

# Choosing the Right Data Frame Coordinate Systems in ArcGIS

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The data frame of an ArcGIS mapping project can use any predefined or custom coordinate system to display data in an attractive way. This is different from “defining a projection” for data; this is simply for aesthetic purposes. In other words, we aren’t doing complex spatial analysis; we want a sexy map.

As with everything in geography, choosing the right coordinate system in ArcGIS is an issue of scale. You will always want to display maps using the “projected coordinate systems” folder, but use the following list to help make the right decision for the map in question.

## ***Small scale (global, continental maps)***

A small scale map covers a large area. Since such a map will cover a large area we want a projected coordinate system that will show the entire world in an attractive way, but also minimizes distortion from the projection process. You can find all of the appropriate systems in the “world” folder (use the plain one, not “sphere-based”) or the “continental” folder.

Global maps that need to show conformity (proper shape)

- *Mercator*
- *Miller Cylindrical*

Global maps that need to show equivalence (proper size)

- *Bonne*
- *Goode Homolosine*
- *Hammer-Aitoff*
- *Mollweide*
- *Sinusoidal*

Global maps that need to show compromise (a mix of shape and size)

- *Aitoff*
- *Robinson*

- *Van der Grinten I*
- *Winkel Triple*

For maps of a continent or large region, look in the specific folder (e.g. open “continental” folder, then the “Asia” folder) and look for the key words to determine which to choose:

- Equal area – refers to showing consistent sizes of places
- Conformal – refers to showing consistent shapes of places

**Medium scale (country, state maps)**

As the scale of a map gets larger (i.e. we zoom into the Earth), distortion becomes less of an issue. You can still use one of the above projections from the small scale section, or you can use a state or country’s official projection and coordinate system. For example, the State of California uses the *NAD 1983 California (Teale) Albers* projection located in the State Systems folder.

**Large scale (county, city, local maps)**

Most county and city agencies use specific coordinate systems to ensure consistency across data and maps. If you are working for a government agency always check to see if there is a standard system you are using.

A safe choice in California is Universal Transverse Mercator (UTM) NAD 1983, Zone 10 or 11.

**Remember...**



**Dumpy California**



**Sexy California**