

Présentation pour la formation LMDZ 2018



Nom : *JAZIRI*
Prénoms : *Yassin*
Poste : *1^{ère} année de thèse*
Unité de recherche : *LAB*
Directeur de thèse : *Franck Selsis*

Sujet de thèse :

*Photochimie des atmosphères de planètes extrasolaires :
des Jupiters chauds aux planètes habitables*

Outils : *Simulation LMDZ Générique*
Objectifs : *Implémentation de la photochimie online au LMDZ Générique*
Expérience : *Stage M2 : Photochimie Terre primitive – Simulation LMDZ-G*



PhD thesis in history and philosophy of climate science – historical progress in climate science and epistemological challenges

Genesis of climate science – from meteorology to climatology

Role of intercomparison projects (AMIP, CMIP...)

- History of intercomparison projects : from heuristic tools to political instruments
- Understanding climate : the heuristic role of intercomparison projects
- Providing useful simulations to decision makers : intercomparison projects as political instruments

Parameterizations – scientific practices, epistemic values and methodological issues

Internal variability – from Lorenz's chaos theory to the limits of knowledge about the climate system

Climate Sensitivity – genealogy of a belief

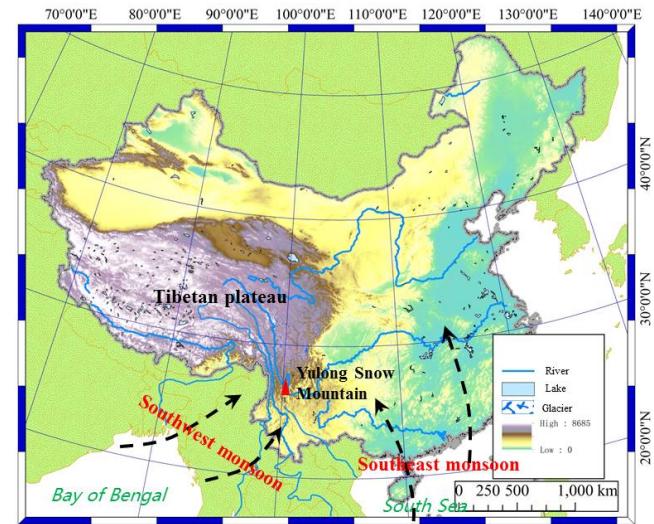
Laboratoire de Météorologie Dynamique



Xiaoyi Shi
Ph.D

Research Objective:

Understand the process controlling the variability of precipitation $\delta^{18}\text{O}$ on the southeastern Tibetan Plateau in China based on LMDZ-iso model





Christophe Genthon

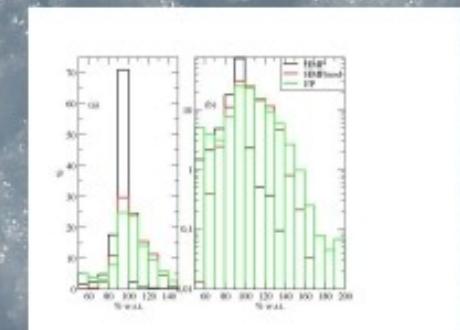
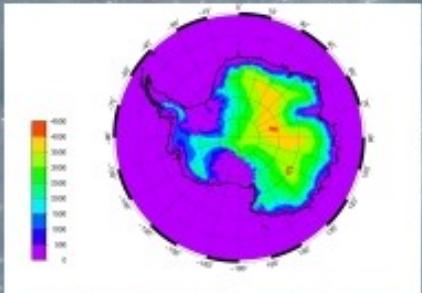
Laboratoire de Météorologie Dynamique - Jussieu

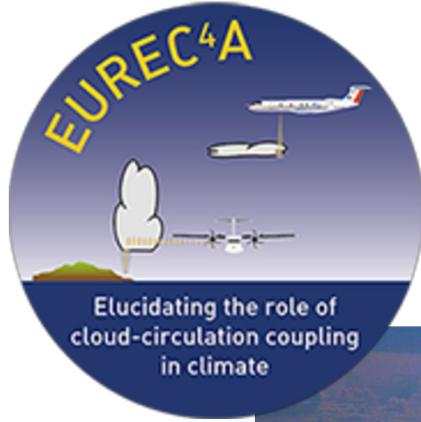
Transfuge récent de Institut des Géosciences de l'Environnement
(transfuge du LMD vers le LGGE/IGE il y a ... 25 ans)

Objets d'étude actuels : atmosphère, météorologie et climat antarctiques

- observations in situ, télédétection
- processus, paramétrisations physiques
- modélisation météorologique et climatique

LMDZ : Le modèle multi-échelle, du processus à la prévision climatique





PhD with Sandrine Bony, Sept. 2018 - 2021

- Cloud feedbacks in models and observations
- EUREC4A field campaign, Barbados, winter 2020
- Conceptual models of trade wind cloudiness

