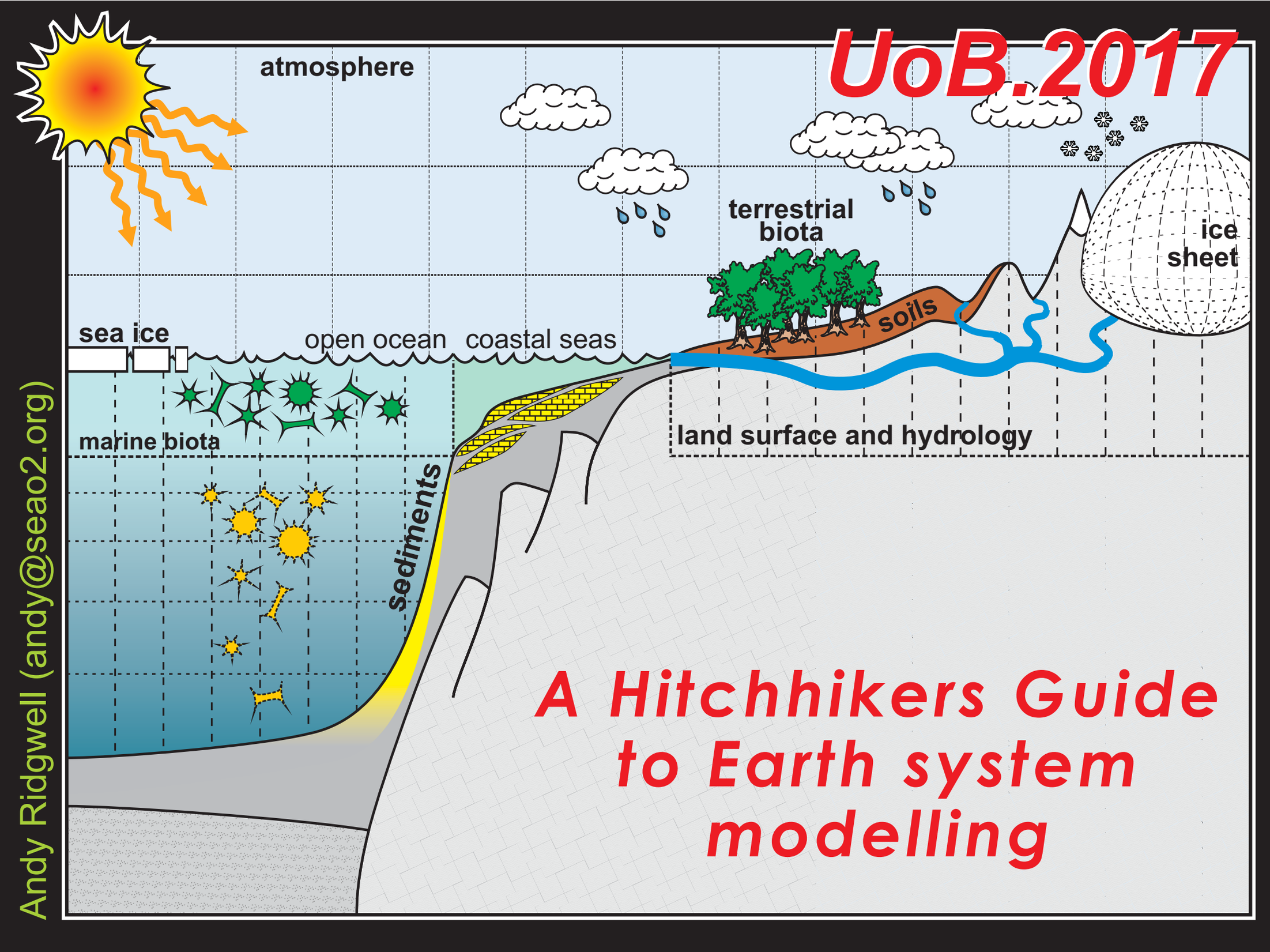

UoB.2017
atmosphere
terrestrial biota
ice sheet
soils
sea ice
open ocean
coastal seas
marine biota
sediments
land surface and hydrology
A Hitchhikers Guide to Earth system modelling
Andy Ridgwell (andy@seao2.org)

Andy's, like, whatever pages

cGENIE EMIC

mycgenie.seao2.org

GENIE project website (RIP)

got data?

Ocean observations [netCDF format file and on *c*GENIE grid]

got muffin?

Quick-start Guides:
(1) Bristol cluster
(2) generic linux
(3) Mac
(4) Windows
general:
READ-ME

got software?

linux netCDF 4.0 source code
Simple Windoz SSH client

mailing lists

CGENIE-DISCUSS
@GENIE_ESM

*c*GENIE resources: DOCUMENTATION

WARNING: Documentation in varying degrees of not updatedness ...
SEE: genie-docs SUBDIRECTORY FOR THE CURRENT .ps AND .pdf DOCUMENTATION BUILDS (as well as latex source)

(1) Current 'muffin' version of *c*GENIE:

- The soon-to-be infamous **Quick-start Guide** (also see platform-specific varient -- box on left) plus the all important and vital **READ-ME** that you inevitably will not read ....
- **User manual**, with details of the namelist parameters given in a seperate and shocking incomplete/outdated Table.
- Various model experiment **EXAMPLES**, including example model configurations, experimental designs, and associated namelist parameter descriptions.
- The *c*GENIE **HOW-TO** - potted explanations of how to get useful stuff done, e.g., spinning up deep-sea sediment distributions.

(2) Original *c*GENIE branch:

cGENIE (biogeochemistry focused) User manual.
Various model experiment EXAMPLES.
The *c*GENIE HOW-TO.
The soon-to-be infamous Quick-start Guide.

*c*GENIE resources: WORKSHOPS [CURRENT -- AWI.2015]

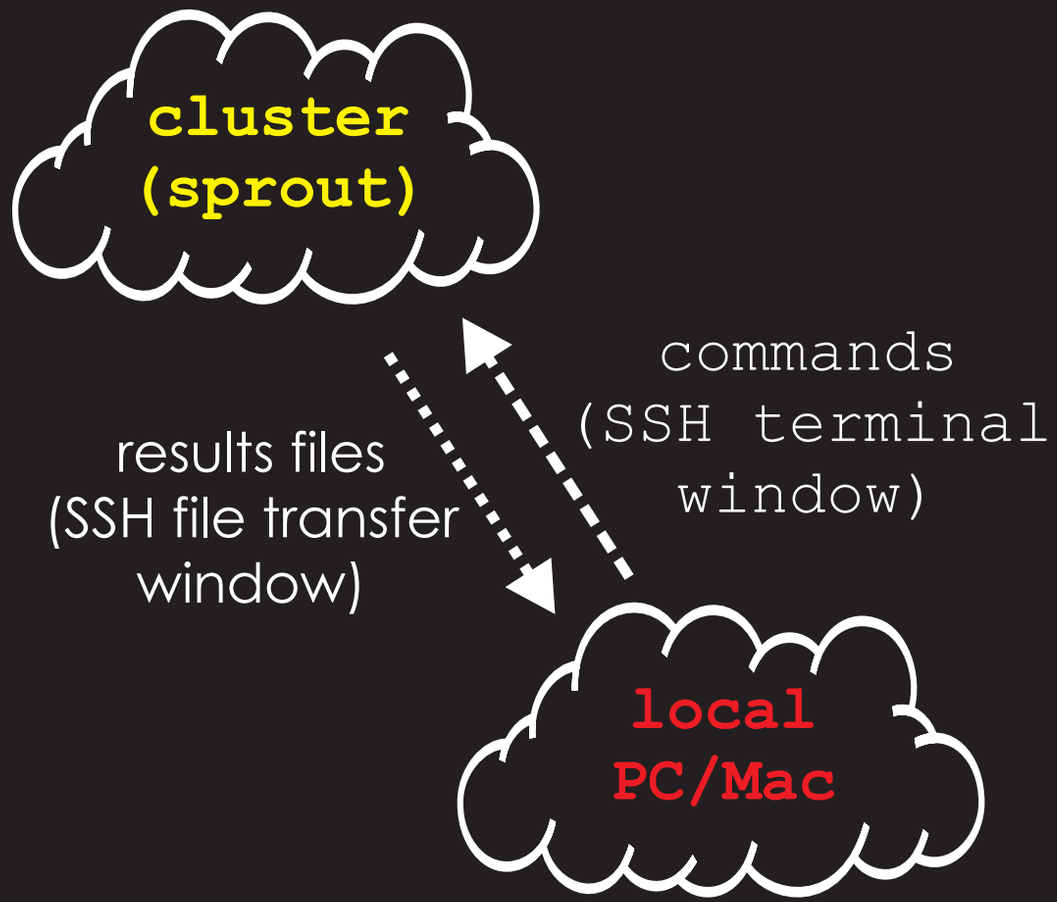
INFO:
Workshop outline.

