

Main activities of ORCHIDEE-Project

- **Status of the main ORCHIDEE branches**

ORCHIDEE-CAN ; ORCHIDEE-Nitrogen; ORCHIDEE - MICT

- **Planning of the « WORK GROUP » in 2014**

- **CMIP6 Agenda & proposed agenda**
- **Main road map of the project meeting**

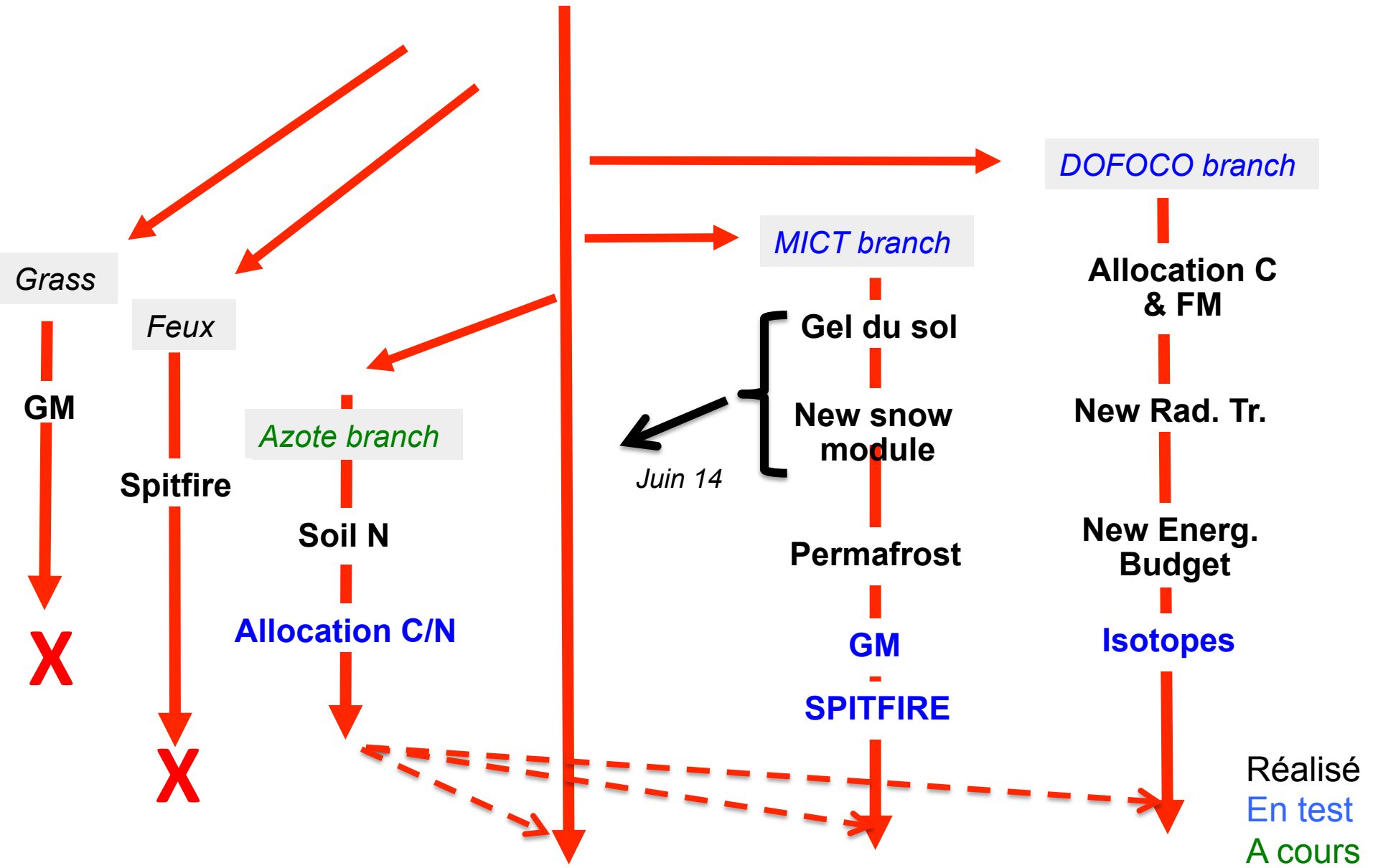
- **VARIOUS information**

- **Precip distribution & Forcing**
- **ORCHIDEE reference article**
- **Fair Use Policy » for ORCHIDEE**
- **Possible Retreat ?**

Version post - AR5 (1.9.6)

Branches actuelles...

Inclus: Hydro-11C, Spin-up Anal, OMP, Ext param; COV



CMIP6 Agenda

- 2 versions are foreseen (with 2 Physics for LMDz)
- Version 1:
 - Should be ready for Autumn 2015
 - Final adjustment up to early 2016
- Version 2:
 - Ready for early 2017 (shift of 1 to 1,5 yr)
 - Coupling with the new LMDz physic
 - To be prepared in parallele

Dedicated wiki page:

