GEONETWORK MIGRATION:

1) after making a complete backup of production version (both GeoNetwork and GeoServer), install latest geonetwork version

* from http://www.geonetwork-opensource.org/downloads.html in new file directory structure (leaving production version intact). Provide password information for GeoNetwork and for server. [Guan]
* install geoserver as well (comes with PC version but not server) > http://sourceforge.net/projects/geoserver/ [Guan]
* if needed, ensure system support (kk) has the 'tomcat' group in linux privileges. Set group "w" privileges on all folders;
* provide command for starting and stopping geonetwork on server [Guan]
* edit config.xml with new password and to use postgresql database (instead of default H2) [Guan]

```
<!-- postgresql -->


<resource enabled="true">
<name>main-db</name>
<provider>jeeves.resources.dbms.ApacheDBCPool</provider>
<config>
<user>geonetwork</user>
<password>s?L_a@B</password>
<!-- we use org.postgis.DriverWrapper in place of
org.postgresql.Driver to support both postgresql and postgis -->
<driver>org.postgresql.Driver</driver>
<!--

jdbc:postgresql:database
jdbc:postgresql://host/database
jdbc:postgresql://host:port/database

or if you are using postgis and want the spatial index loaded
into postgis

jdbc:postgresql_postGIS://host:port/database

-->
<url>jdbc:postgresql://192.168.76.130:5432/geonetwork</url>
<poolSize>10</poolSize>
<validationQuery>SELECT 1</validationQuery>
</config>
</resource>
```

NOTE: Guan has renamed the /geonetwork/ folder to /metadata/ to enable the proxy to work

* NEW 8/27/15: edit config.xml and change the skipInfo value below from Y to n. This is to make it so that baseX and metadown can get the xml.info data for categories (e.g. http://data.glos.us/metadata/srv/eng/xml.info&type=categories). May not work from browser, but ASA can do with authentication.

```
<service name="xml.metadata.get">
        <class name=".services.metadata.Show">
                <param name="skipPopularity" value="y" />
                <param name="skipInfo" value="y" />
        </class>
```

```
</service>
```

2) Clone existing postgresql database to new version (can test by just pointing to it to be sure it works, no schema changes, etc.) [Guan]

3) copy production metadata > WEB-INF/data/data folders to empty new version metadata folder [kk]

* copy 2.8 /data folders to PC (into folder called Migration Files)
* copy /data/metadata_data folder from PC to 2.10
* make sure group set to tomcat and all permissions have group w access

Restart GeoNetwork. Make sure all changes are complete (number of records match between production and newly migrated version. [kk]

---

4) If desired change web admin password from one provided (e.g. g30sstb)

5) Add images

a) GL logo and favicon

* /data/resources folder ... copy 40x40 old logo 699cf735-fabd-4b7f-b7d4-2a1a4e0531ee.gif to 2.10 server - rename with new catalog ID > 15eae370-5cc6-4593-bbea-5dd73e1d4606.gif
* /metadata/images/logos ... same as above (not sure which folder it actually uses)

(look for previously harvested items and copy in the harvest logo with their full identifier.gif)

* make sure all the copied files are owned by tomcat group and have w permission
* In web admin upload the main logo as well as any additional ones (e.g. thredds, harvest); set use for catalogue and use for icon; may need to check full filename for harvested records and copy that into the images folders as well.

Possible issues: if logo is not showing, try clearing your web browser cache; if still not, check that the file actually copied to the server and that the group owner is tomcat and permissions are correct.

b) Category icon images /images/category
(each 16x16px icon image is named to match the exact category name and placed in this folder)

- annexes.png
- beach_health.png
- climatology.png
- environmental.png
- hydrologic.png
- invasiveSpecies.png (new)
- models.png
- nearshore.png
- nutrients.png
- temperature.png (new)

