

MOSAI

Model and observation for Surface Atmosphere Interactions

ANR funding
April 2021 – March 2025

MOSAI

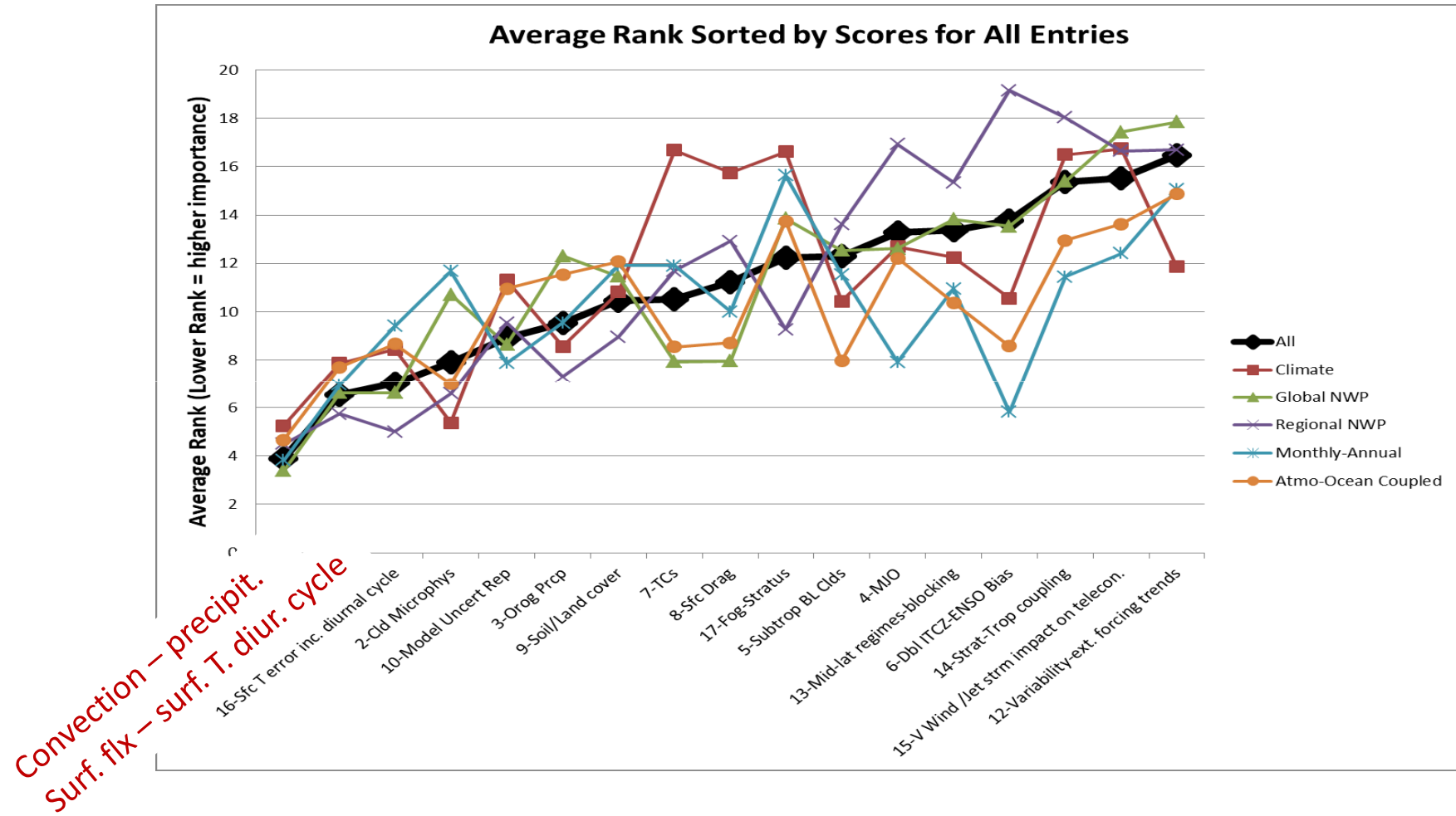
Model and observation for Surface Atmosphere Interactions

LA, CNRM, LMD, LATMOS, CESBIO, GET, IGE, ISPRA

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J.-M. Cohard, C. Coulaud, R. Biron, B. Mercier
S. Lafont, M. Irvine, V. Moreaux

