



Institut
**Pierre
Simon
Laplace**



MÉS●CENTRE IPSL

ESPRI ORGANIZERS:

<i>Coordination</i>	Marie-Alice Foujols
<i>Infrastructure</i>	Frédéric Bongat , Franck Corsini, Karim Ramage , Philippe Weill
<i>Observational data</i>	Cathy Boone , Sophie Bouffies-Cloche , Nathalie Poulet, Karim Ramage
<i>Model data</i>	Sébastien Denvil, Guillaume Levavasseur
<i>Analyse</i>	Nikolay Kadygrov , Jérôme Servonnat

TRAINING PROGRAM:

09:00 - 09:15	General introduction
09:15 - 10:30	Module 1: IPSL Mesocentre infrastructure
10:30 - 10:45	<i>Coffee break</i>
10:45 - 11:30	Module 2: Data you can find or access from IPSL Mesocentre
11:30 - 12:15	Module 3: IPSL Mesocentre tools for climate science
12:30 - 13:30	<i>Lunch</i>
14:00 - 15:15	Practical work (1/2)
15:15 - 15:30	<i>Coffee break</i>
15:30 - 17:15	Practical work (2/2)

MÉS ● CENTRE IPSL

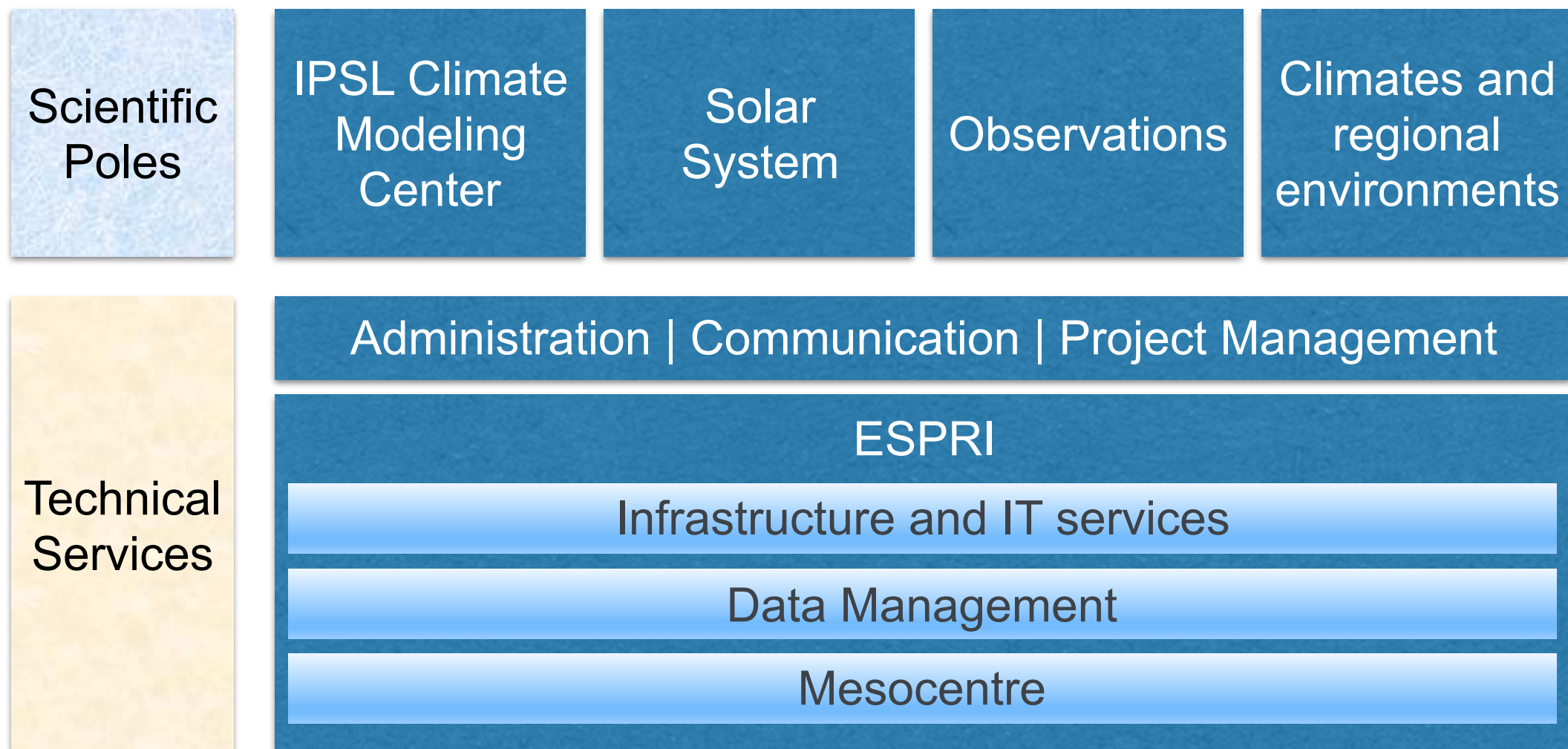
GENERAL INTRODUCTION

What is the IPSL Mesocentre?



Institut Pierre-Simon Laplace (IPSL):

- Federation of 9 laboratories (CEREA , GEOPS , LATMOS , a team from LERMA , LISA , LMD , LOCEAN , LSCE and METIS)
- Research thematic: Global Environment
- Structured around common scientific poles and technical services:



Services for data management and exploitation

- Archiving
- Provision and distribution
- Analytical Tools
- Observations and simulations

Mutualization around a mesocentre type infrastructure

- Storage
- Calculation
- Network
- Virtual Servers for Project Hosting
- Backup and archiving
- Expertise

● **Close to scientific teams.**

● Users: IPSL and Academic Partners

● **Contributions to National Infrastructures (AERIS and CLIMERI)**

● Funding (common infrastructure and equipment for specific projects): IPSL, CNRS/INSU, CNES (AERIS, TOSCA), UPMC, Ecole Polytechnique, ANR (Convergence, etc.), Europe (IS-ENES, etc.)

