06-Sep-2019

**Tides and its application in oceanography**

**Practical - PLAN A**

**Day 1**:

Installation – ADCIRC

GMT

gfortran

MPICH

GCC

Checking for compatibility for ADCIRC and TASK-2000

**Day 2**: **Tidal analysis and prediction**

Group 1 Cochin - RAD - 2012 & 2013

Group 2 Chennai - RAD - 2011 & 2015

Group 3 Minicoy - RAD - 2011 & 2014

Group 4 Port Blair - RAD - 2015

Group 4 Mumbai/JNPT - RAD - 2013 & 2014

Group 5 Visakhapatnam - RAD - 2015 & 2017

**Steps:**

1. Plot the location map and evaluate the coastal geomorphology
2. Tidal analysis for 1 year (TASK-2000)
3. Plotting raw, predicted and residual time series (GMT/FERRET)
4. Plotting the tidal constituents using bar diagram (GMT/FERRET)
5. Analysis/calculation
   1. Identify the top five dominant tidal components
   2. Calculate: Mean sea level
   3. Calculate: Mean tidal level, mean high water level & mean low water level
   4. Identify the non-tidal variabilities in residual
6. Write a summary of the day 2 analysis with plots

**Day 3**: **Tidal Analysis for storm case & QC**

5/6 groups: Thane, Phailin, Hudhud, Vardha & Fani

**Steps:**

1. Quality control of tide gauge data
2. Plot the track of the cyclone along with intensity and overlay the tide gauge location (GMT)
3. Tidal analysis during the cyclone period (TASK-2000)
4. Plotting raw, predicted and residual time series (GMT/FERRET)
5. Identify the sea level variability during the cyclone (GMT/FERRET)
6. Compare the differences of sea level observed in tide gauges (GMT/FERRET)
7. Write a summary of the day 3 analysis with plots

**Day 4: Regional tide and storm surge modelling using ADCIRC**

5/6 groups: Thane, Phailin, Hudhud, Vardha & Fani

**Steps:**

1. Creating Grid, forcing, Initial and boundary files for ADCIRC
2. Plot the model grid and overlay the cyclone track (GMT).
3. Run ADCIRC for a cyclone case
   1. Predict tide
      1. Compare the observed and modeled tide (GMT/FERRET)
   2. Predict storm tide
      1. Compare the observed and modeled sea level (GMT/FERRET)
      2. Sea level evolution at the coast during a cyclone (GMT/FERRET)
   3. Understanding the surge caused due to cyclone
   4. Importance of surge and tide at the coast during a cyclone
4. Write a summary of the day 4 analysis with plots

**Day 5: Group presentation**

5/6 groups: Thane, Phailin, Hudhud, Vardha & Fani

**Steps:**

1. Continuation of Day 4 analysis
2. Group presentation (PPT)