

Identification\_Information:

Citation:

Citation\_Information:

Originator: Commission for Environmental Cooperation

Publication\_Date: 2021

Title: North American Mangroves Distribution

Geospatial\_Data\_Presentation\_Form: Vector digital data

Publication\_Information:

Publication\_Place: Montréal, Québec, Canada

Publisher: Commission for Environmental Cooperation

Online\_Linkage: <http://www.cec.org/north-american-environmental-atlas/>

Description:

Abstract:

The extent of Mangroves in North America was estimated by combining datasets from different sources using different methods. These include global and national datasets that were generated from remote sensed imagery. The current dataset serves as an updated of the previously North American Mangroves distribution map published by the Commission for Environmental Cooperation in 2016.

Commission for Environmental Cooperation (CEC). 2016. "North American Blue Carbon". Ed. 1.0, Vector digital data [1:10,000,000]. Available at <http://www.cec.org/tools-and-resources/map-files/north-american-blue-carbon-2017> CEC. 2016. North America's Blue Carbon: Assessing Seagrass, Salt Marsh and Mangrove Distribution and Carbon Sinks. Montreal, Canada: Commission for Environmental Cooperation. 54 pp. Available at <http://www3.cec.org/islandora/en/item/11664-north-america-s-blue-carbon-assessing-seagrass-salt-marsh-and-mangrove-en.pdf>

A) Datasets used in the North American 2021 Mangroves Distribution Map. A more detailed description of all the datasets used, as well as the preprocess performed to extract Mangroves information is available in the accompanying document "Blue Carbon Map source data notes 2021.docx".

*MG\_01 Global Distribution of Mangroves USGS (2011)*  
World Conservation Monitoring Center-United Nations Environment Programme  
Spatial Domain: Global  
Geometry: Polygon  
Data: <https://data.unep-wcmc.org/datasets/4>  
Source metadata: [https://data.unep-wcmc.org/pdfs/4/Global\\_Distribution\\_of\\_Mangroves\\_USGS.pdf?1615453294](https://data.unep-wcmc.org/pdfs/4/Global_Distribution_of_Mangroves_USGS.pdf?1615453294)  
Source file name: 14\_001\_WCMC010\_MangroveUSGS2011\_v1\_3.shp  
Scale/Resolution: 30 meters  
Version: 1.3  
Year of Origin: 2011  
Year of Publication: 2015

*MG\_02 Mangrove distribution in Mexico, 2020*  
National Commission for the Knowledge and Use of Biodiversity (CONABIO)  
Spatial Domain: Mexico  
Geometry: Polygon  
Data: [http://geoportal.conabio.gob.mx/metadatos/doc/html/mx\\_man20gw.html](http://geoportal.conabio.gob.mx/metadatos/doc/html/mx_man20gw.html)  
Source metadata:  
[http://geoportal.conabio.gob.mx/metadatos/doc/html/mx\\_man20gw.html](http://geoportal.conabio.gob.mx/metadatos/doc/html/mx_man20gw.html)

Source file name: *mx\_man20gw.shp*  
Scale/Resolution: 1:50,000  
Version: 1.0  
Year of Origin: 2020  
Year of Publication: 2021

*MG\_03 Disturbed Mangrove distribution in Mexico, 2020*  
National Commission for the Knowledge and Use of Biodiversity (CONABIO)  
Spatial Domain: Mexico  
Geometry: Polygon  
Data: [http://geoportal.conabio.gob.mx/metadatos/doc/html/mx\\_mp2020gw.html](http://geoportal.conabio.gob.mx/metadatos/doc/html/mx_mp2020gw.html)  
Source metadata:  
[http://geoportal.conabio.gob.mx/metadatos/doc/html/mx\\_mp2020gw.html](http://geoportal.conabio.gob.mx/metadatos/doc/html/mx_mp2020gw.html)  
Source file name: *mx\_mp2020gw.shp*  
Scale/Resolution: 1:50,000  
Version: 1.0  
Year of Origin: 2020  
Year of Publication: 2021