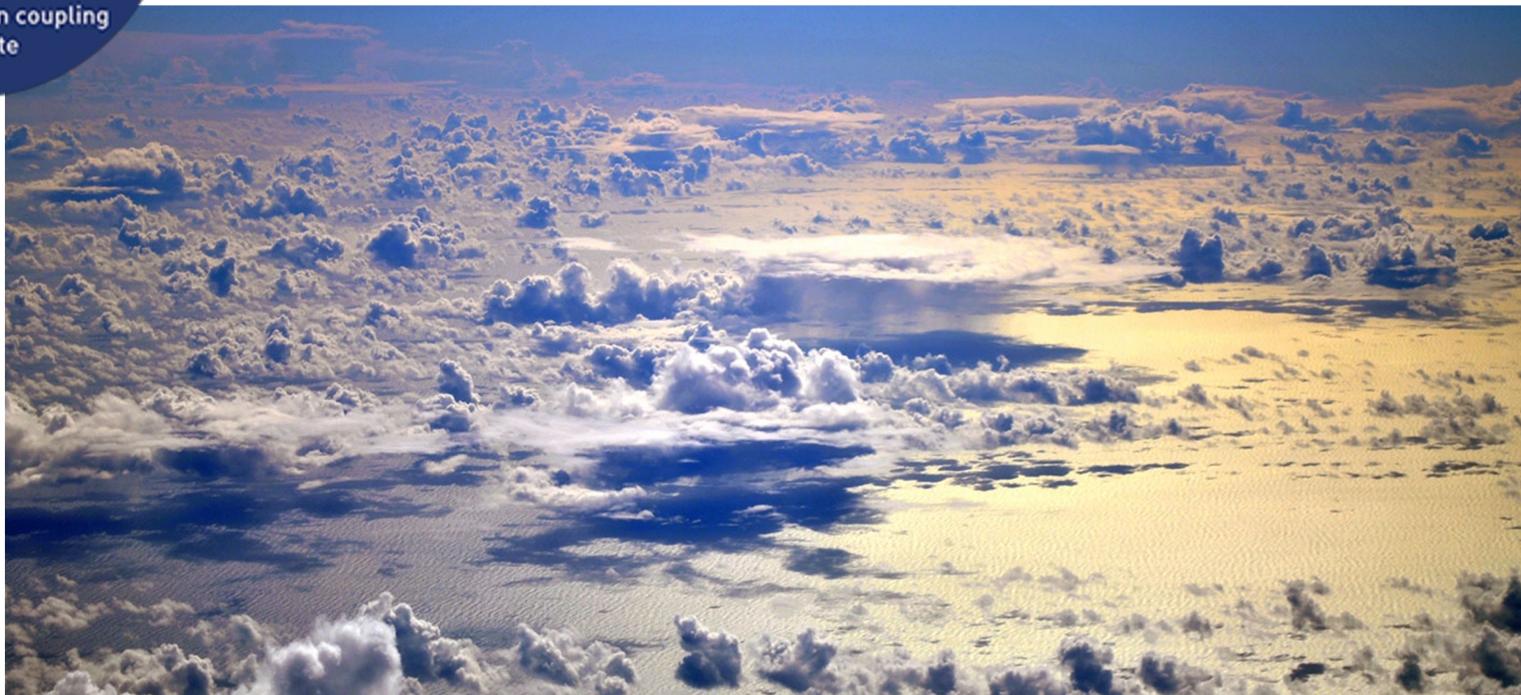


Photo taken by Sandrine Bony



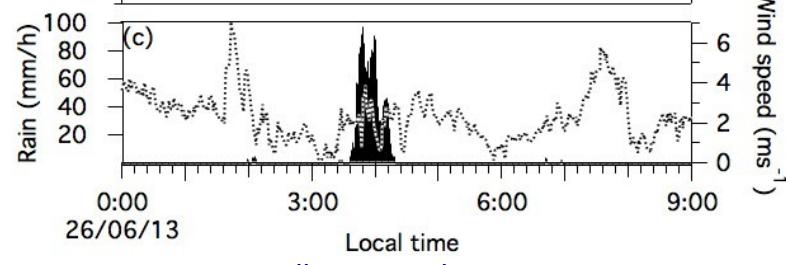
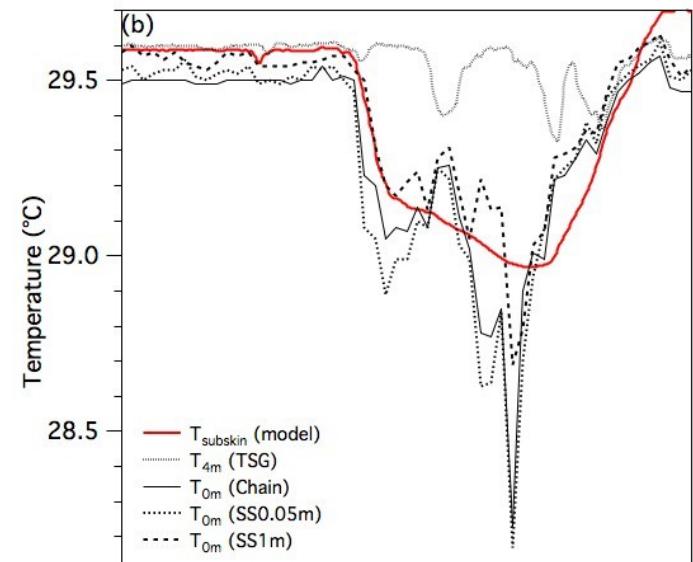
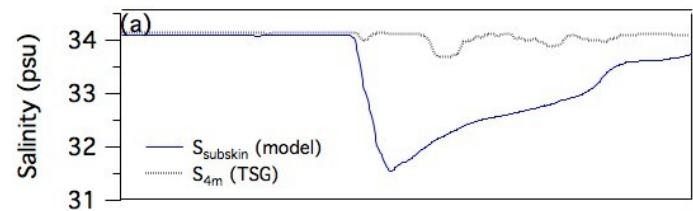
Hugo Bellenger

Researcher CNRS

Laboratoire de Météorologie Dynamique

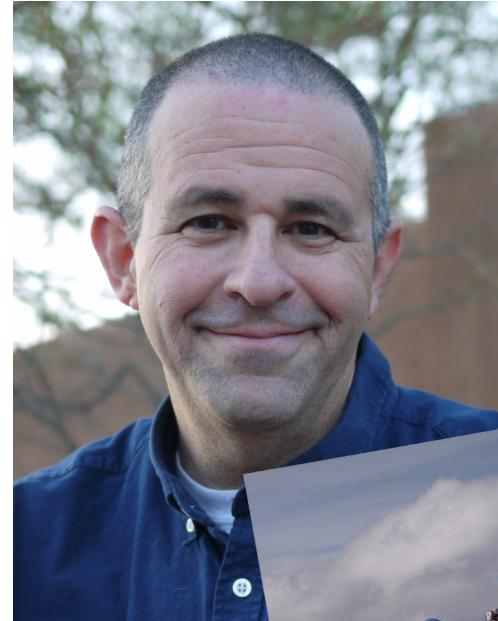
Research themes:

Air-Sea interaction
Convection
Tropical Meteorology



Joe Galewsky

- Now: Professor at the University of New Mexico
- Before: Texas A&M University, UC Santa Cruz, Columbia University
- Research Interests: Water vapor, clouds, and climate; stable isotopes
- I am on sabbatical at LMD for the whole academic year with my wife and our two young kids (2 and 5 years old)





