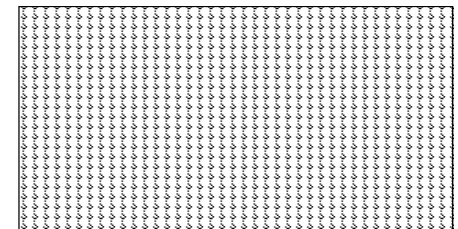
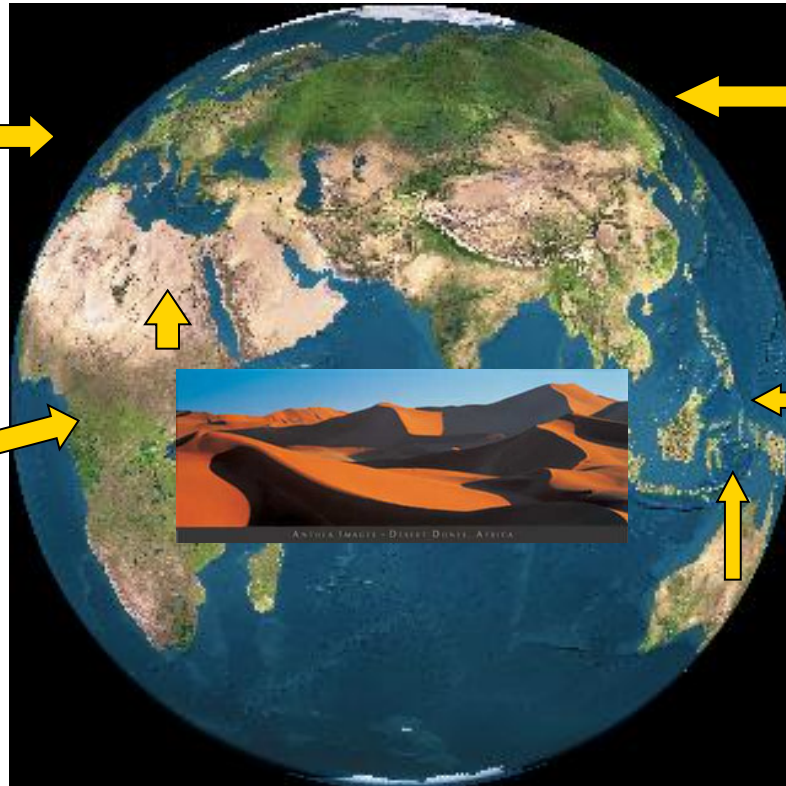
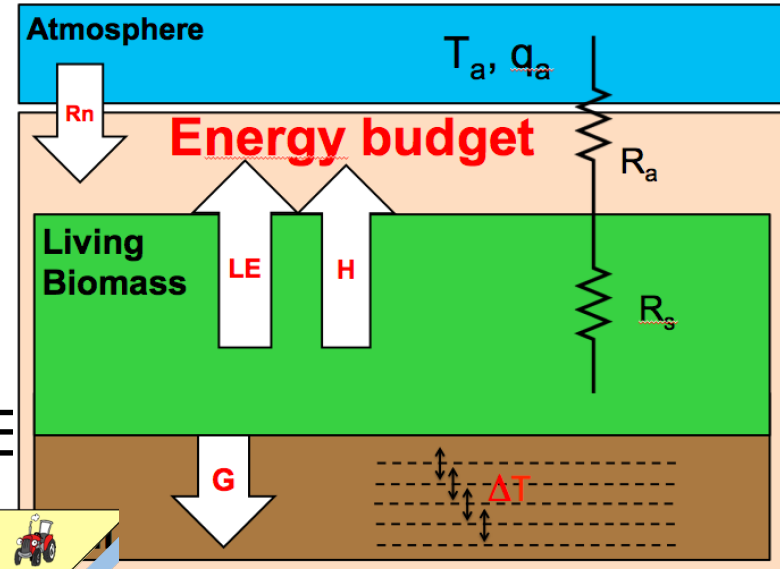
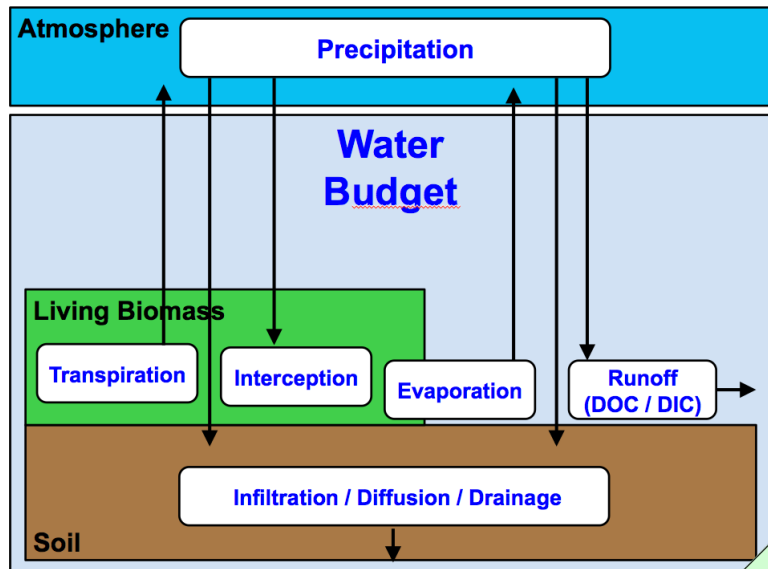