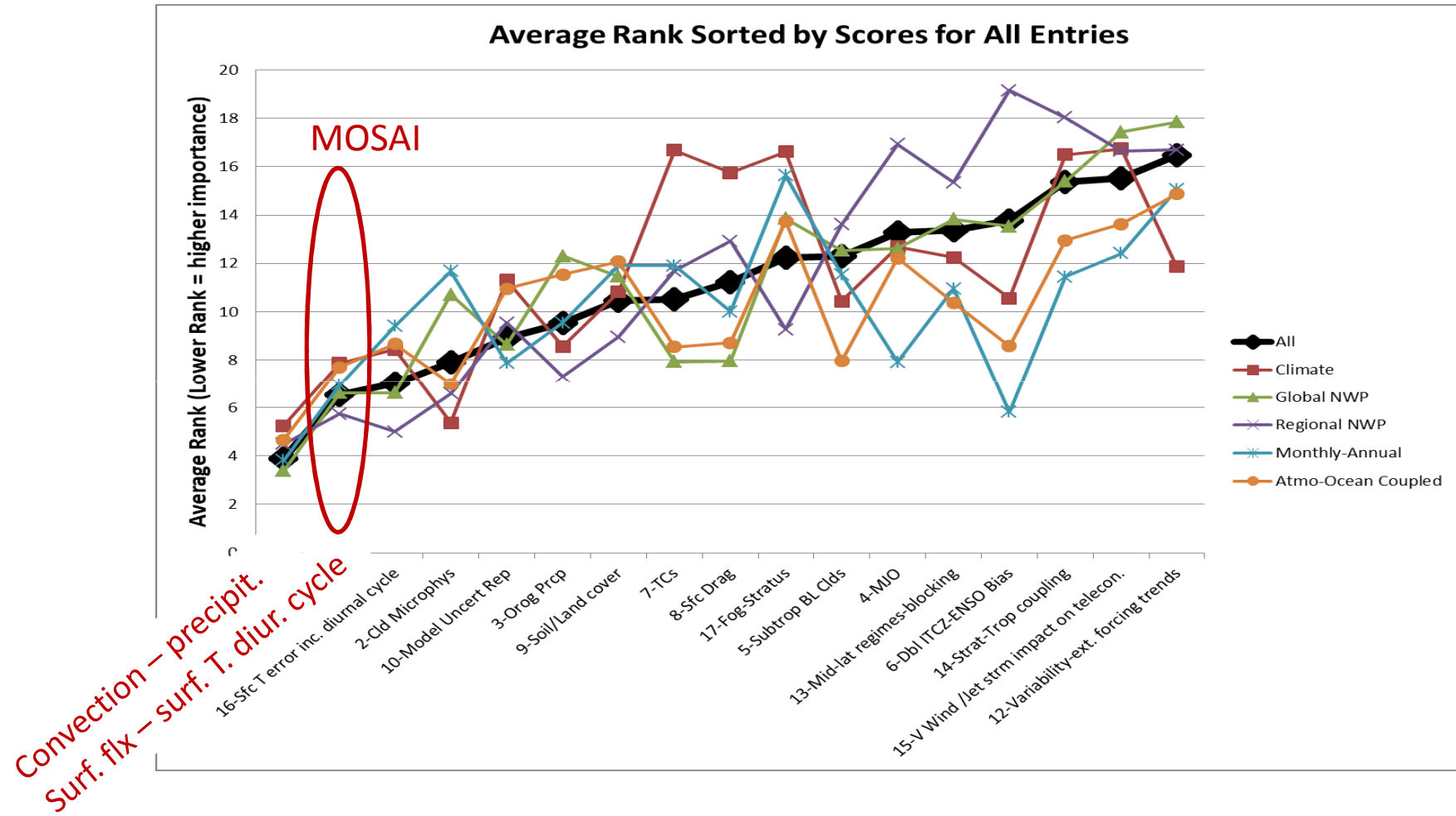
Motivations

Working Group on Numerical Experimentation (Fev. 2019)

