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## Data Publishing

### Configuring CORDEX project for ESGF publication

In order to publish, you have to configure a text file, `/esg/config/esgset/esg.ini`. For this propose, we are going to create a new project called `cordex`:

```
[project:cordex]
categories =
    project          | enum | true | true | 0
    domain           | enum | true | true | 1
    institute        | enum | true | true | 2
    product          | enum | true | true | 3
    driving_model    | enum | false | true | 4
    experiment       | enum | false | true | 5
    ensemble         | enum | false | true | 6
    model            | enum | false | true | 7
    time_frequency   | enum | false | true | 8
    version          | enum | false | true | 9
    rcm_model        | enum | false | true | 10
    rcm_version      | enum | false | true | 11
    description      | text | false | false | 99

category_defaults =
    domain | EUR-44
    institute | UCAN
    driving_model | ECMWF-ERAINT
    ensemble | rlilp1
    time_frequency | mon
    experiment | evaluation
    model | WRF331G
    product | output

model_map = map(project,rcm_model : model)
cordex| AUTH-LHTEE-WRF321B| WRF321B
cordex| AUTH-Met-WRF331A| WRF331A
cordex| AWI-HIRHAM5| HIRHAM5
cordex| BCCR-WRF331C| WRF331C
cordex| CCCma-CanRCM4| CanRCM4
cordex| CHMI-ALADIN52| ALADIN52
cordex| CLMcom-CCLM4-8-17| CCLM4-8-17
cordex| CNRM-ALADIN52| ALADIN52
cordex| CNRM-ARPEGE52| ARPEGE52
cordex| CRP-GL-WRF331A| WRF331A
cordex| CUNI-RegCM4-2| RegCM4-2
cordex| DHMZ-RegCM4-2| RegCM4-2
cordex| DMI-HIRHAM5| HIRHAM5
cordex| ENEA-RegCM4-3| RegCM4-3
cordex| HMS-ALADIN52| ALADIN52
cordex| ICTP-RegCM4-3| RegCM4-3
cordex| IDL-WRF331D| WRF331D
cordex| IPSL-INNERIS-WRF331F| WRF331F
cordex| KNMI-RACMO21P| RACMO21P
cordex| KNMI-RACMO22T| RACMO22T
cordex| KNMI-RACMO22E| RACMO22E
cordex| MIUB-WRF331A| WRF331A
cordex| MOHC-HadGEM3-RA| HadGEM3-RA
cordex| MOHC-HadRM3P| HadRM3P
cordex| MPI-CSC-REMO2009| REMO2009
cordex| NUIM-WRF331F| WRF331F
cordex| SMHI-RCA4| RCA4
cordex| SMHI-RCA4-SN| RCA4-SN
```

```

cordex | SMHI-RCAO | RCAO
cordex | SMHI-RCAO-SN | RCAO-SN
cordex | UCAN-WRF331G | WRF331G
cordex | UCAN-WRF350I | WRF350I
cordex | UCLM-PROMES | PROMES
cordex | UHOH-WRF331H | WRF331H
cordex | UQAM-CRCM5 | CRCM5
domain_map = map(project_id, domain : domain_description)
cordex | SAM-44 | South America
cordex | CAM-44 | Central America
cordex | NAM-44 | North America
cordex | EUR-44 | Europe
cordex | EUR-22 | Europe
cordex | AFR-44 | Africa
cordex | WAS-44 | West Asia
cordex | EAS-44 | East Asia
cordex | CAS-44 | Central Asia
cordex | AUS-44 | Australasia
cordex | ANT-44 | Antarctica
cordex | ARC-44 | The Arctic
cordex | MED-44 | HYMEX Mediterranean
cordex | EUR-11 | High-res. Europe
cordex | SAM-44i | South America
cordex | CAM-44i | Central America
cordex | NAM-44i | North America
cordex | EUR-44i | Europe
cordex | AFR-44i | Africa
cordex | WAS-44i | West Asia
cordex | EAS-44i | East Asia
cordex | CAS-44i | Central Asia
cordex | AUS-44i | Australasia
cordex | ANT-44i | Antarctica
cordex | ARC-44i | The Arctic
cordex | MED-44i | HYMEX Mediterranean
cordex | EUR-11i | High-res. Europe
cordex | MNA-44 | Middle East and North Africa
cordex | MNA-44i | Middle East and North Africa
cordex | MNA-22 | Middle East and North Africa
cordex | MNA-22i | Middle East and North Africa
domain_options = SAM-44,CAM-44,NAM-44,EUR-44,EUR-22,EUR-44i,AFR-44,AFR-44i,WAS-44,EAS-44,CAS-44,AUS-44,ANT-44,ARC-44,MED-44,
driving_model_options = ERAINT, ECMWF-ERAINT, CCCma-CanESM2, CNRM-CERFACS-CNRM-CM5, ICHEC-EC-EARTH, MIROC-MIROC5, MOHC-Had
ensemble_options = r1i1p1, r12i1p1, r0i1p0
product_options = output1, output2, output
experiment_options =
    cordex | evaluation | no description
    cordex | historical | no description
    cordex | rcp4 | no description
    cordex | rcp26 | no description
    cordex | rcp45 | no description
    cordex | rcp85 | no description
institute_map = map(project_id,model : institute)
cordex | WRF331G | UCAN
institute_options = UCAN
las_configure = false
las_time_delta_map = map(time_frequency : las_time_delta)
    mon | 1 month
    day | 1 day
    fx | fixed
    sem | semi
maps = institute_map, las_time_delta_map, domain_map
model_options = WRF331G