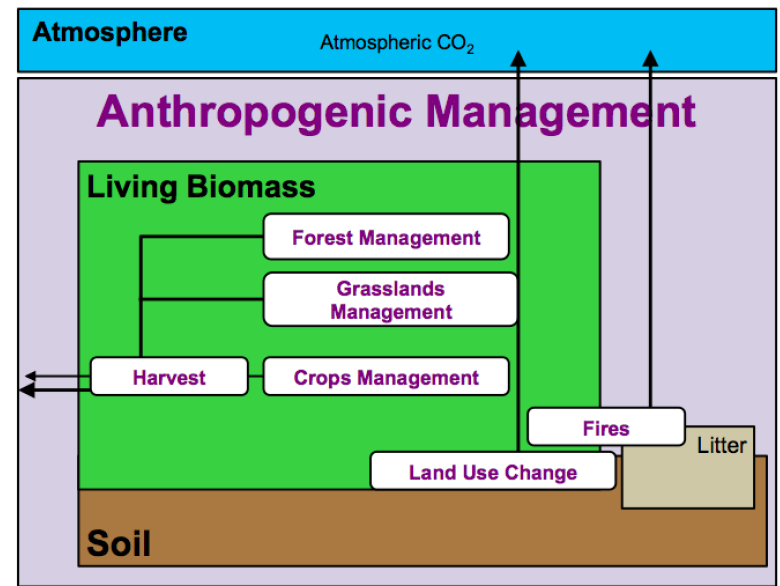
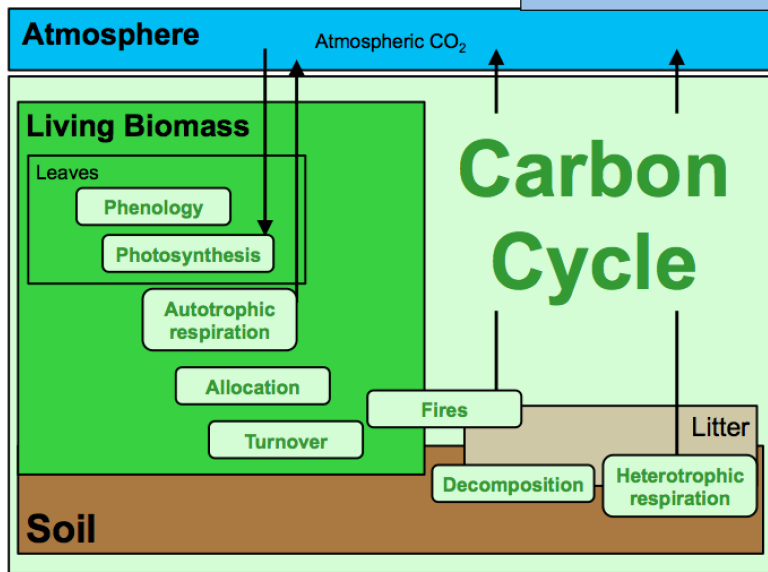
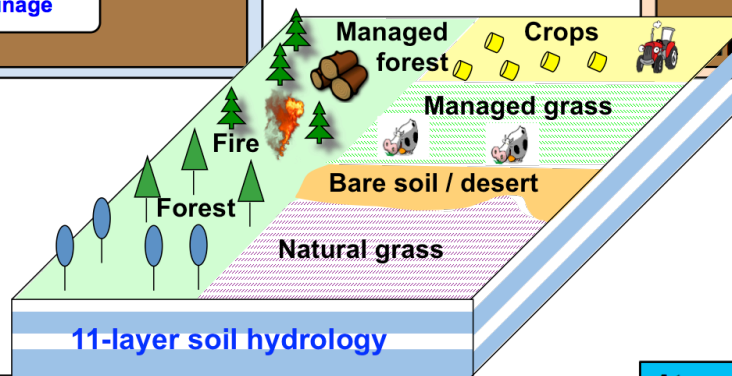
Dynamic Global Vegetation Model ORCHIDEE

