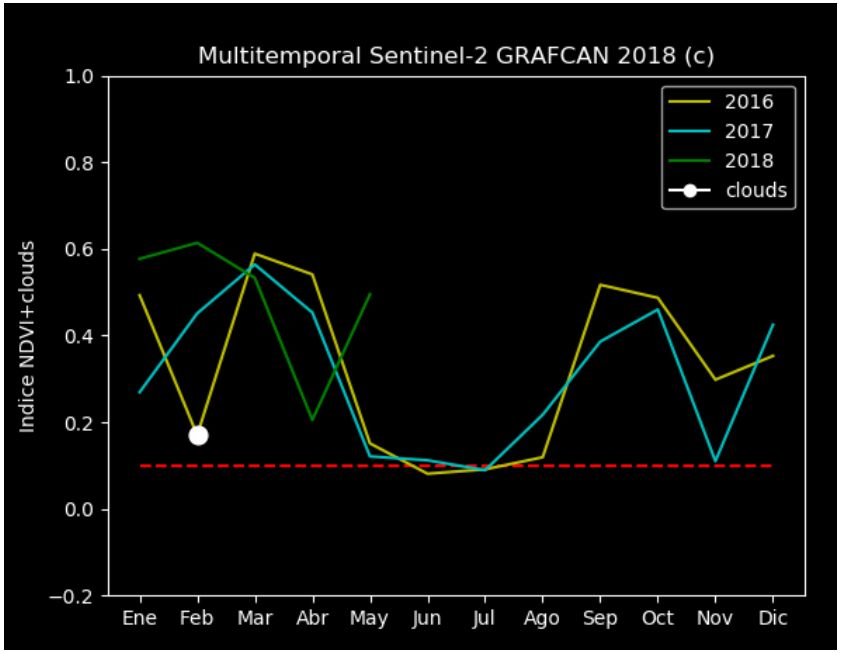


Detección nubes Sentinel2



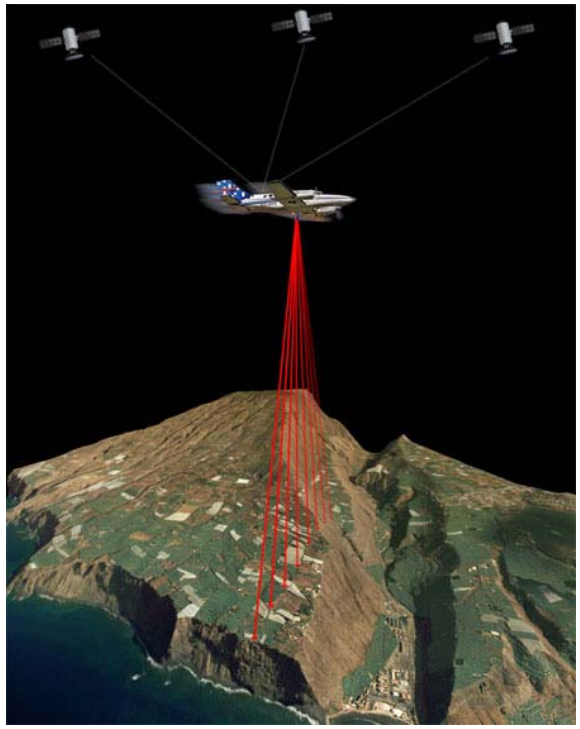
Servicios Multitemporales Sentinel2

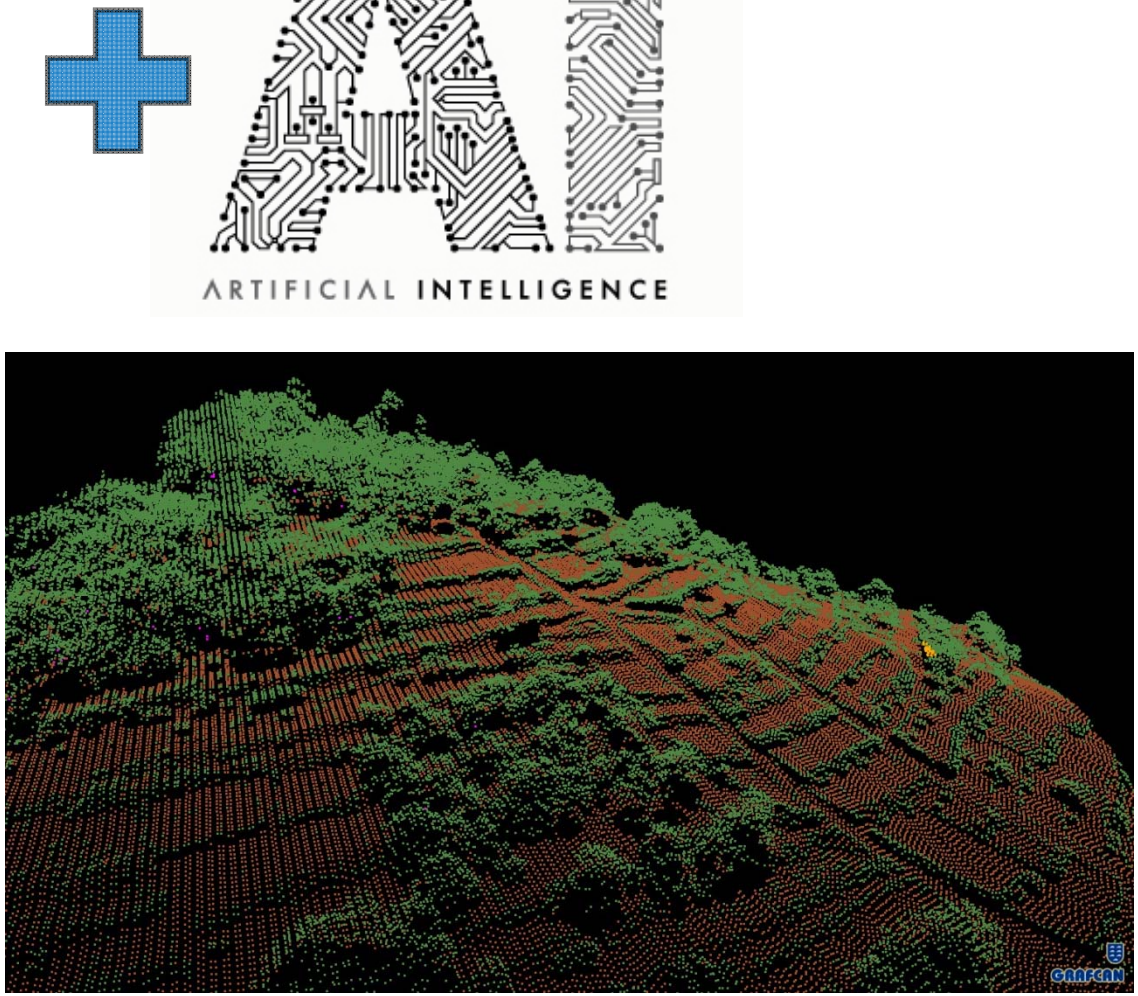




Detección Residuos

Clasificación Lidar (I+D) …to do…





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Gracias por su atención

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Gobierno de Canarias

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