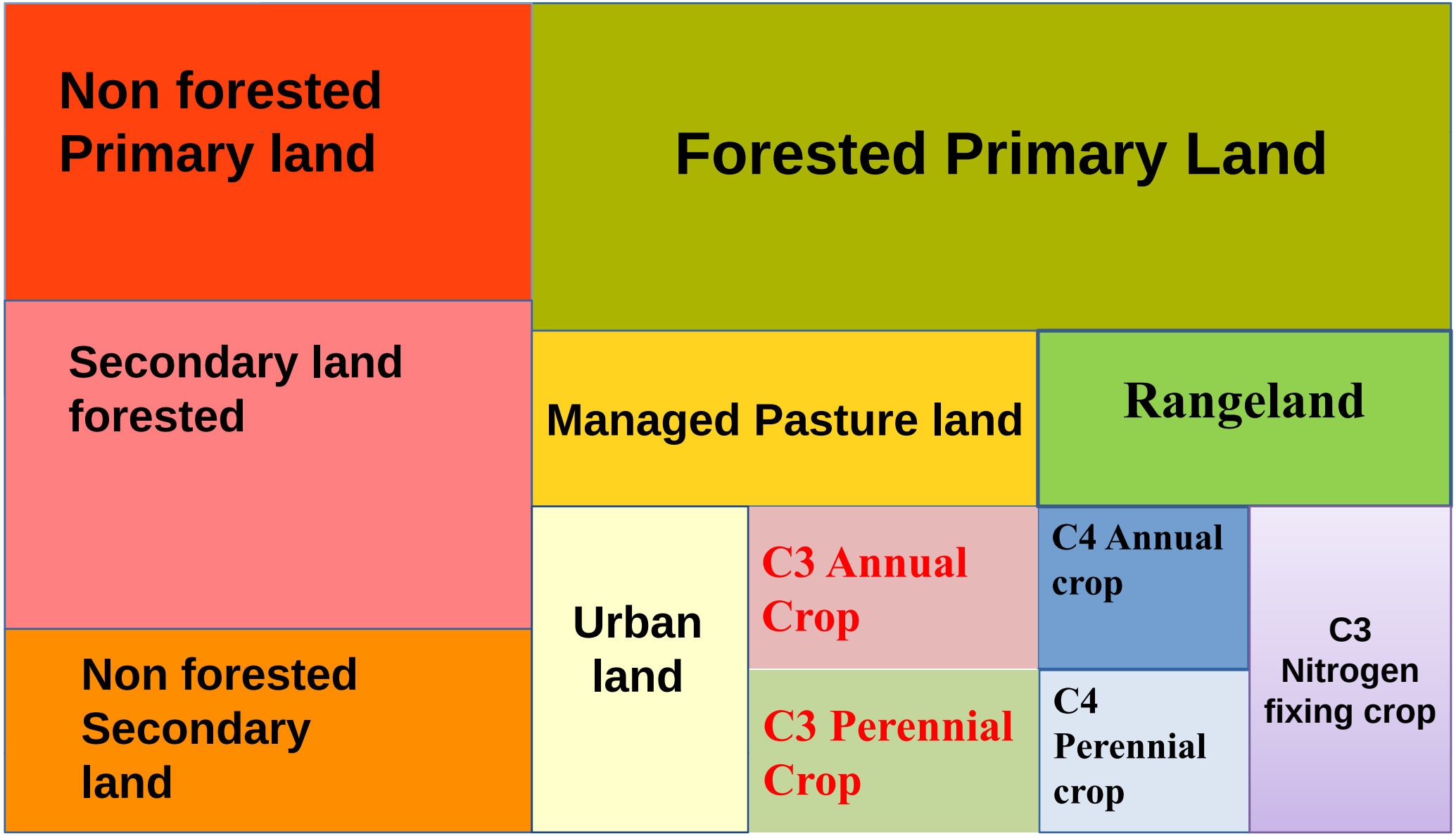
Land Use Map Translation

Summary
after Discussion meeting held on17 Sept,2015

Main OBJECTIVES of this meeting

- **Prepare ORCHIDEE PFT maps for CMIP6 (present day, historical + future Scenarios …. 6 land-use scenarios will be available)**
- **Make sure the maps will be useful for ALL versions of ORCHIDEE**
- **At the highest possible spatial resolution (land-use maps will be delivered at 0.25°)**