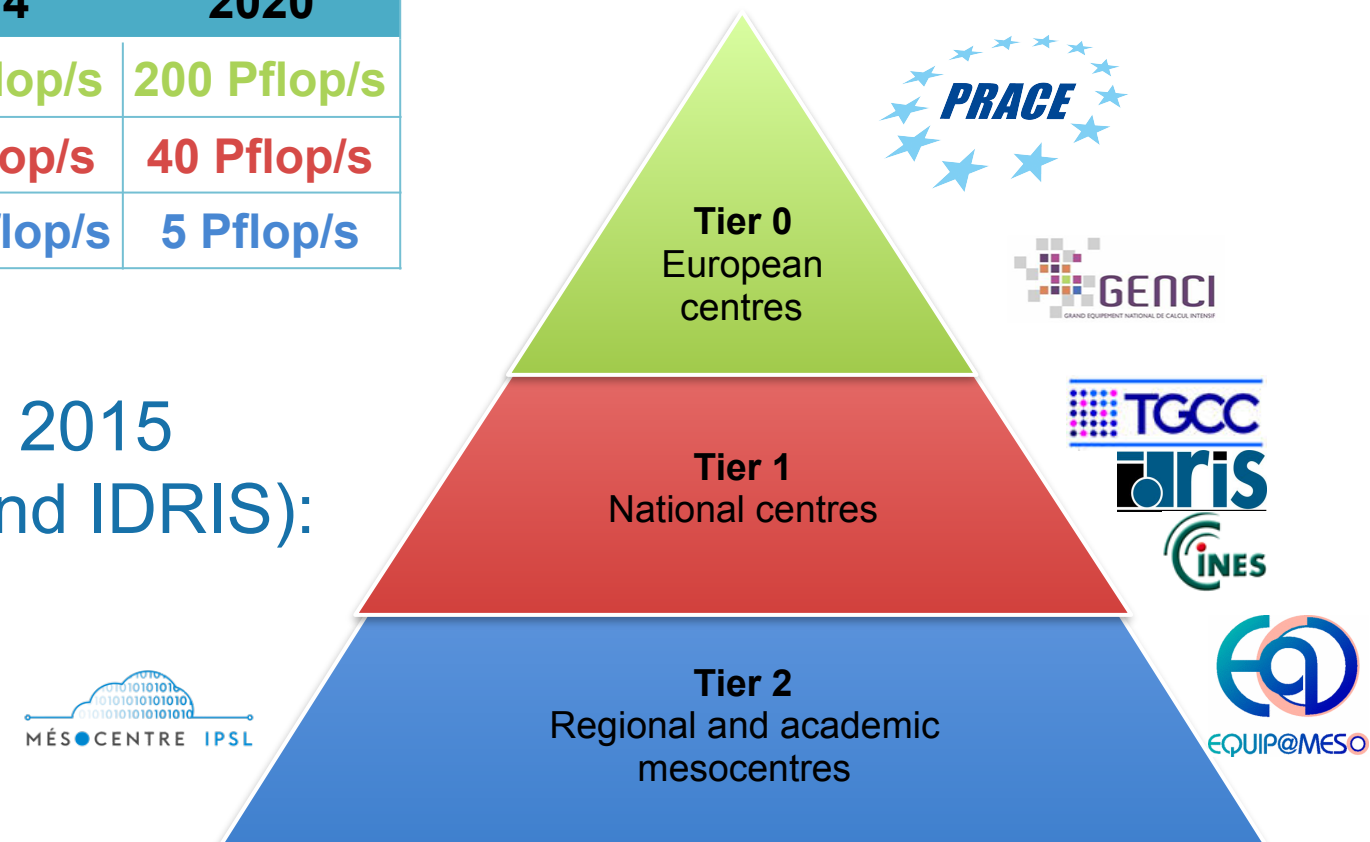
In France, GENCI since 2007: created to make up with the lag of France in the field of intensive computing

- 2008 Representative of France in PRACE
- End of 2014, Consolidated National Ecosystem
 - Overall available power : 5.1 Petaflops
 - 4 supercomputers with complementary architectures: curie, ada, turing, occigen
 - Unique and free access to national means of calculation via 2 calls / year

2007	2014	2020
0 Pflop/s	≈20 Pflop/s	200 Pflop/s
0,02 Pflop/s	5,1 Pflop/s	40 Pflop/s
<0,01 Pflop/s	≈1,5 Pflop/s	5 Pflop/s

And the storage?

- IPSL: 2nd mesocenter on storage in 2015
- CMIP6 GENCI Resources (TGCC and IDRIS):
 - 300 million hours 2016-2018
 - 14Po
 - Of which 2Po distributed by ESGF



A little bit of history

Key dates and statistics:

- 1996: ClimServ/LMD at Polytechnique
- 2003: ClimServ becomes an IPSL service; Shared IPSL datacenter at UPMC
- 2008: CICLAD
- 2014: new generation CICLAD = Climserv / Coordinated software Env.
- 2015: dedicated X-UPMC network interconnection, cross-data access, shared user base
- 2016: UPMC connection at 10 Gb/s
- 2017: common user database and management system

CICLAD cluster at UPMC (Jussieu)



ClimServ at Polytechnique (Palaiseau)



Use cases by IPSL Scientific Poles

IPSL Climate Modeling Center:

- To develop and test the components of the IPSL Global Climate Model
- To analyse the climate simulations (CMIP5/6, CORDEX, etc.)
- To distribute CMIP6 climate simulations

Observations pole:

- To study, develop and validate processing or analysis methods of spatial or in-situ data
- Preparatory work before transfer to national centres (AERIS, ACTRIS, etc.)
- To host and distribute observational database