Lab instructions:
Lesson #0 == cGENIE modelling basics
Lesson #1 == Snowball Earth + experiments in climate hysteresis.
Lesson #2 == Ocean circulation and overturning stability.

*c*GENIE resources: TEACHING LABS [OLD -- GEOGM1110 / GEOGM1404]

INFO: Course outline; non-intimidating linux 101 (MLP version).
Lab instructions: Session #0000 == cGENIE modelling basics + experiments in climate hysteresis // Session #0001 == Ocean circulation and overturning stability // Session #0100 == Fossil fuel CO_2 release and 'ocean acidification' plus a supplement summerizing ocean acidification relevant results variables, and both together in a revised Session #0100 document // Session #0101: GEOGM1110 == Engineering the carbon cycle (GEOGM1110) // Session #0101: GEOGM1404 == Engineering the carbon cycle (GEOGM1404).

Start (/stop) model experiments
Edit (configuration) files
(**SciTE**/other editor)
Visualize results (**Panoply**)

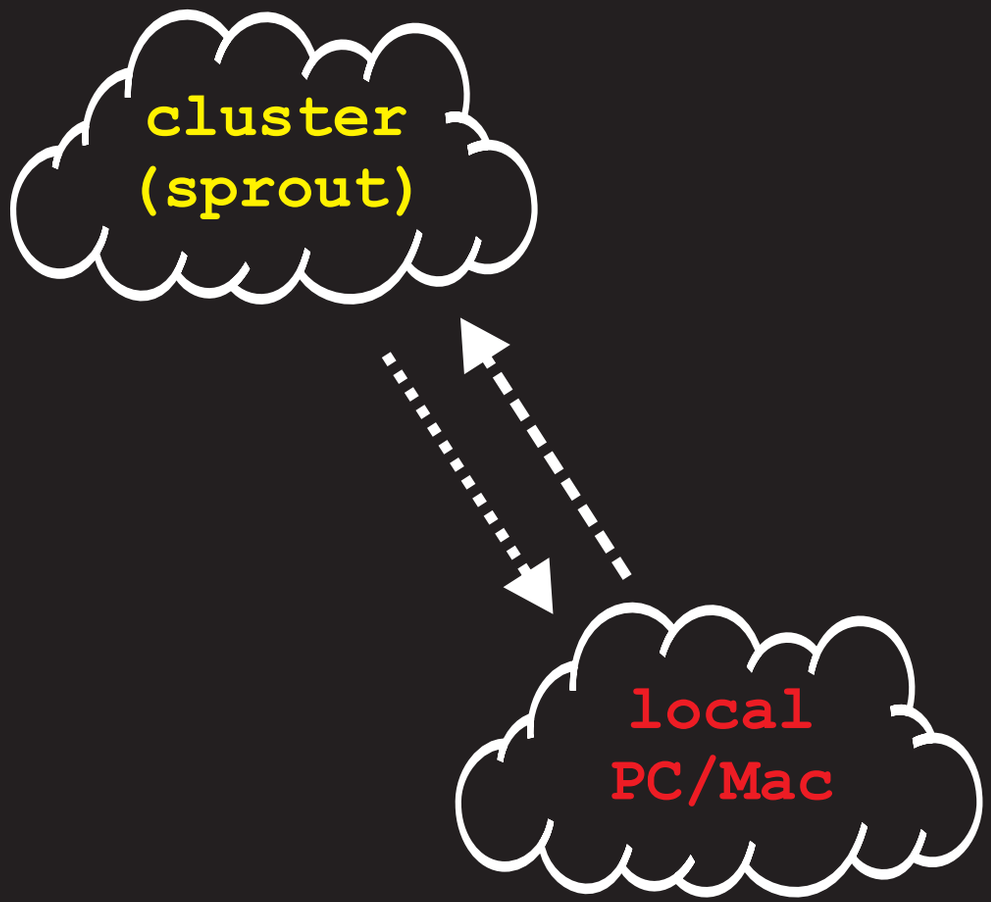

cluster
(sprout)
commands
(SSH terminal
window)
results files
(SSH file transfer
window)
local
PC/Mac