<https://forge.ipsl.jussieu.fr/orchidee/wiki/Meetings/CMIP6>

CM6_v1 : Physical developments

- 11 layers soil hydrology (ready)
- Common soil vertical discretization between Hydrology and Thermics (ready)
 - Soil thermics goes up to 7 meter
 - Hydrology stops most likely at 2 m
- New soil thermal properties (function of USDA soil texture classes) (ready)
- Soil freezing following I. Gouttevin's Phd (ready)
 - Current scheme conserve energy on annual basis (from freezing/thawing)
 - Revision is planned for "instantaneous" conservation (late 2015 ?)
- New 3 layers snow module following Tao's work (to be update : mid 2015)
 - Current Atm. coupling is not fully implicit and no snow fraction
 - Ongoing improvement to have a snow fraction and fully implicit.
- Adjusted albedos (en cours: objectif Juin 2015)
 - Replace Bares Soil albedo by the "MODIS – Background Albedo" from JRC-TIP or from ECOCLIMAP-2
 - Optimize the NIR and VIS 12 vegetation albedos using MODIS global albedo

CM6_v1 : Biogeochemical developments

- Nitrogen cycle (most likely, Autumn 2015)
 - Code ready, under debugging phase ; several persons involved (NV, SP, DG,...)
 - Impact will be limited to the Leaf Area Index ; possible
- Permafrost and Yedoma deposit (to be decided, autumn 2015)
 - Permafrost module currently implemented in MICT version
Main impact is a source of CO₂ to the Atm.;
small impact on soil thermal properties
 - Yedoma (deep permafrost): impact through CO₂ emissions
- Crops
 - Addition of a distinction between winter and spring C3 crops (phenology).
- Fires following SPITFIRE (to be decided)
 - Forcing for “human-induced” fires need to be prepared
- DGVM (late 2015)
 - Ready for the High latitude PFTs
 - Ongoing “check/calibration” for the tropics

CM6_v1 : others developments

- New Land Cover Classes using ESA - ECVIcover product (to be done late 2015)
 - Merge with LC changes provided by CM6 to be done.
- Calibration of several model parameters (done)
 - Decrease the fertilisation due to CO₂: (without N cycle)
 - Optimize carbon use efficiency (NPP/GPP) over the tropics
 - Adjust fraction of woody-NPP to NPP for the tropics
 - Change decomposition rates of deforestation products
- New technical features
 - Nudging the soil humidity and snow (for LS3MIP) (to be done spring 2015)
 - Cleaning of the model diagnostics and outputs (end 2015)
 - Reading of LC maps change from last to first time step.. (spring 2015)
 - XIOS (done)

Distribution of Precipitation (force mode)

- IF Forcing DT > 30' (ex: 6 hourly)
 - SPRED_PREC (flag) indicates how the precip are distributed along the 12 time steps
 - Default was SPRED_PREC = 1 (all the rain in 30')
 - → Problem of soil drying (too much drainage) in arid zone
- Proposition :
 - Default: SPRED_PREC so that the rain is distributed over $\frac{1}{2}$ DT

CRU –NCEP forcing

- Problem in v5.3 : coherence between the variables..
- Corrected for the upcoming v5.x

Driver

- Ongoing work to improve Driver (speed & flexibility): Jan P.

Evaluation / Validation

- Global CHECK
 - Energy, water, carbon conservation !
- Global comparison (data streams):
 - Carbone, water and energy cycles
 - List of the product that will be used under:
<https://forge.ipsl.jussieu.fr/orchidee/wiki/Meetings/CMIP6>: (see specific document)
- Tool for model evaluation
 - A dedicated meeting will be proposed...

Fair use policy ?

- 1) Protect model developers of new scientific modules (in particular CDDs)
- 2) Protect “overall” model contributors : code maintenance, drivers preparation, user-help, validation tool, fixing bugs ... (overall model life..)
- 3) Protect from too much “internal competition”; to keep some “scientific space” for everyone..

Use LSCE cloud to support policy..

- [https://files.lsce.ipsl.fr/index.php/apps/files?dir=/Shared/ORCHIDEE/FairUse %26 ARTICLES](https://files.lsce.ipsl.fr/index.php/apps/files?dir=/Shared/ORCHIDEE/FairUse%26ARTICLES)
- ARTICLE_IN_PREP: directory with all articles..
- INTENDED_STUDIES.doc
- MODEL_FUNCTIONALITIES.doc

New Reference Article

- New reference ORCHIDEE article (to replace Krinner et al. 2005)
- Collective effort :
 - Description of the TRUNC (current version)
 - Last version accessible under:
<https://files.lsce.ipsl.fr/index.php/apps/files?dir=/Shared/ORCHIDEE/PUBLICATIONS/ARTICLE-Reference-2014>
 - Description of Physics and Biogeochemistry
 - Emphasize on the model evaluation
 - Fluxnet site:
 - Global forced simulation :
 - Global LMDzOR :

Past / ongoing actions...

- Coding Guidelines : OK
- XIOS new output module : implemented
- Parallelization : MPI-OMP in coupled mode only
- Version LMDz-zoom Europe – ORC : ok
- Version WRF – ORCHIDEE : (a branch)
- Several reference simulations (MIP): TRENDY, MsTMIP,...
- Protocol for model evaluation: Done

- Re-organisation of the WIKI web site : « done »
- Reference Article : in progress
- New Logo : soon...

Next retreat

- “Restricted retreat” with JULES core developpers
 - Jules retreat: 30 Juin – 1 Juil
 - => common meeting the 2 Juil ?
 - Objectives: Exchange on Validation tools and possible join parameterizations..
- Standard ORC retreat (DEV group)
 - Cleaning of the code (following coding guide lines)
 - Specific work on model outputs (units, names,...)
 - Any suggestions are welcome ?