**Purpose:**

This dataset was created as part of a collaborative effort between the Mexican Carbon Program that conducted an exhaustive search for data updates or new datasets available, as well as coordinate three national workshops with Blue Carbon experts from Canada, the United States and Mexico to retrieve feedback on the best practices to map Blue Carbon ecosystems across North America; and the Commission for Environmental Cooperation that conducted the review and evaluation of the datasets collected, as well as the map integration process and cartographic refinement in collaboration with Ricardo Llamas ([rllamas@comunidad.unam.mx](mailto:rllamas@comunidad.unam.mx)) as independent geospatial consultant.

The goal of this datasets is to serve as a geospatial tool to estimate Blue Carbon Sink potential of North America in ecosystems such as Mangroves, as well as provide a standardized and publicly available input dataset for various Carbon Budget analyses.

**Supplemental\_Information:**

The Commission for Environmental Cooperation (CEC) is an international organization created by Canada, Mexico, and the United States of America under the North American Agreement on Environmental Cooperation (NAAEC). The CEC was established to address regional environmental concerns, help prevent potential trade and environmental conflicts, and to promote the effective enforcement of environmental law. The Agreement complements the environmental provisions of the North American Free Trade Agreement (NAFTA). Further information on the CEC is available from <http://www.cec.org/> or from  
>Commission for Environmental Cooperation  
>700 de la Gauchetière St. West  
>Suite 1620  
>Montréal (Québec)  
>H3B 5M2 Canada  
>  
>Telephone: 1 514 350 4300  
>Facsimile: 1 514 350 4314  
>Electronic mail: [info@cec.org](mailto:info@cec.org)  
>

A more detailed description of all the datasets used, as well as the preprocess performed to extract Mangroves information is available in the accompanying document "Blue Carbon Map source data notes 2021.docx"

Information related to the Blue Carbon legacy maps produced by the Commission for Environmental Cooperation can be found in the following reports:

1) CEC. 2014. North America's Blue Carbon: Assessing Seagrass, Salt Marsh and Mangrove Carbon Sinks A Final Report. Montreal, Canada: Commission for Environmental Cooperation. 219 pp

2) CEC. 2017. Blue Carbon Seagrass Mapping in Canada and The United States: British Columbia Washington and Oregon, Developing an Algorithm and Quantifying Eelgrass Extent A Final Report. Montreal, Canada: Commission for Environmental Cooperation. 82 pp

Time\_Period\_of\_Content:

Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date: 3 May 2021

Currentness\_Reference: Publication date

Status:

Progress: Complete

Maintenance\_and\_Update\_Frequency: Irregular

Spatial\_Domain:

Bounding\_Coordinates:

West\_Bounding\_Coordinate: -170.5

East\_Bounding\_Coordinate: -50.0

North\_Bounding\_Coordinate: 85.0

South\_Bounding\_Coordinate: 14.0

Keywords:

Theme:

Theme\_Keyword\_Thesaurus: ISO 19115 Topic Category

Theme\_Keyword: biota

Theme\_Keyword: environment

Theme\_Keyword: oceans

Theme:

Theme\_Keyword\_Thesaurus: GCMD science keywords

Theme\_Keyword: Saltmarsh

Theme\_Keyword: Mangrove

Theme\_Keyword: Disturbed Mangrove

Place:

Place\_Keyword\_Thesaurus: None

Place\_Keyword: North America

Theme\_Keyword: Canada

Place\_Keyword: Mexico

Place\_Keyword: United States of America

Access\_Constraints: None

Use\_Constraints:

None. Acknowledgement of the Commission for Environmental Cooperation would be appreciated in products derived from these data.

