Institut Pierre Simon Laplace

Institut de recherche en sciences de l'environnement

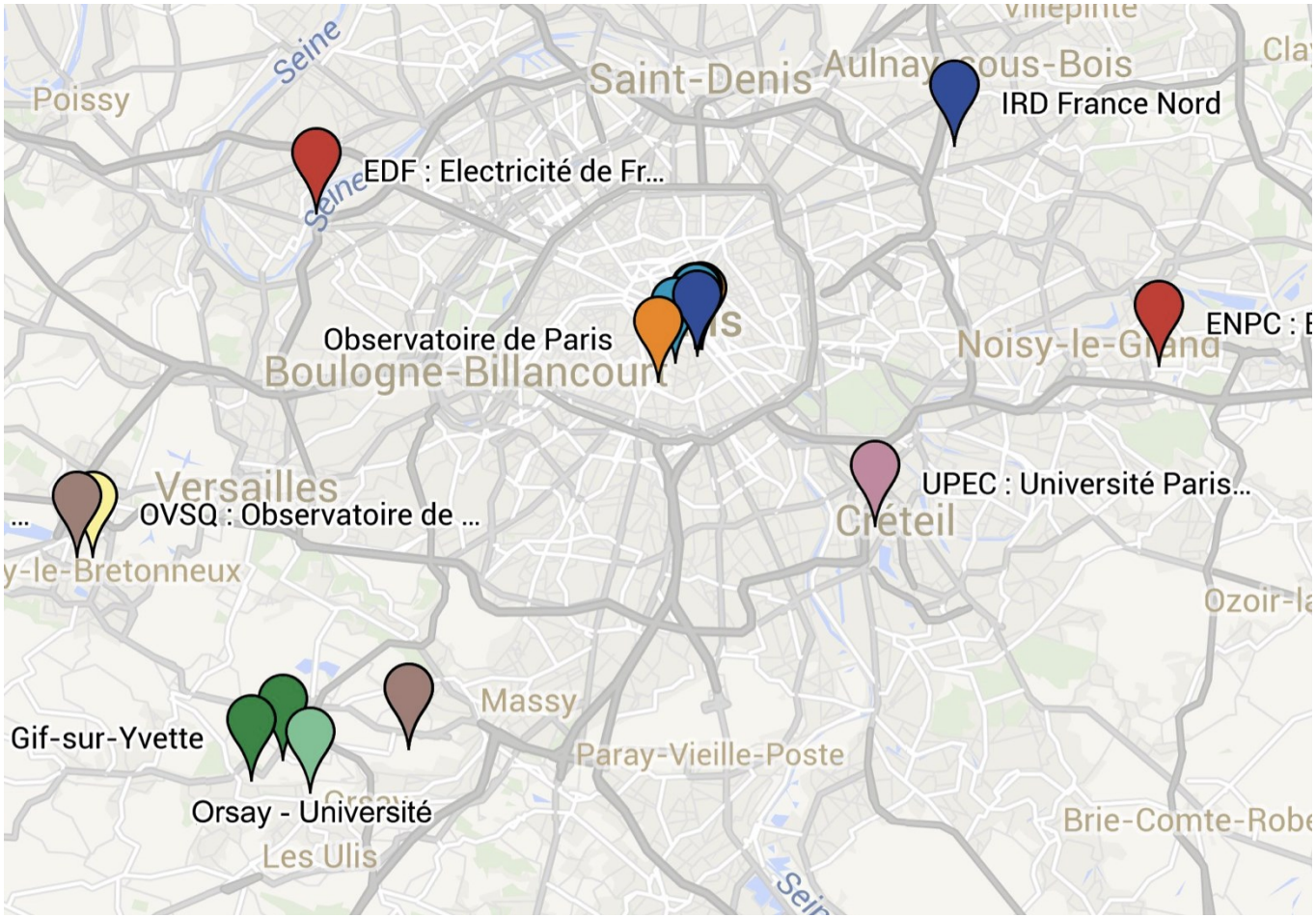
THE INSTITUT PIERRE-SIMON LAPLACE *(IPSL)*

Director: Hervé le Treut
Deputy-directors: Philippe Bousquet, Olivier Boucher, Marie-Alice Foujols, Martial Haeffelin, Nicole Papineau

AN INSTITUTE AT THE SCALE of PARIS BROAD AREA (« Ile de France »)

8 laboratories and 1 team , 14 locations

- Fédération IPSL
- LMD
- LOCEAN
- CEREA
- LATMOS
- LSCE
- GEOPS
- LERMA
- LISA
- METIS



More than 1400 people

WHAT IS THE IPSL ?

