Frame Up Your Map

Using data frame properties to fine tune map canvas display

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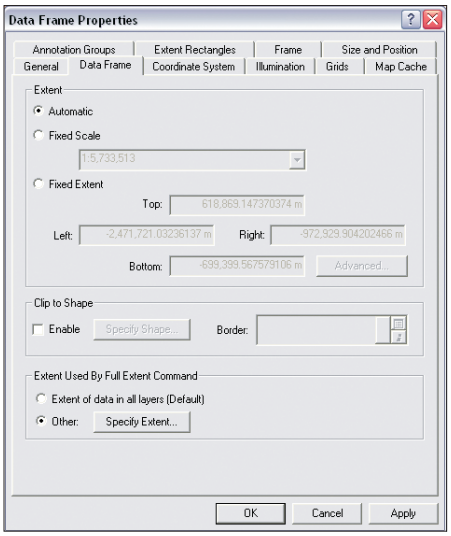
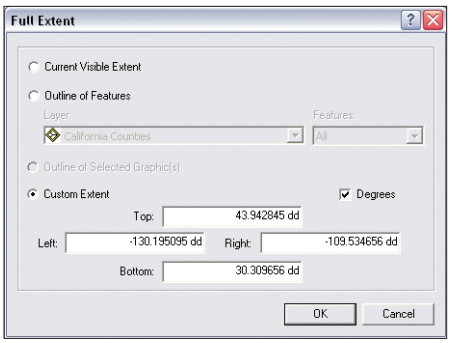
In ArcMap (at all license levels of ArcGIS), the data frame controls how data is displayed on the map canvas. The Data Frame Properties dialog box has Coordinate System, Illumination, Grids, Map Cache, Frame, Size and Position, Annotation Groups, Extent Rectangles, General, and Data Frame tabs. The Data Frame tab holds several tools, some old, one new. The Extent, Clip to Shape, and Extent Used by Full Extent Command tools control how map viewers see and interact with a map.

Set a Custom Extent

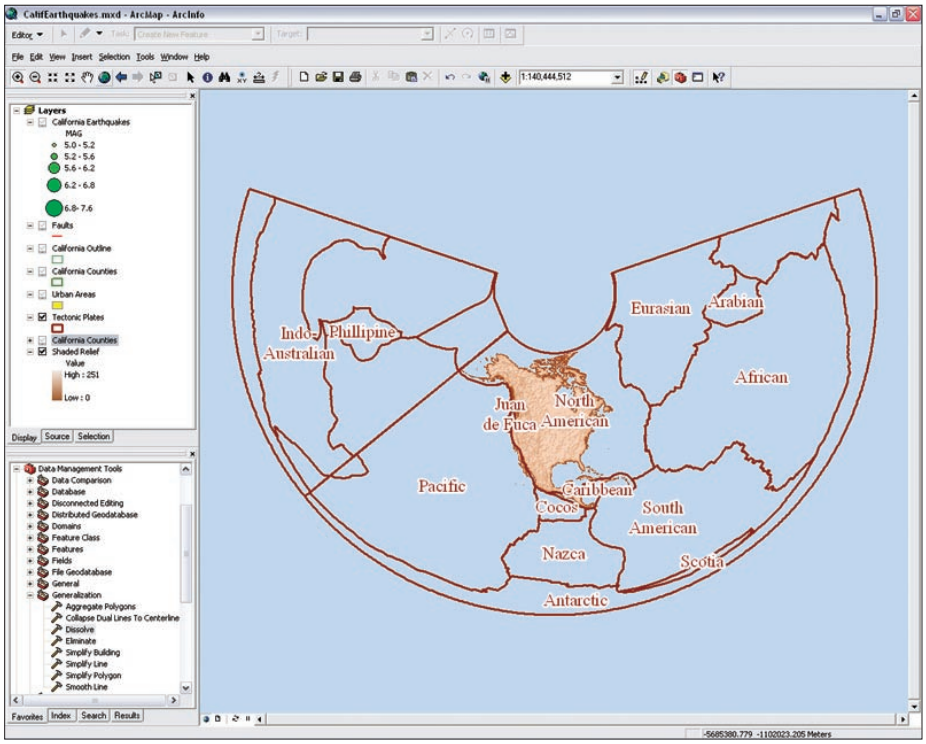
The Extent Used By Full Extent Command (aka Custom Extent) tool is new with ArcGIS 9.2. It was added to avoid an annoying scenario experienced by users. The default Full Extent is



