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Barcelona Supercomputing Center
Centro Nacional de Supercomputación

THREDDS training

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What's THREDDS?

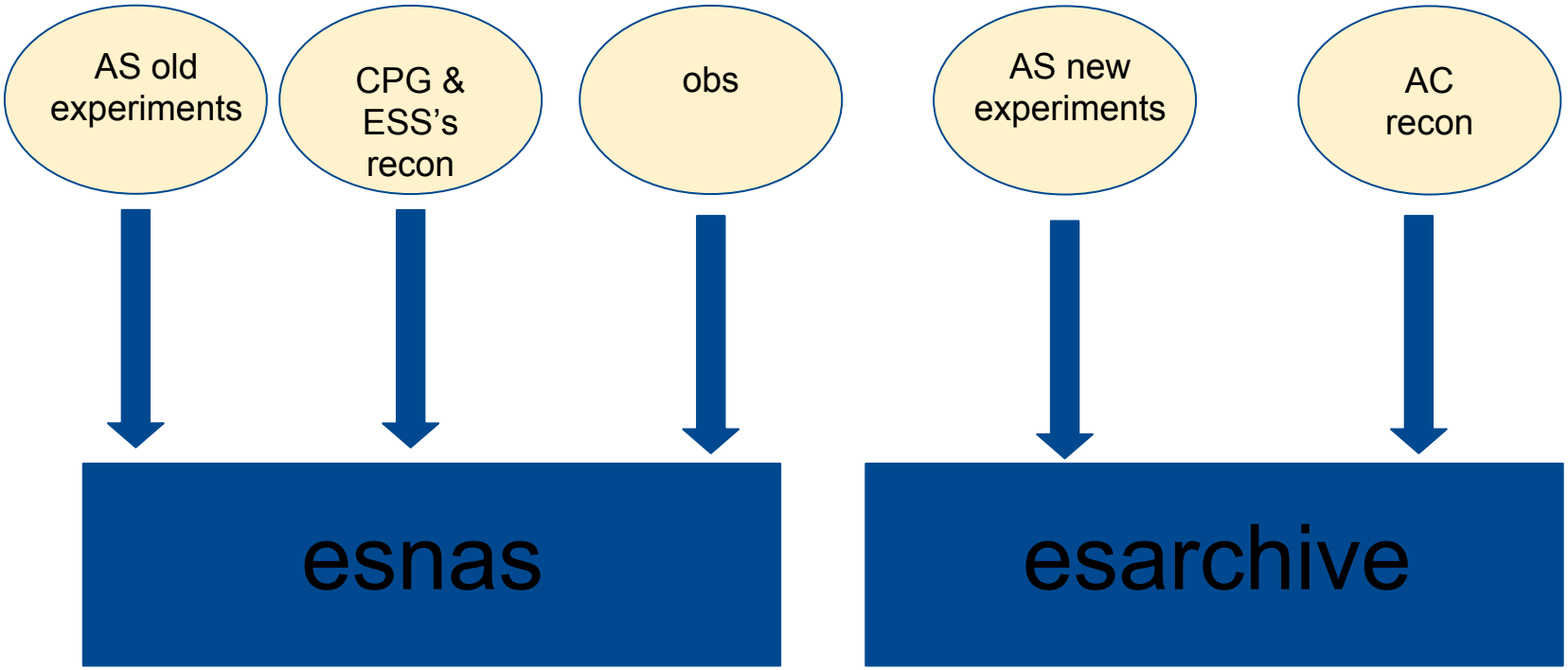
- What is it officially?
  - **T**hematic **R**ealtime **E**nvironmental **D**istributed **D**ata Services.
  - "THREDDS is a tool for serving data using a variety of services. The defaults are OPeNDAP, WMS, and WCS." developed for Earth Sciences by Unidata
- How will you see it?
  - Web interface to our storage

- What does it allow you to do?
  - access data remotely
  - subset without loading all the file
  - aggregate multiple files
  - modify metadata "virtually"

Why THREDDS at ES?

