4.3. Cyclonic Storms

In this section, the details of activity of cyclonic storms are discussed using the long term tropical cyclone track data. Fig 4.4 shows the frequency of Cyclonic Storms (Depressions and above) forming over each 2.5 × 2.5 degree boxes during the period 1961-2020. In each box, top figure shows the frequency of all systems together (Depressions + Cyclonic Storm + Severe Cyclonic Storm), middle one is the frequency of CS+SCS and bottom one is the frequency of SCS alone. These statistics are derived from the IMD Cyclone atlas (http://www.imdchennai.gov.in/). Frequency of cyclonic storms is maximum over the west central Bay of Bengal (10^0-17.5^0N, 80^0-90^0E). Therefore, during the NE monsoon season, north Tamil Nadu and Coastal Andhra Pradesh are most vulnerable to cyclonic storms.

The tracks of cyclonic storms (depressions and above) during the months October to December months are shown in Fig. 4.5, 4.6 and 4.7 respectively. In October, north Tamil Nadu, Coastal Andhra Pradesh, Odisha and West Bengal experience the landfall of these storms. Some storms after moving northwestwards recurve towards northeast, due to the influence of sub-tropical high. Over south Peninsula, north Tamil Nadu and coastal Andhra Pradesh experience Tropical cyclonic storms.