Point\_of\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: Commission for Environmental Cooperation

Contact\_Address:

Address\_Type: Mailing and physical address

Address: 700 de la Gauchetière St. West, Suite 1620

City: Montreal

State\_or\_Province: Quebec

Postal\_Code: H3B 5M2

Country: Canada

Contact\_Voice\_Telephone: 1 514 350 4300

Contact\_Facsimile\_Telephone: 1 514 350 4314

Contact\_Electronic\_Mail\_Address: [info@cec.org](mailto:info@cec.org)

Data\_Quality\_Information:

Attribute\_Accuracy:

Attribute\_Accuracy\_Report:

Attributes and values were reviewed manually. No additional tests for attribute accuracy was performed on this data set.

Logical\_Consistency\_Report:

No tests for logical consistency have been performed on this data set.

Completeness\_Report:

The international, national, and local dataset used in this analysis have known data gaps. In this dataset, the most updated and spatially extended Mangroves datasets to our knowledge have been used. Future updates are envisioned as new data is available and new data providers offer spatial information over areas omitted in the current map.

North American 2021 Mangroves Distribution, Map Integration Report:

The datasets used for the North America Blue Carbon Maps integration were preprocessed to extract spatial information representing the distribution of Saltmarshes, Mangroves and Seagrasses.

Preprocesses conducted with the Mangroves datasets were performed between December 2020 and March 2021.

NOTE: A more complete and detailed report of the North America 2021 Mangroves Distribution map is available in the accompanying report "NA BC Cartographic Integration Process.docx"

Preprocessing by dataset:

MG\_01. Global Distribution of Mangroves USGS (2011)

A "selection by attributes process" was performed to isolate all mangrove polygons within the United States and Mexico territories. All polygons located in the USA territories over the Pacific Ocean as well as Puerto Rico were deselected. A final saltmarshes layer was exported from the remaining polygons selection.

MG\_02. Distribución de los manglares en México en 2020

No preprocessing was needed for this dataset.

MG\_03. Distribución de manglar perturbado de México en 2020  
No preprocessing was needed for this dataset.

#### Cartographic Integration Process:

As some of the datasets show spatial overlaps, some criteria were defined to deal with overlapping polygons from different data sources and keep as much spatial information as possible.

In order to define the criteria to prioritize sources datasets on areas where information overlaps, the Mexican Carbon Program conducted a series of three national workshops with experts from Canada, the United States and Mexico.

Experts were asked to rank the sources datasets features that should be considered when selecting the sources of information that must prevail over areas with overlapping polygons. Six quality features were evaluated by the experts, comprising:

- > Most updated datasets
- > Fine spatial resolution over coarse spatial resolution
- > Datasets reporting accuracy
- > National or regional datasets over global datasets
- > Independent research studies over institutional datasets
- > Most complete metadata

A group of eleven experts participated in a survey to rank the criteria

>-----

Name	Institution	Email
Nate Herold	NOAA	nate.herold@noaa.gov
Margot Hessing-Lewis	Hakai Institute	margot@hakai.org
Gail Chmura	McGill University	gail.chmura@mcgill.ca
Dan Mulrooney	Parks Canada	dan.mulrooney@canada.ca
Anna Hilting	NOAA	anna.hilting@noaa.gov
Ma. Teresa Rodríguez	CONABIO	mrodrig@conabio.gob.mx
Joanna Acosta Velázquez	Aura Manglares y costas	joanna.acosta@gmail.com
Iliana Pérez Espinosa	CONABIO	iperez@conabio.gob.mx
Carlos Troche	CONABIO	ctroche@conabio.gob.mx
Beatriz Corral Osuna	INECC	beatriz.corral@gmail.com
Zulia Sánchez Mejía	ITSON	zulia.sanchez@itson.edu

As a result of the experts-defined criteria and the characteristics of the information provided by each source dataset, we defined each dataset as authoritative over its corresponding region.

The Mexico Mangrove Distribution map and the Disturbed Mangrove distribution map produced by the National Commission for the Knowledge and Use of Biodiversity (CONABIO) were the defined as the only authoritative source over Mexico. Thus, mangrove distribution data provided by the WCMC map was not used as input layer over Mexico. Mangrove polygons form both mangrove distribution and disturbed mangrove distribution over Mexico spatially complement each other without any overlapping, thus, no further processes were required prior the use of these layers for the North America Mangrove distribution map.