6) copy revised banner & footer to ...webapps/metadata/images folder

* footer.jpg (edit footer.jpg to include the new version number (e.g. 2.10.3)
* gray-background.jpg
* header-left.jpg
* header-right.jpg

a. using XMLcopyeditor or Notepad++, edit geonetwork/xsl/banner.xsl (to include the above two header jpgs)

```
<!-- title -->
<tr class="banner">
  <td class="banner">
    <img src="{/root/gui/url}/images/header-left.jpg" alt="Great Lakes Metadata Catalog" align="top" />
  </td>
  <td align="right" class="banner">
    <img src="{/root/gui/url}/images/header-right.gif" alt="Geo Great Lakes" align="top" />
  </td>
</tr>
```

b. edit geonetwork/geonetwork.css (to include the above background and footer style)

background >>>

```
/* change .jpg for background-image to gray */
td.banner {
        font-size: 8pt;
        color: #ffffff;
        background-image: url('images/gray-background.jpg');
        border-bottom: 1px solid #ffffff; /* moved here from tr since
IE accepts it only here */
}
```

footer >>>>

```
/*************************************************************************
*********
footer
*************************************************************************
********/

*/ orig footer
td.footer {
        font-size: 8pt;
        background: #beb800;
        padding-top: 4px;
        padding-bottom: 4px;
        padding-left: 8px;
        padding-right: 8px;
} */

td.footer {
}

a.footer {
```

```
        color: #999999;
}

a.footer:hover
{
        text-decoration: underline;
}
```

c. edit main-page.xsl

- to add //south footer and ....

```
var viewport = new Ext.Panel({
        region: 'center',
        layout:'border',
        border:false,
        autoScroll:true,
        items:[
                // North: header
                {
                        region:'north',
                        contentEl :'header',
                        border:false
                },
/* kkoch -- added in south footer so that the footer
info expands across full webpage */
                // South: footer
                {
                        region:'south',
                        contentEl :'footer',
                        border:false
                },
/* end footer add */
                // Center: Content
                {
                        region:'center',
                        layout:'border',
                        border:false,
                        layoutConfig:{
                        animate:true
        },
```

- …. to include footer.jpg

```
<xsl:comment>MAIN CONTENT</xsl:comment>
<div class="geosearchmain">
<h1 id="loadingMD" style="text-align: center; display: none; width:100%"> <img
src="{/root/gui/url}/images/loading.gif" width="20" height="21" /><xsl:value-of
select="/root/gui/strings/searching"/></h1>

<!-- This DIV contains a first-time message that will be removed when the first search will be run -->
<div id="resultList">
<div class="padded-content">
<xsl:comment>MAINPAGE 1</xsl:comment>
<xsl:copy-of select="/root/gui/strings/mainpage1/node()"/>
<xsl:comment>MAINPAGE 2</xsl:comment>
<xsl:copy-of select="/root/gui/strings/mainpage2/node()"/> <a
href="mailto:{/root/gui/env/feedback/email}">
<xsl:value-of select="/root/gui/env/feedback/email"/>
```

```
                                        </a>
                                    </div>
                                    <xsl:if test="/root/gui/featured/*">
                                        <div style="padding: 10px;">
<xsl:comment>Featured Map</xsl:comment>
<xsl:call-template name="featured"/>
                                        </div>
                                    </xsl:if>
                                </div>
<!--kkoch: add footer-->
                    <div id="footer">
                                <table id="footer" width="100%">
                                    <tbody>
                                      <tr>
                                        <td class="footer" align="left">
<img src="{/root/gui/url}/images/footer.jpg" width="100%"
height="60px" border="0" alt="Project collaborators" />
                                        </td>
                                      </tr>
                                    </tbody>
                                </table>
                    </div>
                                <!--end footer-->
```