In November, most of the storms forming over the Bay of Bengal move northwestwards and make landfall over Tamil Nadu and the coastal Andhra Pradesh. In November, a few storms recurve and make landfall over West Bengal and Bangladesh. In December, cyclonic storm activity is generally reduced. In December also, when storms form, they move northwestwards and make landfall over Tamil Nadu. A few storms recurve and make landfall over coastal Andhra Pradesh and Bangladesh. There are a few storms, which form over the Bay of Bengal, cross the south peninsula and emerge in the Arabian Sea, thus making longer lifetime. The systems forming over the Arabian Sea, either move westwards towards the Arabian sub-continent or towards Gujarat/Pakistan. The storms forming over the Arabian sea generally do not make

landfall over the south peninsula. They tend move northwestwards. A few storms however move north and affect the Gujarat coasts.
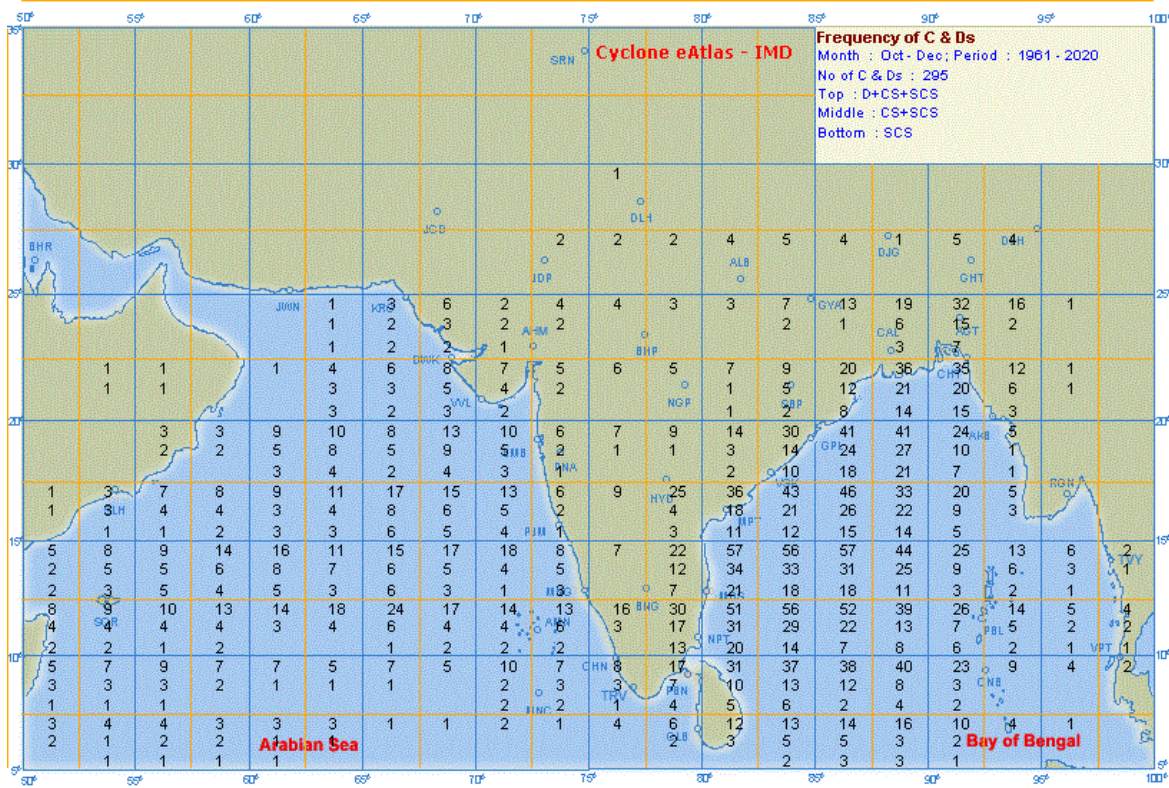

Fig. 4.4. Frequency of all Cyclonic disturbances (Depressions and above) during the period 1961-2020. In each box top figure shows the frequency of Dep+CS+SCS, middle one CS+SCS and bottom one is the frequency of SCS. These statistics is derived from IMD Cyclone atlas.