What will we get in terms of land-cover & use Informations? land units in a grid cell



What we have agreed on ORCHIDEE map

- **Yearly Maps at 0.25°x0.25° Resolution**

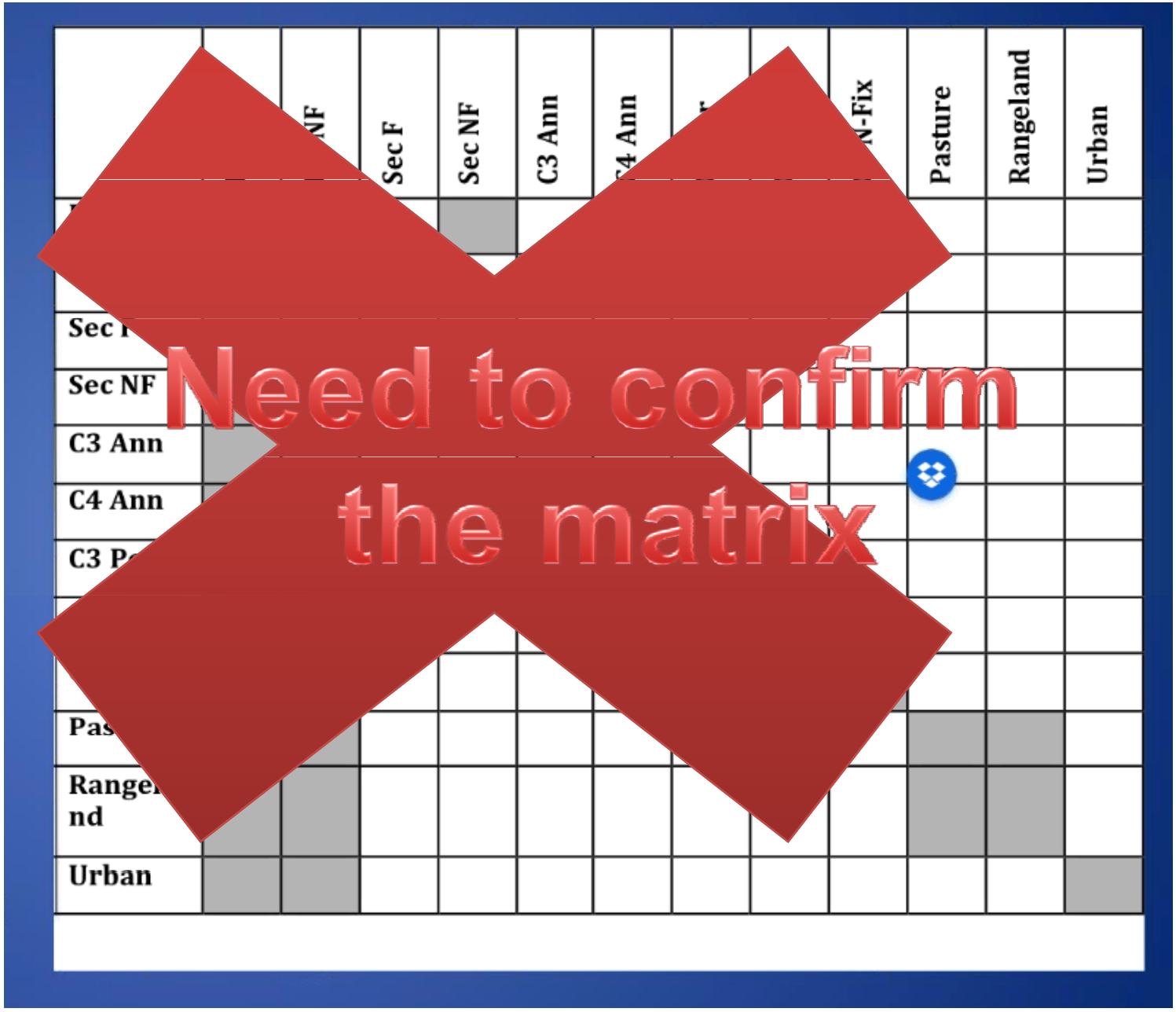
- **≥ 19 PFTs**

  [more than 19 means that we would further detail the crop part …. But from other source of data as Harmonized data sets for CMIP6 will not include more infos]

