# CHAPTER OVERVIEW

## 6: The Celestial Sphere

If you look up in the sky, it appears as if you are at the centre of a vast crystal sphere with the stars fixed on its surface. This sphere is the *celestial sphere*. It has no particular radius; we record positions of the stars merely by specifying angles. We see only half of the sphere; the remaining half is hidden below the *horizon*. In this section we describe the several coordinate systems that are used to describe the positions of stars and other bodies on the celestial sphere, and how to convert between one system and another. In particular, we describe *altazimuth*, *equatorial* and *ecliptic coordinates* and the relations between them. The relation between ecliptic and equatorial coordinates varies with time owing to the *precession of the equinoxes* and *nutation*, which are also described in this chapter.



Thumbnail: Earth rotating within a relatively small-radius, geocentric celestial sphere. Depicted here are stars (white), the ecliptic (red), and circles of right ascension and declination (cyan) of the equatorial coordinate system. (CC SA-BY 3.0; Tfr000).