The participating laboratories

LATMOS (UVSQ, UPMC, CNRS): Atmospheric chemistry, mesoscale processes, ionospheres and exospheres, comets
LISA (UPEC,CNRS): Atmospheric chemistry, exobiology, spectroscopy
LMD (ENS,UPMC, X,CNRS) : Atmospheric physics and dynamics, climate studies
LOCEAN (UPMC,MNHN, IRD, CNRS) : Physical and biogeochemical studies of the ocean, tropical environments
LSCE (UVSQ, CEA,CNRS) : Paleoclimatology, geochemical cycles, climate studies and impacts
CEREA (EDF, ENPC): Air quality, mathematical methods
IDES (U-Psud, CNRS) : Hydrology, planetary geology, soil physics
METIS (UPMC, CNRS): Hydrology, soil physics and biochemistry, impacts
Atmospheric team of **LERMA** (UPMC,CNRS, Paris Observatory): Spectroscopy

WHAT IS THE IPSL ?

Key scientific themes

Climate change and impacts
Climate key processes
From global to regional environments
Past climates

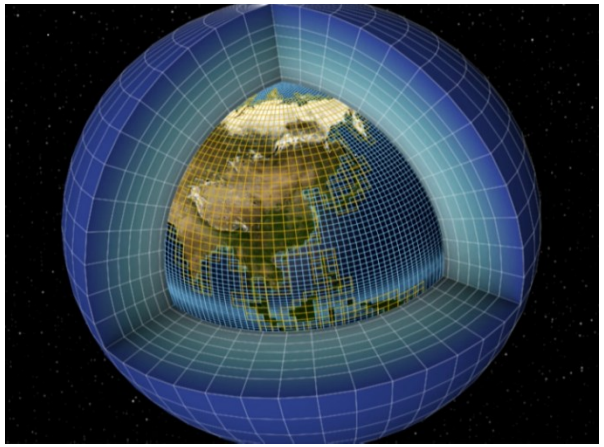
Global biogeochemical cycles: carbon, nitrogen
Air quality and active chemistry within the atmosphere
Biochemistry of the oceans

Planetology/ Solar System (Mars, Venus, Titan)

Instrumental physics (in situ sensors, instrumentation for field campaigns, for space physics)

IPSL also provides platforms to link those physical themes with wider (scientific or societal) issues