Stella BOURDIN, intern at LSCE

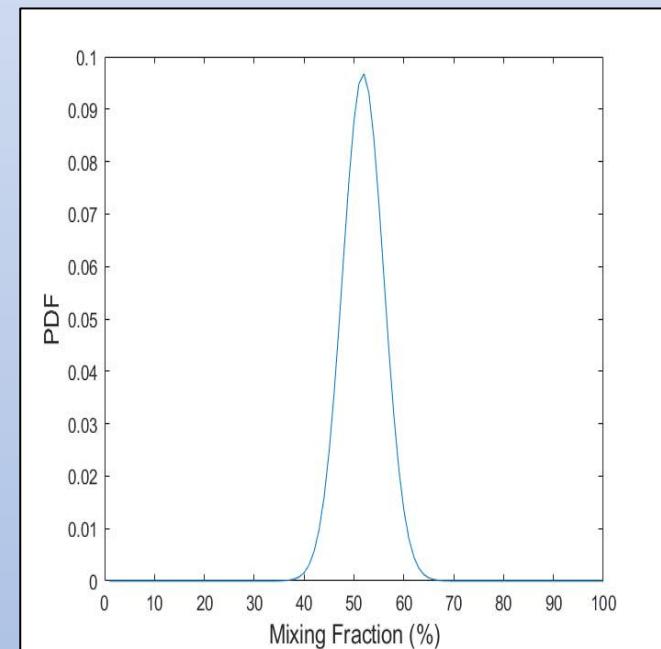
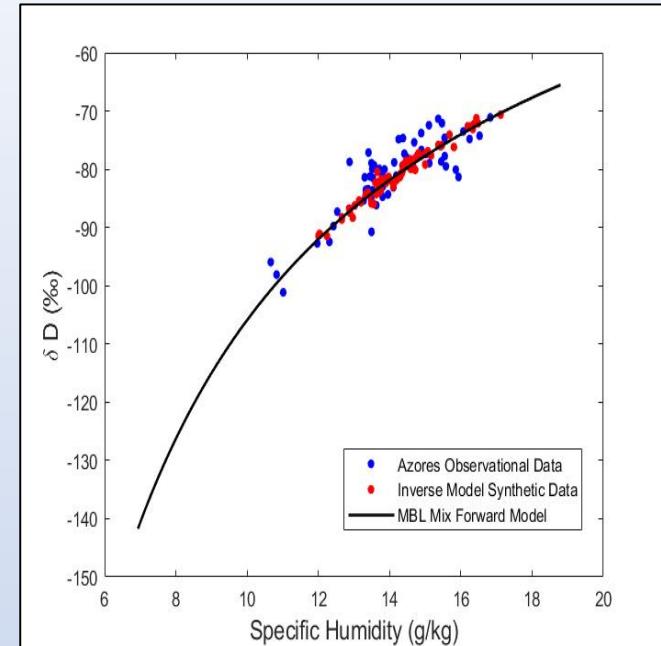
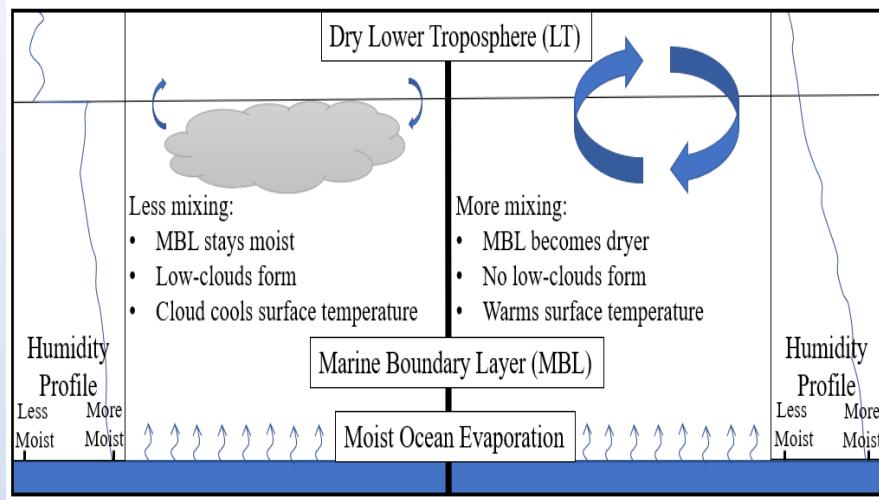
(Engineering student at ECP)

Supervised by Sébastien Fromang & Masa Kageyama

Field : NUMERICAL SIMULATION OF ATMOSPHERIC DYNAMICS

- Studying the **influence of resolution and dissipation on the circulation**, more especially the jets position, (also energy and waves), on **Dynamico**.
- Participating in tests for **HighResMIP**.

Jacquelyn Delp



Research Interests:
climate change
hydrology
stable isotopes

SAFI MOHAMED JOMAA

Ecole Nationale d'Ingénieurs de Tunis



PhD in Physics Paris 6

State PhD(Doctorat d'Etat) in Mathematics Paris 6

RECHEARCH THEMES

Sustainable Development

Impact of Land Use on Local and Regional Climate : sand, artificial lake, palm trees, Jujoba.

Dynamic of a Lake located in Arid Zone (South Tunisia)

Yanfeng ZHAO (yanfeng.zhao@lmd.jussieu.fr)

POSTDOC (Supervisors: Frédérique Cheruy)

Laboratoire de Météorologie Dynamique (LMD)

Labex: LP2: Understanding climate variations since the early 20th century
(LMD, LATMOS, METIS, LOCEAN, LSCE)

Approach: Construct and use climate reconstruction testing the
thermodynamic component of the IPSL-CM6 for the second half of the
20th century, and build confidence in the climate projections.



LABORATOIRE DES SCIENCES DU CLIMAT
& DE L'ENVIRONNEMENT



Institut
Pierre
Simon
Laplace



UNIVERSITÉ DE
VERSAILLES
ST-QUENTIN-EN-YVELINES
université PARIS-SACLAY

Marie Sicard

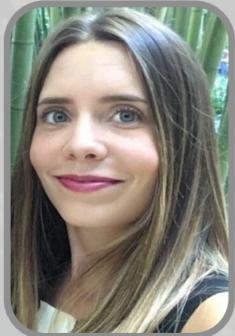
1st year PhD student at LSCE

Supervisors : Masa Kageyama and Sylvie Charbit



Towards an improved understanding of the Greenland climate and ice sheet evolutions during the last interglacial period – a modelling study

- Analyze the climatic changes during the last interglacial period using outputs from the **IPSLCM6 model** and from **LMDZ model**.
- Study the impacts of the changes in temperature and surface mass balance using the **GRISLI ice sheet model**.