**Simulates the Energy, Water and Carbon balance
Land component of the IPSL Earth System Model**





ORCHIDEE

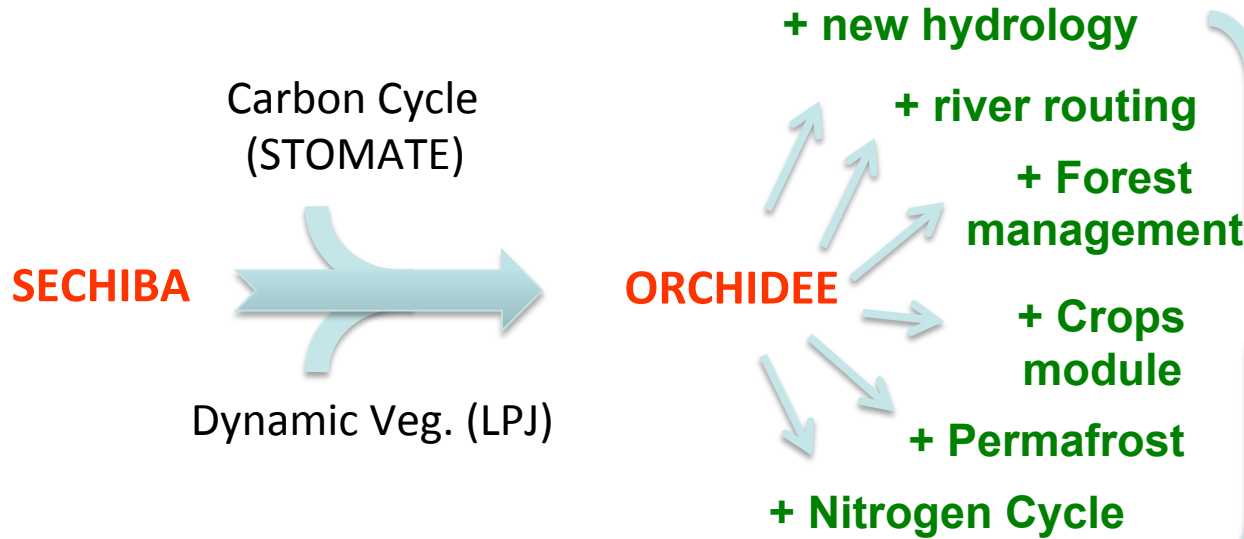


The ORCHIDEE project

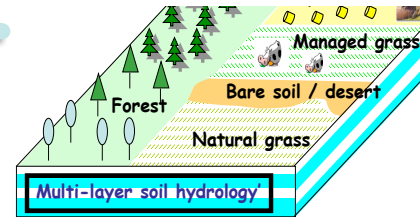
- COLLABORATIVE effort with many contributors !!
- More than 15 permanents and over 30 CDD
 - Several laboratories but mainly from IPSL
- YOU may include new processes or change some
 - ➔ It should benefit to the ORC project
- BUT never forget:
 - ➔ The current ORC model that will allow your research results from a huge team work !

