CLIPC DRS for Climate Impact Indicators

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Introduction

This document details the data reference syntax (DRS) for the climate impact indicators for the Climate Information Platform for Copernicus (CLIPC) project. The DRS consists of a number of facets that represent specific attributes from the CLIPC metadata standard. The facets should be thus associated to corresponding attribute names. In this way, we facilitate tracking of potential changes and allows consistency in facetted search through publication in ESGF (Earth System Grid Federation) within the portal.

Since climate impact indicators may be calculated from either climate model data or observational data, the DRS for climate impact indicators are non-trivial to construct. The approach taken here details two DRS one for model (or reanalysis) derived indicators and one for observationally derived indicators.

For the purposes of the CLIPC project the following DRS has been agreed. All those producing, tier 1, 2, or 3 climate impact indicators should follow the DRS conventions detailed below. It is hoped that this DRS will be useful beyond the scope of CLIPC however given the complexities involved in compiling the climate impact indicators DRS it is possible to further refine these in the future.

Section 1 lists all the facets of climate impact indicator DRS, section 2 shows how to construct a climate impact indicator dataset DRS and section 3 shows how to construct a climate impact indicator filename DRS. Example dataset and filename DRS are shown in sections 2 and 3 respectively as a guide.

1. Facets for climate impact indicators DRS

The table below lists all the facets used to construct the climate impact indicator dataset and filename DRS. The facets used for model derived indicators closely follows the DRS used in CORDEX, however the CORDEX standard is not entirely flexible enough to cover the needs of the climate impact indicator community therefore some facets are optional or are not constrained in the same way as CORDEX (see table for full details). For observationally derived indicators the DRS is similar to the DRS used in the ESA Climate Change Initiative (CCI) that has been developed as part of CLIPC. The table indicates where facets are optional either in the dataset or filename and whether the facet value is fixed, i.e. to be selected from a controlled vocabulary or can be constructed freely.

NOTE: Some variables eg. growing season length has multiple competing definitions. The definition should be given in the global attributes and these should be given individual records in Luis's database.

			Optional	
Facet Name	**Usage**	**Fixed or flexible**	**Dataset**	**Filename**
activity	CLIPC	Fixed		
product	gcm-, rcm-, reanl-, obs-derived	Fixed		
package	Software package used to generate the climate indicator, e.g. icclim	Fixed		
domain	Preference is to use CORDEX domain names. This may not be flexible enough to cover all possibilities for impact indicators. Therefore, a sensible alternative maybe used, if this is the case it should be clearly stated in the global attributes of the file. Alternatively, a lat/lon bounding box may also be used.		✓	✓
institution	Institution or organisation that generated the data. Where data has been generated through a multi-institutional collaboration, the lead institution should take precedence and others listed in the global attribtues.			
GCMModelName	Name of model used to derive the index, this may be a driving model in the case of indicators calculated from regional models. Conventions for this facet should follow that of the program (i.e. CMIP5 or CORDEX) used to derive the indicator.	Fixed		
CMIP5ExperimentName	CMIP5 experiment name	Fixed		
CMIP5EnsembleMember	CMIP5 ensemble reference number	Fixed		
RCMName	Regional climate model name	Fixed	✓	✓
RCMVersionID	Regional climate model version id	Fixed	✓	✓
ObservationDataset	Reference name of observational dataset, e.g. cci-sst, HadCRUT4. Alternatively this could be the name of an instrument or platform.			
frequency	Temporal frequency of output following CMIP5 conventions	Fixed		
Reference_period	Baseline reference period over which the indicator is calculated. It should be supplied in the format YYYY-YYYY; use “na” if not applicable	Fixed		✓
VariableName	Climate indicator acronym	Fixed		
version	ESGF version at the dataset level	Fixed		
model	Model name, could be global, regional or a reanalysis product	Fixed		
IndicatorRealisation	Additional facet for flexibility to allow for potential future variations. The form is not fixed it could be used e.g. v1 or r1			✓
StartTime-EndTime	Temporal range of output: YYYYMMDD-YYYYMMDD		✓	
tile-nnnnn	Tile for indicator, the coordinates of the tile should be well specified within the attributes of the file and it should be uniquely numbered	Fixed		

2. Dataset DRS proposal

Model-based indices:
<activity>.<product>.<package>.<Institution>.<GCMModelName>.<CMIP5ExperimentName>.<CMIP5EnsembleMember>.[<RCMName>.<RCMVersionID>.<domain>.]<Frequency>.<reference_period>.<VariableName>.<version>

Examples:
clipc.gcm-derived.icclim.SMHI.EC-EARTH.historical.r1i1p1.yr.na.cdd.v20141010

A CORDEX example:
clipc.rcm-derived.icclim.SMHI.ICHEC-EC-EARTH.historical.r1i1p1.SMHI-RCA4.EUR-11.yr.na.cdd.v20141010

Observation-based indices:
<activity>.<product>.<package>.<domain>.<Institution>.<ObservationDataset>.<Frequency>.<reference_period>.<VariableName>.<version>

Example:
clipc.obs-derived.icclim.EUR.SMHI.EOBS10.yr.na.cdd.c20150101

3. Filename DRS proposal

Model-based indices:
<VariableName>_<package>_<institution>_<model>_<CMIP5ExperimentName>_<CMIP5EnsembleMember>[-IndicatorRealisation][_<RCMModelName>_<RCMVersionID>_<domain>]_<Frequency>_<StartTime-EndTime>[--<reference_period>][_tile-nnnnn].nc

Observation-based indices:
<VariableName>_<package>_<institution>_<ObservationDataset>_<frequency>_<StartTime-EndTime>[--<reference_period>][_tile-nnnnn].nc