7) Edit /loc/eng/xml text

* strings.xml

    - Mainpage text

```
<mainpageTitle>Welcome to the GEO Great Lakes Metadata Catalog</mainpageTitle>

…

    <mainpage1>
        <p>This site contains information about geographically referenced data for the
Great Lakes region, in particular GIS and remote sensing data. It features searchable descriptive
metadata contributed by Catalog partners, allowing users to identify useful maps, datasets and other
information products and find out how to obtain them.</p>
        <p>The GEO Great Lakes Metadata Catalog is a service of the Great Lakes
Observing System, the Great Lakes Information Network and partner agencies throughout the region.
To contribute metadata records to the inventory, please click “Contact us” on the menu bar.</p>
<p>Partners:</p>
        <ul>
            <li>International Upper Great Lakes Study</li>
            <li>MI DNR Institute for Fisheries Research</li>
            <li>Great Lakes Commission</li>
  <li>Environment Canada</li>
  <li>Great Lakes Information System</li>
  <li>Great Lakes Observing System</li>
  <li>US Geological Survey</li>
        </ul>
    </mainpage1>
    <mainpage2>
        <p>
        For more information please contact us at:
        </p>
    </mainpage2>
```

- Change “Featured Map” on home page to “Featured Record”

<featuredMap>Featured record</featuredMap>

8) Update (or double check that it all came over with the db clone) System Configuration info in web Admin module (for now set default view to simple and email to kkoch@limno.com)

IMPORTANT! change the HOST name from old (e.g. slrfvm.glos.us) to new name (e.g. data.glos.us)

SYSTEM CONFIGURATION

SITE

Catalogue identifier: 699cf735-fabd-4b7f-b7d4-2a1a
Name: GEO Great Lakes Metadata Cat
Organization: GEO Great Lakes

SERVER

Preferred Protocol: http
Host: slrfvm.glos.us
Port: 80
Secure Port: 8443

INTRANET

Network: 127.0.0.1
Netmask: 255.0.0.0

METADATA SEARCH RESULTS

Maximum selected records: 1000

MULTI-THREADED INDEXING

Number of processing threads: 1 Recommended: **4** (From number of processors)

LUCENE INDEX OPTIMIZER

Enable: ☑
Run at: 0 : 0 (hour of day : minute eg. 23:15)
Will run again every: 1 day

Z39.50 SERVER

Enable: ☑
Port: 2100

OAI PROVIDER

Datesearch: temporal extent
ResumptionToken Timeout: 3600
Cachesize: 60

XLINK RESOLVER

Enable: ☑

HIDE WITHHELD ELEMENTS

Enable: ☐
Keep Marked Element: ☑

SEARCH STATISTICS

Enable: ☑

MULTILINGUAL SETTINGS

- [ ] Enable auto-detecting search request language
- [ ] Search results in requested language sorted on top

Search only in requested language: All documents in all languages (No preferences)

DATA-FOR-DOWNLOAD SERVICE

- (•) Use GeoNetwork simple file download service (resources.get)
- ( ) Use GeoNetwork disclaimer and constraints service (file.disclaimer)
- ( ) Use metadata linkage as is - no changes to linkage

CLICKABLE HYPERLINKS

Enable [x]

LOCAL RATING

Enable [x]

AUTOMATIC FIXES

Enable [x]

INSPIRE

Enable [ ]

METADATA VIEWS

- [x] Enable simple view
- [x] Enable ISO view
- [ ] Enable INSPIRE view
- [x] Enable XML view

Default view: Advanced view

METADATA PRIVILEGES

Only set privileges to user's groups [x]

HARVESTING

Allow editing on harvested records [x]

PROXY

Use [ ]

FEEDBACK

EMail: comments@glos.us
SMTP Host:
SMTP Port: 25

REMOVED METADATA

Directory: WEB-INF/data/remove

AUTHENTICATION

Enable user self-registration [ ]

Allow other users to login from:

- [ ] Shibboleth

9) Groups > check that groups and privileges were updated with db clone (should have been)

10) Regions > 2.10 does not migrate the postgresql REGIONS & REGIONSDES tables for the region dropdowns. Replace the /WEB-INF/data/config/codelist/external/thesauri/place/regions.rdf file with the file in Appendix A