All polygons from the WCMC Global Distribution of Mangroves corresponding to USA territory were selected and exported to a new spatial layer.

Output = WCMC\_mangroves\_laea\_final.shp

#### Step 02

All the layers previously prepared and preprocessed with no overlapping areas between source data sets were merged in a new spatial layer.

```
> WCMC_mangroves_laea_final.shp
> MEX_mangroves_laea_final.shp
> MEX_disturbed_mangroves_laea_final.shp
```

Output = NorthAmerica\_mangrove\_layers\_merge.shp

#### Step 03

A process of "Multipart to Single part" was applied to the output layer from the previous step. This way, all polygons are individually accounted as single polygons, which will allow to dissolve spatially connected polygons that share the same values in all the attribute fields.

Output = NorthAmerica\_mangrove\_layers\_singlepart.shp

#### Step 04

A "Dissolve" process was applied to the output layer from the previous step. All individual polygons that are spatially connected and share the same values across the thirteen common attributed fields (except area) will break down into new polygons. This way, the number of polygons and the size of the final spatial layer file is reduced. No multipart features creation is allowed in this step.

Output = NorthAmerica\_mangrove\_polygons\_dissolve.shp

#### Step 05

A new field "AREA\_SQMT" is created and the area in squared meters is calculated for this field. The area is calculated based on the map coordinate reference system, 1 decimal point and thousands separated by comas are defined.

#### Step 06

After a final check of attribute table consistency and data display on different GIS platforms, a spatial data file in ESRI "shp" format is generated to provide the final CEC North America mangroves distribution map.

#### Spatial\_Data\_Organization\_Information:

Direct\_Spatial\_Reference\_Method: Vector

#### Point\_and\_Vector\_Object\_Information:

##### SDTS\_Terms\_Description:

SDTS\_Point\_and\_Vector\_Object\_Type: G-polygon

Point\_and\_Vector\_Object\_Count: 34630

#### Spatial\_Reference\_Information:

##### Horizontal\_Coordinate\_System\_Definition:

Planar:

Map\_Projection:

Map\_Projection\_Name: Sphere\_ARC\_INFO\_Lambert\_Azimuthal\_Equal\_Area  
Projection: Lambert  
Longitude\_of\_Projection\_Center/Central\_Meridian: -100.0  
Latitude\_of\_Projection\_Center/Origin: 45.0  
False\_Easting: 0.0  
False\_Northing: 0.0

Planar\_Coordinate\_Information:  
Planar\_Coordinate\_Encoding\_Method: Coordinate pair  
Coordinate\_Representation:  
Abscissa\_Resolution: 0.001  
Ordinate\_Resolution: 0.001  
Planar\_Distance\_Units: Meter

Geodetic\_Model/Datum:  
Horizontal\_Datum\_Name: D\_Sphere\_ARC\_INFO  
Ellipsoid\_Name: Sphere\_ARC\_INFO  
Semi-major\_Axis: 6370997.0  
Semiminor\_Axis: 6370997.0  
Denominator\_of\_Flattening\_Ratio/Inverse\_Flattening: 0.0

Entity\_and\_Attribute\_Information:

Detailed\_Description:

Entity\_Type:

Entity\_Type\_Label: North American 2021 Mangroves Distribution  
Entity\_Type\_Definition:  
Vector polygons representing Mangroves areas in North America.

