



ECOCLIMAP-SG status and plans

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SURFEX – Steering Committee
27/05/2024

ECOCLIMAP-SG general remarks

ECOCLIMAP-SG database

COVER : land cover map directly composed of the vegetation and urban types used in ISBA and TEB.

33 covers : 3 covers WATER / 20 covers NATURE / 10 covers TOWN

Contrary to ECOCLIMAP, physiographic parameters are not described in tables but maps for each parameter are provided

HT : height of trees map, elaborated in compliance with the COVER map

LAI : Leaf Area Index, elaborated in compliance with the COVER map
(36 maps, each for a 10-day period)

ALB : visible and near infrared soil and vegetation albedos, elaborated in compliance with the COVER map
(36 maps, each for a 10-day period, for the 4 albedos)

Plan

1. ECOCLIMAP-SG V0 : 5-year maps
 - current version V0.1
2. ECOCLIMAP-SG V1 : 1-year maps
 - new developments available in V1.0
 - ongoing developments for V1.1
3. ECOCLIMAP-SG High Resolution COVER maps
 - ongoing developments for V1

1. ECOCLIMAP-SG V0 : 5-year maps

ECOCLIMAP-SG V0.1

Current version

COVER : based on ESA-CCI Global Land Cover product **over 5 years (2008-2012)**

HT : elaborated from the Forest Canopy Height map (Simard et al., 2011)

LAI_SAT : 36 maps (300m-resolution) without missing data,
elaborated from the 2014-2016 CGLS LAI data at 300m-resolution

LAI_KAL : 36 maps (300m-resolution) without missing data,
elaborated from the 2008-2012 CGLS LAI data at 1km-resolution,
with Kalman filter to separate the contributions of each vegetation type
(method explained in Munier et al., 2018)

ALB_SAT (for NIR and VIS) : 36 maps (300m-resolution) without missing data,
elaborated **without snow effect** from the 2008-2012 CGLS data at 1km-resolution,

ALB_KAL (for NIR / VIS and for SOIL / VEG) : 36 maps (300m-resolution) without missing data,
elaborated **without snow effect** from the 2008-2012 CGLS data at 1km-resolution,
with Kalman filter to separate the contributions of each vegetation type, and to
separate soil and vegetation (method explained in Carrer et al., 2014)

2. ECOCLIMAP-SG V1 : 1-year maps

ECOCLIMAP-SG V1.0

Same algorithm and same ancillary data as V0, available now

COVER : based on [annual](#) ESA-CCI (then C3S) Global Land Cover product, [from 1992 to 2020](#)

HT : elaborated in the same way as V0, in compliance with each annual COVER map

LAI_SAT : 36 maps (300m-resolution) without missing data,
elaborated *on demand* in the same way as V0, from 2014 to 2020

LAI_KAL : 36 maps (300m-resolution) without missing data,
elaborated *on demand* in the same way as V0, from 1999 to 2019

ALB_SAT (for NIR and VIS) : 36 maps (300m-resolution) without missing data,
elaborated *on demand* in the same way as V0, from 1999 to 2019

ALB_KAL (for NIR / VIS and for SOIL / VEG) : 36 maps (300m-resolution) without missing data,
elaborated *on demand* in the same way as V0, from 1999 to 2019

NB: These maps can be elaborated on restricted geographical areas

2. ECOCLIMAP-SG V1 : 1-year maps

ECOCLIMAP-SG V1.1

Same algorithm as V0 but new ancillary data, available soon

COVER : based on the annual ESA-CCI (then C3S) Global Land Cover product, from 1992 to 2020

- ▶ with **improved crop areas** using the GAEZ v4 data (Fischer et al., 2021)
 - ~ 10km-resolution, years 2000 and 2010
 - 26 major crops / crop groups
- ▶ with **improved urban areas** using the Global Map of LCZ (Demuzere et al., 2022)
 - ~ 100m-resolution, year 2018
 - 17 classes of Local Climate Zones

HT : **improved height of trees**, based on the Global Canopy Height map (Lang et al., 2022),
~ 10m-resolution, year 2020

LAI_SAT, LAI_KAL : elaborated in the same way as V0
or from a different satellite dataset

ALB_SAT, ALB_KAL (for NIR and VIS) : elaborated in the same way as V0
or from a different satellite dataset

3. ECOCLIMAP-SG High Resolution COVER maps

Context : currently concerns only 4 French overseas islands

Objectives :

- Improve the COVER maps quality over these islands
- Improve the COVER maps resolution from 300 m to 30 m
- Keeping the possibility of an annual update

Methodology :

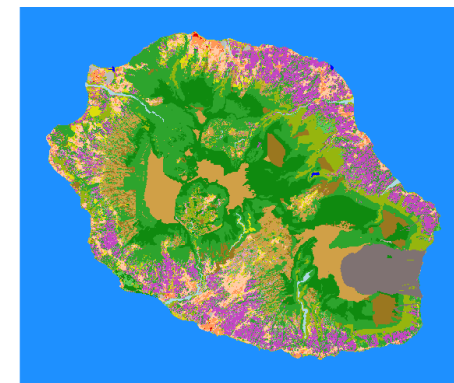
- Build a ground truth dataset over the Reunion island
- Find predictors available over French overseas territories
- Build and train a simple Dense Neural Network
- Apply the final model to the other French overseas territories

The best stable result is obtained with :

- a water mask built from Corine LC
- an urban mask built from Global Map LCZ (or Geoclimate/OSM)
- a first DNN to predict 10 thematic “nature” classes
- nested DNN to predict ECO-SG classes inside of the 10 thematic classes
- a training with 24 predictors



COVER ECO-SG 2019 V1.0
La Réunion Island



HR COVER ECO-SG 2019
La Réunion Island

Thanks for your attention