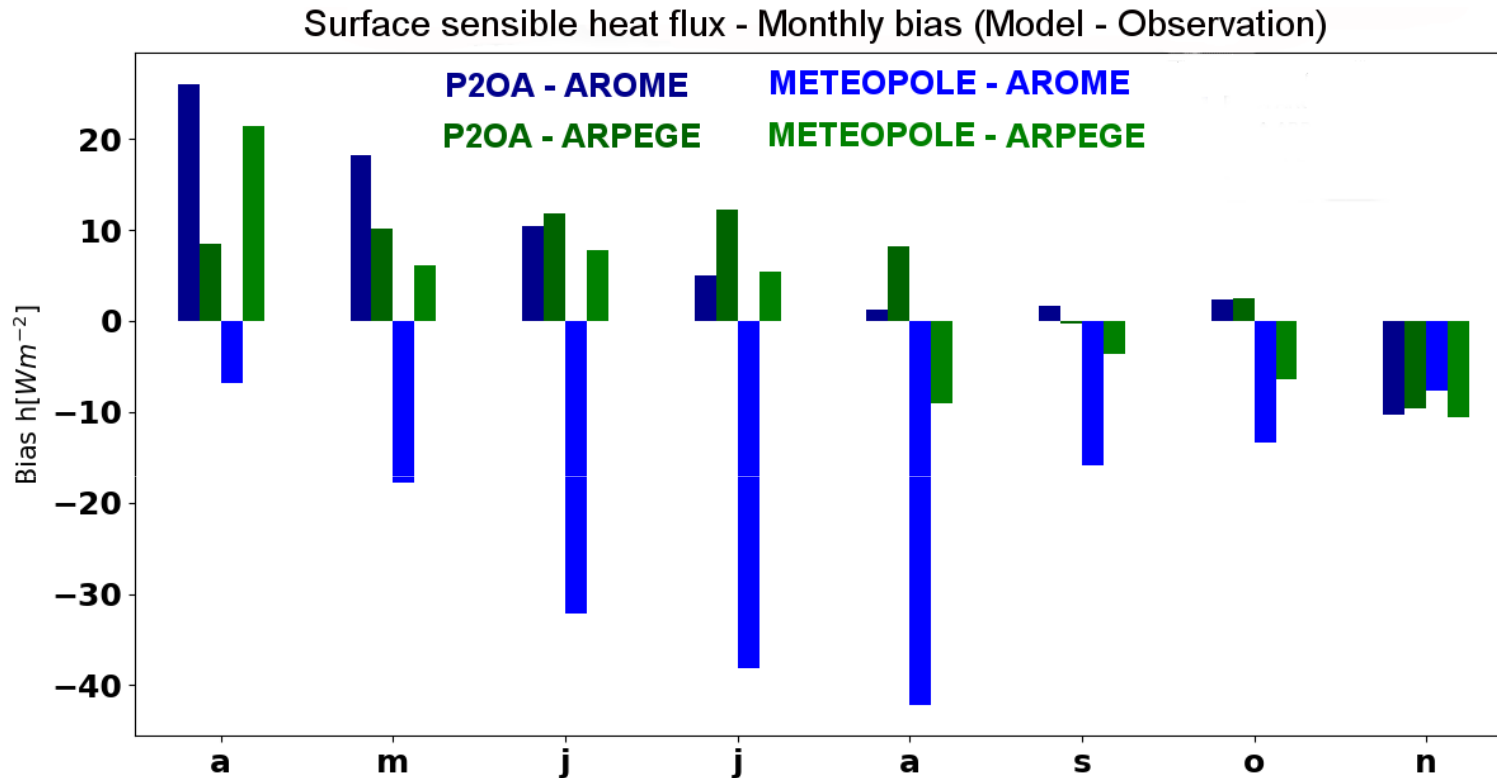


Motivations

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Motivations

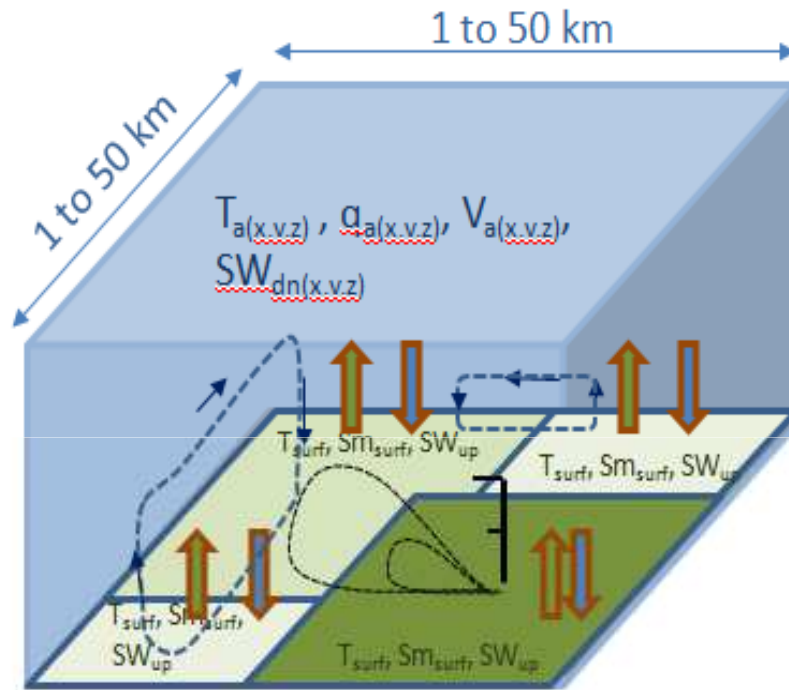


Monthly bias (from April (a) to November (n)) of AROME and ARPEGE sensible surface fluxes compared to observations at P2OA and Météopole in 2017.

(Guylaine Canut)

