

## **2) Description of Research Carried out**

### **i. Introduction/ Rationale/ Justification**

Earth surface receives energy from direct and scattered solar radiation. Energy from the sun passes through the atmosphere to the earth's surface. This heats earth surface and earth surface becomes the main source of energy for the atmosphere. The amount of heating varies spatially and temporally and the unequal distribution of heat leads directly to the horizontal motion we know as winds, and to the vertical motion, which creates clouds and precipitation.

Eventually the energy that has been received from the sun takes part in the various activities within the atmosphere is returned to space. Hence, the climate can be viewed as a result of series of energy transformations and exchanges within and between the atmosphere and the underlying surface.

Floods and erosions, due to heavy rainfall, can cause enormous damage to agriculture, ecology, infrastructure, and disruption to human activities. On the other hand, lack of rainfall causes drought conditions, which lead to collapse of eco-climatic system. Fluctuations in atmospheric conditions cause above/below rainfall anomalies over certain regions of the world. Sri Lanka being a Tropical Island situated at the Southern tip of the Indian subcontinent and in the Asiatic monsoon region, its climate could be characterized as tropical as well as monsoonal. As such, over Sri Lanka, air temperature varies slightly through the year, except for few mountainous areas. However, significant anomalies are found in rainfall and it has a strong impact on agricultural activities of the country.

The role of Ocean-atmosphere interactions has long been recognized as a major factor that determines tropical seasonal variability. It is generally believed that the onset and the existence of the Asiatic monsoon are primarily due to land-sea contrast. However, the fluctuations and variability of the monsoon activity may depend at least partially, on the air-sea interaction, which take place during the travel of the monsoon wind flow over the Indian Ocean, Arabian Sea and Bay of Bengal. It has been postulated that the sea surface temperature (SST) over the Arabian Sea has important influences on the monsoons flow and associated rainfall. Many researchers have pointed out that the Sea Surface Temperature around an