- Usage of 2 different storages (esnas/esarchive)
  - auto-models
  - observations
  - reconstructions

=> need for a transparent access to the data



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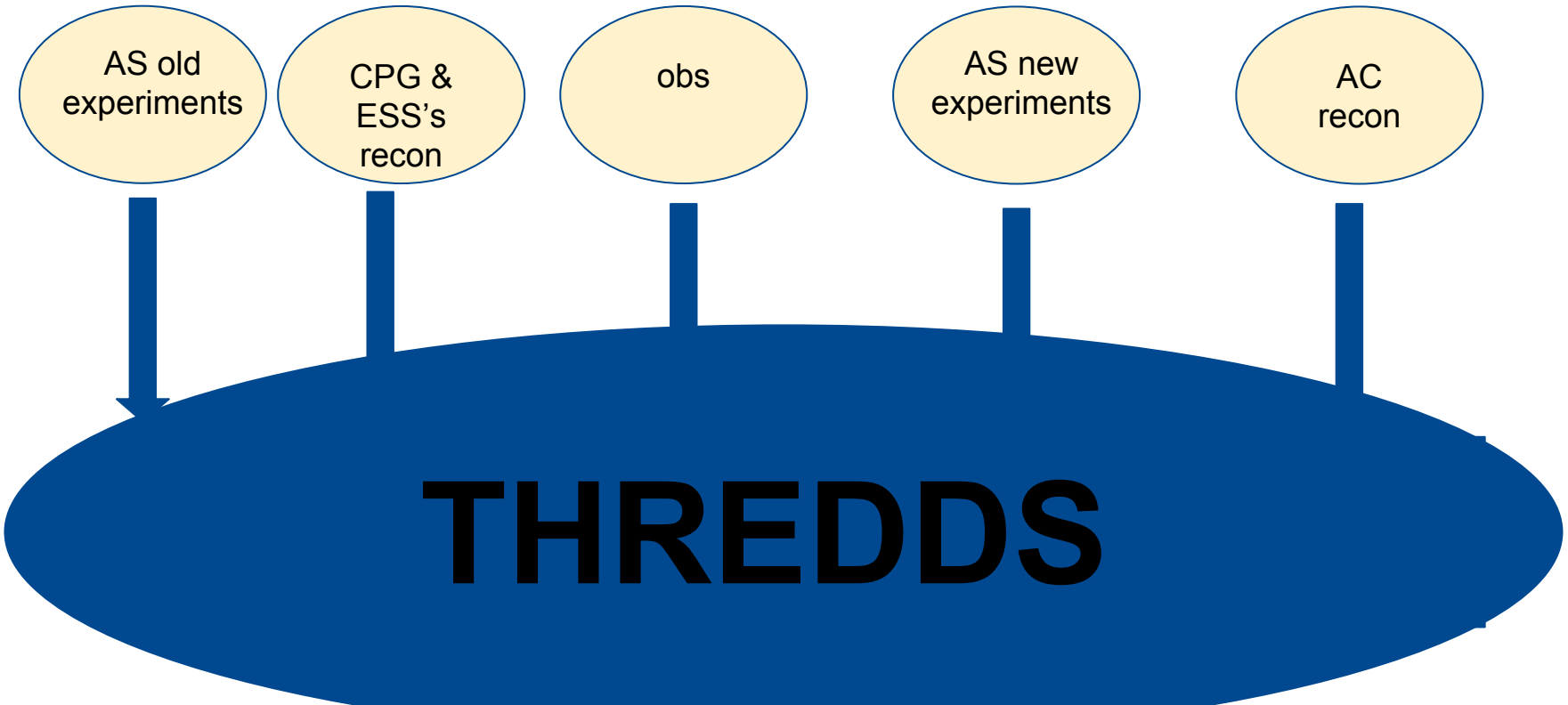