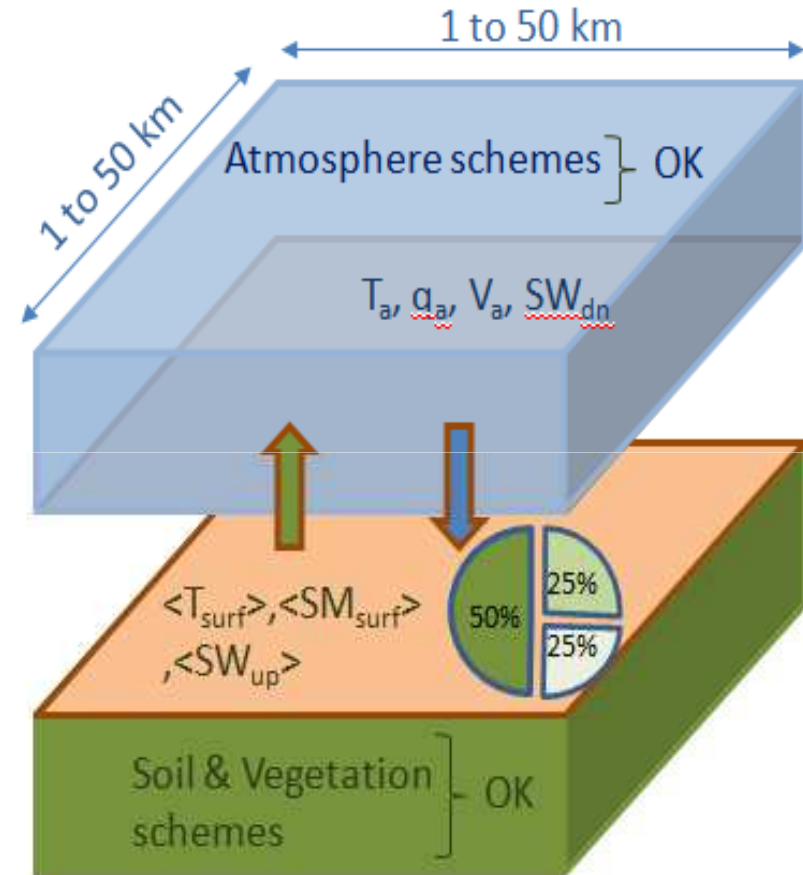
Objectives

Observations at model grid scale



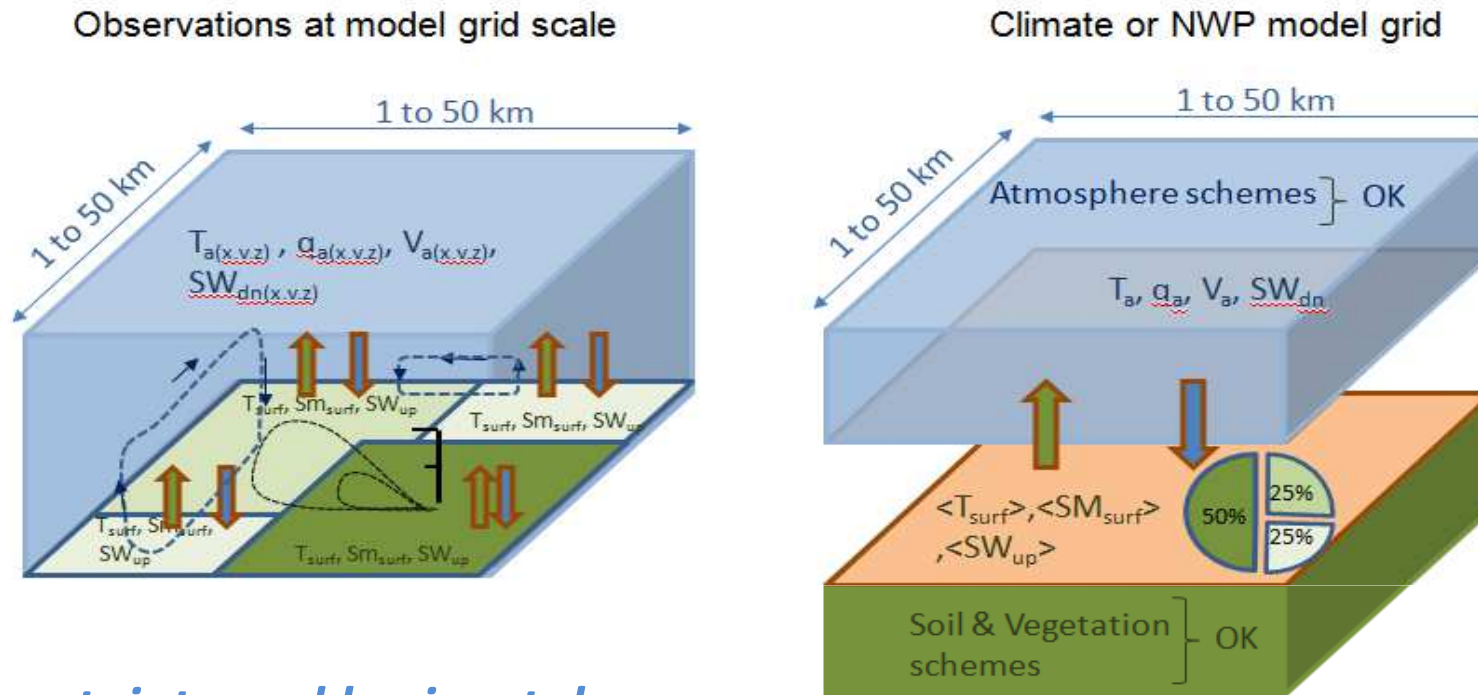
Secondary circulations: e.g. Patton et al., 