# Global Earthquake Model – Direct Observation Tools for Windows

## System Requirements

Windows XP/VISTA/7  
Admin privileges  
Microsoft Visual C++ 2008  
Microsoft .Net Framework 4

## Installation

Before you install the Global Earthquake Model Direct Observation (GEM DO) Tools there are some prerequisites that you might need to install. These are required by many other software products so they may already be installed, but trying to install them again won’t cause any problems.

Please ensure the following installations are run with Administration privileges.

**The Microsoft Visual C++ 2008 Redistributable Package (x86)**If this included with the distribution please install ‘credist\_x86\_2008.exe’ otherwise download the installation from <http://www.microsoft.com/en-us/download/details.aspx?id=5582>

**The Microsoft .Net Framework 4**If this included with the distribution please install ‘dotNetFx40\_Full\_x86\_x64.exe’ otherwise download the installation from <http://www.microsoft.com/en-us/download/details.aspx?id=17718>

**Global Earthquake Model – Direct Observation Tools for Windows**With these prerequisites installed you can now run the ‘GEM - Direct Observation Tools.msi’ installation file.

## GIS Functionality

1. Add reference maps in the form of Image data as a backdrop such as topographic maps
2. Add reference feature data, such as building footprints, in the form of ESRI shapefiles such as building footprints
3. Ability to define the spatial reference system of layers and the spatial reference system of the map window.
4. Remove layers
5. Ability to change the order of layers
6. Control over the visibility of layers
7. Control over the classification and symbology of layers
8. Navigation using pan, zoom in, zoom out, zoom to extent, zoom to selected, zoom to previous extent, zoom to next extent and zoom to layer tools
9. Centre map on GPS location, view current GPS location, record GPS track log
10. Save and load projects from and to disk
11. MapWindow GIS provides a great deal of additional functionality over and above the functions listed above. However such functionality is not seen as an essential part of the data capture system and can be hidden if it is not wanted.

## Data Collection

1. Tool to capture point locations representing buildings and allow the capture of attributes as defined in the GEM Taxonomy.
   1. Option to save entire building attributes as a favourite, so that the same style building can be repeated quickly. These can be setup during or before survey.
   2. Integrated context-dependent help
2. Users can only collect a single attribute for each field. Parameters such as "Year Built" and "Height" will have a qualifier and two data entry fields to allow for entries such as "year built is between 1980 and 1990".
3. The data relating to each building will be stored in a SQLite database.
4. Tool to allow viewing and editing of data already entered.
5. Functionality to associate multiple photographs to a building location.
   1. Photographs will not be taken by the system, but it will have tools to help associate photographs and other media with a building. This is because most laptops and windows tablets do not have a suitable camera. The Photos-4-GEM protocol will detail **how photos** should be captured either by a GPS camera or linking separate GPS and camera hardware. Documentation provided with the Windows tool should detail how the resulting GPS photos can be associated to buildings.
   2. Linked photographs will be stored on disk alongside the project file and database, in a media folder.
6. Tool to retrieve and display multiple photographic images by clicking on a building point

## Data Management

1. Ability to trim down the taxonomy tree depending on the survey area and scope
2. Ability to merge two or more GEM databases into one
3. Export to Shapefile
4. Export to KML to allow visualization in Google Earth

## Common Problems

**The program crashes instantly**  
The MapWindow components have not registered properly. Try registering the MapWindow ActiveX control manually by browsing to the installation directory, typically “C:\Program Files\GEM\GEM - Direct Observation Tools\” and running the ‘regMapWinGIS.cmd’ file as administrator. If it cannot register the map window ocx try installing the prerequisites listed above, then run the ‘regMapWinGIS.cmd’ file again.

**Failed to initialize the selected projection**Files required by the Proj4 projection library cannot be found. Try registering the location manually by browsing to the installation directory, typically “C:\Program Files\GEM\GEM - Direct Observation Tools\” and running the ‘regMapWinGIS.cmd’ file as administrator. This automatically adds the environment variable ‘PROJ\_LIB’ which points to the ‘PROJ\_NAD’ folder. A system reboot is sometimes required.