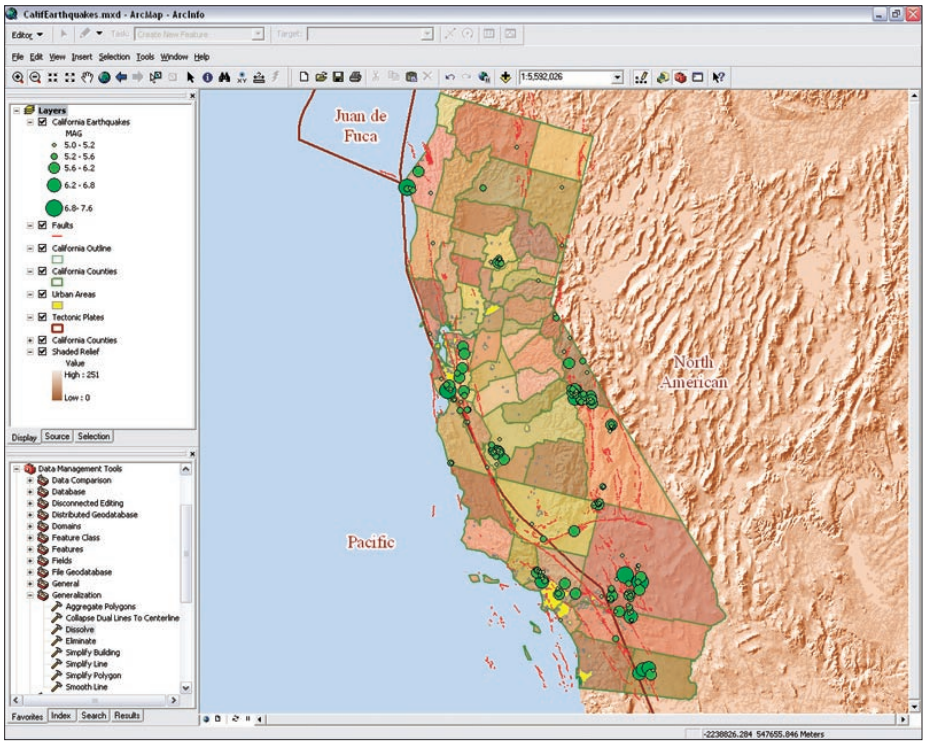
Click the Data Frame tab and go to the Extent Used By Full Extent Command. Click the radio button next to Other and click the Specify Extent button.