2005, Liu et al, 2011, Maronga and Raasch, 2013

Climate or NWP model grid



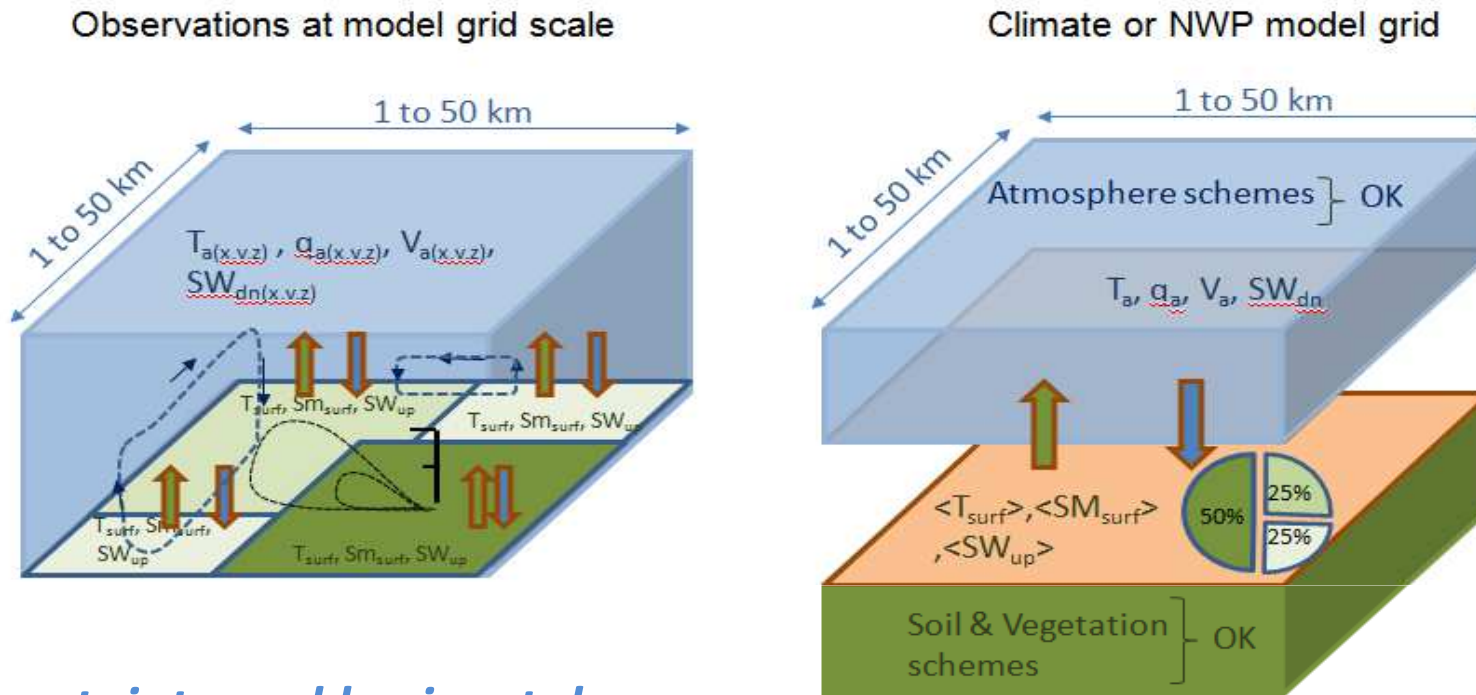
L-A coupling: André et al., 1986; Noilhan et al., 1997