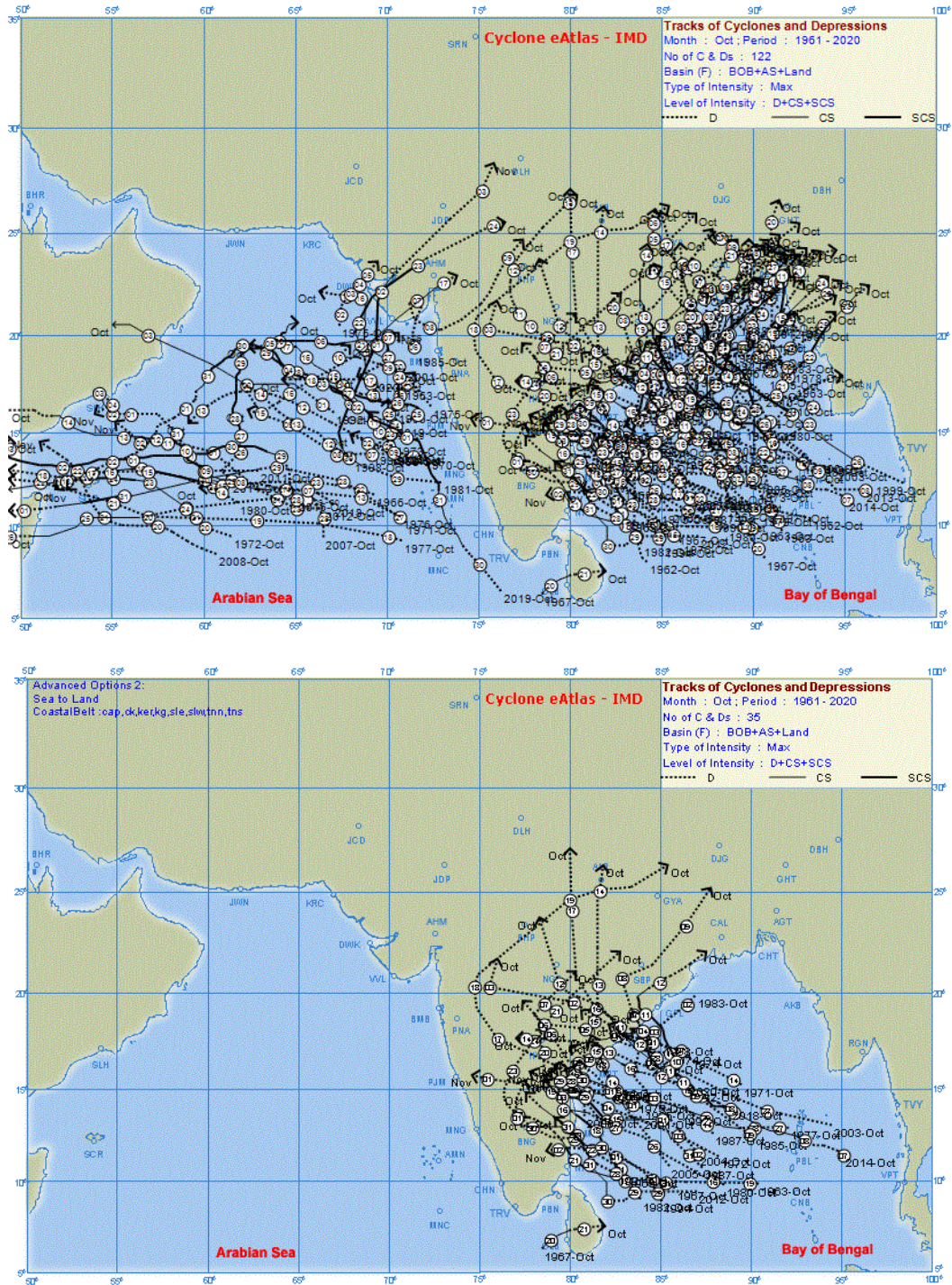
Fig. 4.5. Tracks of cyclonic storms (Depressions and above) during October for the period 1961-2020 (Above) and tracks of cyclonic storms (depressions and above) during October, but which affected the south peninsular region. These tracks are derived from IMD Cyclone Atlas.
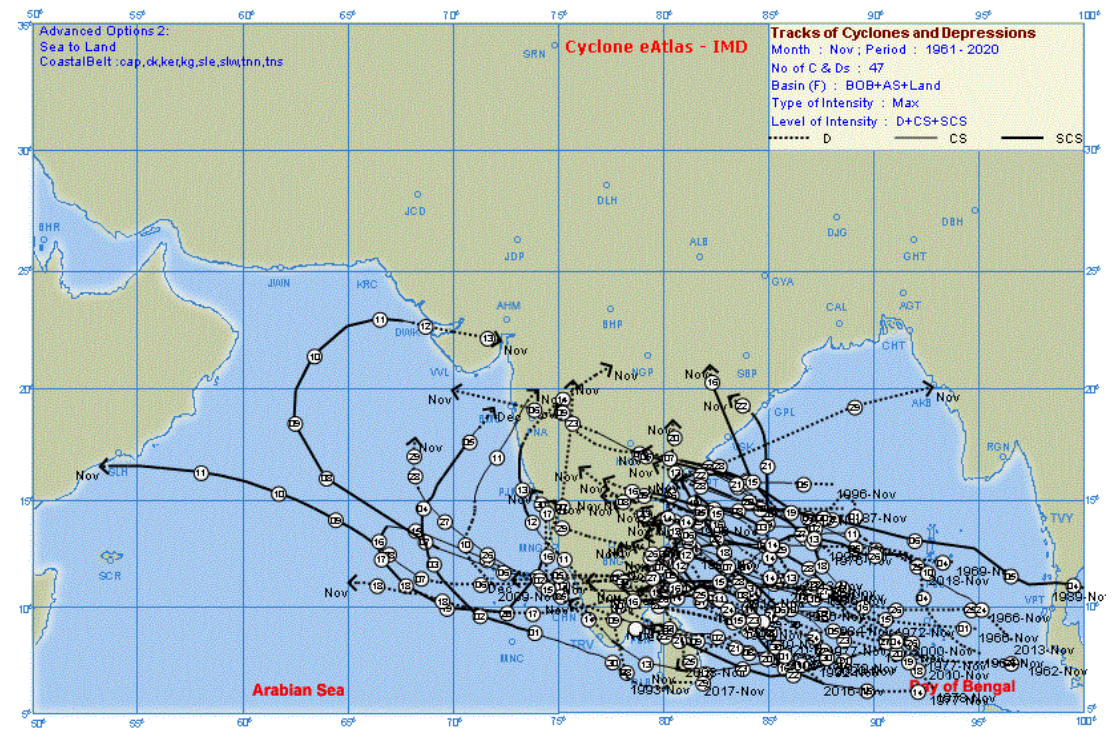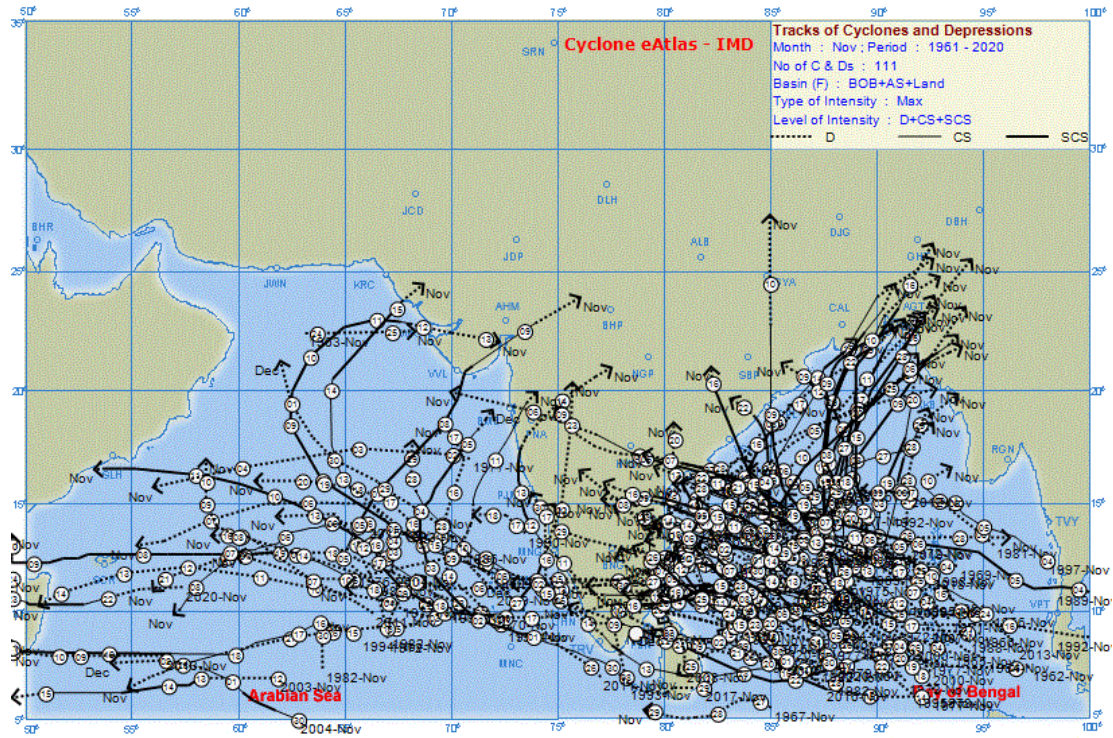
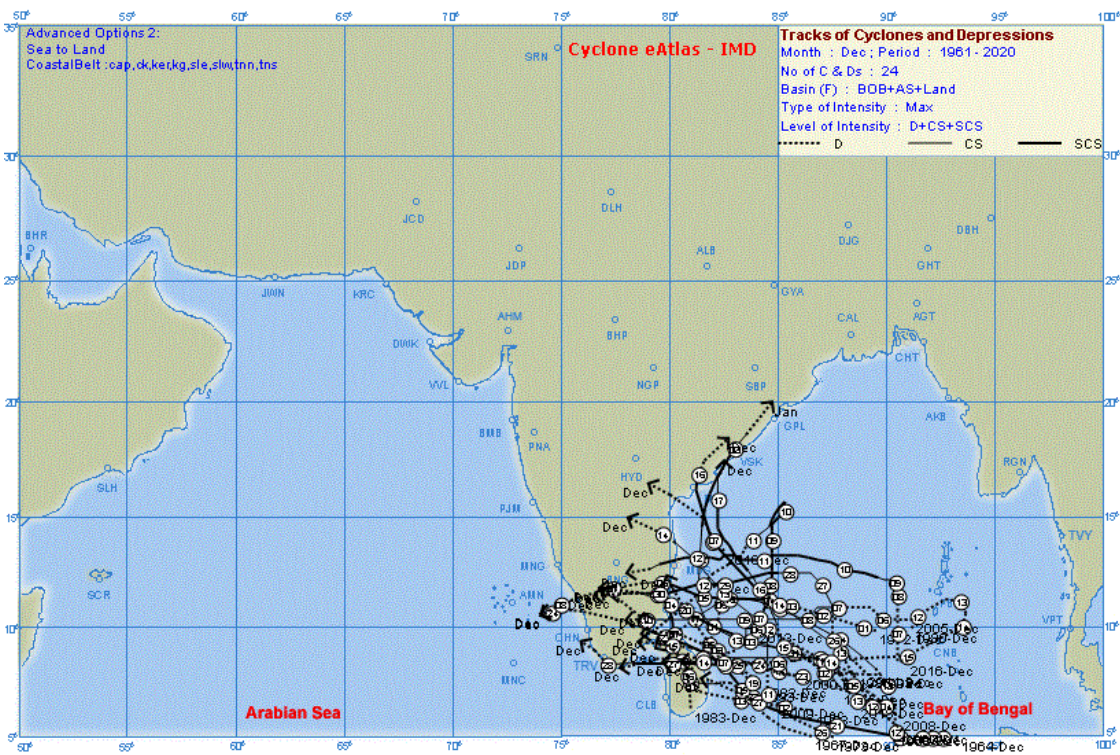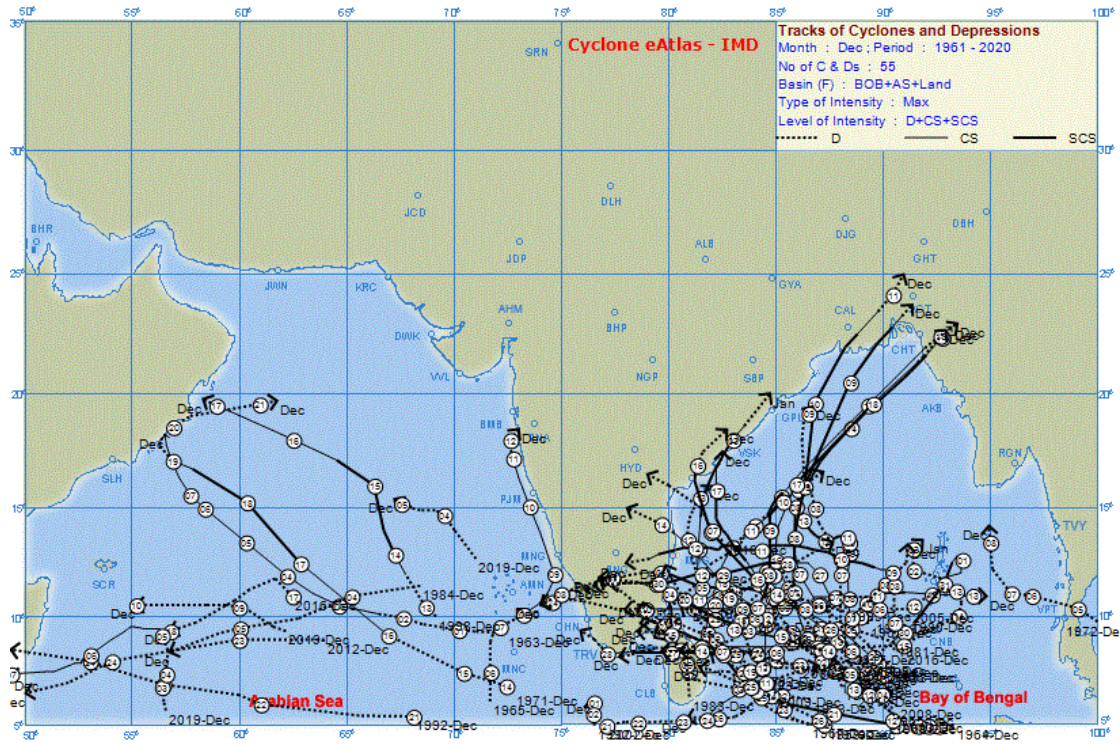Fig. 4.6. Same as Fig. 4.5, but for November.