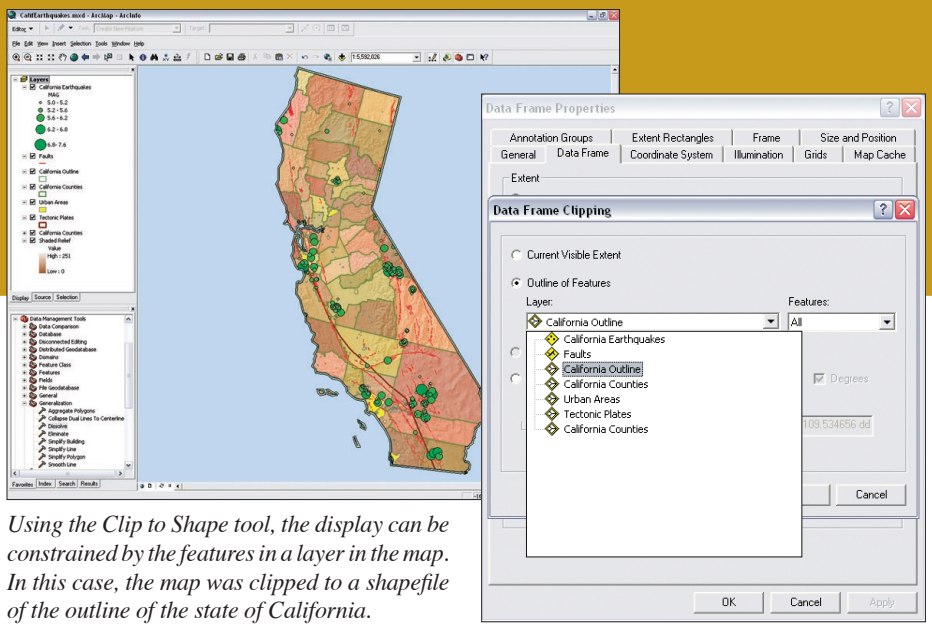
In the Full Extent dialog box, choose one of the three methods offered.



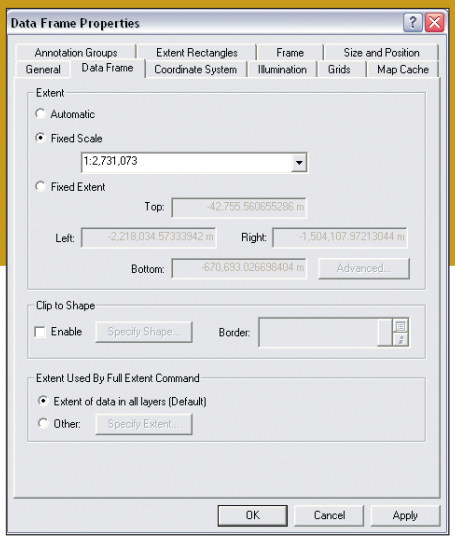
The default extent is the largest layer in the map. Clicking the Full Extent can trigger a map redraw at a disorienting scale if the map includes a layer with a much larger extent.



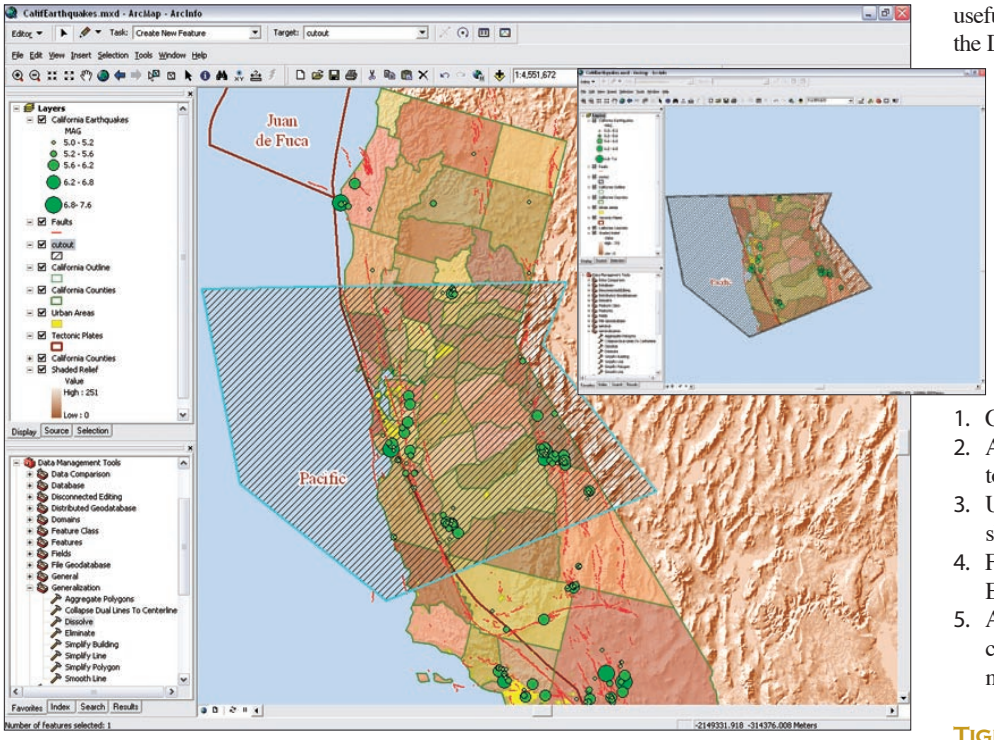
Setting a custom extent makes the Full Extent button more useful.