IPSL Earth System Model **IPSL-CM**

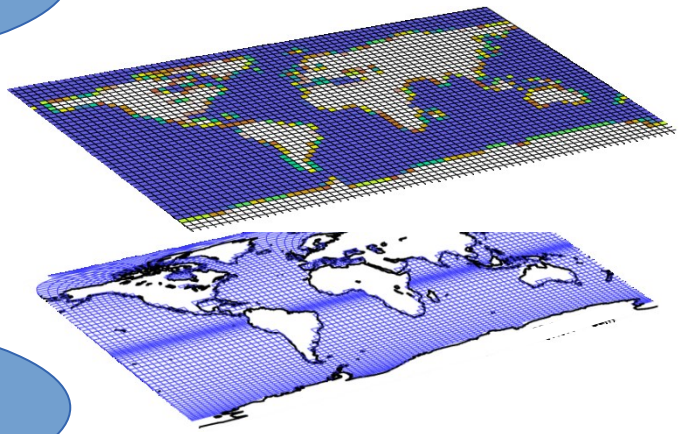


Chemistry & Aerosols
INCA / REPROBUS

Land and vegetation
ORCHIDEE

Atmospheric physics
LMDZ

coupler
OASIS



Oceanic physics
OPA

NEMO

Biogeochmistry
PISCES

Sea Ice
LIM

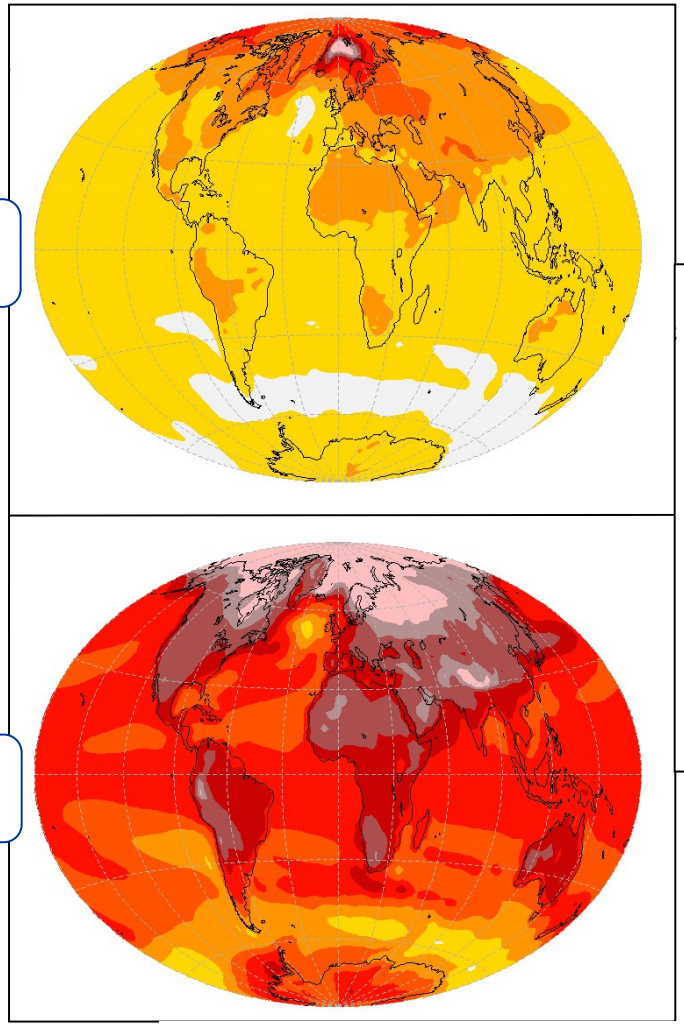
Climate sensitivity: past and future climate