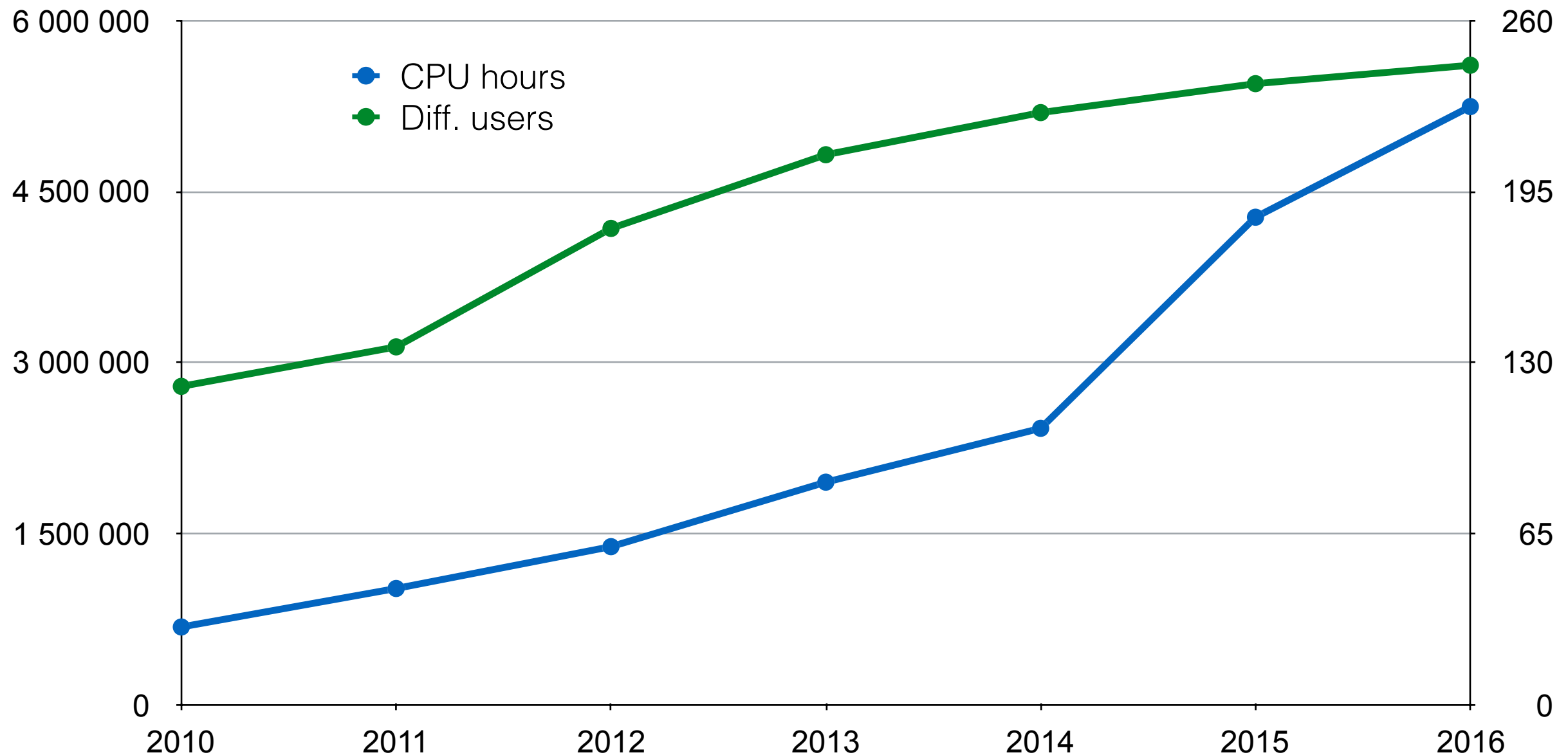
Climates and regional environments pole:

- To host and distribute regional multidisciplinary databases (AMMA, Mistrals, etc.)
- To develop and test the components of the IPSL Regional System Model

Solar system pole:

- To develop and test scientific studies before transferring to National Computing Centres
- To produce numerical simulations of solar wind interactions with Mars, Mercure, Ganymede and Europe

Statistics



2017:

- 2,584,730 CPU hours
- 480,000 jobs
- 730 registered users