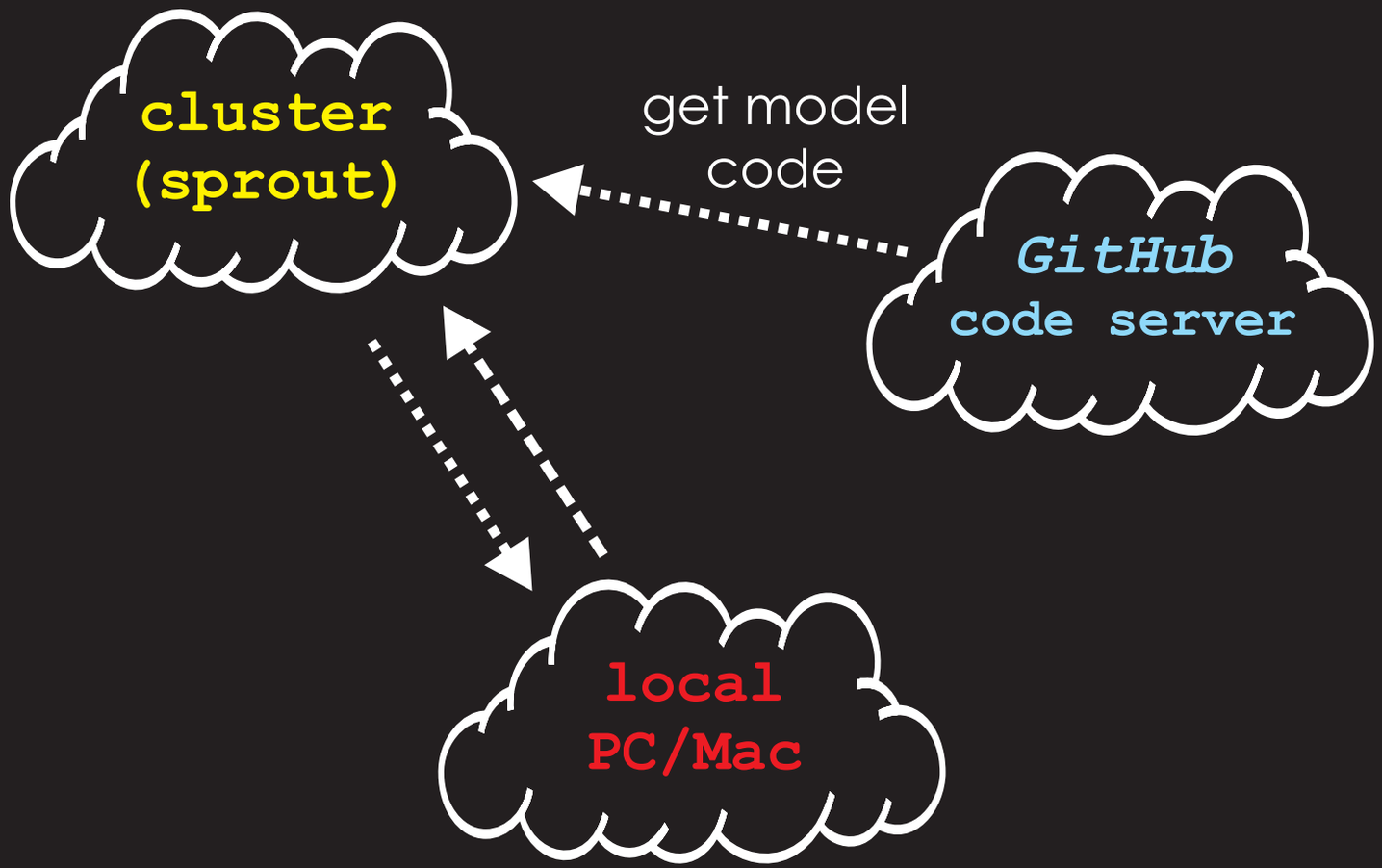
Works in groups of 3s / 2s

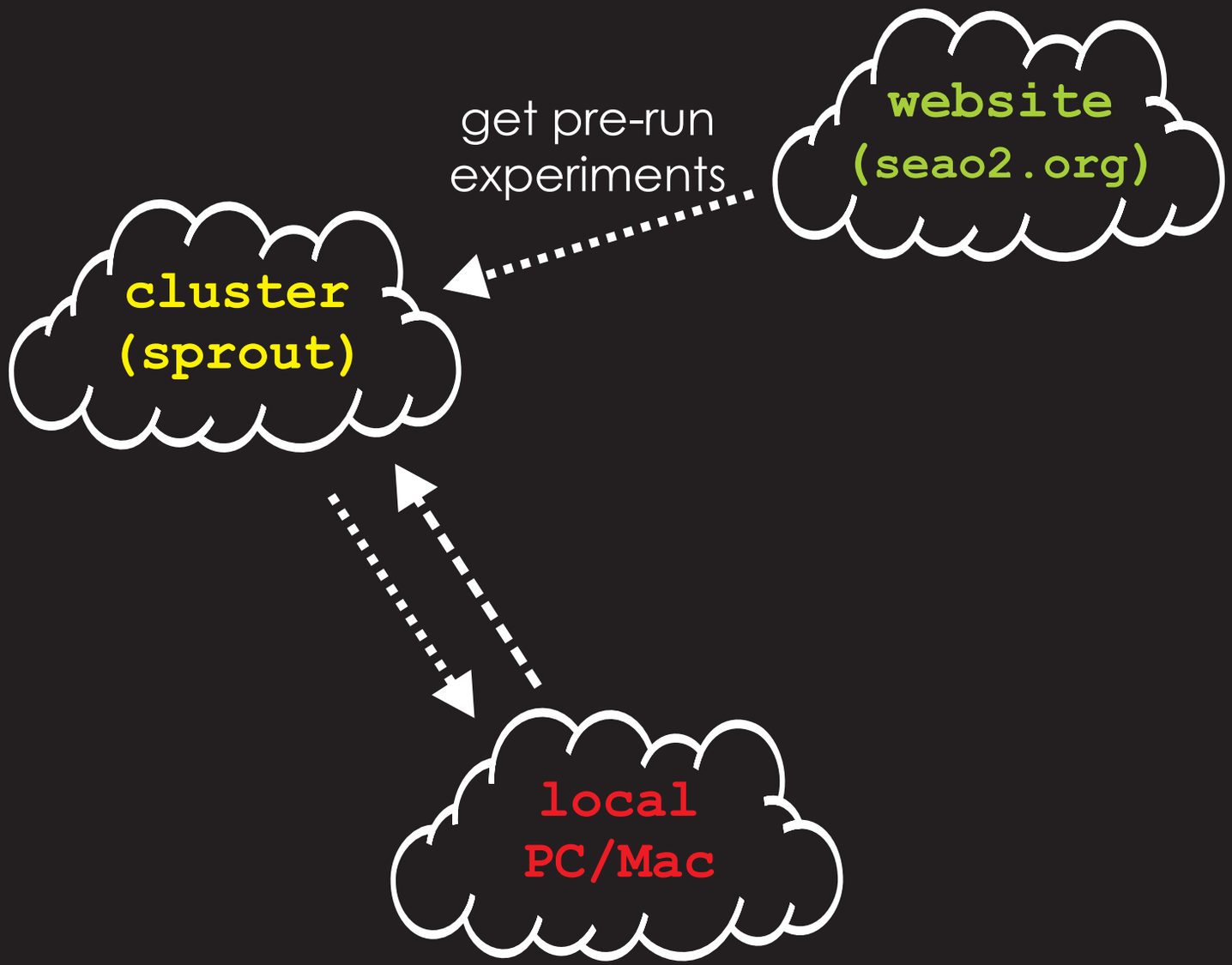
`sprout` cluster account names:

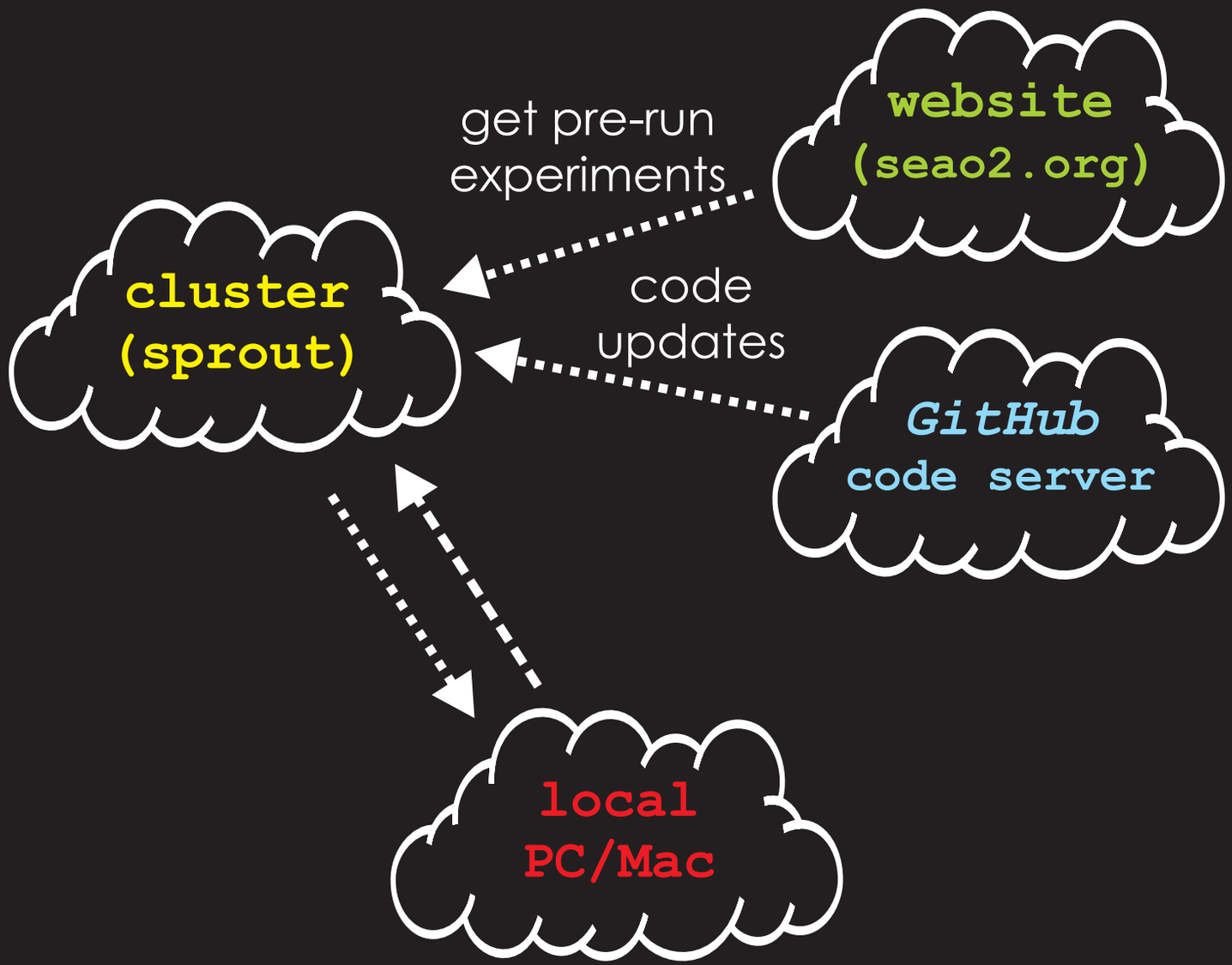
`cgenie_1, cgenie_2, cgenie_3,`
`cgenie_4, ... cgenie_9`