Entity\_Type\_Definition\_Source:

<See Datasets section>

Attribute:

Attribute\_Label: FID  
Attribute\_Definition: Unique identifier for each polygon.  
Attribute\_Definition\_Source: Automatically generated  
Attribute\_Domain\_Values:  
Range\_Domain:  
Range\_Domain\_Minimum: 0  
Range\_Domain\_Maximum: 34630

Attribute:

Attribute\_Label: COUNTRY  
Attribute\_Definition: Country.  
Attribute\_Definition\_Source: Country of location of each polygon (CAN:  
Canada, USA: United States of America, MEX: Mexico). CEC 2005.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> MEX  
> USA

Reference:

Commission for Environmental Cooperation (2005) *Guidelines for Geo-spatial data for Compatibility with the North American Atlas Framework*.  
CEC: Montreal pp.5-11

Attribute:

Attribute\_Label: STATEABB

Attribute\_Definition: State or Province.

Attribute\_Definition\_Source: State or province code defining the location of each polygon (two letters country code + two letters state/province code).

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> MX-BCN  
> MX-BCS  
> MX-CAM  
> MX-CHP  
> MX-COL  
> MX-GRO  
> MX-JAL  
> MX-MIC  
> MX-NAY  
> MX-OAX  
> MX-ROO  
> MX-SIN  
> MX-SON  
> MX-TAB  
> MX-TAM  
> MX-VER  
> MX-YUC  
> US-FL  
> US-LA  
> US-TX

See complete list in:

Commission for Environmental Cooperation (2005) *Guidelines for Geo-spatial data for Compatibility with the North American Atlas Framework*.  
CEC: Montreal pp.5-11

Attribute:

Attribute\_Label: NAME

Attribute\_Definition: Reported Name.

Attribute\_Definition\_Source: Name of the features described by each polygon, as reported by the source of each dataset.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> Disturbed Mangrove  
> Mangrove

Attribute:

Attribute\_Label: INPT\_SRCE

Attribute\_Definition: Input Source.



Attribute\_Definition\_Source: Description of the original dataset used to acquire each polygon.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> National Commission for the Knowledge and Use of Biodiversity (CONABIO)  
> UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)

Attribute:

Attribute\_Label: YEAR\_PUB

Attribute\_Definition: Year of Publication.

Attribute\_Definition\_Source: Year of the publication of the last update of the dataset used as input.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> 2015  
> 2021

Attribute:

Attribute\_Label: RESP\_PARTY

Attribute\_Definition: Responsible Party.

Attribute\_Definition\_Source: Name of the entity responsible on providing each dataset.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> Giri et al., 2011  
> MEX: National Commission for the Knowledge and Use of Biodiversity (CONABIO)

Attribute:

Attribute\_Label: YEAR\_ORGN

Attribute\_Definition: Year of Origin.

Attribute\_Definition\_Source: Year of origin of data reported by the source of each dataset (this can be year when data was taken or when the data was originally published by the source).

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> 2011  
> 2020

Attribute:

Attribute\_Label: SURVEY\_MET

Attribute\_Definition: Survey Method.

Attribute\_Definition\_Source: Reported method of data acquisition as reported by the source of each dataset.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----

> Remote Sensing

Attribute:

Attribute\_Label: SCAL\_RPRTD

Attribute\_Definition: Scale Reported.

Attribute\_Definition\_Source: Scale of the input data used in each polygon or general dataset as reported by the source.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----

> 1:50,000

> Not Reported

Attribute:

Attribute\_Label: RESL\_RPRTD

Attribute\_Definition: Resolution Reported.

Attribute\_Definition\_Source: Resolution of the input data used in each polygon or general dataset as reported by the source.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----

> 30 m

> Not Reported

Attribute:

Attribute\_Label: SOURCE\_DES

Attribute\_Definition: Source Description.

Attribute\_Definition\_Source: General description of the source dataset used to derive each polygon.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----

> Distribution and extension of the disturbed mangrove cover across Mexico in 2020, obtained from an interdependent classification method. A set of 94 ESA Sentinel-2 satellite constellation images were used, January-May 2020.

> Distribution and extension of the mangrove cover across Mexico in 2020, obtained from an interdependent classification method. A set of 94 ESA Sentinel-2 satellite constellation images were used, January-May 2020.