Objectives



WP1: uncertainty and horizontal representativeness of L-A exchanges measured over heterogeneous landscape

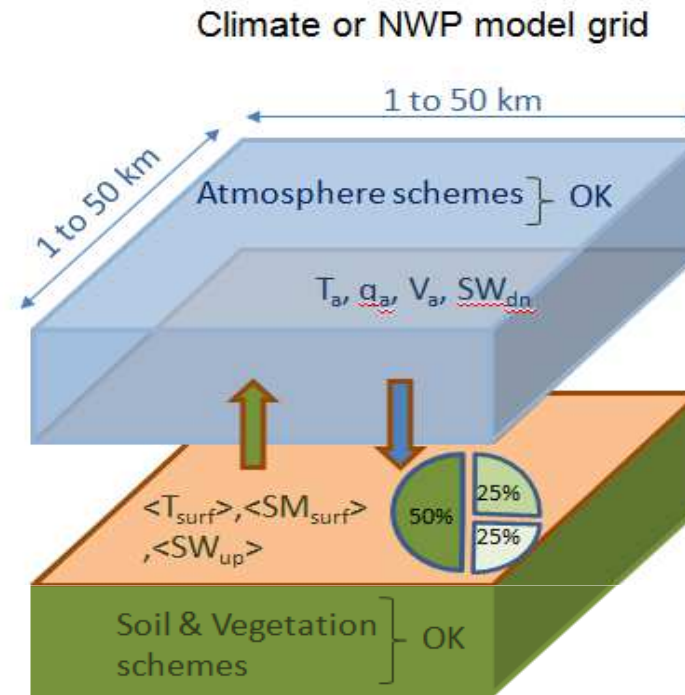
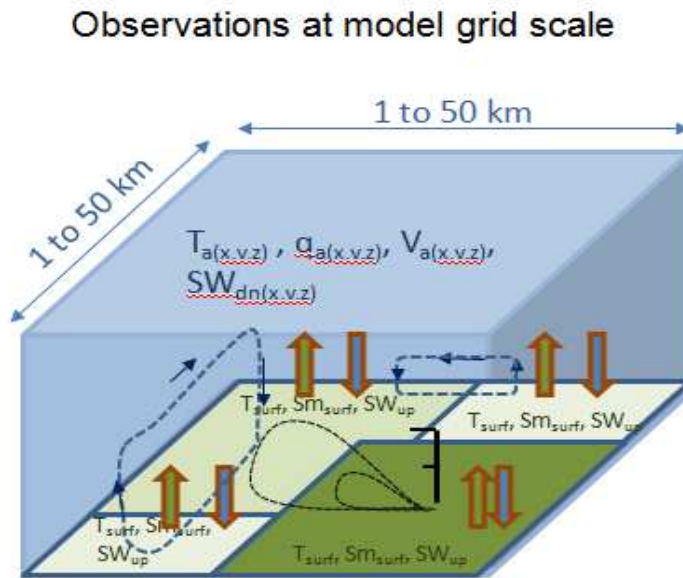
Objectives