11) copy About.xml with changed text (change the **version number** if appropriate)

```
<?xml version="1.0" encoding="UTF-8"?>
<help>
 <title>About the Great Lakes Geospatial Metadata Catalog - v. 2.10.3</title>
 <content>
        <div align="left">
         <p>
                <span lang="EN-US">The <b>Great Lakes Geospatial Metadata
Catalog</b> provides access to data about the Great Lakes region from a wide
variety of agencies, research institutions and regional organizations. The
Catalog is based on metadata records containing standardized, detailed
information about the GIS data, remotely sensed imagery, reports and other
documents the catalog includes.</span>
         </p>
         <p>
                <span lang="EN-US">The Catalog's records can be searched in a
number of ways based on the topic (What?), the location (Where?) and/or a
timeframe (When?). Each metadata record includes a description of the dataset
and information about obtaining it, allowing the user to determine whether the
data will meet their needs and how to best acquire it. In many cases, the data
can be downloaded through a hyperlink in the Catalog record. However, the
Catalog may also contain records about data that must be requested from the
source or purchased.</span>
         </p>
         <p>
                The Great Lakes Metadata Catalog was developed with the support
of the <a href="http://www.glos.us">Great Lakes Observing System</a> and is
hosted by the <a href="http://www.glin.net">Great Lakes Information
Network</a>. Data partners include
         </p>
         <ul>
                <li><a href="http://www.glos.us">Great Lakes Observing
System</a>
                </li>
                <li><a href="http://www.iugls.org">International Upper Great
Lakes Study</a>
                </li>
                <li><a href="http://www.glc.org">Great Lakes Commission</a>
                </li>
                <li><a
href="http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_10951_18964---,00.ht
ml">Institute for Fisheries Research</a>
                </li>
         </ul>
         <p>
                This site is powered by <a
href="http://geonetwork-opensource.org" target="_blank">GeoNetwork
opensource</a>, a standardized and decentralized spatial information management
environment, originally designed for the United Nations to enable access to
geo-referenced databases, cartographic products and related metadata from a
variety of sources. <a href="http://geonetwork-opensource.org"
target="_blank">Read more ...</a></p>
```

```
    </div>
    </content>
</help>
```

12) CONFIG-GUI.XML CHANGES

a) Remove the language dropdown from top banner, comment out 'languages' from config-gui.xml

```
<!-- Comment out languages to hide them from language selector.
CHG: 02/2015 commented out all languages to remove dropdown from banner.
kkoch
 <languages>
     <ara/>
     <cat/>
     <chi/>
     <dut/>
     <eng/>
     <fin/>
     <fre/>
     <ger/>
     <ita/>
     <nor/>
     <pol/>
     <por/>
     <rus/>
     <spa/>
     <tur/>
 </languages>
-->
```

b) change default mini-map and larger map to default to Great Lakes region (but still remain zoomable to a larger area)

- edit /WEB-INF/config-gui.xml mapsearch options : change both restrictedExtent values to: -92,41,-75,49 (NOTE: Do NOT change maxExtent or this will disable zooming)

- change localhost:8080 references to http://data.glos.us/geoserver/ (or whatever Guan tells me the new link is for GeoServer) [see also section on GeoServer changes]
- (or if that doesn't work have ortophoto map use maps.opengeo.org/geowebcache/service/wms)

```
<!-- CHG: 02/2016 - change restrictedExtent coordinates to Great Lakes;
changed layer server to opengeo and bluemarble not world, img png - kkoch
-->
  <mapSearch options="{projection: 'EPSG:4326', maxExtent: new
OpenLayers.Bounds(-180,-90,180,90), units: 'degrees', restrictedExtent:
new OpenLayers.Bounds(-92,41,-75,49)}">
  <layers>
    <layer server="http://data.glos.us/geoserver/wms" tocName="Borders"
params="{layers:
'gn:ne_50m_boundary_da,gn:ne_50m_boundary_lines_land,gn:ne_50m_coastline'
, transparent: 'true', format: 'image/png'}"  options="{}" />
    <layer server="http://maps.opengeo.org/geowebcache/service/wms?"
tocName="Ortophoto" params="{layers: 'bluemarble', format: 'image/png'}"
options="{isBaseLayer: true}" />
  </layers>
```

```
</mapSearch>
```