Fig. 4.7. Same as Fig 4.5, but for December.

Figs. 4.8 a, b and c show the return periods (year) of cyclonic storms (CS)/ Severe Cyclonic Storms (SCS) passing within 50 nm of the coastal districts during October, November and December respectively. The period 1961-2020 was considered for this analysis. The maps are derived from the IMD Climate Hazards and Vulnerability Atlas of India, 2022. The same maps for cyclonic storms (CS) and Severe cyclonic storms (SCS) separately are available in the IMD Climate Hazards and Vulnerability Atlas of India (2022). In October, the districts in coastal Andhra Pradesh and north Tamil Nadu have short return periods of 7.5 to 9.0 years. In November, a few coastal districts in south coastal Andhra Pradesh and north Tamil Nadu have much shorter return period of 3.7-5.0 days. Some more neighhouring districts have return periods of 5.1-10.0 years. In December coastal districts of Tamil Nadu show return periods of 7.5-9.0 years.
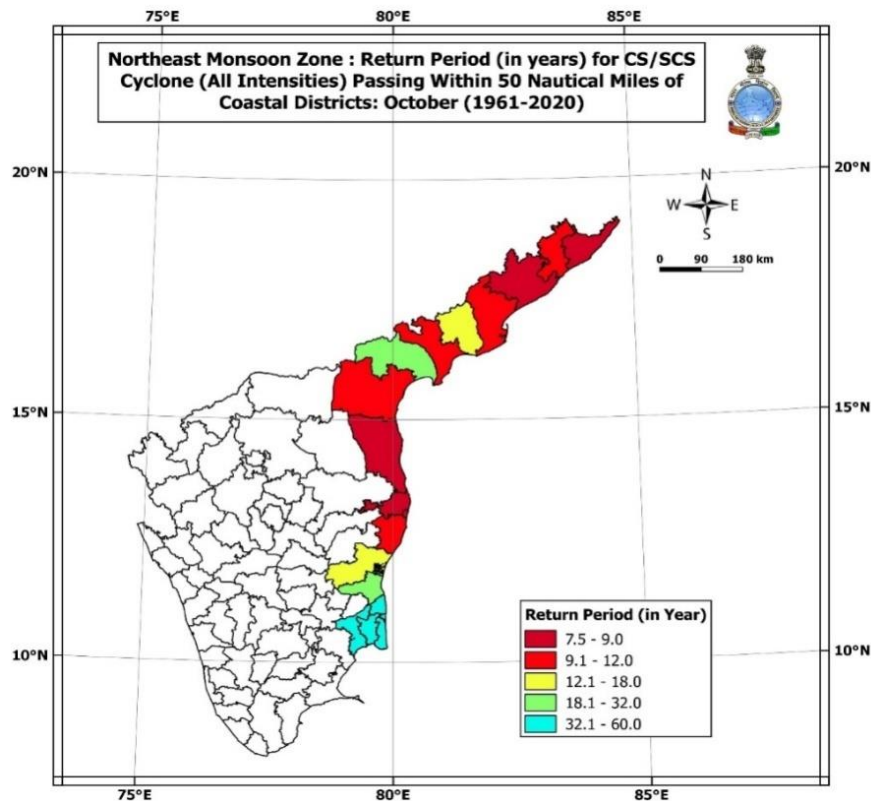

Fig. 4.8 a. Return period (in years) for Cyclonic Storm (CS)/ Severe Cyclonic Storm passing within 50 nautical miles of coastal Districts during October for the period 1961-2020. (Source: IMD Climate Hazards and Vulnerability Atlas of India, 2022).