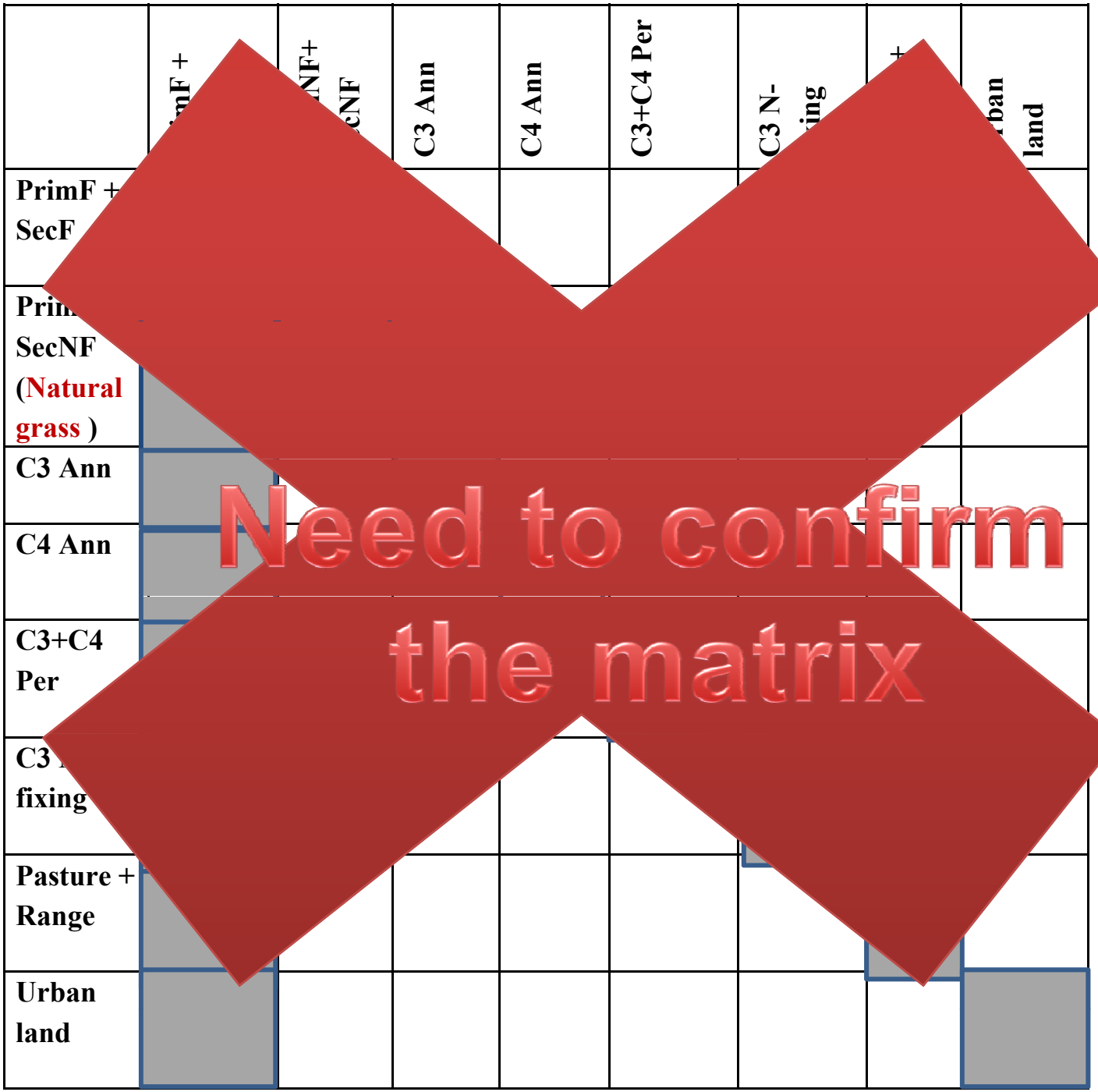
ORCHIDEE Tiles planned

1. Bare ground	12. C3 anthr. grass	13. C4 anthr. grass
2. TropBEf		
3. TropBRf	14. C3 Per crop	15. C4 Per crop
4. TempNEf		
5. TempBEf	16. C3 Ann crop	17. C4 Ann crop
6. TempBSf		
7. BorNEf	18. N-fixing crop	