13) To remove 'no preview available' image placeholder in /loc/eng/images/ folder, copy blank (125x125 px blank image) nopreview.gif from previous version
14) Check all metadata migrated over. Current version has only 3 records with 'retired' status. For this migration had to select all records and set to approved and then reset these three

- 45021 buoy
- GBTM4 buoy
- 45020 buoy

15) GeoServer changes

a) Copy files from 2.8 to new GeoServer instance as needed

- /data/coverages/BlueMarble_world folder
- /data/data/naturalearth folder
- /data/workspaces/gn folder * (copy this from old version but will move files to new after geoserver configuration/setup)
- /styles/
  - boundaries.sld
  - boundaries.xml
  - concat.xml
  - default_raster.sld
  - flags.xml
  - ne_boundary.sld
  - ne_boundary.xml
  - ne_boundary_da.sld
  - ne_boundary_da.xml
  - ne_coastline.sld
  - ne_coastline.xml
- /data/www/styler
- /schemas
- /data/gwc folder (edit geowebcache.xml to change server reference)
  e.g., http://data.glos.us/geoserver/wms

b) on GeoServer webadmin http://data.glos.us/geoserver

- Login [Guan provides login info]
- Click Workspaces (left nav), add workspace
  - Name: gn
  - Namespace URI: http://data.glos.us/gn (note: does not need to be a real url – just needs to be unique)
  - Check 'default' box

  - click on gn to edit workspace
  - check 'enabled' box
  - check 'wcs', 'wfs', 'wms' boxes

save settings

add layers for gn:BlueMarble_world and gn:naturalearth_boundaries >

- Click Stores, add new Store
  - select: Raster Data Sources 'GeoTIFF'
  - Workspace: gn
  - Data Source Name: BlueMarble_world
  - Description: <blank>
  - Check 'enabled' box
  - URL: file:coverages/BlueMarble_world/bluemarble_jpeg_small.tiff

- Click Stores, add new Store
  - select: Vector Data Sources 'Directory of spatial files (shapefiles)'
  - Workspace: gn
  - Data Source Name: naturalearth_boundaries
  - Description: 1:50m Cultural and Physical Vectors
  - Check 'enabled' box
  - URL: file:data/naturalearth
  - DBF files charset: ISO-8859-1 (? this was the default)
  - Leave checked create spatial index if missing/outdated
  - Leave checked cache and reuse memory maps

publish each of the three naturalearth layers (50m_coastline, ne_50m_admin_0_boundary_breakway_disputed_areas, ne_50m_admin_0_boundary_lines_land). Do not rrename those files in data/data/naturalearth >

- Edit Layer > update the following
  - Add keywords if desired (e.g. NATURALEARTH)
  - Declared SRS: EPSG:4326
  - SRS Handling: Force declared
  - Native Bounding Box
    compute from data
  - Lat/Lon Bounding Box
    compute from native bounding box data

- preview layers to be sure the following are in gn:
  - ne_50m_boundary_lines_land
  - ne_50m_boundary_da
  - coastline
  - world

NOTE: Check that you have the new geoserver name in config_gui.xml. If World does not work, change ortophoto map in config_gui.xml to
http://maps.opengeo.org/geowebcache/service/wms?