A brief history of ORCHIDEE

Model



Toward a single community tool



(Laval et al., 1981)

(Ducoudré et al., 1993)

(Viovy et al., 1997)

(Polcher et al., 1998)

(Krinner et al., 2005)

Project / Users

80s

90s

2000

2009

Few Scientists at LMD (3-4)

Small group btw LMD/LSCE (5-10)

Increasing number of developers & users (15-25)

LMD

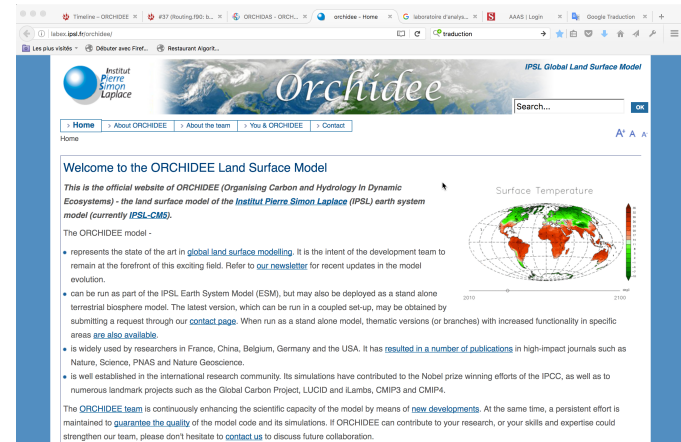
organization LMD/LSCE

Specific "Project Group" across IPSL & few other labs.



Several web sites...

➤ Official web site :
for external people



➤ Wiki web site: contain all what you need
<https://forge.ipsl.jussieu.fr/orchidee/wiki>

➤ Web site for Data Assimilation
<https://orchidas.lsce.ipsl.fr/>

A screenshot of the ORCHIDEE Data Assimilation Systems website. The page has a green header with the ORCHIDEE logo and navigation links. The main content area includes a welcome message, a description of the systems, and a diagram illustrating the data assimilation process. The diagram shows the flow from assimilation data (Station, Flux, FluxNet, Green & RemoteSensing) through a Carbon data assimilation system to optimized carbon fluxes and stocks, which are then evaluated against various data sources (Forest C stock, Soil C stock, Independent land C fluxes, Independent Green C fluxes, Independent soil C stock).

Wiki site: content all info you need



Institut Pierre Simon Laplace
Sciences de l'environnement

ORCHIDÉE

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[Wiki](#) | [Timeline](#) | [Roadmap](#) | [Browse Source](#) | [View Tickets](#) | [Search](#)

[wiki: WikiStart](#) | [Start Page](#) | [Index](#) | [History](#)

[Model developments](#) | [Documentation](#) | [Source Code](#) | [Reference Simulations](#) | [Group Activities & Contact](#)

Wiki of ORCHIDEE model

This wiki aims at gathering information on ORCHIDEE model : code versions and documentation, configurations used by the model, evaluation, seminars... Information is organized according different sections which are described below :

Section	Description	Highlights or short cuts to sub-sections
Model Developments	In this section, you will find all the informations on the ongoing developments	CMIP6
Documentation	'News', Scientific documentation, Information on the implementation of the code, Users guide/How To, Informations on the forcing	UserGuide/How To
Source Code	Where you will find the source code of the different versions, restricted access for some ongoing developments	See the trunk here.
Reference Simulations	All the information on evaluation protocol and reference simulation	validation simulation with rev 2724
Group Activities	Include: ORCHIDEE-POLICY , meetings, seminars, users list, contact, training courses	Training courses

Several mailing lists

- ORCHIDEE-DEV:

All users and developpers.

Main list to exchange information

- ORCHIDEE-PROJECT:

Restricted to mainly permanent people plus few « investigated » CDDs..

- ORCHIDEE-HELP

To use with parsimony..