```

```

parent_id = wdcc2.cordex
project_handler_name = basic_builtin
rcm_model_options = UCAN-WRF331G
rcm_version_options = v01,v02
thredds_exclude_variables = a, a_bnds, alev1, alevel, alevhalf, alt40, b, b_bnds, basin, bnds, bounds_lat, bounds_lon, dbz
time_frequency_options = day,fx,mon,sem,3hr,6hr
variable_locate = clivi, clivi_| clt, clt_| evspsbl, evspsbl_| hfls , hfls_| hfss , hfss_| hus850 , hus850_| huss , huss
variable_per_file = true
version_options = 20140328
model= WRF331G

dataset_id = cordex.%(product)s.%(domain)s.%(institute)s.%(driving_model)s.%(experiment)s.%(ensemble)s.%(model)s.%(rcm_version)s
directory_format = /datasets/cordex-noncommercial/cordex/%(product)s/%(domain)s/%(institute)s/%(driving_model)s/%(experiment)s/%(ensemble)s/%(model)s/%(rcm_version)s

```

Therefore, if you use the above configuration file, you will have to create a tree directory like this:

```

[root@data ~]# tree /datasets/
/datasets/
|-- cordex-noncommercial
    |-- cordex
        |-- output
            |-- EUR-22
                |-- UCAN
                    |-- ECMWF-ERAINT
                        |-- evaluation
                            |-- rlilpl
                                |-- UCAN-WRF331G
                                    |-- v02
                                        |-- 3hr
                                            |-- clivi
                                                |-- v20140328
                                                    |-- clt
                                                        |-- v20140328
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1979
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1980
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1981
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1982
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1983
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1984
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1985
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1986
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1987
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1988
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1989
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1990
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1991
                                                            |-- clt_EUR-22_ECMWF-ERAINT_evaluation_rlilpl_UCAN-WRF331G_v02_3hr_1992

```

Then you have to add the project name to the `esgcat_models_table.txt` file

```
$ echo "cordex | WRF331G | UCAN | http://meteo.unican.es" >> /esg/config/esgcat/esgcat_models_table.txt
```

After modifying `esgcat_models_table.txt` and `esg.ini` files, you have to update the data base by executing :

```
$ cd /usr/local/uvcdat/1.4.0/bin/
$ ./esginitialize -i /esg/config/esgcat/esg.ini -c
```

To remove all tables : `esginitialize -d 0`

## Using the ESGF Publisher

This takes place in three steps:

- Scan each file for metadata and save the metadata in the node database. (This is in contrast to running `esgscan_directory`, which just scans the directory structure.)
- Generate a THREDDS catalog based on the scanned information. THREDDS is a data and metadata server used by ESGF.
- Notify the idx that one or more catalogs have been generated.