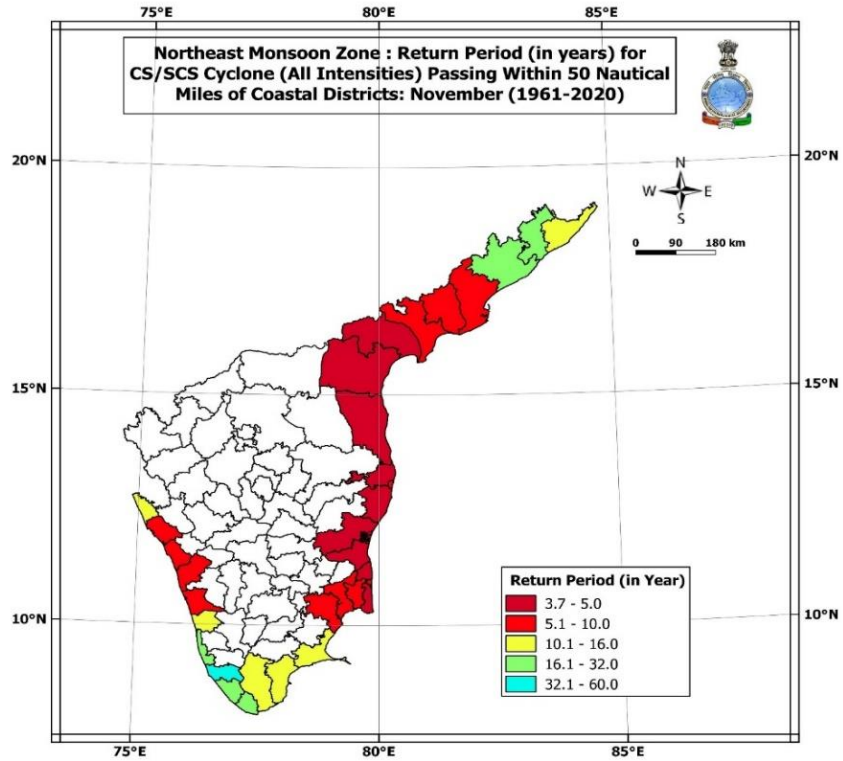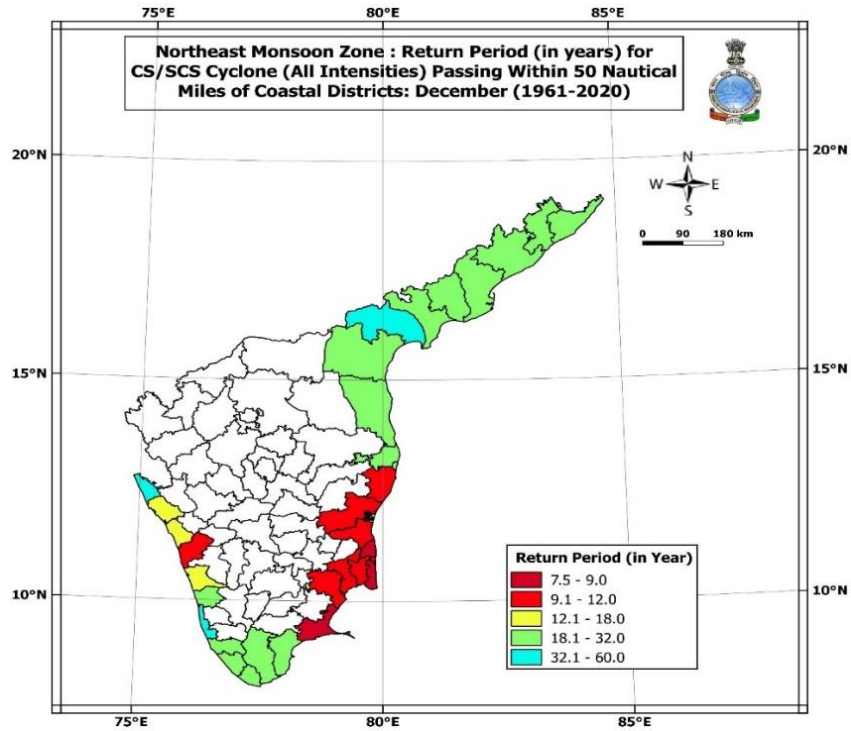
Fig. 4.8 b. Same as Fig 4.5 a, but for November.

Fig. 4.8 c. Same as Fig 4.5 a, but for December.