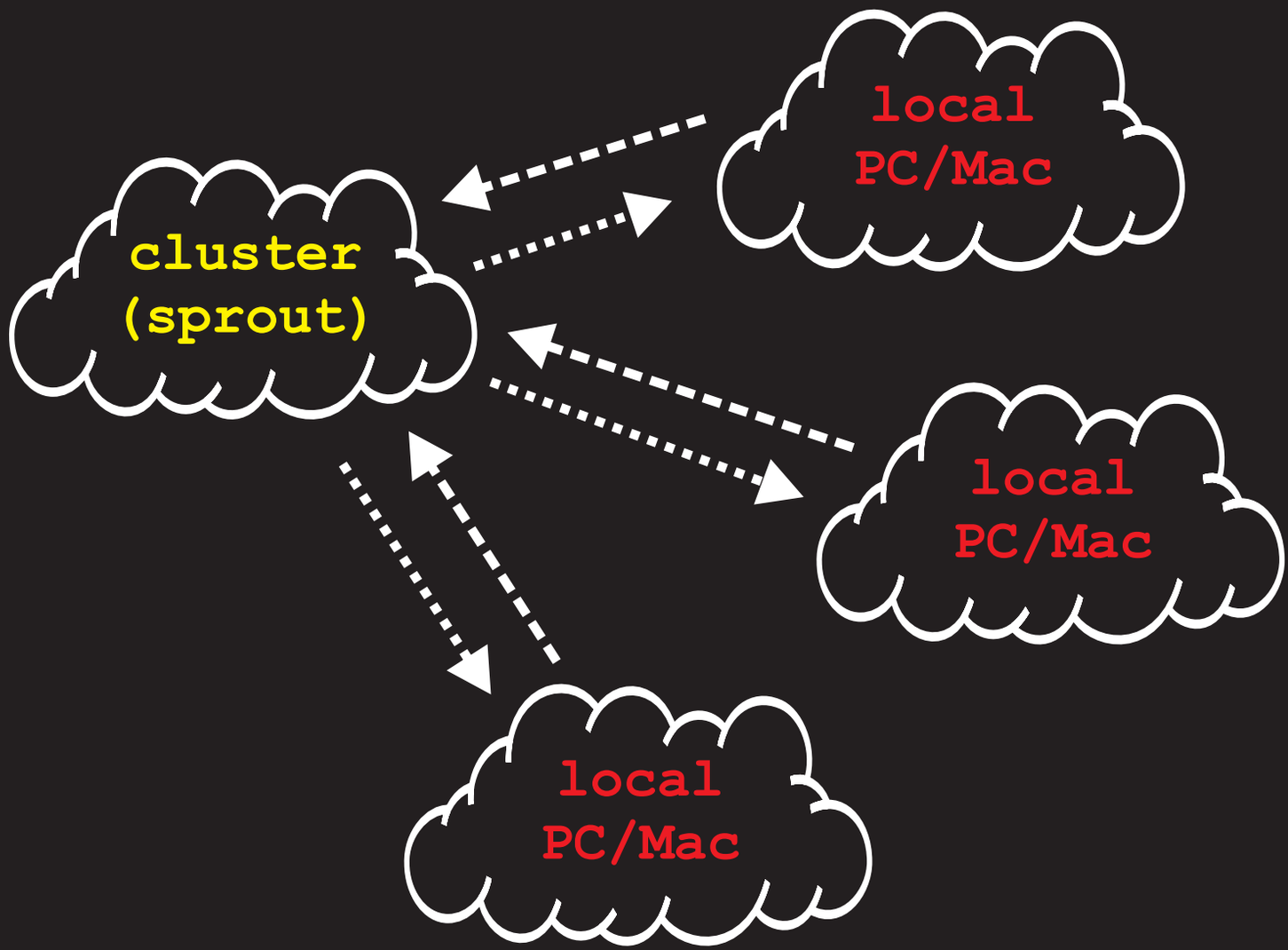
Password: `????????` (the same for all)