WP1: uncertainty and horizontal representativeness of L-A exchanges measured over heterogeneous landscape

WP2: Model evaluation using long-term measurements

Objectives



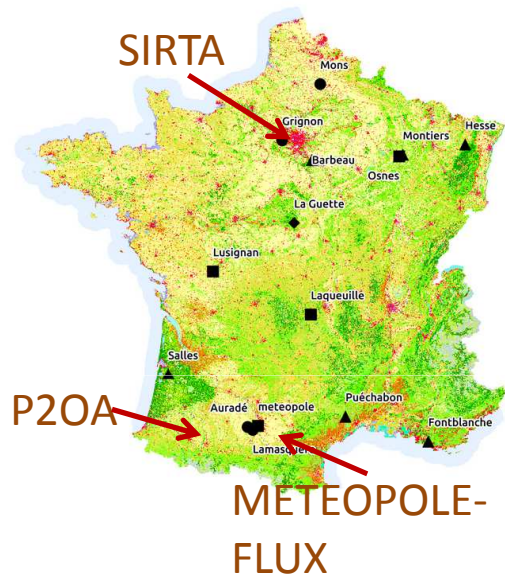
WP1: uncertainty and horizontal representativeness of L-A exchanges measured over heterogeneous landscape

WP2: Model evaluation using long-term measurements

WP3: Improvement of the L-A models coupling

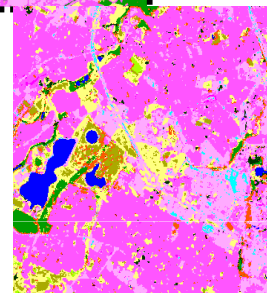
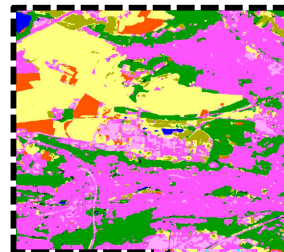
Permanent Observations ~ 10 years

