

Coordinate Systems

A. Local Coordinate System

- 2-D latitudes & departures, length units
- Plane geometry and coordinate geometry (CO-GO)
- 3-D obtained by adding elevation

B. State Plane Coordinate System

- Conformal - angles preserved
- 2-D relationship with latitude/longitude
- 3-D with elevations (pseudo 3-D)
- Projection types:
 - Lambert Conic
 - Transverse Mercator

C. Geodetic Coordinates

- 2-D curvilinear latitude & longitude
- Add ellipsoid height for 3-D, mixed units

D. Astronomic Coordinates

- Direction only from earth - no linear distances
- Position in sky referenced to:
 - Right ascension
 - Declination

E. Geocentric Coordinates

- 3-D rectangular cartesian with length units
- Origin at earth's center of mass, X/Y in plane of equator
- Z-axis parallel to spin axis
- Rules of solid geometry provide geometrical integrity

F. Local Geodetic Horizon Coordinates

- Tangent plane to earth at instrument station - standpoint
- Origin at standpoint, north referenced to local meridian
- True 3-D spatial relationships