> This dataset shows the global distribution of mangrove forests, derived from earth observation satellite imagery. The dataset was created using Global Land Survey (GLS) data and the Landsat archive.

Attribute:

Attribute\_Label: CITATION

Attribute\_Definition: Full citation of the used data source.

Attribute\_Definition\_Source: Modified APA 7th citation style to fit in a maximum of 254 characters.

Attribute\_Domain\_Values:

Enumerated\_Domain:

Enumerated\_Domain\_Value: (see table below)

Enumerated\_Domain\_Value\_Definition:

>-----  
> CONABIO (2021) 'Distribución de los manglares en México en 2020', 1:50,000, Ed. 1. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad - Sistema de Monitoreo de los Manglares de México (SMMM), Mexico City, Mexico.  
> CONABIO (2021) 'Distribución de manglar perturbado de México en 2020', 1:50,000, Ed. 1. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad - Sistema de Monitoreo de los Manglares de México (SMMM), Mexico City, Mexico.  
> Giri, C. et al. (2011) 'Status and distribution of mangrove forests of the world using earth observation satellite data', Global Ecology and Biogeography, 20 (1), pp. 154-159.

Attribute:

Attribute\_Label: SOURCE\_ID

Attribute\_Definition: Identification code of the datasets reported in the data sources full description document.

Attribute\_Definition\_Source: Assigned by the GIS consultant

Attribute\_Domain\_Values:

Range\_Domain:

Range\_Domain\_Minimum: SM\_01

Range\_Domain\_Maximum: SM\_03

Attribute:

Attribute\_Label: AREA\_SQMT

Attribute\_Definition: The size of the shape in square meters.

Attribute\_Definition\_Source: ESRI

Attribute\_Domain\_Values:

Range\_Domain:

Range\_Domain\_Minimum: 795.823

Range\_Domain\_Maximum: 1165690000

Distribution\_Information:

Distributor:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: Commission for Environmental Cooperation

Contact\_Address:

Address\_Type: Mailing and physical address

Address: 700 de la Gauchetière St. West, Suite 1620

City: Montreal

State\_or\_Province: Quebec

Postal\_Code: H3B 5M2

Country: Canada

Contact\_Voice\_Telephone: 1 514 350 4300

Contact\_Facsimile\_Telephone: 1 514 350 4314

Contact\_Electronic\_Mail\_Address: [info@cec.org](mailto:info@cec.org)

Distribution\_Liability:

Although these data have been processed successfully on a computer system at the Commission for Environmental Cooperation, no warranty expressed or implied is made by the CEC regarding the utility of the data on any other system, nor shall the act of distribution constitute any such warranty.

No responsibility is assumed by CEC in the use of these data.

Standard\_Order\_Process:

Digital\_Form:

Digital\_Transfer\_Information:

Format\_Name: ESRI Shapefile

Digital\_Transfer\_Option:

Online\_Option:

Computer\_Contact\_Information:

Network\_Address:

Network\_Resource\_Name: <http://www.cec.org/north-american-environmental-atlas/>

Metadata\_Reference\_Information:

Metadata\_Date(YYYYMMDAY): 20210425

Metadata\_Contact:

Contact\_Information:

Contact\_Organization\_Primary:

Contact\_Organization: Commission for Environmental Cooperation

Contact\_Address:

Address\_Type: Mailing and physical address

Address: 700 de la Gauchetière St. West, Suite 1620

City: Montreal

State\_or\_Province: Quebec

Postal\_Code: H3B 5M2

Country: Canada

Contact\_Voice\_Telephone: 1 514 350 4300

Contact\_Facsimile\_Telephone: 1 514 350 4314

Contact\_Electronic\_Mail\_Address: [info@cec.org](mailto:info@cec.org)

Metadata\_Standard\_Name:

FGDC Content Standard for Digital Geospatial Metadata

Metadata\_Standard\_Version: FGDC-STD-001-1998

Metadata\_Access\_Constraints: None

Metadata\_Use\_Constraints: None