Coordinate Systems

Altazimuth coordinates can be used to specify the location relative to the local horizon in simple, temporary terms. Clock hour can be used for azimuth measure as well. An *altazimuth telescope mount* is very simple to point, but it can be difficult to track celestial objects with it.



Altazimuth Coordinates		
Horizon	The local horizon.	
Meridian	Magnetic north.	
Altitude	Angle in degrees from horizon.	
Azimuth	Angle in degrees (or clock hour) from compass North.	

Geographic coordinates are used to fix the position of an object relative to the Earth's surface.



Geographic Coordinates		
Equator	Plane perpendicular to North and South Pole at 0 degrees latitude.	
Prime Meridian	Great circle of constant longitude passing through the (Greenwich, England).	
Latitude	Horizontal lines measuring angular distance in <i>degrees</i> North or South of the Earth's equator (small circles).	
Longitude	Great circles measuring angular distance in degrees East (+) or West (-) of the Prime Meridian.	

Equatorial coordinates are useful to accurately specify the location of an object on the non-rotating celestial sphere, most useful for finding an object in the sky, even as the Earth rotates. An *equatorial telescope mount* can be *polaraligned* to allow easy tracking of an object in the eyepiece as the Earth rotates.



Equatorial Coordinates		
Celestial Sphere	Imaginary sphere with the observer at the center and on which all celestial objects are considered to lie.	
Celestial Equator	Projection of the Earth's equator onto the celestial sphere.	
Ecliptic	A great circle on the celestial sphere representing the sun's apparent path over the course of a year.	
Celestial Meridian	Point on the celestial sphere where the Sun crosses the celestial sphere from North to South during the year (March), marking the point of 0 degrees right ascension — also called the Vernal Equinox or the First Point of Ares (now in Pisces).	
Declination	Celestial latitude, or angular measure, in <i>degrees</i> , north or south of the celestial equator.	
Right Ascension	Celestial longitude, or angular measure in <i>hours, minutes, and seconds</i> east of the First Point of Ares on the celestial sphere.	

Ecliptic coordinates are used to specify the location of an object relative to the plane of the general motion of the planets.

Ecliptic Coordinates		
Ecliptic	A great circle on the celestial sphere representing the sun's apparent path over the course of a year.	
Primary Direction	First Point of Ares	
Latitude	Angle in degrees North of Ecliptic	
Longitude	Right Ascension in deg, min, sec from primary direction.	