Julia Bres

1st year PhD student at LSCE

Directors : Pierre Sepulchre, Nicolas Viovy and Nicolas Vuichard

Modelling and understanding the links between paleogeography, continental water routing and vegetation since the Cretaceous

- Generate sensitivity tests with reduced topography in IPSLCM5A2;
- Analyse the feedbacks between atmosphere and paleo vegetation in LMDZOR and further in IPSLCM5A2



Artem Feofilov

1990-2000: St. Petersburg State University, Ph.D. in physics
with specialization in photonics.

2001-2016: scientific researcher at IAA, NASA GSFC, LMD
2016-now: research engineer at LMD

Specialization:
radiative transfer in planetary atmospheres, which includes

- (a) developing the models of radiation formation;
- (b) estimating the energetic effects of the interaction between the radiative field and the matter;
- (c) developing the methods of atmospheric properties retrieval using the data from remote sensing.

Interest in the present course:

1. learn the basics of the LMDZ and the role of radiation in its energetics;
2. better understand the interfaces between the core of the model and the simulation of outgoing radiances.

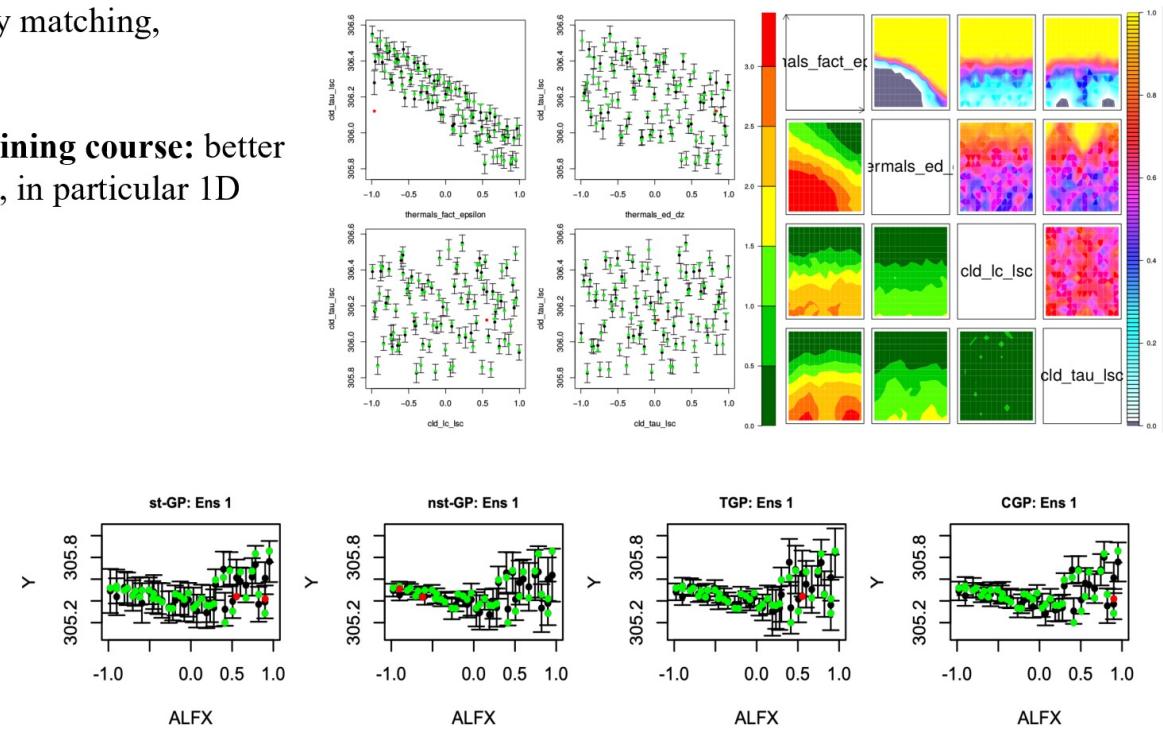
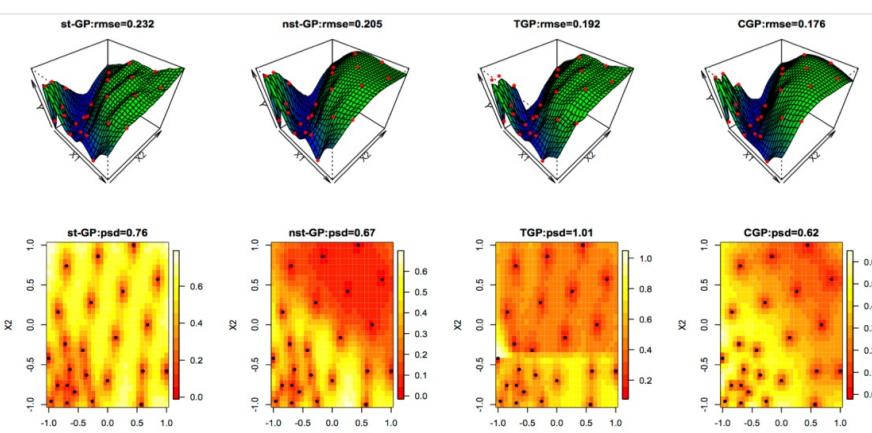


Victoria Volodina,
4th Year PhD student in Mathematics (Statistics)

Research Domain:

Uncertainty Quantification (UQ),
 Gaussian Process Emulation,
 Bayesian calibration and history matching,
 Bayesian experimental design

Expectations from LMDZ training course: better understanding of LMDZ model, in particular 1D configuration.

