

Assignment #3 (from Haiyan Jiang)

Due Monday Oct. 6, 2008

1. Use the balance between centripetal force and general gravity force to calculate the altitude from the Earth's surface for a GEOS satellite. Given orbital constant GMe (G is newtonian gravitation constant and Me is the Earth's mass) is $3.98 \times 10^{14} \text{ (m}^3 \text{ s}^{-2}\text{)}$; Angular velocity of Earth is $7.29 \times 10^{-5} \text{ rad s}^{-1}$; Equatorial radius of Earth is 6378 km.
2. Find any one storm with best track data available (in or before 2007), and plot the storm's best track and advisory track if it is a current year storm) on a global map using IDL or other programming tools. Storm track data can be found at <http://weather.unisys.com/hurricane/index.html>
3. For the 3-day period of listed below for each of you regarding to Hurricane Ivan 2004, write a brief report of the evolution of its cloud, convection, and rainfall structures using available satellite observations such as those from TRMM TMI, SSM/I, AMSU-B, AMSR-E, TRMM PR, QuikSCAT SeaWinds and ClouSat CPR. Use the web site links that Ed sent out on Aug. 24 to access necessary images. Also you can use "JAXA Tropical Cyclone Database" website. If you don't like your assigned period, you may switch with another student (by mutual agreement).
 - a. Period 1: 00Z Sep. 4- 23Z Sep. 6, 2004 (Ellen): Pay special attention to the rapid intensification during the 18 h period between 06 Z Sep. 5 and 00 Z Sep. 6.
 - b. Period 2: 00Z Sep. 11-23Z Sep. 13, 2004 (Matt): Pay special attention to the eyewall replacement cycle during the period.
 - c. Period 3: 00Z Sep. 16-23Z Sep. 18, 2004 (Forrest): Pay special attention to the weakening during landfall.

For problem #2, if you have any questions about using IDL, please come to see me. I have a general code available which plots the Katrina best track and advisory track figure that I showed on Wednesday Sep 17. This assignment should be a combination of text and figures that may be emailed to me (Haiyan), given on a memory stick, with or without some printed pages.