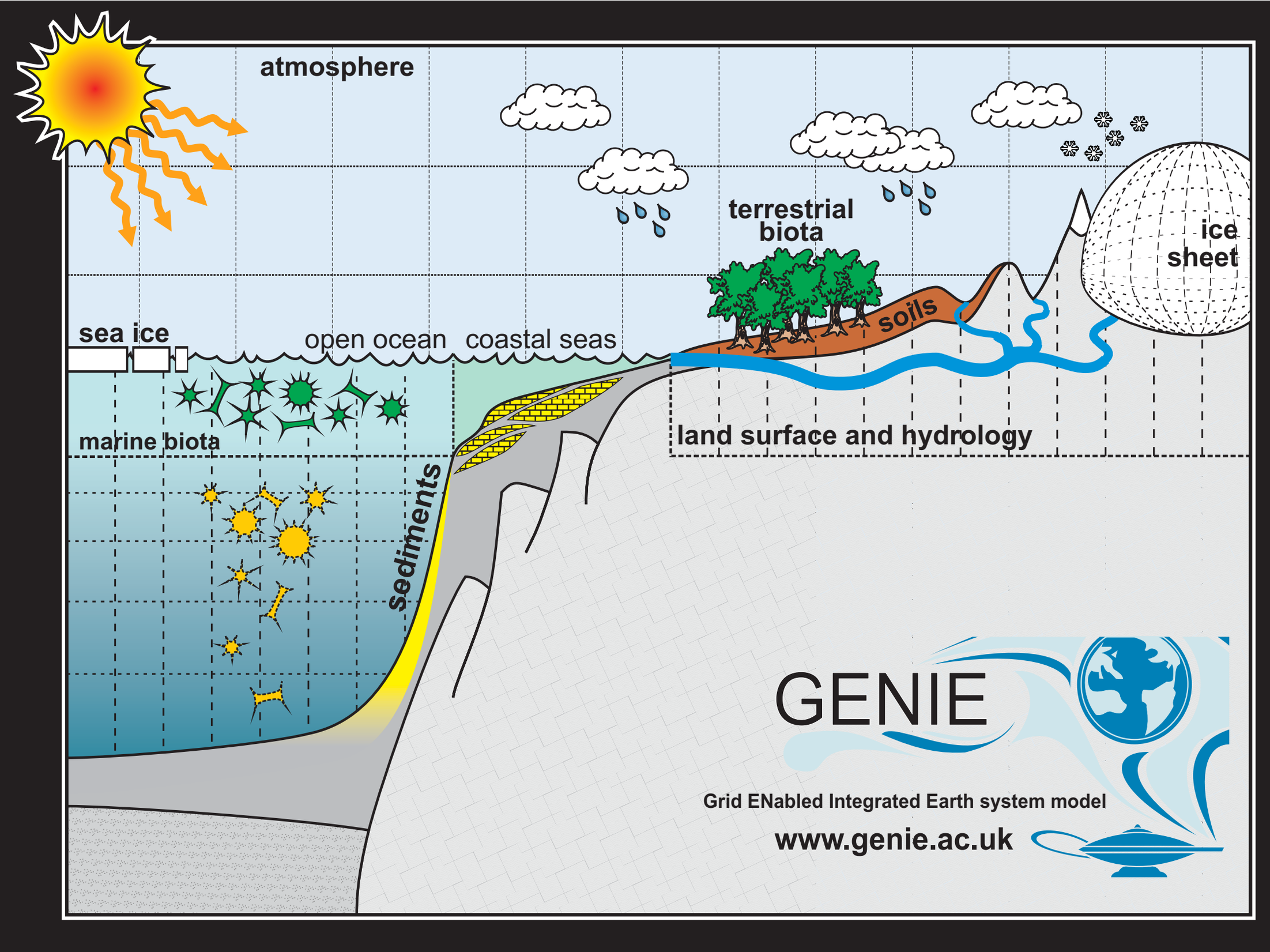



cluster
(sprout)
get model
code
GitHub
code server
local
PC/Mac


website
(seao2.org)
get pre-run
experiments
cluster
(sprout)
local
PC/Mac


website
(seao2.org)
get pre-run
experiments
cluster
(sprout)
code
updates
GitHub
code server
local
PC/Mac


local
PC/Mac
cluster
(sprout)
local
PC/Mac
local
PC/Mac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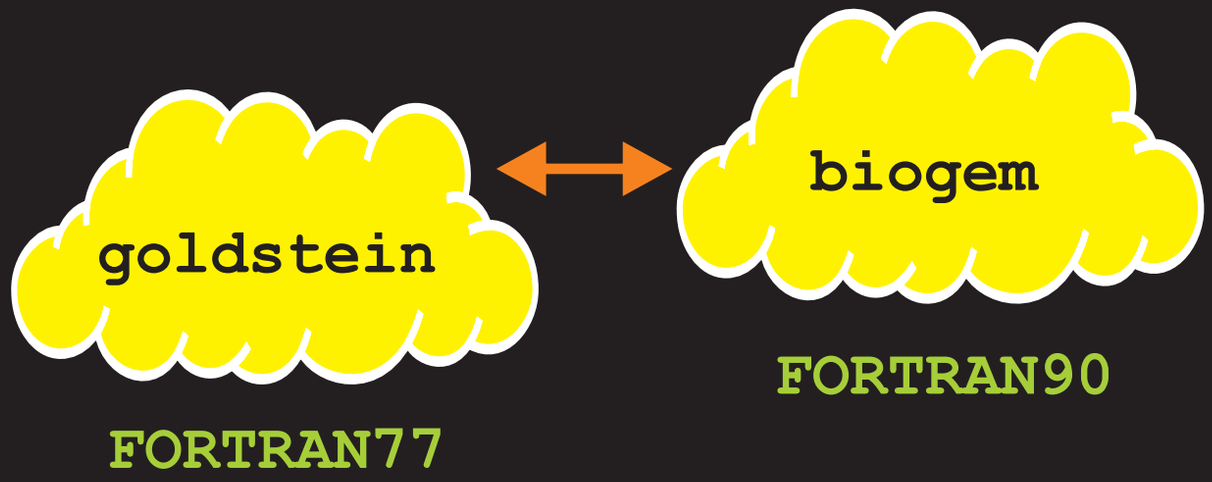
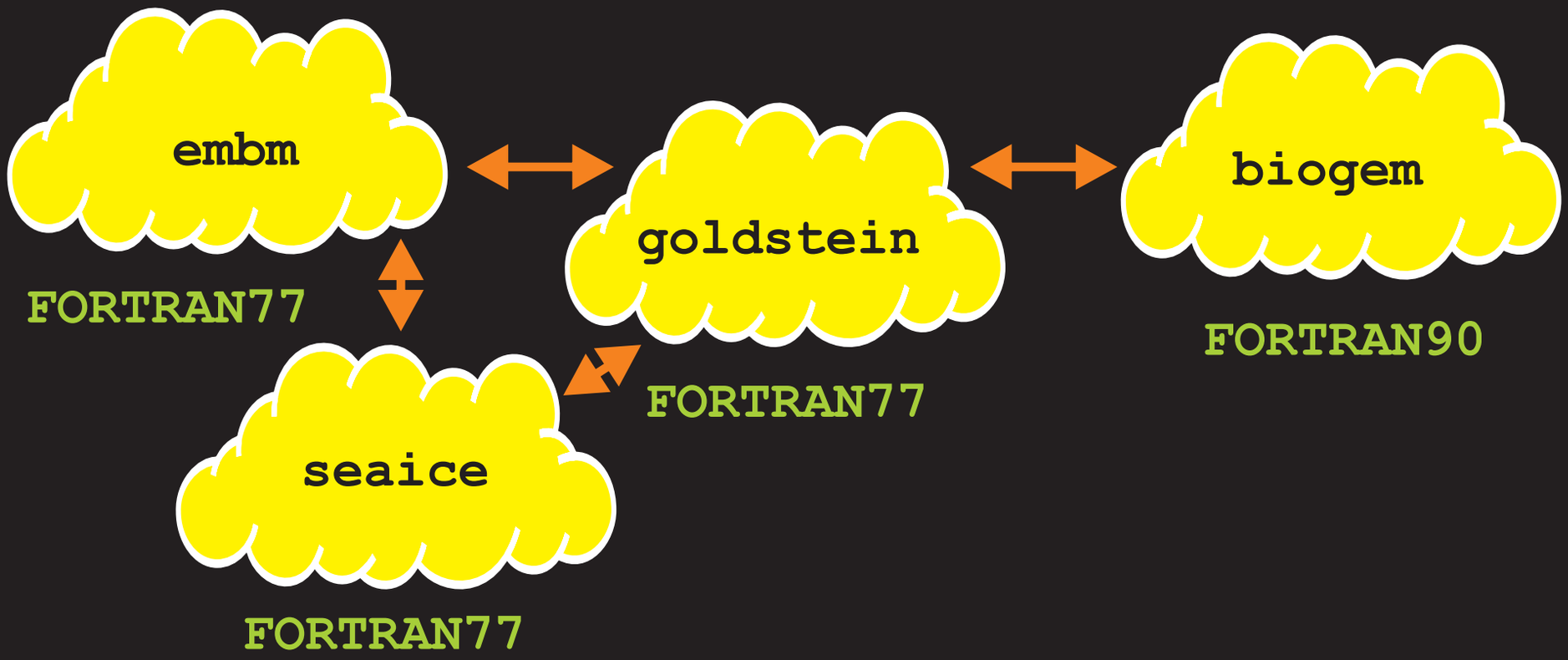
sediments
land surface and hydrology
GENIE
Grid ENabled Integrated Earth system model
www.genie.ac.uk

FORTRAN77

xxx ?