ICOS-ecosystem network
ACTRIS-FR network



Enhanced Observations ~ 1 year

SIRTA: péri-urbain



MTO: urbain

P2OA: rural



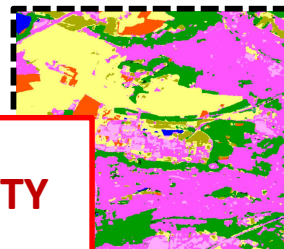
Permanent Observations ~ 10 years

ICOS-ecosystem network
ACTRIS-FR network

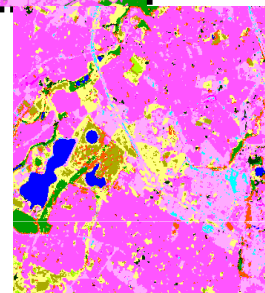


Enhanced Observations ~ 1 year

SIRTA: péri-urbain



P2OA: rural

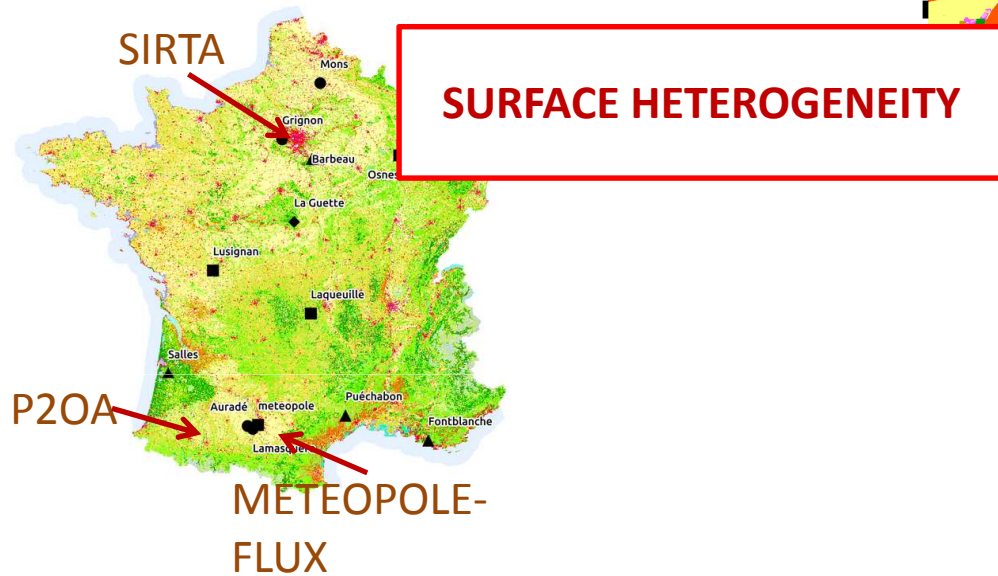


MTO: urbain



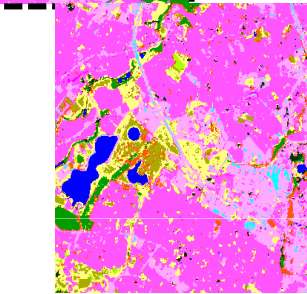
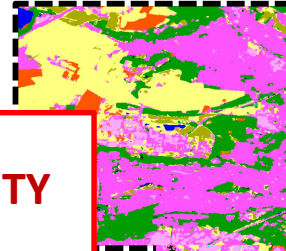
Permanent Observations ~ 10 years

ICOS-ecosystem network
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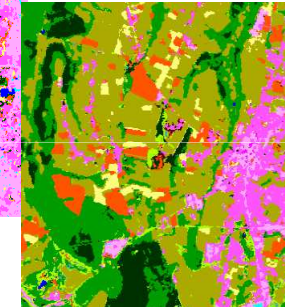
Enhanced Observations ~ 1 year

SIRTA: péri-urbain



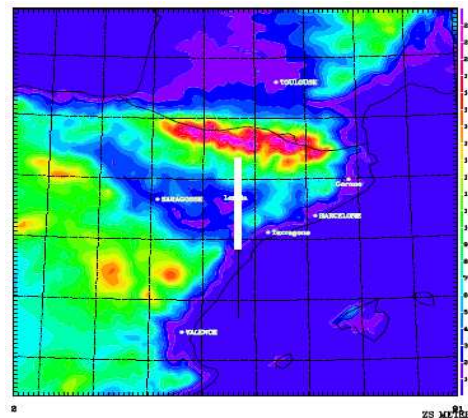
MTO: urbain

P20A: rural



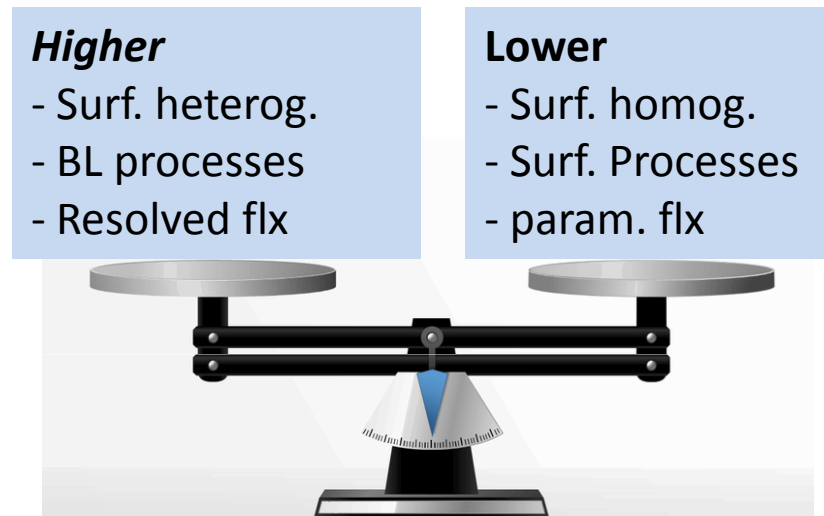
Intensive Observations LIAISE

VERTICAL STRUCTURE



Question we would like to answer with LIAISE measurements:

At what height observations and models should be compared over heterogeneous landscape.



Vertical structure of the lower atmosphere according to the surface heterogeneities

All types of high frequency measurements below 100 m.

- 50m masts & EC stations: heter. & hom. footprints
- Turbulent sonde below tethered balloon.
- Scintillometers
- RPAS
-

Data analysis
&
LES

Thank you !