Using the Clip to Shape tool, the display can be constrained by the features in a layer in the map. In this case, the map was clipped to a shapefile of the outline of the state of California.



Once the Fixed Scale is set, the user can pan throughout the map but cannot zoom.



Creating a free-form shapefile to use with the Clip to Shape tool adds more flexibility to map display choices.

the extent of the largest layer in the map. When a layer with a much larger extent was included in a map, casually pressing the Full Extent button could trigger a time-consuming map redraw at a very removed and disorienting scale. Setting a custom extent is easy to do on the Data Frame tab. Once set, the Full Extent button can be used to toggle between an overview of the entire area of interest and a specific section of the map or map bookmark.

1. To set a custom extent, double-click on the data frame in the Table of Contents to open the Data Frame Properties dialog box.
2. Click the Data Frame tab and go to the Extent Used By Full Extent Command.
3. Click the radio button next to Other and the Specify Extent button.
4. In the Full Extent dialog box, choose one of the three methods offered. If the current extent displayed in the map canvas is the desired extent, simply click Current Visible Extent.
5. Alternately, use a layer in the data frame to define the full extent by clicking Outline of Features and choosing that layer from the drop-down list.
6. Finally, the full extent can be specified by coordinates in either decimal degrees or in the map units that were set on the General tab of the Data Frame Properties dialog box.

Use a Layer as a Template

The Clip to Shape extent tool directs the map viewer's attention to an area. The shape of that area can be defined. Clip to Shape is particularly useful for creating more dramatic layouts. On the Data Frame tab of the Data Frame Properties dialog box, check the box next to Enable in the Clip to Shape section. If desired, choose a border type from the drop-down list next to Border. Click the Specify Shape button. In choices in the Data Frame Clipping dialog box are the same as the Specify Extent dialog box—the current extent, specific coordinates, or features in a layer in the map. Setting the shape of the extent doesn't have to be constrained to the shape of geographic features in the map. A free-form extent can be used.

1. Create an empty shapefile in ArcCatalog.
2. Add this shapefile to the map. Open the Editor toolbars and choose Start Editing.
3. Use the Sketch tools to draw the desired shape.
4. From the Editor toolbar menu, choose Save Edits and Stop Editing.
5. Access the Data Frame Clipping dialog box, choose Outline of Features and choose the newly created shapefile as the layer to use.

Tightly Control the Map Extent

Two tools in the first section on the Data Frame tab can be set to protect less experienced ArcGIS users from themselves. The Extent section contains both the Fixed Scale and Fixed Extent tools. The Fixed Scale defaults to automatic but can be set to one of the standard map scales in the drop-down box or a custom scale. Once set, the user can pan throughout the map but cannot zoom.

Even more confining is the Fixed Extent. Initially, the parameters can be set using current coordinates in map units. However, clicking on the Advanced button accesses the now familiar choices of the current extent or features in a layer in the map. Once set, the user can't zoom or pan the map in Data view and those tools are disabled in the interface. However, in Layout view, the zoom and pan layout tools are enabled and the display can be zoomed and panned.