Indian Monsoon is a topic of immense scientific research all over the world since the last century. Indian economy is vitally linked with the monsoon rainfall. Major part of the country receives more than 75% of the annual rainfall during the four months; June to September (Monsoon season). During the southwest monsoon period a strong southerly flow appears at about 1.5 km level near the eastern coast of Africa and the western Indian Ocean region. This flow turns to the right after crossing equator and flows towards Indian region. The normal speed of the flow is of the order of 15m/s, while speeds exceeding 30m/s are also not uncommon. This flow is known as Somali Jet which is also known as East African Low Level Jet or Findlater’s Jet.

This jet constitutes the strongest cross-equatorial flow in the lower troposphere at any level and forms part of a major low-level air current in the monsoon system. The major part of this low level jet penetrates into East Africa during May and, subsequently, traverses the northern parts of the Arabian Sea before reaching India in June. Observations suggest that the strongest cross equatorial flow from the southern to the northern hemisphere during the Asian Summer Monsoon is in the region of the low level jet. This low level jet penetrates inland over the flat coastal strip of Kenya, low lands of Ethiopia, Somalia and emerges out into the Arabian Sea near 90° N. It
then crosses the west coast of India and transports moisture to the Indian sub-continent during the southwest monsoon.

After the low level jet moves towards the Indian coastline around 9° N, it separates into two branches. One appears to move to the northern parts of the Indian Peninsula while the other recurves towards the southern half of the Indian coastline and Sri Lanka. Low level jet has strong horizontal as well vertical shear which is important for the development of weather systems responsible for rainfall. The Somali jet also helps in transporting moisture to the Indian mainland. With the advent of satellite, our knowledge about the dynamics of the monsoon has improved significantly in the last few decades. However, the origins and mechanics of the monsoon have yet to be conclusively established.

In the present thesis an attempt has been made to provide a broad view of Somali jet by utilizing information from satellite and reanalysis datasets has been utilized. An attempt has been made to provide detailed view over the entire Arabian Sea. The thesis also sets the goal of formulating a criterion for the prediction of the date of onset of monsoon over Kerala and active monsoon spell over the west coast of India. Additionally the thesis also aims at finding out the amount of cross equatorial flux of moisture as well as momentum during the monsoon months. Simulation experiment using WRF has been conducted in order to find out the effect of Mascarene high on the strength of Somali Jet.