Heat Waves in Orissa

P.K. Mohanty[1], U.S. Panda[2] and S.K. Dash[3]

[1]*Department of Marine Sciences, Berhampur University, Berhampur-760 007, Odisha, India*
[2]*Integrated Coastal Marine Area Management, NIOT campus, Chennai, India*
[3]*Centre for Atmospheric Sciences, IIT, Delhi*

Heat waves(HW) are believed to become more frequent, more intense and longer lasting with climate change. Studies have shown that there is a detectable man made influence on the frequency of extremely warm climate events. There have been many studies looking more closely at the 2003 heatwave events of India and Europe in the context of past climate variability and future changes in the frequency of heat waves. These studies are part of a global effort to focus climate research on the nature of weather extremes and their impacts on society. All India mean annual temperature has shown significant warming trend of 0.05^0C/10 yr during the period 1901-2003 while the period 1971-2003 has shown relatively accelerated warming of 0.22^0C /10 yr and was attributed to the significant warming in both maximum(0.20^0C/10 yr) and minimum temperature 0.21^0C /10 yr during 1971-2003. Unprecedented changes in the global/hemispheric temperature and over the India in the context of contemporary global warming entails a study at the regional scale.

Heat wave conditions and the associated mortality in Odisha, along east coast of India, were alarming as compared to other states of India both during 1998 and 2003. Heat wave in Odisha was studied from a climatological perspective with details of period, no of heat waves and mortality for the period 1975 to 2007. Heat wave conditions were studied following the definition of India Meteorological Department, and other heat indices such as heat index, apparent temperature and thermo-hygrometric index(THI). It is observed that for most of the stations in Orissa, coherence of mortality is higher with THI followed by apparent temperature, heat index and IMD definition of HW. Orissa was divided into four heat zones on the basis of mean of highest temperature recorded during 1st March to 30th June for the period 1995-2005. Trend analysis of both maximum and minimum temperature for the month of March-May during the period 1961-2005 indicates rising trends in most of the stations. Interesting relationship between heat wave and the movement of cyclonic storms during March-May over Bay of Bengal were revealed. Analysis of storm tracks indicated very severe heat wave associated with cyclonic storms moving in the NE direction.