➔ Find all lists under : <http://courriel.ipsl.jussieu.fr/mailman/listinfo>
(you can subscribe directly on the web site)

« Animation »

- ORC – DEV meeting every 2 months on specific scientific and technical topics
- Regular « annual retreat » next one not decided yet..
- Project meeting every Tuesday (restricted):
 - ➔ Summary accessible to everyone (to follow most ongoing activities) (need to be log on to see the summary)

Coding guidelines..

- A document that summarizes the MAJOR RULES that you NEED TO FOLLOW when developing new code
- NEEDED to get support from the group
- NEEDED if you want your code to be further used and included in the main ORC version
- You are welcome to suggest new coding rules...

➔ Access it under :

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

Coding guidelines..

Please respect the following:

- Comments should be in english
- Indentation to maintain
- Key words should be in capital letters
- Always have Module and Subroutine description sections
- ...

➔ Access it under :

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

Use of SVN

- Josefine will explained it uses...
- SVN is the BEST way to maintain properly your developments
- SVN is is the BEST way to insure your code will be further used in the TRUNC
- SVN is a facilitating tool.

Use of the “Help”

- TO BE USED SPARINGLY... (as little as you can)
- FIRST: Dig as much as you can into the code..
- SECOND: check the WIKI
- THIRD: ask your main advisor
- FOURTH: Ask your colleague/neighbour
- THEN: post a message to “orchidee-help@ipsl.jussieu.fr
- AS A RETURN, please:
 - Try to write a little summary of the answer to your question on the WIKI (if relevant)
 - Use the “How to ?” section

Various recommendations...

- USE LIBIGCM...
- BE CAREFULL with computer time consumption
 - CURRIE: DO NOT use “many processors” without strong advice from experts !!
 - LSCE: Cluster will increase in size but respect the main rule (under LSCE web site)
 - OTHER systems: Ask the main advisor..
- Propose “Talks” for our regular ORC dev meeting

Fair Use policy

- To ensure “reward” to developers of new physical modules and people maintaining the code (including drivers)
- New developments are not “free” to use : fair use should include/propose co-authorship to the developers
- Reward the “difficult” and less visible technical maintenance and improvement of the code
- Try to prevent “competition” within the ORC group

→ Access from the wiki:

<https://forge.ipsl.jussieu.fr/orchidee/wiki/GroupActivities/UseOfORCHIDEEpolicy>

Fair Use policy

- Means to help following the fair-use policy:

Two table accessible from the wiki:

<https://forge.ipsl.jussieu.fr/orchidee/wiki/GroupActivities/UseOfORCHIDEEpolicy>

- Table for the “ownership/status” of model features
- Table describing the “intended” studies/papers