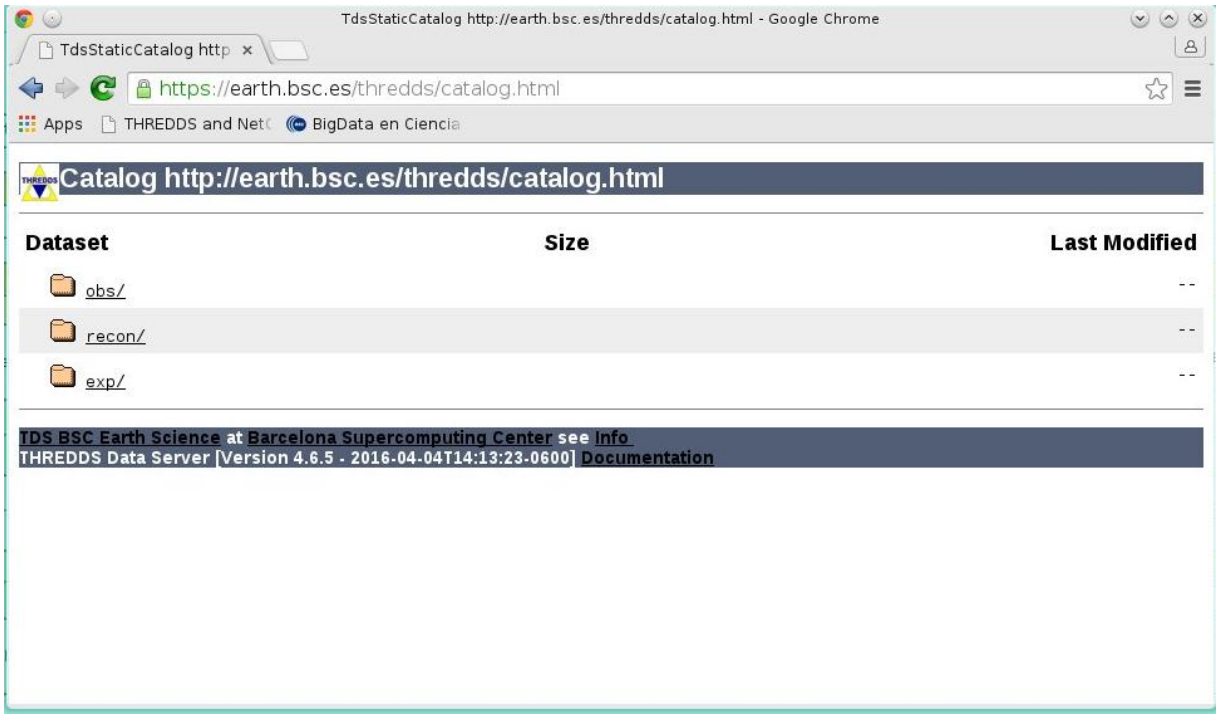
Why THREDDS at ES?

- The new THREDDS ES server will:
  - Improve performance of existing tools
  - Transparently be integrated in the common tools of the department:
    - Ocean diagnostics
    - s2dverification
    - atmospheric_diagnostics
- New Gitlab project to open issues:

  https://earth.bsc.es/gitlab/es/THREDDS

Hands-on session

- Connect to VPN or ibsc wifi
- ssh -X bscearth<num>.int.bsc.es
- Open http://earth.bsc.es/thredds in a web browser



Access to exp

- Building the URL:

Replace “/esnas” by “http://earth.bsc.es/thredds/dodsC/” in your queries:

/esnas/exp/ecmwf/system4_m1/6hourly/tos/tos_20150701.nc

=>

http://earth.bsc.es/thredds/dodsC/exp/ecmwf/system4_m1/6hourly/tos/tos_20150701.nc

Access to exp

Can be used “in a normal way” with cdo, nco, ncview:

- Cdo monmean http://earth.bsc.es/thredds/dodsC/exp/ecmwf/system4_m1/6hourly/tos/tos_20150701.nc $outfile
- ncdump -h http://earth.bsc.es/thredds/dodsC/exp/meteofrance/system4_m1/monthly_mean/vas_f6h/vas_20131201.nc
- ncview http://earth.bsc.es/thredds/dodsC/exp/ecmwf/system4_m1/monthly_mean/tos_f24h/tos_20151201.nc

Access to obs/recon

- Files are aggregated along the time dimension

tas_197901.nc , tas_197902.nc, … , tas_201608.nc
-> tas.nc

ncdump -h
http://earth.bsc.es/thredds/dodsC/obs/ukmo/hadslp_v2/monthly_mean/psl.nc

- Subsetting: add at the end of the URL the variables/subset you need:

?var[d1_start:incr:d1_end][d2_start:incr:d2_end][d3_start:incr:d3_end]

ncview
http://earth.bsc.es/thredds/dodsC/recon/mercator/glorys2_v1/monthly_mean/sit.nc?lon[0:1:359],sit[0:1:20][0:1:175][0:1:75]

www.bsc.es

Thank you!

For further information please contact
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Explanation about aggregation

- For observations and reconstructions, files are aggregated along the time dimension

tas_197901.nc , tas_197902.nc, … , tas_201608.nc
-> tas.nc

- For experiments, files are presented as in esnas:

tas_19790101.nc , tas_19790201.nc, … , tas_20160801.nc
because the date in the name of the file is the start date and the leadtimes are already aggregated in the file

How to generate browser URLs

- Obs & recon:

http://earth.bsc.es/thredds/catalogs_time/recon/$institute_id/catalog-recon-institute_id.html

http://earth.bsc.es/thredds/catalogs_time/obs/$institute_id/$institute/catalog-recon-$institute_id-$model.html

http://earth.bsc.es/thredds/dodsC/recon/$institute_id/$institute/$freq/$var.nc.html

- Exp:

http://earth.bsc.es/thredds/catalog/exp/$model/$expid/$freq/$var/catalog.html

http://earth.bsc.es/thredds/dodsC/exp/$model/$expid/$freq/$var/$file.html