APPENDIX A
REGIONS.RDF

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:dcterms="http://purl.org/dc/terms/"
xmlns:fn="http://www.w3.org/2005/02/xpath-functions"
xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:gml="http://www.opengis.net/gml#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:skos="http://www.w3.org/2004/02/skos/core#"
xmlns:xdt="http://www.w3.org/2005/02/xpath-datatypes"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <!-- Scheme -->
  <skos:ConceptScheme rdf:about="http://geonetwork-opensource.org/regions">
    <dc:title>Region</dc:title>
    <dc:description>GeoNetwork Regions.</dc:description>
    <dc:creator>
      <foaf:Organization>
        <foaf:name>IOW</foaf:name>
      </foaf:Organization>
    </dc:creator>
    <dc:rights>Free to all for non commercial use.</dc:rights>
    <dcterms:issued>2006-09-22 07:57:15</dcterms:issued>
    <dcterms:modified>2006-09-22 07:57:15</dcterms:modified>
  </skos:ConceptScheme>
  <!-- Main Concept-->
  <skos:Concept rdf:about="http://geonetwork-opensource.org/regions#country">
    <skos:prefLabel xml:lang="en">country</skos:prefLabel>
    <skos:prefLabel xml:lang="es">pais</skos:prefLabel>
    <skos:prefLabel xml:lang="cn">country</skos:prefLabel>
    <skos:prefLabel xml:lang="fr">pays</skos:prefLabel>
    <skos:prefLabel xml:lang="ar">pays</skos:prefLabel>
    <skos:inScheme rdf:resource="http://geonetwork-opensource.org/regions" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1221" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1225" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1228" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1237" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1220" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1223" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1229" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1235" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1241" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1240" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1226" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1232" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1238" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1224" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#33" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#231" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1231" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1234" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1227" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1230" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1239" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1233" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1236" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1239" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1242" />
    <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1221" />
    <!-- TODO : Remove ocean and continent narrower -->
```

```
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#continent">
  <skos:prefLabel xml:lang="en">continent</skos:prefLabel>
  <skos:prefLabel xml:lang="es">continent</skos:prefLabel>
  <skos:prefLabel xml:lang="cn">continent</skos:prefLabel>
  <skos:prefLabel xml:lang="ar">continent</skos:prefLabel>
  <skos:prefLabel xml:lang="fr">continent</skos:prefLabel>
  <skos:inScheme rdf:resource="http://geonetwork-opensource.org/regions" />
  <!-- TODO : Add narrower -->
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#ocean">
  <skos:prefLabel xml:lang="en">ocean</skos:prefLabel>
  <skos:prefLabel xml:lang="es">ocean</skos:prefLabel>
  <skos:prefLabel xml:lang="cn">ocean</skos:prefLabel>
  <skos:prefLabel xml:lang="ar">ocean</skos:prefLabel>
  <skos:prefLabel xml:lang="fr">océan</skos:prefLabel>
  <skos:inScheme rdf:resource="http://geonetwork-opensource.org/regions" />
  <skos:narrower rdf:resource="http://geonetwork-opensource.org/regions#1220" />
  <!-- TODO : Add narrower -->
</skos:Concept>
<!-- Concept list -->
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1221">
  <skos:prefLabel xml:lang="en">Wisconsin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-93.5 42</gml:lowerCorner>
      <gml:upperCorner>-86 47.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1222">
  <skos:prefLabel xml:lang="en">All Lakes</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-92 41</gml:lowerCorner>
      <gml:upperCorner>-75 49</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#continent" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1223">
  <skos:prefLabel xml:lang="en">Lake Huron</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-84.7 43</gml:lowerCorner>
      <gml:upperCorner>-81.30 46.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1224">
  <skos:prefLabel xml:lang="en">Lake Superior Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-93.5 45.5</gml:lowerCorner>
      <gml:upperCorner>-82.5 51</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
```

```
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1225">
  <skos:prefLabel xml:lang="en">All States/Provinces</skos:prefLabel>
   <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-170 24</gml:lowerCorner>
      <gml:upperCorner>-50.5 76.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#continent" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1226">
  <skos:prefLabel xml:lang="en">Lake Huron Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-85.5 42</gml:lowerCorner>
      <gml:upperCorner>-78 48</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1227">
  <skos:prefLabel xml:lang="en">Michigan</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-90.4 41.7</gml:lowerCorner>
      <gml:upperCorner>-82.4 46.8</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1228">
  <skos:prefLabel xml:lang="en">Great Lakes Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-93.21 40.39</gml:lowerCorner>
      <gml:upperCorner>-74.49 50.74</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1229">
  <skos:prefLabel xml:lang="en">Lake Michigan</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-88.5 41</gml:lowerCorner>
      <gml:upperCorner>-84.5 46.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1230">
  <skos:prefLabel xml:lang="en">Minnesota</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-97.5 43</gml:lowerCorner>
      <gml:upperCorner>-89 50</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1231">
```