Exemple of model functionality and status

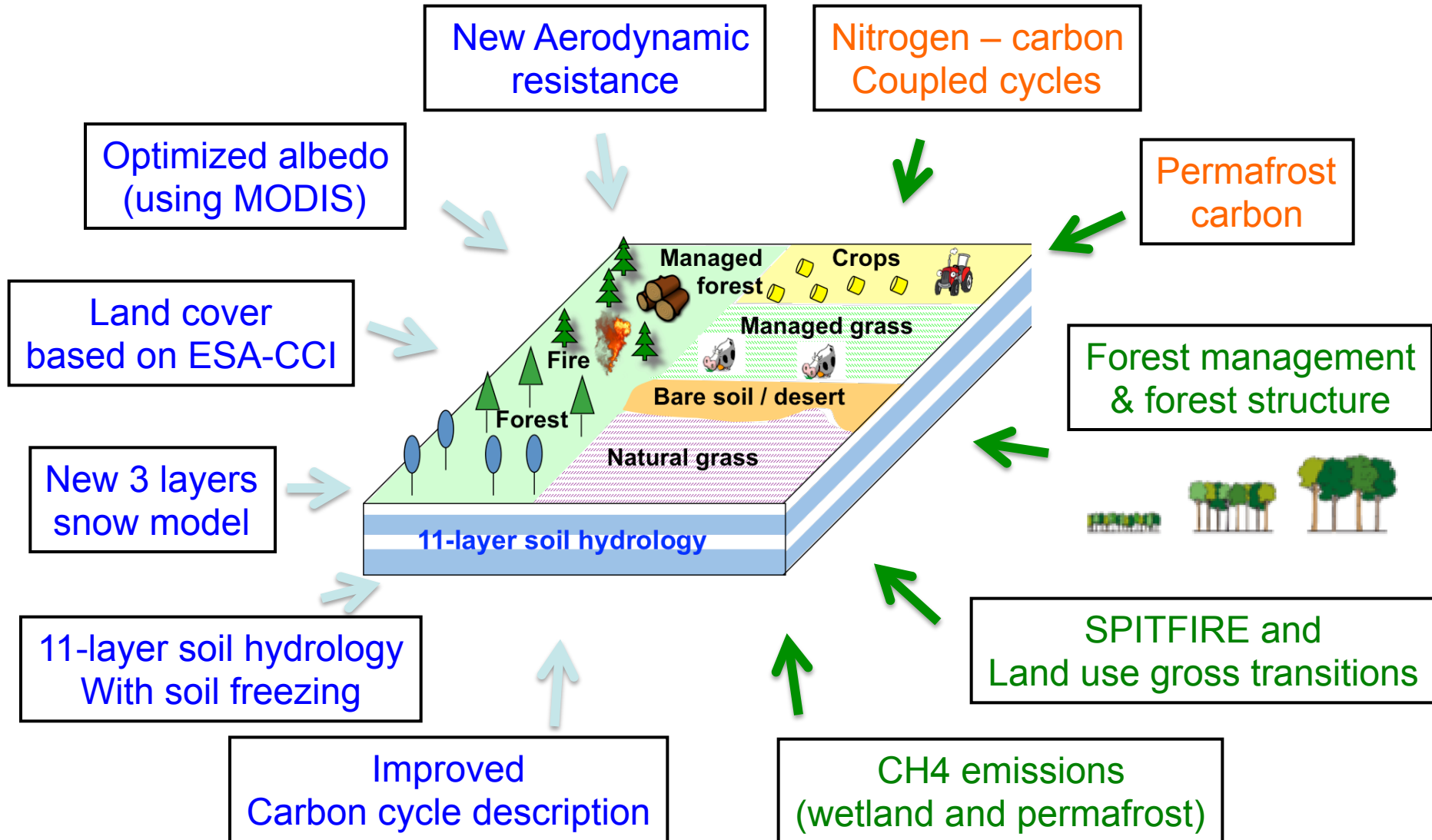
FUNCTIONALITY	REFERENCES	ORC VERSIONS	MAIN CONTACT POINTS	CONTRIBUTORS	STATUS (from restricted to free)
New soil temperature and hydrology discretization		TRUNK	Frederic Cheruy, Fuxing Wang,	Agnes Ducharne, Jean Louis Dufresne, Jan Polcher	free
Multi-layer soil hydrology	de Rosnay 1999 de Rosnay et al. 2000, 2002 d'Orgeval 2006 d'Orgeval et al. 2008 Campoy et al. 2013	TRUNK ORC-CAN ORC-MICT	Agnès Ducharne, Jan Polcher	Patricia de Rosnay, Tristan d'Orgeval, Martial Mancip, Matthieu Guimberteau, Aurélien Campoy, Frédérique Cheruy, Fuxing Wang, Joséfine Ghattas	free
Routing	Vivant 2002 Polcher 2003 de Rosnay et al. 2003 Ngo-Duc 2005 Ngo-Duc et al. 2007 d'Orgeval et al. 2008 Guimberteau 2012 Guimberteau et al. 2012a, 2012b	TRUNK	Jan Polcher, Matthieu Guimberteau	Anne-Charlotte Vivant, Patricia de Rosnay, Thanh Ngo-Duc, Tristan d'Orgeval, Agnès Ducharne	Contact developers
Soil freezing	Gouttevin et al. 2012	TRUNK ORC-MICT	Gerhard Krinner	Isabelle Gouttevin, Philippe Ciais	free
Permafrost carbon	Koven	ORC-MICT	Philippe Ciais	Shushi Peng, Tao Wang, Gerhard Krinner	Contact developers
New snow multi-layer	Wang et al. 2013	TRUNK	Tao Wang, Catherine Ottlé	Philippe Ciais, Aaron	Contact developers