cb-goldstein



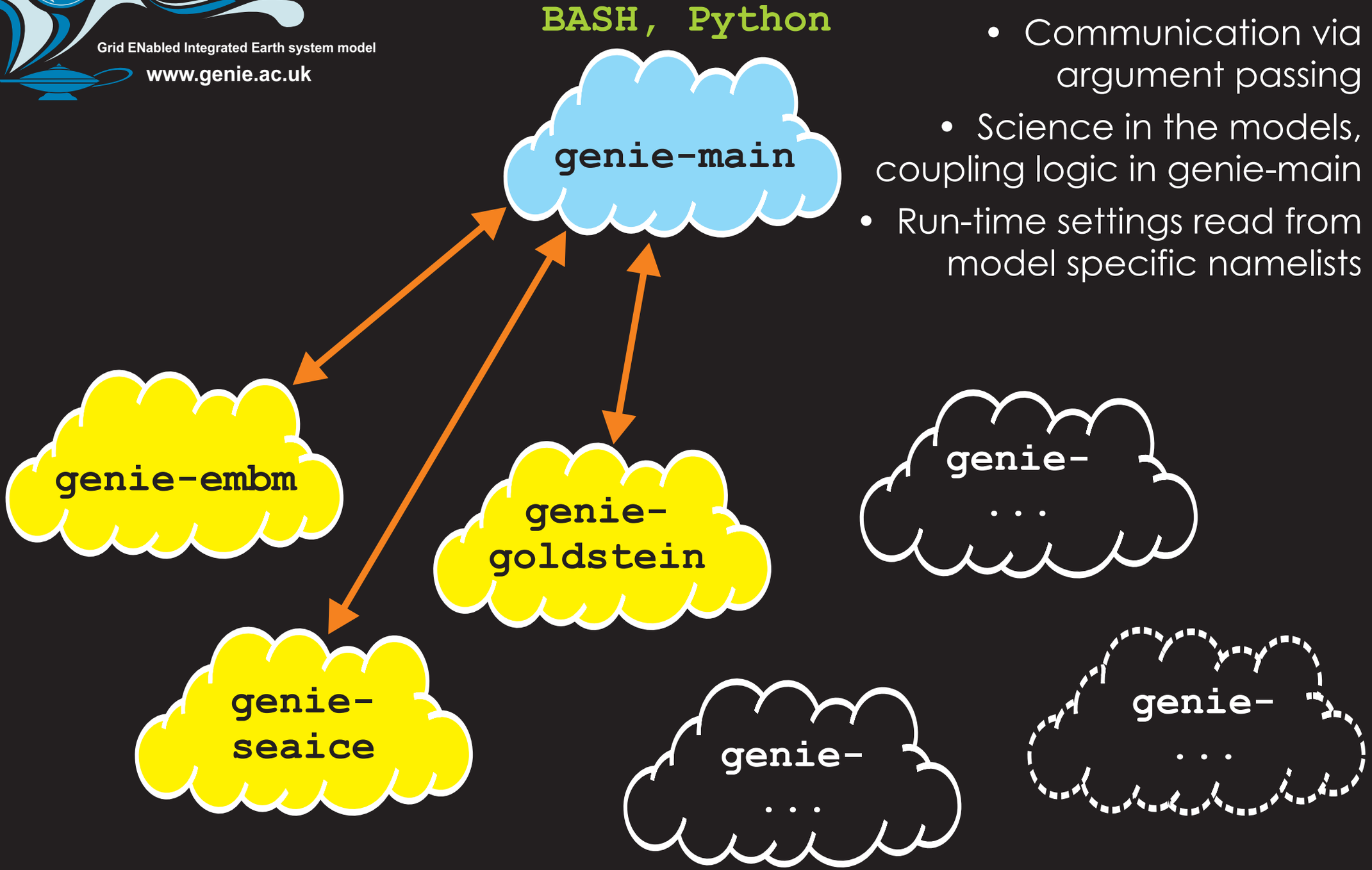
GENIE

Grid ENabled Integrated Earth system model

www.genie.ac.uk

Modular, Hierarchical

- Communication via argument passing
- Science in the models, coupling logic in genie-main
- Run-time settings read from model specific namelists