8. BorBSf		
9. BorNSf	19. Additional crop (if any to be decided)	
10. C3 Natural grass	20. Urban land	
11. C4 Natural grass		

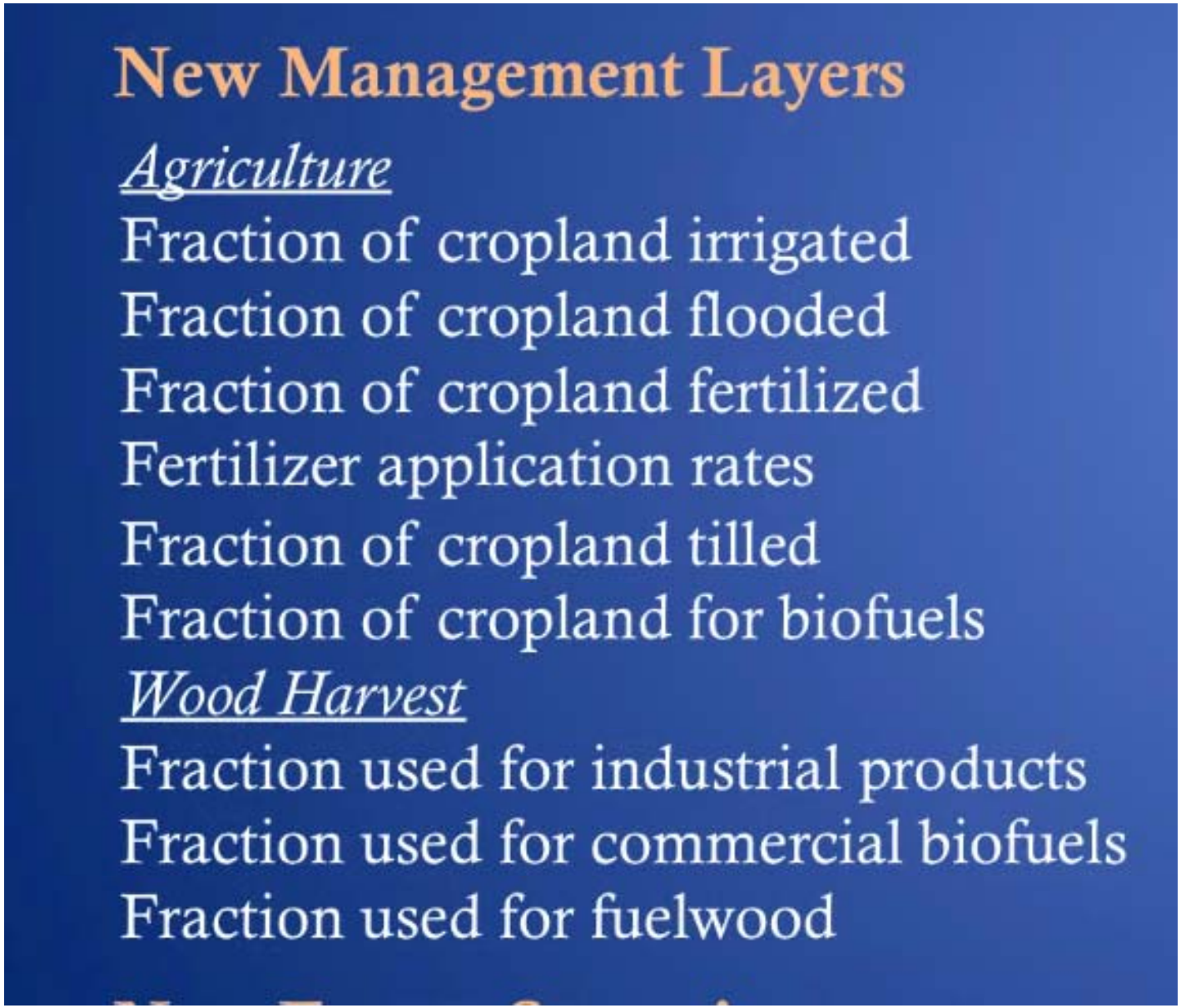
What will we get in terms of land-cover & use Informations? The Transition Matrix