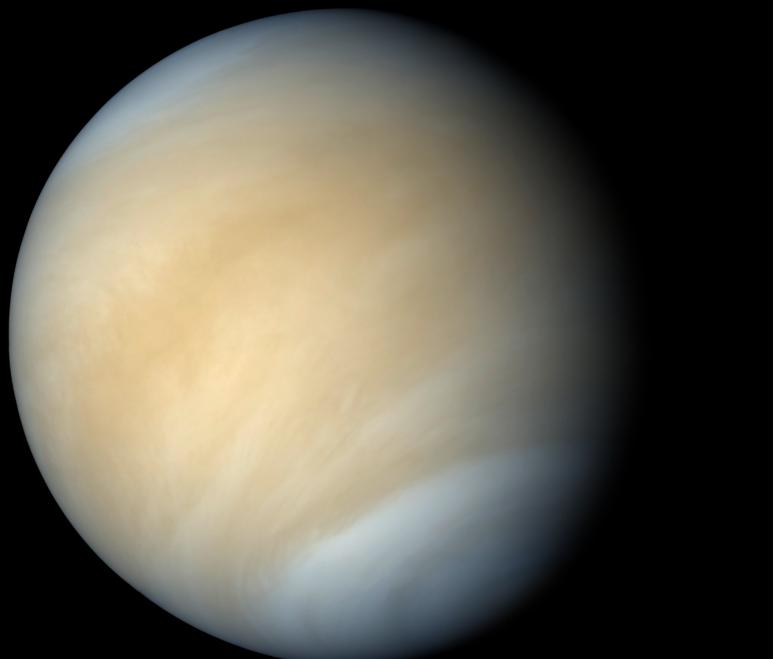




Pietro Scarica

3rd year PhD student

Astronomy, Astrophysics and
Space Science



The atmosphere of Venus: a comparison of the LMDZ model and Venus Express data

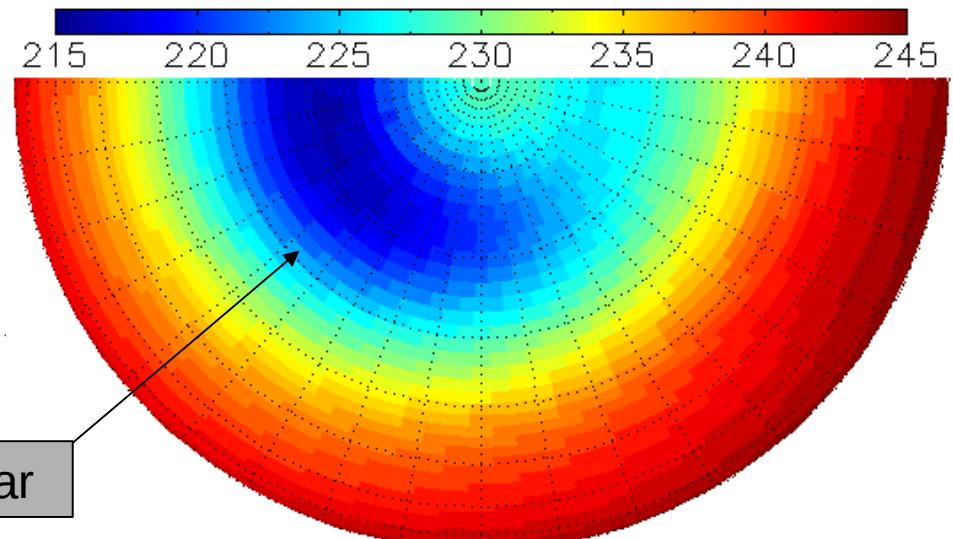
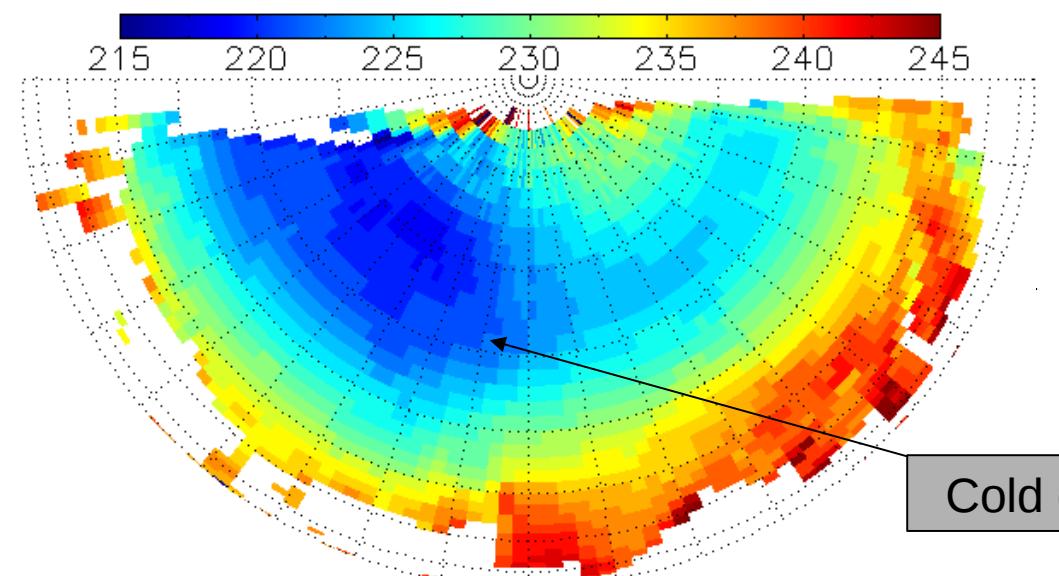
Dr. G.Piccioni

Dr. F.Berrilli

Dr. C.Cagnazzo

Dr. S.Lebonnois

Dr. I.Garate-Lopez



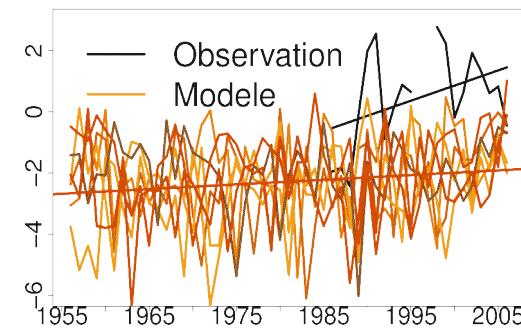
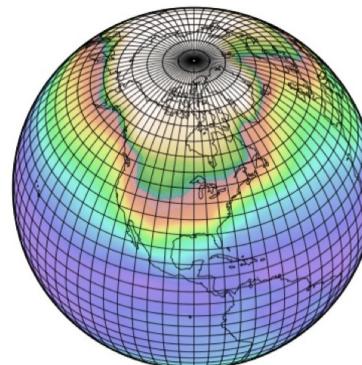
Data (VEX) - model (LMDZ)

- Climate variability

- **Forcings, aerosols**
- **Snow cover, glaciers**



- **Observations and models**



Martin Ménégoz



Extreme and exceptional winds:

Classification, modelisation and future projection over France under multiple climate change scenarios



Goals :

- > Redefining the levels of extreme hazards and their evolutions in the long term when taking into account multiple extreme wind phenomena of both synoptic and local scales.
- > Defining a methodology in order to improve extreme wind representations and exploitations in Global Climate Models.