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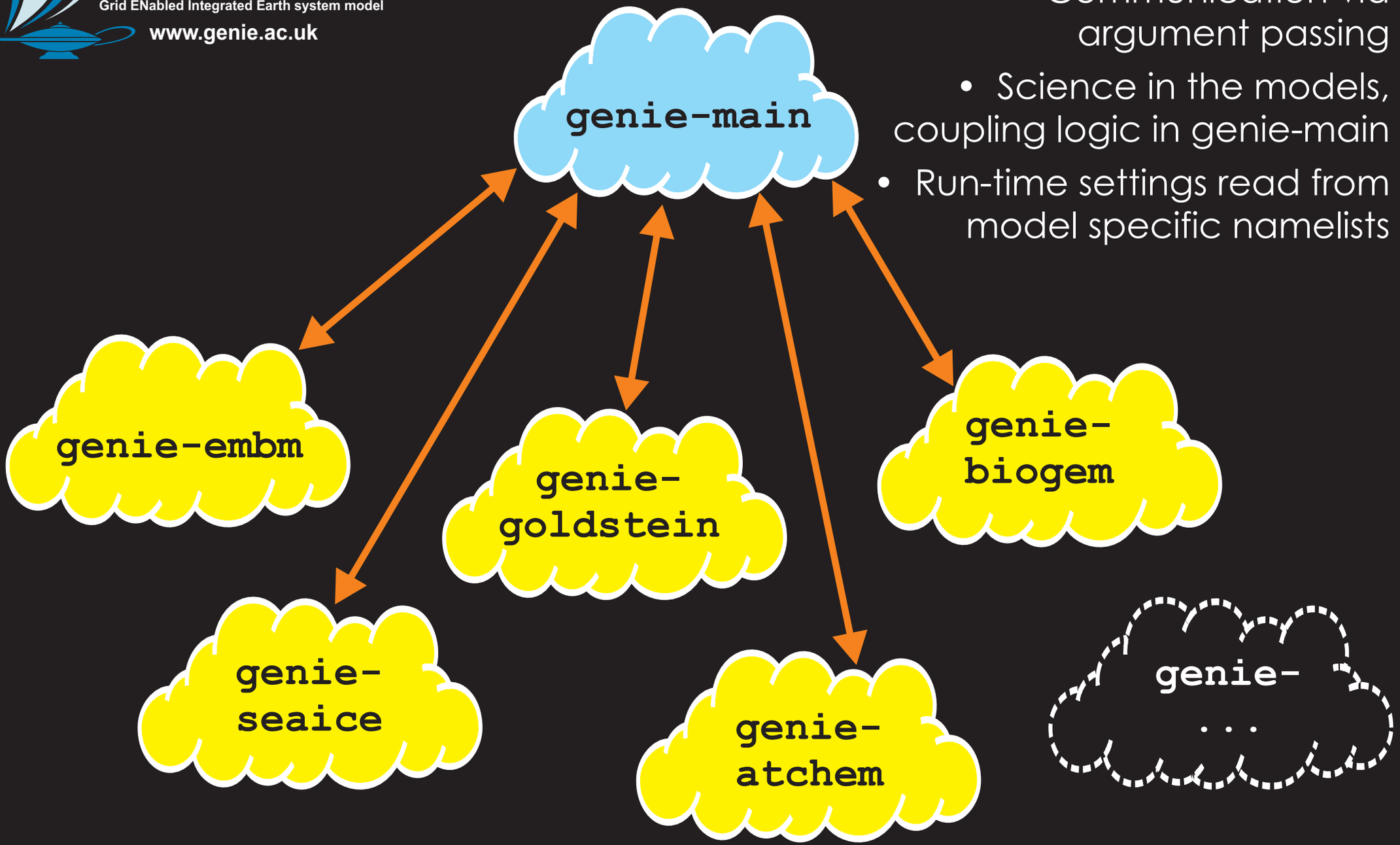
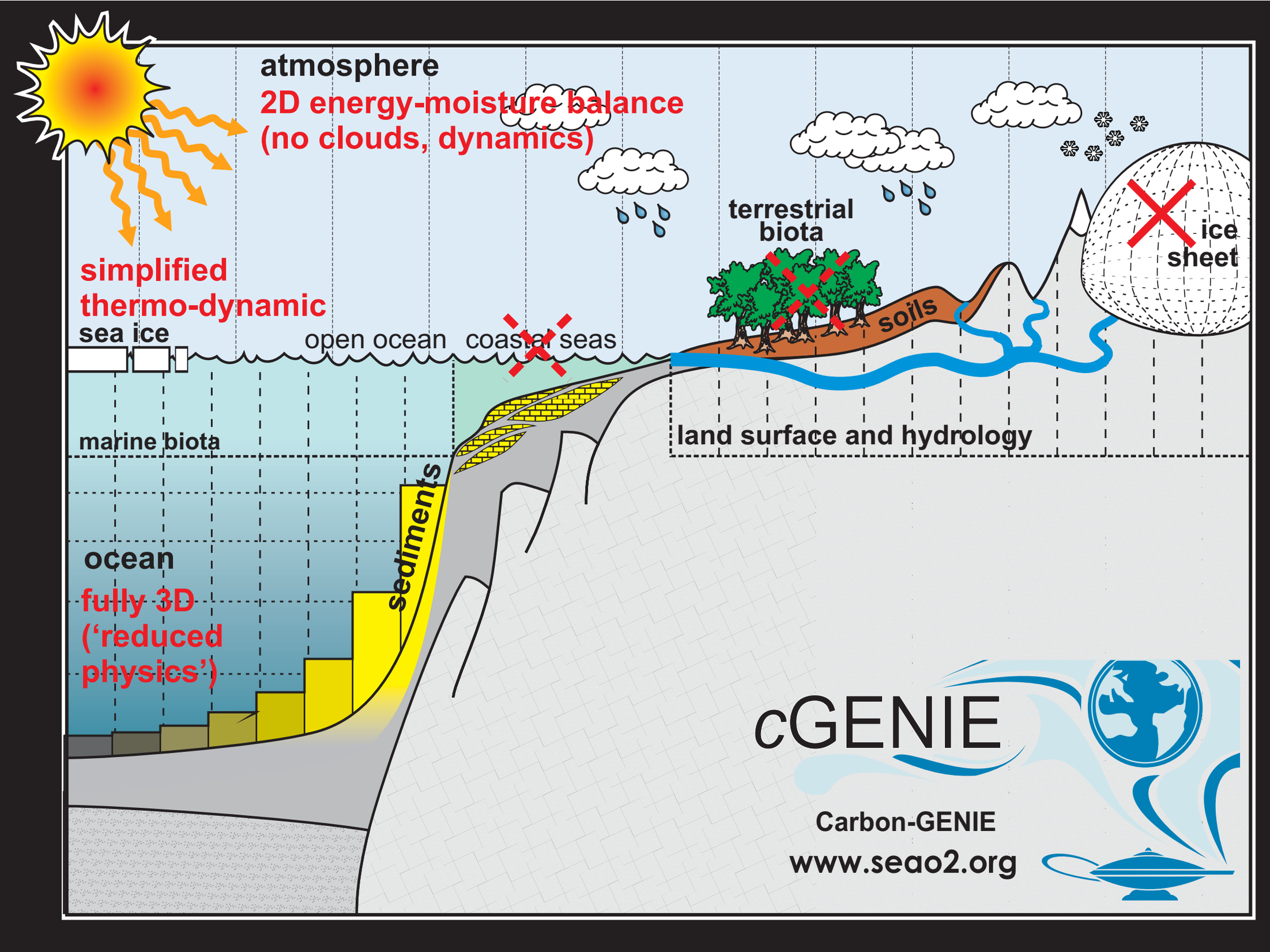
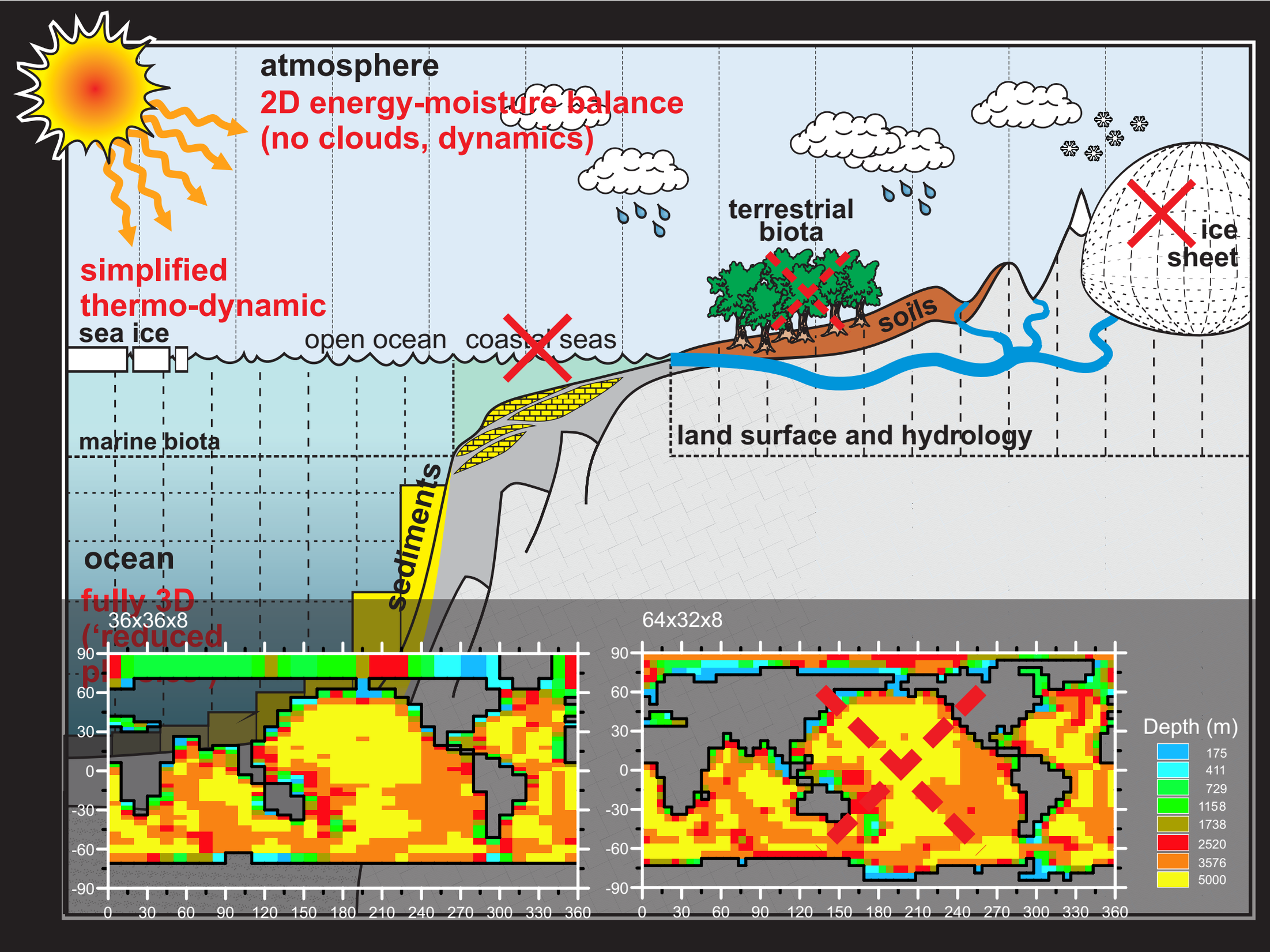