### File Scan Phase

In order to scan the cordex files for metadata, run `esgscan_directory` to generate a mapfile and after that run `esgpublish` with input from a mapfile:

```
$ whoami
root
$ cd /usr/local/uvcdat/1.4.0/bin
$ esgscan_directory -i /esg/config/esgset/esg.ini --project cordex -o ~/cordex_v20140328.txt /datasets
$ sudo ./esgpublish -i /esg/config/esgset/esg.ini --map ~/cordex.txt
```

In order to check that the datasets were entered correctly into the database, list the datasets for cordex project:

```

$ ./esglist_datasets -i /esg/config/esgset/esg.ini cordex
+-----+-----+-----+-----+-----+-----+
| id | name                                                                                               | project | model  | experiment | run  |
+-----+-----+-----+-----+-----+-----+
| 1  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.hf1s | cordex  | WRF331G | evaluation | Non  |
| 2  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.hfss | cordex  | WRF331G | evaluation | Non  |
| 3  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.huss | cordex  | WRF331G | evaluation | Non  |
| 4  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.pr  | cordex  | WRF331G | evaluation | Non  |
| 5  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.prc  | cordex  | WRF331G | evaluation | Non  |
| 6  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.ps   | cordex  | WRF331G | evaluation | Non  |
| 7  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.rlds  | cordex  | WRF331G | evaluation | Non  |
| 8  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.rsds  | cordex  | WRF331G | evaluation | Non  |
| 9  | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.sfcWind | cordex  | WRF331G | evaluation | Non  |
| 10 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.3hr.tas   | cordex  | WRF331G | evaluation | Non  |
| 11 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.6hr.mrros | cordex  | WRF331G | evaluation | Non  |
| 12 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.6hr.uas   | cordex  | WRF331G | evaluation | Non  |
| 13 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.6hr.vas   | cordex  | WRF331G | evaluation | Non  |
| 14 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.day.mrso  | cordex  | WRF331G | evaluation | Non  |
| 15 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.day.pr    | cordex  | WRF331G | evaluation | Non  |
| 16 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.day.sfcWindmax | cordex  | WRF331G | evaluation | Non  |
| 17 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.day.tasmax | cordex  | WRF331G | evaluation | Non  |
| 18 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.day.tasmin | cordex  | WRF331G | evaluation | Non  |
| 19 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.mon.pr    | cordex  | WRF331G | evaluation | Non  |
| 20 | cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.r1i1p1.WRF331G_v02.mon.tas   | cordex  | WRF331G | evaluation | Non  |
+-----+-----+-----+-----+-----+-----+

```

In order undo the scan, run `esgunpublish` with the following flags:

```
$ esgunpublish -i /esg/config/esgset/esg.ini --skip-gateway --skip-thredds --database-delete --map ~/cordex_v20140328.txt
```

### Generate a THREDDS catalog

You can generate the THREDDS catalog with :

```

$ sgpublish -i /esg/config/esgset/esg.ini --project cordex --map ~/cordex_v20140328.txt --noscan --thredds
INFO      2013-11-19 19:46:30,642 Writing THREDDS catalog /esg/content/thredds/esgset/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
INFO      2013-11-19 19:46:30,837 Writing THREDDS catalog /esg/content/thredds/esgset/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e

```

```
INFO      2013-11-19 19:46:31,019 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
INFO      2013-11-19 19:46:31,198 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
INFO      2013-11-19 19:46:31,536 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
.....
```

In order to remove the catalogs from the THREDDS :

```
$ esgunpublish -i /esg/config/esgcet/esg.ini --map ~/cordex_v20140328.txt --skip-gateway
```

### idx notification

First, obtain a digital certificate from an ESGF trusted MyProxy server, and rename it to whatever path you have defined in esg.ini.

Remember, you have to log in a Federation to do it.

```
$ /usr/local/globus/bin/myproxy-logon -s esgf-node.ipsl.fr -l josecarlosblanco -o ~/.globus/certificate-file
```

Then you can publish the cordex catalog by executing :

```
$ sudo ./esgpublish -i /esg/config/esgcet/esg.ini --project cordex --map ~/cordex_v20140328.txt --noscan --publish
INFO      2013-11-19 20:01:24,817 Publishing: cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.rlilpl.WRF331G_v02.3hr.hfls
INFO      2013-11-19 20:01:28,678      Result: SUCCESSFUL
INFO      2013-11-19 20:01:28,678 Publishing: cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.rlilpl.WRF331G_v02.3hr.hfss
INFO      2013-11-19 20:01:32,416      Result: SUCCESSFUL
INFO      2013-11-19 20:01:32,417 Publishing: cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.rlilpl.WRF331G_v02.3hr.huss
INFO      2013-11-19 20:01:36,125      Result: SUCCESSFUL
INFO      2013-11-19 20:01:36,125 Publishing: cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.rlilpl.WRF331G_v02.3hr.pr
INFO      2013-11-19 20:01:39,964      Result: SUCCESSFUL
INFO      2013-11-19 20:01:39,965 Publishing: cordex.EUR-22.UCAN.ECMWF-ERAINT.evaluation.rlilpl.WRF331G_v02.3hr.prc
```