Expected usage of the model to this day:

- > Use of 3D LMDz in “regular-world” mode in a regional configuration zoomed in on the Mediterranean basin to study wind data and compare them to reanalysis (with an emphasis over France).
- > Use of 3D LMDz in “regular-world” mode, unzoomed global climate, eventually coupled with ocean, in order to study large scale dynamic processes correlated with extreme winds.

Hugues Delattre
PhD student
supervised by **Laurent Li** as part of a collaboration between LMD/IRSN/CSTB



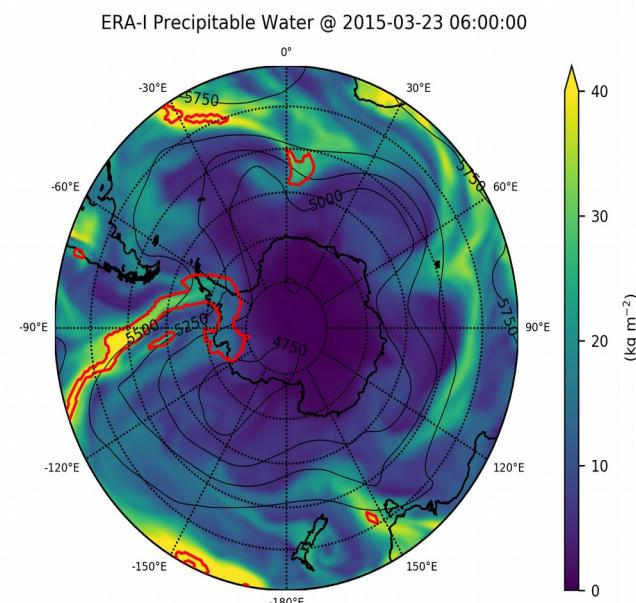
Jonathan Wille

PhD Student at the Université Grenoble Alpes
Supervisors: Vincent Favier & Francis Codron



Atmospheric Rivers in Antarctica

- Large-scale atmospheric circulation around Antarctica with a focus on atmospheric rivers
- Use LMDZ to examine future behavior
- Force MAR with LMDZ to examine future impacts on SMB





Sébastien Fromang

Researcher @ CEA/Saclay, DRF/Irfu/Dap & UMR AIM

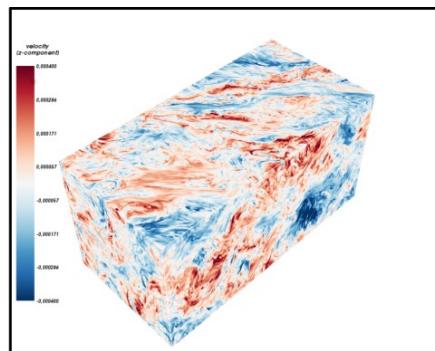
Skills:

Fluid dynamics & High Performance Computing

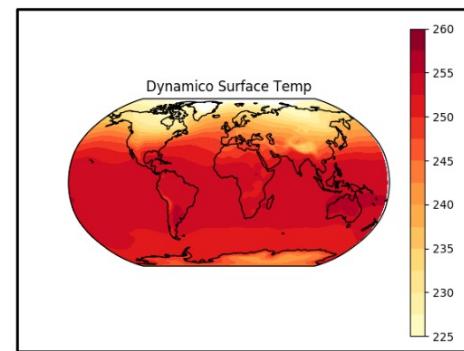
Current work & motivations:

Idealized earth atmosphere simulations with Dynamico

High spatial resolution



Turbulence @ 1000^3



Forced Dynamico/LMDZ simulations

Wenzhe Xu

A second year PhD student in CEMPS in Exeter working on Uncertainty Quantification (UQ).

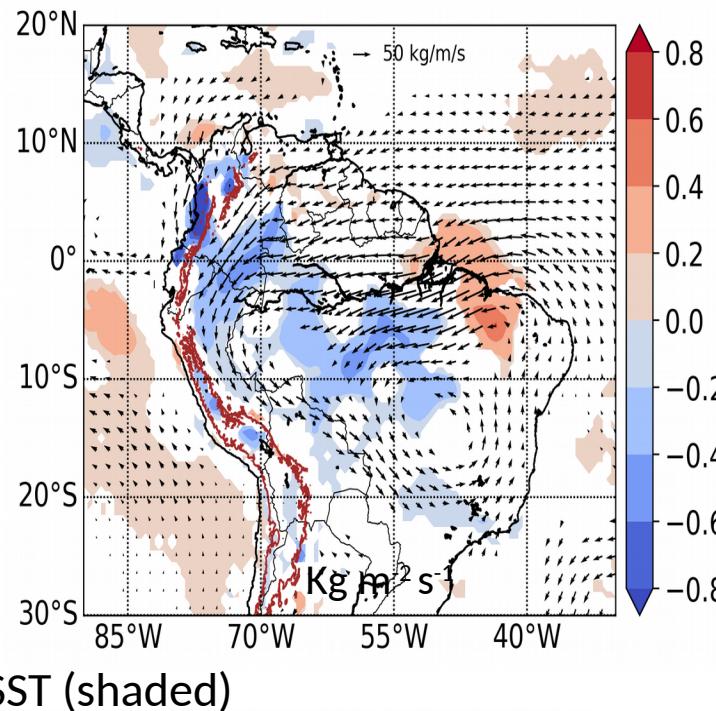


- Gaussian process emulator & History matching.
- Multi-wave design for climate model calibration.
- UQ for computer models with high-dimensional output.