atmosphere
2D energy-moisture balance
(no clouds, dynamics)
simplified
thermo-dynamic
sea ice
open ocean
coastal seas
terrestrial
biota
soils
ice
sheet
land surface and hydrology
marine biota
sediments
ocean
fully 3D
('reduced
physics')
cGENIE
Carbon-GENIE
www.seao2.org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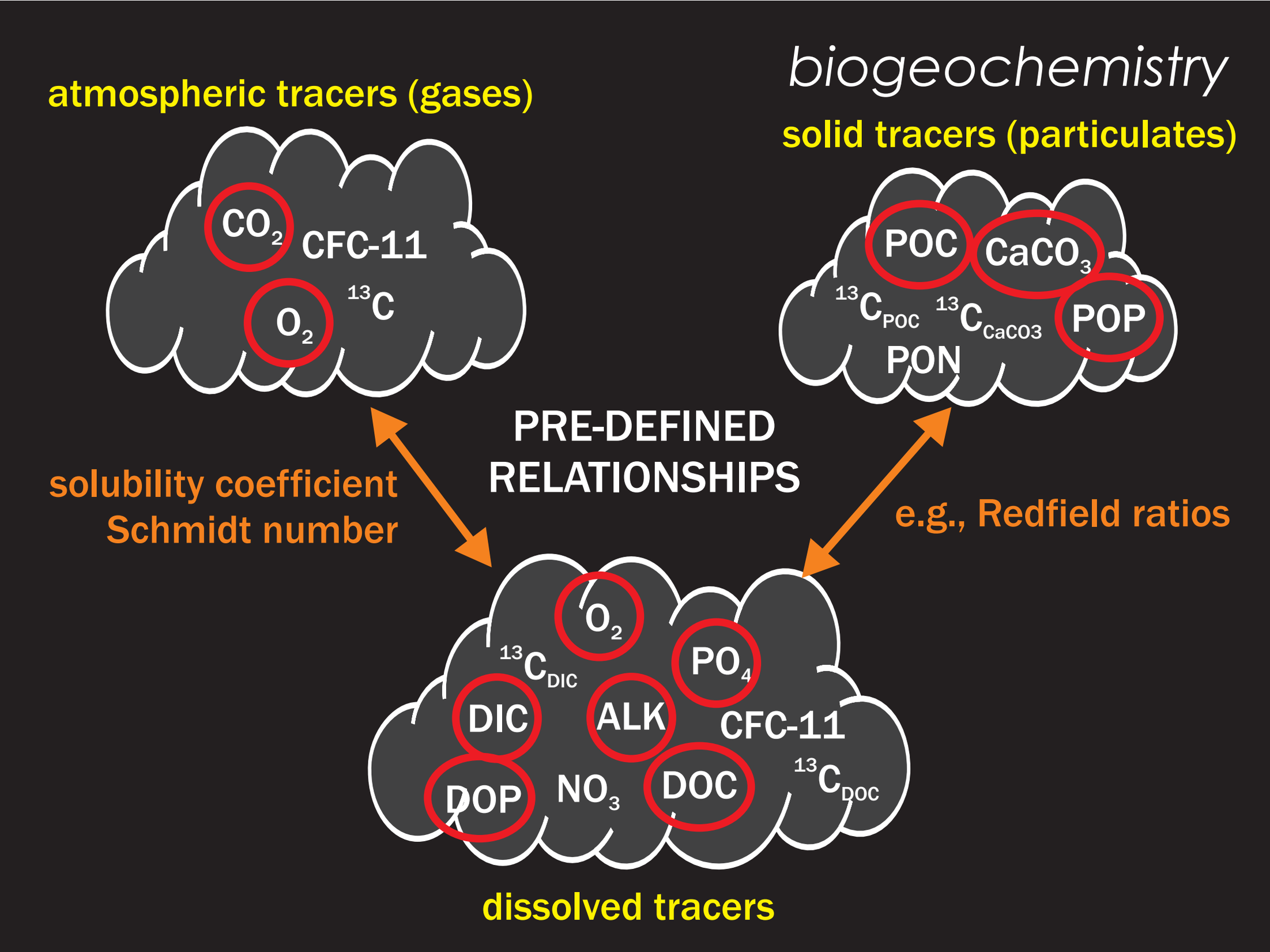
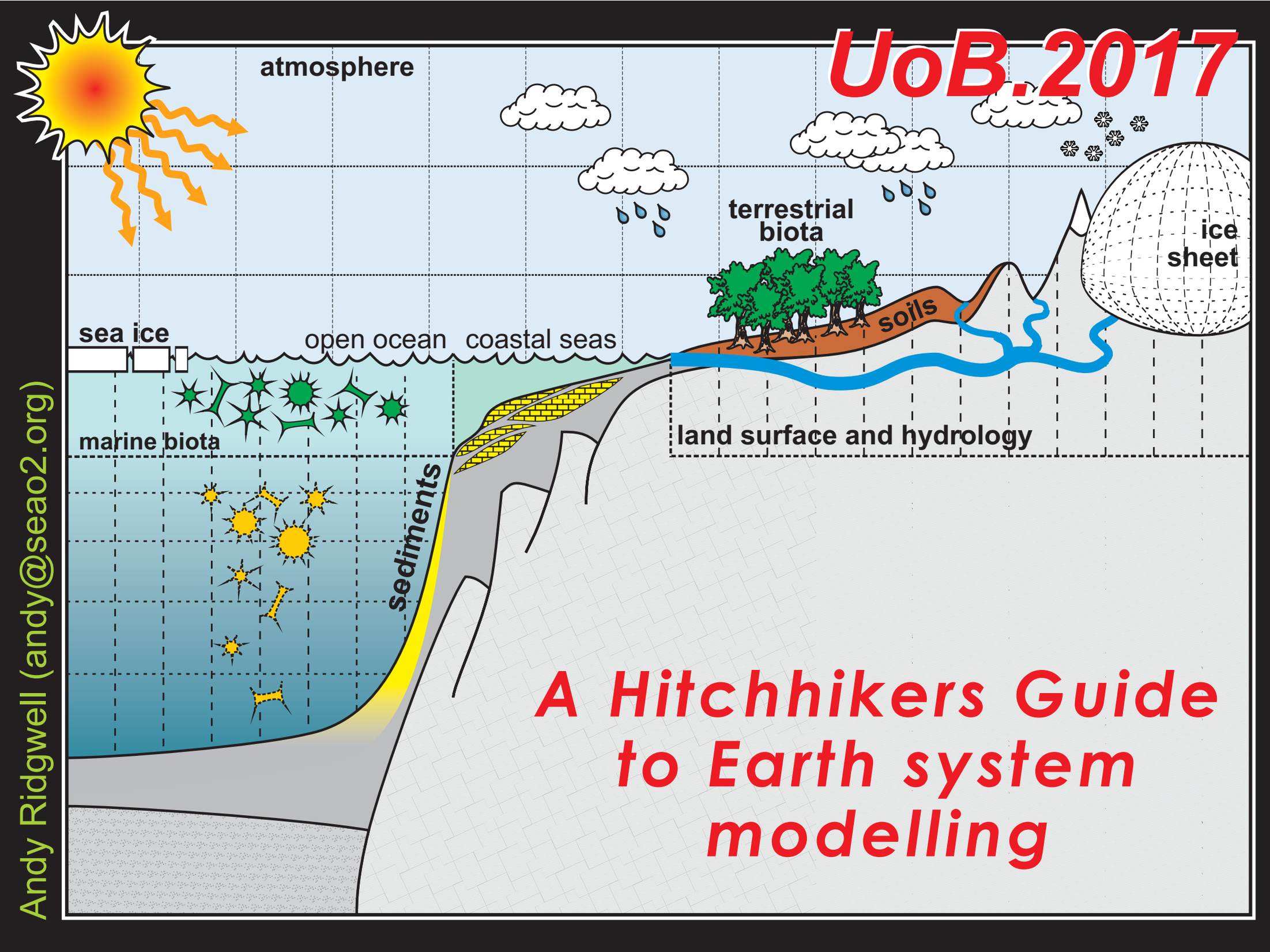
sediments
ocean
fully 3D
('reduced
36x36x8
64x32x8
90
60
30
0
-30
-60
-90
0 30 60 90 120 150 180 210 240 270 300 330 360
Depth (m)
175
411
729
1158
1738
2520
3576
5000


biogeochemistry
atmospheric tracers (gases)
CO_2
CFC-11
^{13}C
O_2
solid tracers (particulates)
POC
$CaCO_3$
$^{13}C_{POC}$
$^{13}C_{CaCO3}$
POP
PON
PRE-DEFINED
RELATIONSHIPS
solubility coefficient
Schmidt number
e.g., Redfield ratios
O_2
$^{13}C_{DIC}$
PO_4
DIC
ALK
CFC-11
DOP
NO_3
DOC
$^{13}C_{DOC}$
dissolved tracers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