ECOCLIMAP-SG : technical documentation (update 05/06/18)

Some changes are realized on the map of the version 0 of ECOCLIMAP-SG.

For a next version of ECOCLIMAP-SG, these changes will need to be integrated directly in the operating procedure to build the map.

1) Correction of the map of heights of trees

- **script make_new_ht_0406.sh :**

```
new_ht_0406 = \
if((ecosg_final_map6 >= 7 && ecosg_final_map6 <= 15 || \
ecosg_final_map6 == 22), \
if(height_of_trees_simard@INPUT != 0, height_of_trees_simard@NPUT, if(all_crops == 8, 1,  \
if(ecosg_final_map6 == 15, 2, 5))))
```

→ permanent crops (all_crops=8) : 1 meter
→ shrubs : 2 meters
→ other trees not represented in height_of_trees_simard : 5 meters

2) Use of finer climate maps for the climatic separation

Some climatic maps at 1km resolution are created to replace the climatic maps at 0,5° previously used.

- We use : http://worldclim.org/version2 (1km resolution, global)
  - **Tc,min** : minimal value of the temperature of the coldest month
    - available in the bioclimatic variables : BIO6
  - **Tc,max** : maximal value of the temperature of the coldest month
    - to find the coldest month from the Tavg : script get_coldest_month.sh
    - to take the maximal temperature of this coldest month : script get_tmax_coldest_month.sh
  - **GDD5,min** : minimal value of the annual sum of the daily temperatures higher > 5°C
    - to interpolated between the Tavg to get the daily values then to sum these higher or equal to 5°C : script get_nbj_5.sh

→ maps tc_min_bio6, tmax_coldest_month, nbj_5_tot (sum of nbj_5_1, nbj_5_2, …, nbj_5_12)

- Then, the criteria are :

	Tc, min	*Tc,max*	*GDD5,min*
TrBE	≥ 13°C		
TrBD	≥ 13°C		
TeNE	≥ -6°C	≤ 22°C	≥ 900
TeBE	≥ -1°C	≤ 22°C	≥ 1200
TeBD	≥ -17°C	≤ 15°C	≥ 1200

BoNE	≥ -32.5	≤ 5°C	≥ 600
BoBD		≤ -2°C	≥ 350
BoBD		≤ -2°C	≥ 350
TROG	≥ 5°C		
Arct Grass		≤ -7°C	

The limits are created with the script make_limites.sh.
The maps created are tropical, tene, tebe, tebd, bone, bond, bobd, arctic_grass, tropical_grass, at 1km resolution.

- Some local modifications are added :
  - sparse vegetation in the area of arctic grassland is replaced by arctic grassland
    → s**cript make_new_vegtypes.sh**, makes the map ecosg_final_map2
  - sparse vegetation in South America is manually replaced by temperate grassland
    → **r.patch** --overwrite input="am_sud_sparse@christine,ecosg_final_map2@christine" output="ecosg_final_map3" (**am_sud_sparse** was created on a region manually defined ron South America)
  - crops in Africa are replaced by 50% of tropical grassland + 50 % of original crops (C3w, C3s of C4) :
    - random map crops_ecosg3_100 : generated by r**.surf.random** with 10 values
    - script **make_new_crops_50.sh**, makes the map new_crops_50, applied on a region manually defined on Africa

    → **r.patch** --overwrite input="new_crops_50,ecosg_final_map3" output="ecosg_final_map4"
  - grassland in Africa and Australia are manually forced to « tropical » :

→ **r.patch** input="australie_grass,ecosg_final_map5" output="ecosg_final_map6" (australie_grass is build on the region manually defined on Australia, with all grassland tropical)

=> the final map is ecosg_final_map6