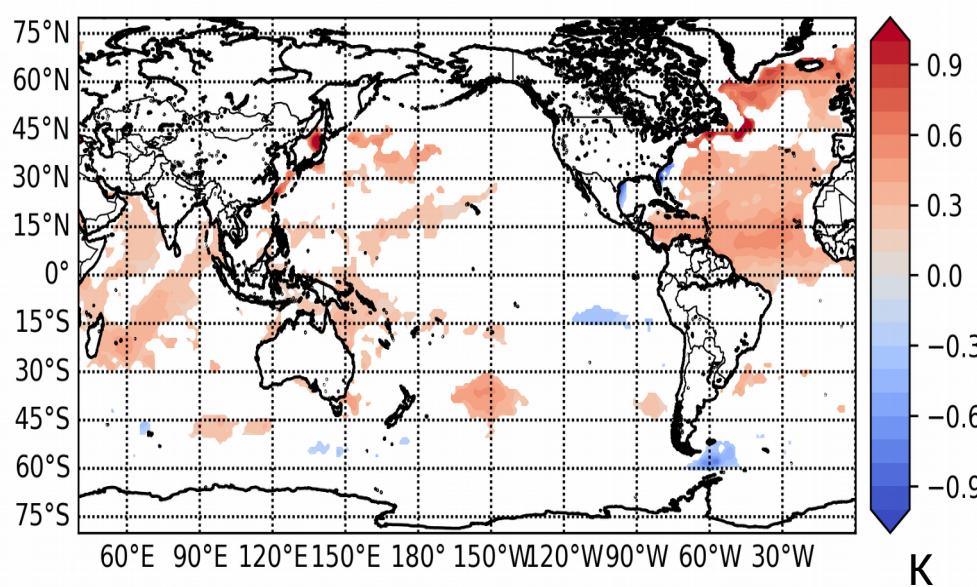
Changes in the atmospheric circulation over western Amazon

Difference in the December-March atmospheric circulation (2002-2016
and 1982-2001)

$\nabla \cdot \sqrt{qdp}$ (shaded) and \sqrt{qdp} (vectors)



Hans Segura
PhD Student at
the Université
Grenoble Alpes



Possible linked to changes
in the SST in the north
tropical Atlantic



Formation LMDZ - 17-19 decembre 2018

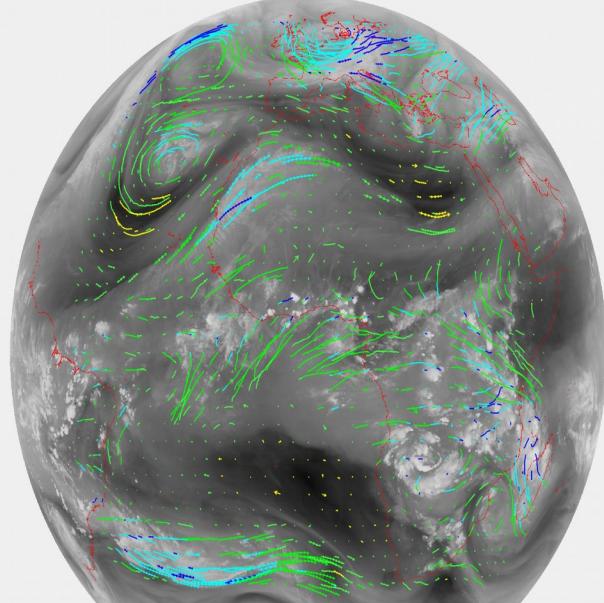
André Szantai

-

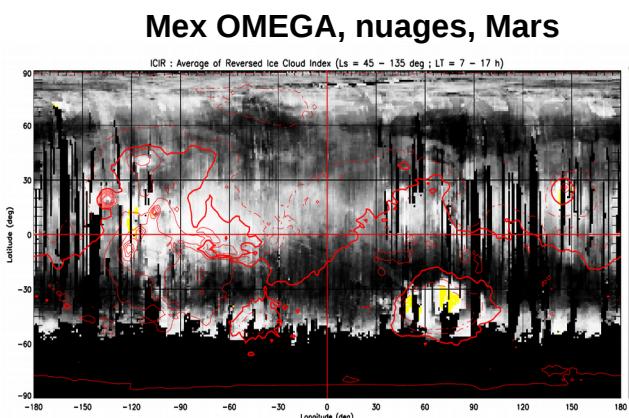
LMD, IR, informaticien

- **Traitemet d'images satellites terrestres géostationnaires**
- Qualité d'images, vents satellites et trajectoires de nuages
- **Traitemet d'images satellites martiennes**
- Climatologie des nuages martiens à partir du spectro-imageur OMEGA sur Mars Express
- **Modèle ? LMDZ ?**
- Utilisation de la Mars Climate Database (MCD), dérivée du GCM du LMD, pour comparaison avec données satellites.

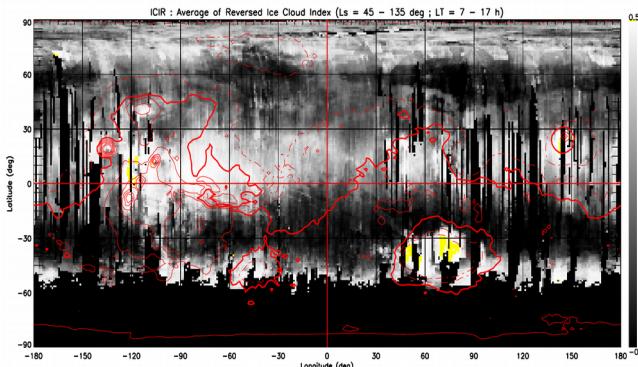
MSAT WV, 18/2 17:30 UTC – 19/2/1996 17:30 UTC