Use esgunpublish to delete idx datasets:

```
$ ./esgunpublish -i /esg/config/esgcet/esg.ini --map ~/cordex_v20140328.txt --skip-thredds
```

### Running all publication steps

For convenience, the full publication can be performed with one command. Also, if the arguments are directories rather than a mapfile, the directories will be scanned as if esgscan\_directory were run:

```
$ esgpublish -i /esg/config/esgcet/esg.ini --project cordex --map ~/cordex_v20140328.txt --thredds --publish
INFO      2013-11-19 19:46:30,642 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
INFO      2013-11-19 19:46:30,837 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
INFO      2013-11-19 19:46:31,019 Writing THREDDS catalog /esg/content/thredds/esgcet/1/cordex.EUR-22.UCAN.ECMWF-ERAINT.e
```

esgunpublish will remove the datasets from the idx, THREDDS, and node database in that order:

```
$ esgpublish -i /esg/config/esgcet/esg.ini --database-delete --map ~/cordex_v20140328.txt
```

### Access files

Finally, in order to grant access to the files you need to add the lines below :

```
<policy resource=".*cordexnoncommercial.*" attribute_type="CORDEX_Research" attribute_value="user" action="Read"/>
<policy resource=".*view.*" attribute_type="CORDEX_Research" attribute_value="user" action="Read"/>
<policy resource=".*cordex.*" attribute_type="wheel" attribute_value="super" action="Write"/>
```

in your esgf\_policies\_local.xml file :

```

cat /esg/config/esgf_policies_local.xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<!-- This file is intended to be edited and maintained by the local Node administrators.
      It should contain only policies specific to data served by the local Node.
      It will not be overridden by a software update. -->
<policies xmlns="http://www.esgf.org/security">

  <!-- The following statements allow all members of group "CMIP5 Research" or "CMIP5 Commercial" to read any local URL t
        Note that the groups "CMIP5 Research" and "CMIP5 Commercial" are administered by PCMDI -->
  <!-- <policy resource=".*cmip5.*" attribute_type="CMIP5 Research" attribute_value="user" action="Read"/> -->
  <!-- <policy resource=".*cmip5.*" attribute_type="CMIP5 Commercial" attribute_value="user" action="Read"/> -->
  <!-- These statements provide CMIP5 Read access for members of the old gateways -->
  <!-- <policy resource=".*cmip5.*" attribute_type="CMIP5 Research" attribute_value="default" action="Read"/> -->
  <!-- <policy resource=".*cmip5.*" attribute_type="CMIP5 Commercial" attribute_value="default" action="Read"/> -->

  <!-- The following statement allows all members of group "MY GROUP" to read any local URL that contains "my_data"
  <policy resource=".*my_data.*" attribute_type="MY GROUP" attribute_value="user" action="Read"/> -->

  <!-- The following statement allows members of group "MY GROUP" with role="publisher" to publish local datasets with id
  <policy resource=".*my_data.*" attribute_type="MY GROUP" attribute_value="publisher" action="Write"/> -->

  <!-- The following statements makes resources that contain '.*test.*' freely available for download -->
  <!-- <policy resource=".*test.*" attribute_type="ANY" attribute_value="" action="Read"/> -->

  <!-- The following statements makes all resources freely available for download -->
  <!-- <policy resource=".*" attribute_type="ANY" attribute_value="" action="Read"/> -->
  <policy resource=".*cordexnoncommercial.*" attribute_type="CORDEX_Research" attribute_value="user" action="Read"/>
  <policy resource=".*view.*" attribute_type="CORDEX_Research" attribute_value="user" action="Read"/>
  <policy resource=".*cordex.*" attribute_type="wheel" attribute_value="super" action="Write"/>
</policies>

```

Finally , you have to restart the services :

```
$ esg-node --restart
```

v20140328