ORCHIDEE developments for CMIP6

Implemented: V1

Soon...: V1.5

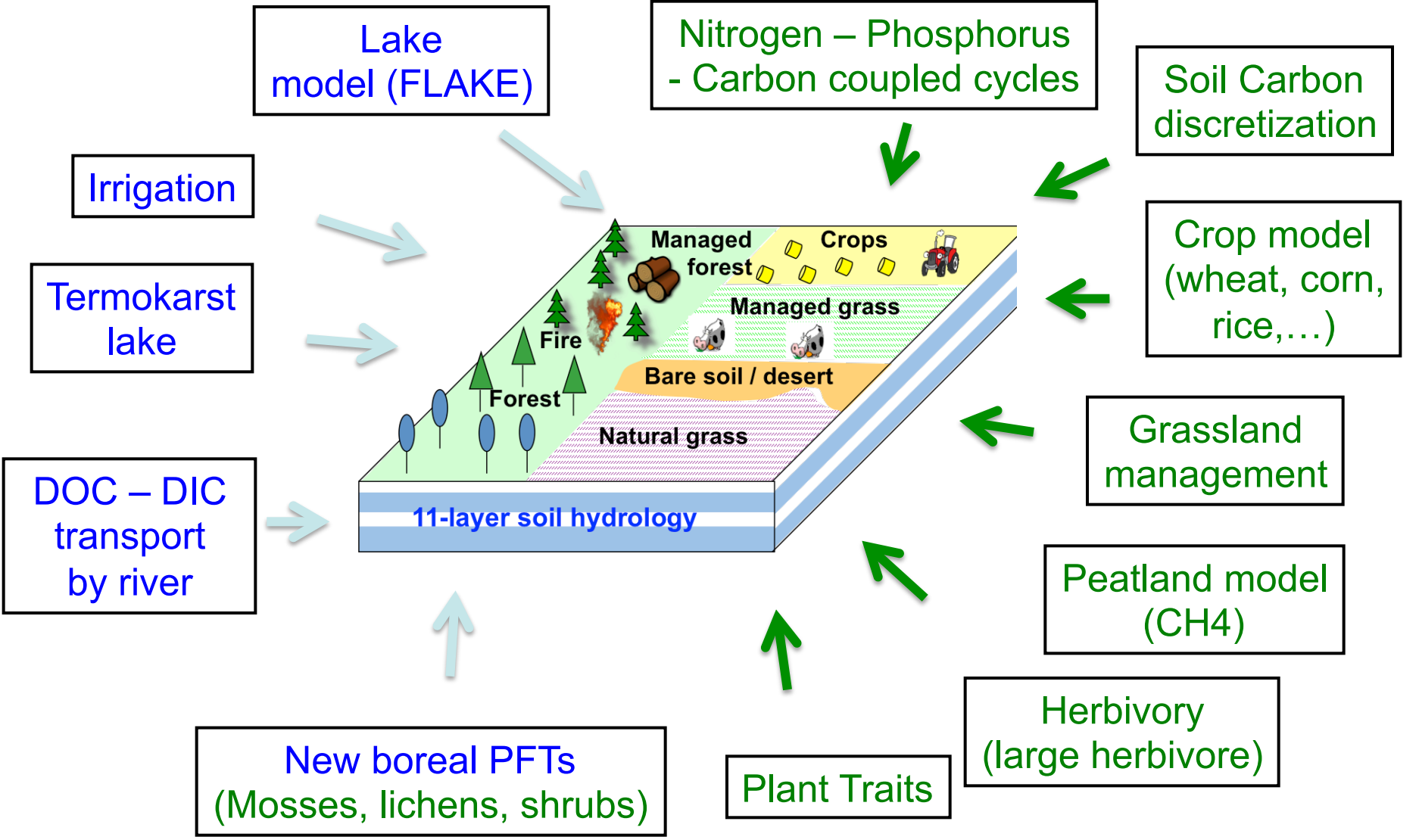
Merging



Other recent developments

Biophysical

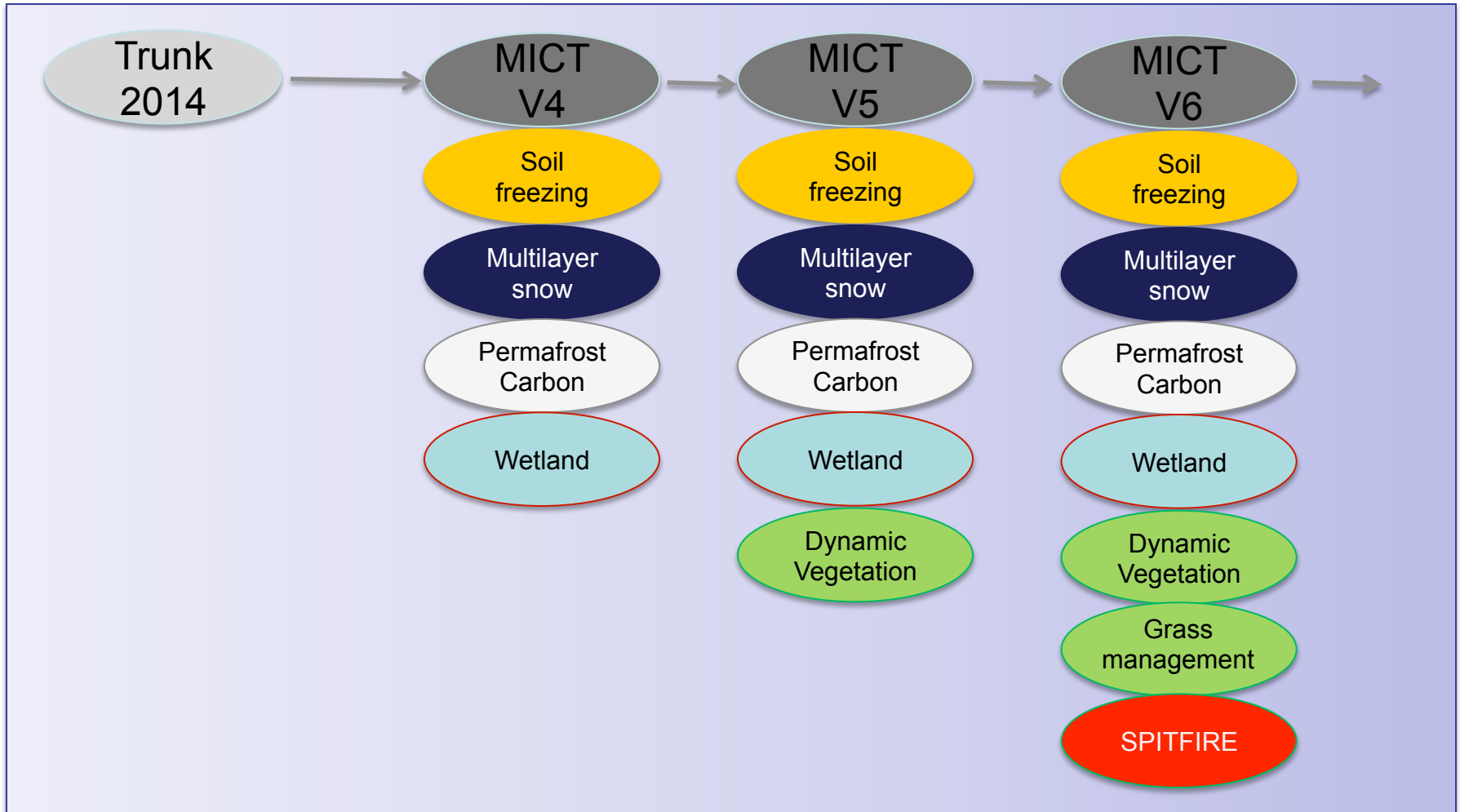
Biogeochemical



Current major branches

- TRUNK (version 2.0) : to be used for CMIP6
- CN : coupled Nitrogen – Carbon:
- CAN-CN : Canopy structure – forest management – CN
- MICT : high latitude focus

Evolution of high-latitude ORCHIDEE version



ORCHIDEE
today...



ORCHIDEE
tomorrow...



Need
collaboration
from
EVERYONE
!