```
  <skos:prefLabel xml:lang="en">Illinois</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-92 36.5</gml:lowerCorner>
      <gml:upperCorner>-87 43</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1232">
  <skos:prefLabel xml:lang="en">Lake Michigan Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-90 41</gml:lowerCorner>
      <gml:upperCorner>-83.5 47</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1233">
  <skos:prefLabel xml:lang="en">New York</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-80.5 40</gml:lowerCorner>
      <gml:upperCorner>-71 45.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1234">
  <skos:prefLabel xml:lang="en">Indiana</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-88 37</gml:lowerCorner>
      <gml:upperCorner>-84.5 42.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1235">
  <skos:prefLabel xml:lang="en">Lake Ontario</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-80 43</gml:lowerCorner>
      <gml:upperCorner>-75 44.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1236">
  <skos:prefLabel xml:lang="en">Ohio</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-85 38</gml:lowerCorner>
      <gml:upperCorner>-80 42.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1237">
  <skos:prefLabel xml:lang="en">Lake Erie</skos:prefLabel>
```

```
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-82.5 41.4</gml:lowerCorner>
      <gml:upperCorner>79 42.9</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1238">
  <skos:prefLabel xml:lang="en">Lake Ontario Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-80.5 41.5</gml:lowerCorner>
      <gml:upperCorner>-74 45.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1239">
  <skos:prefLabel xml:lang="en">Ontario</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-96 41</gml:lowerCorner>
      <gml:upperCorner>-73.5 56.6</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1240">
  <skos:prefLabel xml:lang="en">Lake Erie Basin</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-85.5 40</gml:lowerCorner>
      <gml:upperCorner>-78 44.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1241">
  <skos:prefLabel xml:lang="en">Lake Superior</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-92.5 46</gml:lowerCorner>
      <gml:upperCorner>-83.5 49</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
<skos:Concept rdf:about="http://geonetwork-opensource.org/regions#1242">
  <skos:prefLabel xml:lang="en">Pennsylvania</skos:prefLabel>
  <gml:BoundedBy>
    <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
      <gml:lowerCorner>-81 39.5</gml:lowerCorner>
      <gml:upperCorner>-74 42.5</gml:upperCorner>
    </gml:Envelope>
  </gml:BoundedBy>
  <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
</skos:Concept>
   <skos:Concept rdf:about="http://geonetwork-opensource.org/regions#33">
  <skos:prefLabel xml:lang="en">Canada</skos:prefLabel>
  <gml:BoundedBy>
```

```
      <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
        <gml:lowerCorner>-141.00299 41.67555</gml:lowerCorner>
        <gml:upperCorner>-52.61736 83.11388</gml:upperCorner>
      </gml:Envelope>
    </gml:BoundedBy>
    <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
  </skos:Concept>
  <skos:Concept rdf:about="http://geonetwork-opensource.org/regions#231">
    <skos:prefLabel xml:lang="en">United States</skos:prefLabel>
    <gml:BoundedBy>
      <gml:Envelope gml:srsName="http://www.opengis.net/gml/srs/epsg.xml#epsg:4326">
        <gml:lowerCorner>-178.21655 18.92548</gml:lowerCorner>
        <gml:upperCorner>-68 71.35144</gml:upperCorner>
      </gml:Envelope>
    </gml:BoundedBy>
    <skos:broader rdf:resource="http://geonetwork-opensource.org/regions#country" />
  </skos:Concept>
</rdf:RDF>
```