Difference between 2100 and 1990

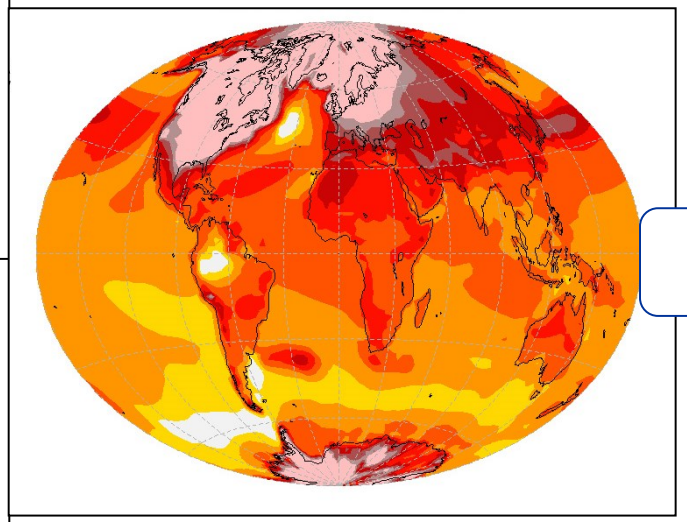
IPSL-CM5A-LR

RCP2.6

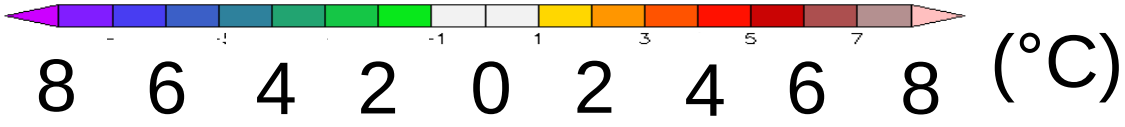
RCP8.5



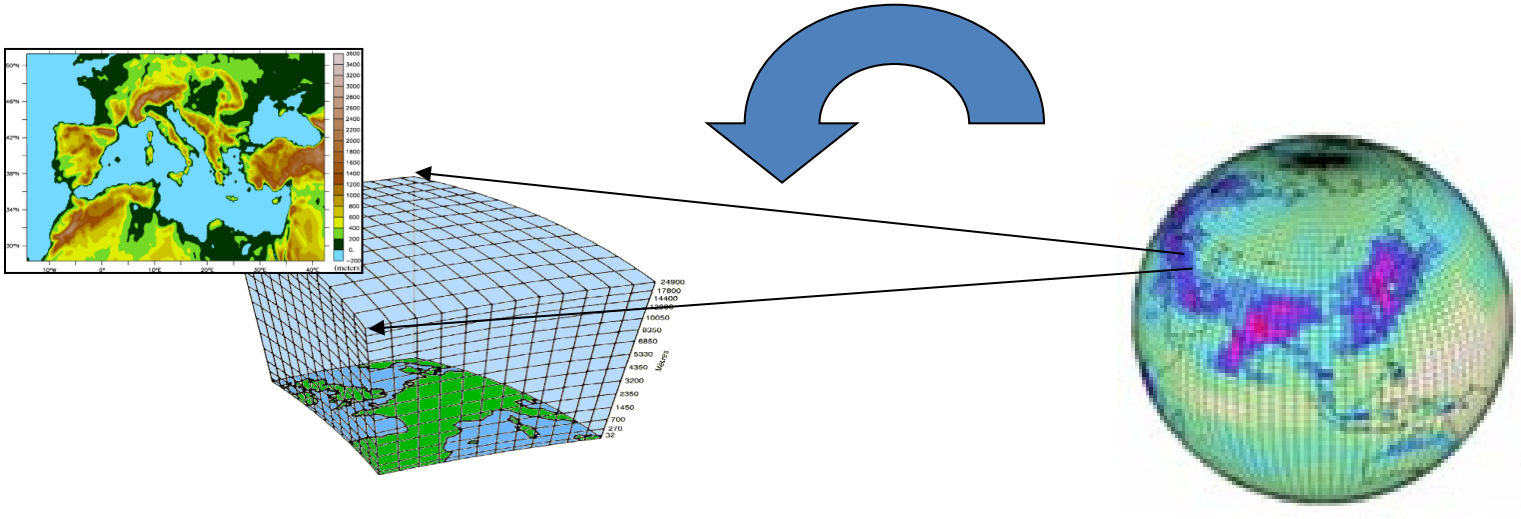
Difference between LGM and preindustrial



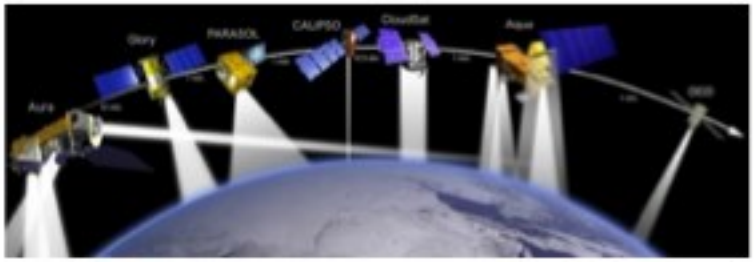
Glacial



Coupled regional model



Projets GIS, DIVERSITAS (CAMBIO), ANR (CHAMPION), FP6 (CIRCE), MERCATOR



EARTH observation at IPSL

In situ measurements (sea, land), ship, airplane, balloon
Observatory
Satellite measurements