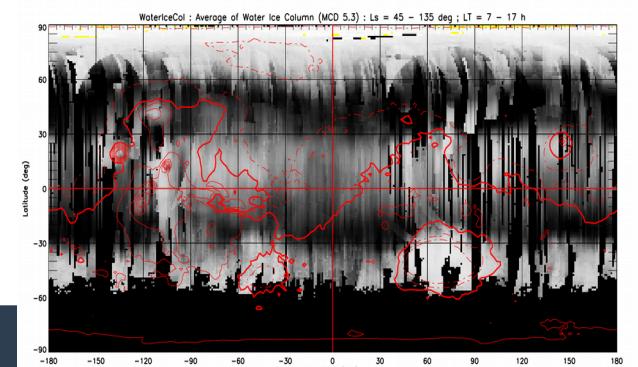
Meteosat-7, trajectoires WV, Terre



Mex OMEGA, nuages, Mars



MCD Colonne de glace d'eau, Mars





Sebastian Los

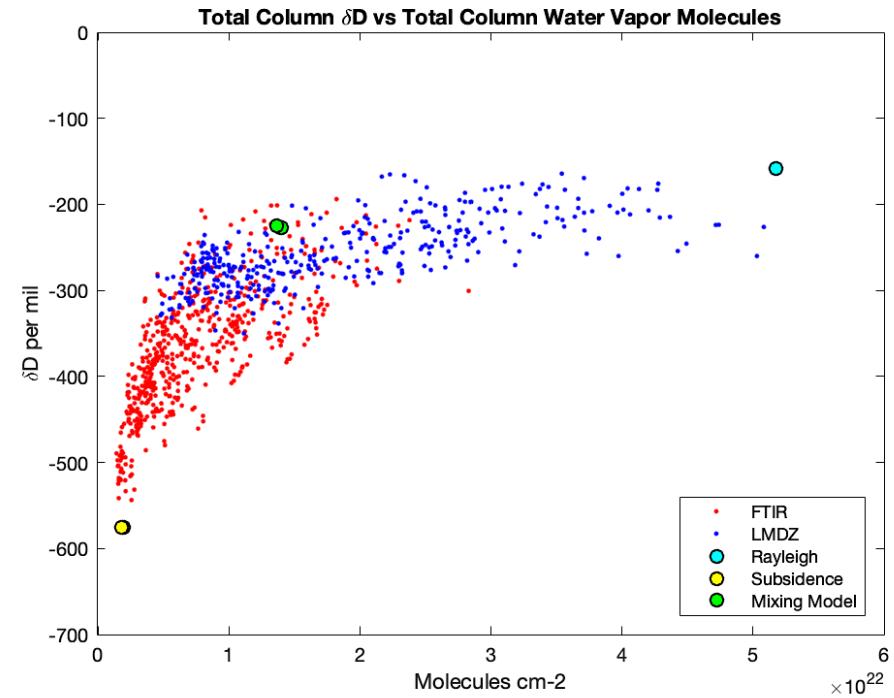
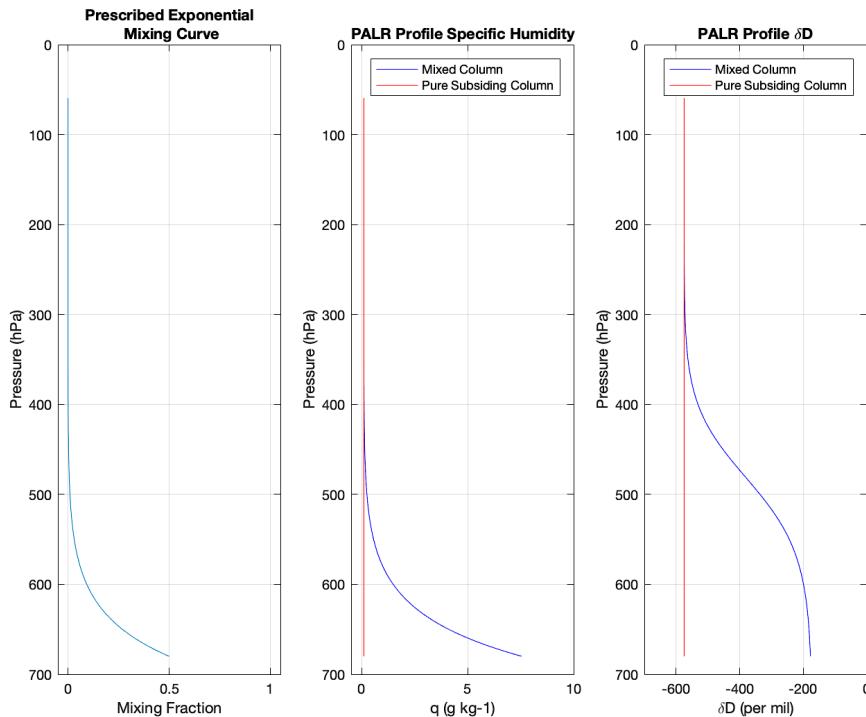
PhD Student

Advisor: Dr. Joe Galewsky



Department of Earth & Planetary Sciences

- Using water vapor stable isotopologues for discerning atmospheric processes
- Constrain atmospheric mixing and transport
- Leveraging FTIR D/H retrievals and idealized column models
- Looking to utilize isotopic capabilities of LMDZ
- Other interests in evapotranspiration, moist convection, Martian H₂O/CO₂ cycle



Vladislav BASTRIKOV

Environmental Researcher / Data Scientist

Laboratoire des Sciences du Climat et de l'Environnement
CEA-CNRS-UVSQ/IPSL, 91191, Gif-sur-Yvette Cedex, France
v.bastrikov@gmail.com



Land Surface Model ORCHIDEE :

- Developments of the physical components
- New input data preparation (forcings, vegetation land cover, soil properties, etc.)
- Reference simulations production, outputs visualization and evaluation

Data Assimilation System around ORCHIDEE :

- Development and maintenance of the code
- Optimization of the carbon, hydrology and energy-related parameters in ORCHIDEE
- Merge of various data sources (in situ flux measurements, satellite products, atmospheric CO₂ measurements, carbon inventory data, etc.)

<https://orchidas.lsce.ipsl.fr>

Expectations from LMDZ training course :

- Coupling LMDZ with ORCHIDEE
- Running LMDZ in zoomed mode
- Performing LMDZ-ORC simulations over several regions using High Resolution Land Cover data from ESACCI

Xavier PERROT

?

Masoud Rostami

?

Alessandra Giannini

?