We plan to simplify the above transition matrix as below



What will we get in terms of land-cover & use Informations? Informations on Management



What we have agreed on ORCHIDEE PFT maps

- **Yearly Infos at 0.25°x0.25° Resolution**
- **One NetCDF file per year containing management Infos**
- **We've agreed to have 2 separate files for PFTs on the one hand, management on the other**
  (Combining both infos is left to the users)

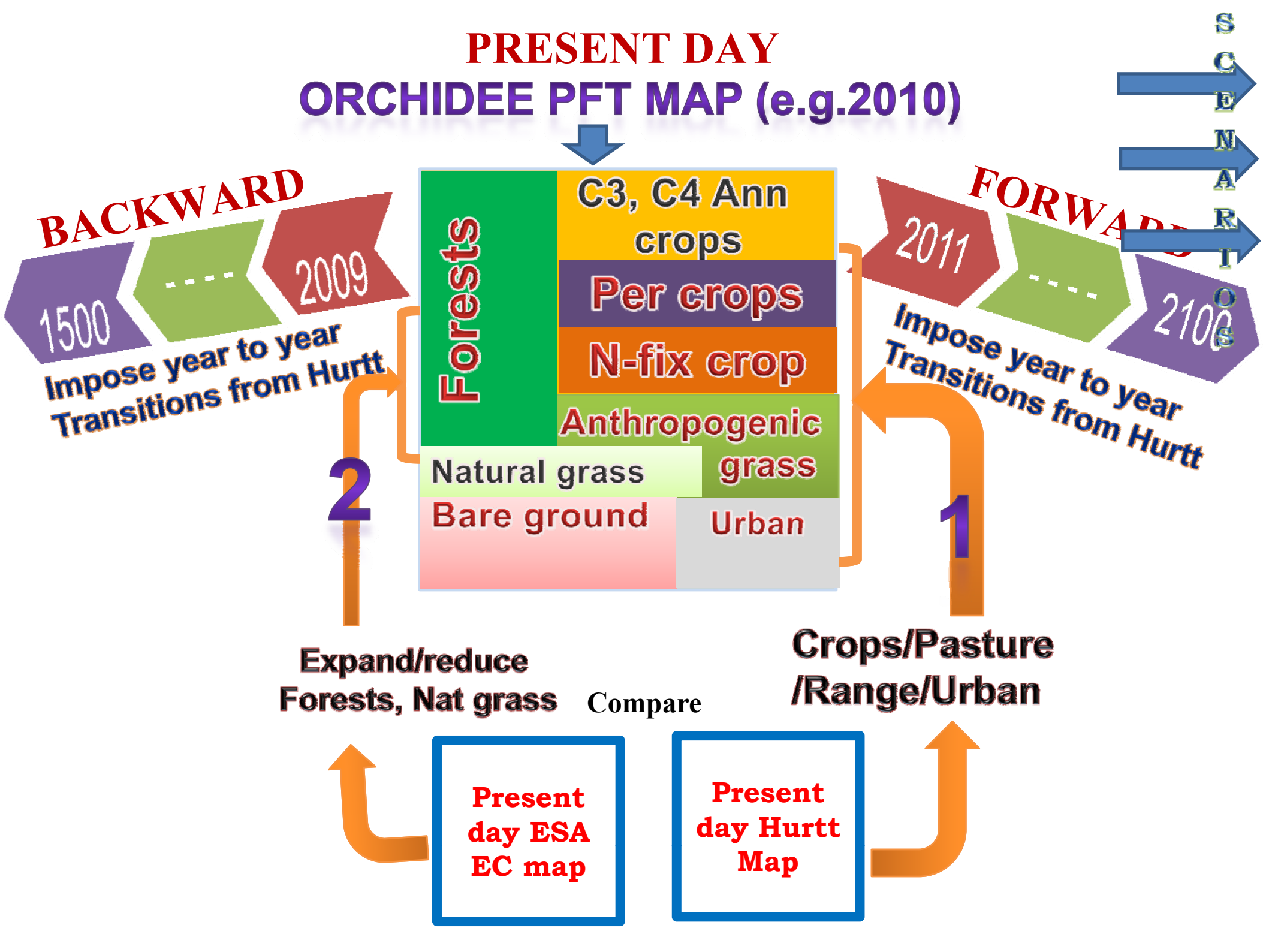
The strategy we have agreed on

- **Start from the ECVLcover present-day PFT map** *[to be redone by Natasha & Dev with our 19 PFTs and at 0.25° resolution]*

- **Run backward for historical values**

- **Run Forward for future scenarios**

- **Make use of the transitions proposed**
  ➔ *we agreed we do not need Gross transitions as ORCHIDEE does not yet include cohorts for soil carbon*
  ➔ *we may need to only compare 2 successive Land-Cover maps to account for the gross transitions rather than use the transition files that seem quite complicated (optional)*


PRESENT DAY
ORCHIDEE PFT MAP (e.g.2010)
BACKWARD
1500
- - - -
2009
Impose year to year Transitions from Hurtt
Forests
C3, C4 Ann crops
Per crops
N-fix crop
Anthropogenic grass
Natural grass
Bare ground
Urban
2
1
FORWARD
2011
- - - -
2100
Impose year to year Transitions from Hurtt
SCENARIOS
Expand/reduce Forests, Nat grass
Compare
Crops/Pasture /Range/Urban
Present day ESA EC map
Present day Hurtt Map

RULES WE FOLLOW

PRESENT DAY MAP (ORCm, Annual map)

- Impose LUH anthropogenic (i.e. Crops/ Urban/Managed pasture/Rangeland) area into observed ORCm map and the expansion (reduction) will occur at the expense (gain) of natural vegetation types proportionally for present day map (ORCm).

- **The Natural vegetation is derived from the observed present day ESA EC LC map.**

- **We keep the area of desert from present day extent, except if the anthrogenic area is larger than natural part of grid cell.**

HISTORICAL and FUTURE Scenario maps (Annual)

- To create transient PFT dataset we start from the present day map (ORCm) and then we move backward until 1500 and forward till 2100 by imposing the year to year transitions provided in LUH data set.

- At each year and at each grid cell we use the sum of simplified transitions and impose net conversions onto the present day map (ORCm) obtained above.

- Throughout 1500 to 2100, we keep the area of desert unchanged, unless otherwise if the anthropogenic area is larger than the natural part of the grid cell.

Note:

If no information is available on the natural distribution of vegetation at a specific location then search for nearest point that has natural vegetation and introduce that vegetation