- Surfaces
  Oceans
  Boundary layer
  Troposphere
- Stratosphere
- Cryosphere

IPSL involvment in space missions

SOHO
CASSINI HUYGENS
MARS EXPRESS
VENUS EXPRESS
ROSETTA
EVE

MSL (SAM)
EXOMARS
BEPI COLOMBO
(PHEBUS)
EJSM JUICE

DEMETER TARANIS

Météorologie
Meteosat GEOSS..
ADM/ AEOLUS
ATSR-M…

Clouds aerosols Interactions
AIRS,MSU,
Calipso,Cloudsat
Earthcare *Mescal*

UTLS Upper atmosphere
SOLSPEC PICARD
GOMOS ILAS
OISVA SSWUV

Atmospheric chemistry
AIRS MOPITT METOP
IASI NG
Metop Train Live

Precipitations radiative budget
TRMM Megha - Tropiques
ScaraB *GPM Dycept*

Greenhouse gases
GOSAT OCO MERLIN
Microcarb

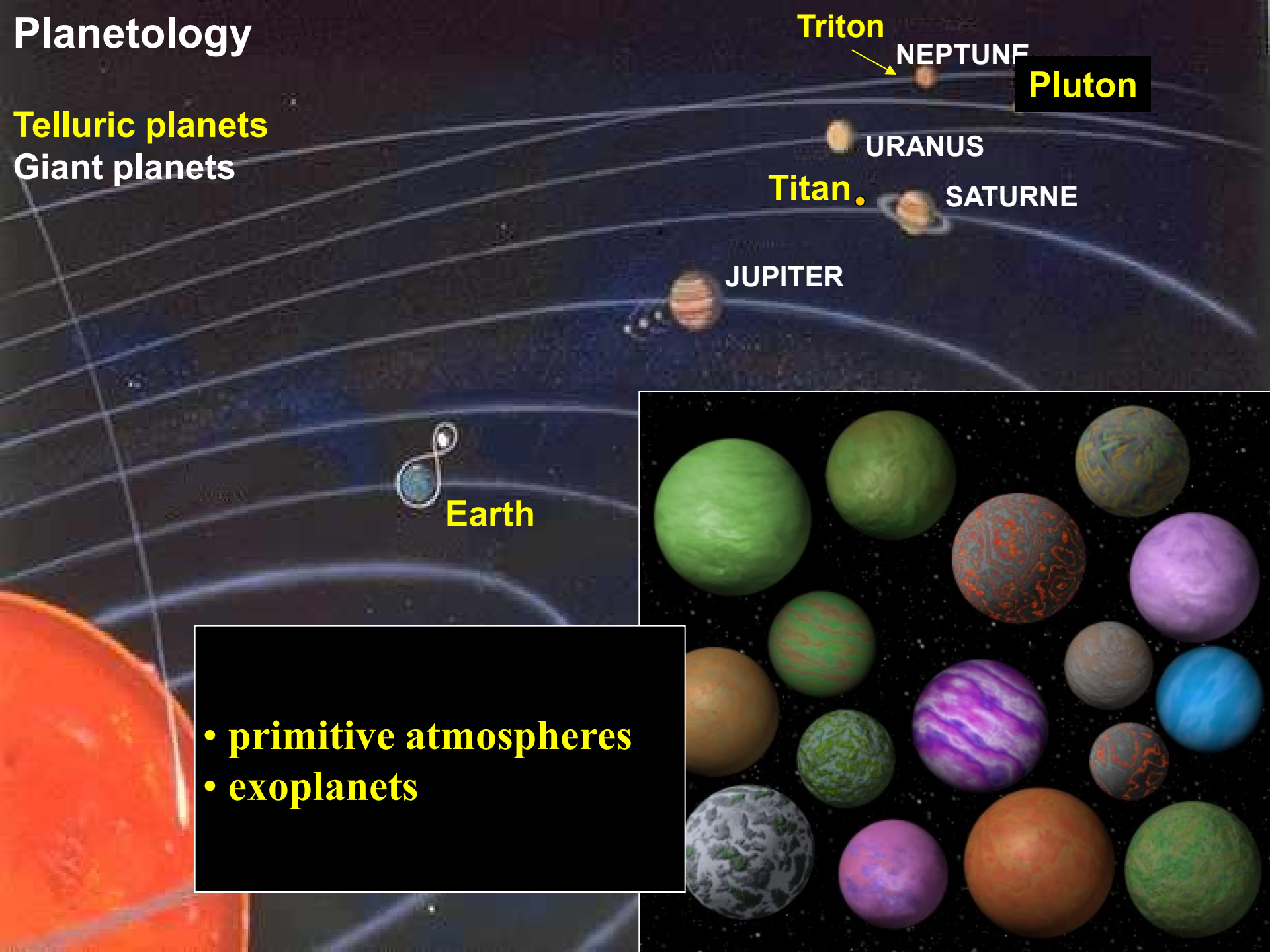
Oceanography
Jason CFOSAT
Sentinelle 2 3
SWOT SMOS

Surface
SMOS BIOMASS
Flex Cool

SIRTA observatory
a node for national and internationa networks

Planetology

Telluric planets
Giant planets



- primitive atmospheres
- exoplanets

- WIFI: eduroam + some wifi connections
- To night