Lec 19\_Magnetopause. This lecture covered the characteristics of the Magnetopause, its current, polar cusps, and the magnetotail. The magnetopause is the outer boundary of the magnetosphere, its location is determined by the pressure balance between the solar winds and the magnetic field. The Magnetopause current is the charged particles entering and being deflected by the forces within the magnetopause. Polar cusps are the high latitude funnel shaped regions where the geomagnetic field lines are open to the magnetosheath. The magnetotail is the elongated region of the magnetosphere that streches anti-sunward on the night side of the earth. One last point was about the plasma sheets, whose location are not close enough to the geomagnetic feild for curvature drift to be an issue, but still while on the closed field lines. When convection occurs, material from the plasma sheet starts to populate the inner magnetosphere.

Lec20\_Magnetosphere convection. Lecture 20 covered the basics of the magnetosphere convection. This topic included; energy input and output, Russell-McPherron effect, and sub-storms. Magnetosphere convection allows solar wind kinetic energy to be converted into magnetic energy into positive in the magnetotail. Energy input and output refers to the amount of energy that enters the mangetosphere is dependent on the solar wind speed, IMF field strength, and clock angle. The Russell-McPherron effect is the efficiency of the solar wind input is at its highest during the equinox's due to the geomagnetic field orientation with respect to IMF. Sub-storms are the process of generating aurora through newly closed field lines returning sun-ward towards dusk and dawn at lower altitudes. sub-storms have three phases, growth, expansion, and recovery.

Lec21\_InnerMagnetosphere. The inner magnetosphere is the region of closed, generally bipolar field lines within the equatorial distance of about 8 RE­ of Earth. Occupied by ions and electrons of various energies, separated into three grounds. Low Energy ( Plasmasphere ), Mid Energy ( Ring Current ), and High Energy ( Radiation Belt ). The Plasmasphere consists of plasma from the ionosphere and has a high plasma density and low energy (<= 1Ev), it exhibits plasma drains during storms. The Ring Current has energy from 1-300Ev and a density around 1-10cm-3. This region’s primary highlight in the lecture dealt with charge exchange. Lastly, we covered the Radiation belt region, with characteristics of low density, high energy particles up to 10MeV. One characteristic covered in lecture was that of Magnetopause shadowing; where particles with different pitch angles have slightly different paths, can remove particles selectively by their escape through the magnetopause.