

Preface

The most common phenomenon prevalent in the current world is migration and the exponential increase of population. These factors call for the need to indulge in development activities. Urbanization is the result of an increased human activity which has a more significant impact on the morphology and biophysical characteristics of a region. With the increase in population there arises a need for utilization of natural resources. The activities of humans thereby become the driving factors for geological hazards such as land subsidence. The exhaustion of groundwater tends to become a greater trigger for the phenomenon to occur in the urban areas. If not mitigated, the subsidence effect can aggravate and cause greater impact on the urban infrastructure which can disrupt the biotic and abiotic factors leading to several adversaries.

In this study, land subsidence is investigated for the Greater Chennai Corporation area to identify the presence and distribution of the phenomenon and analyse the relationship of subsidence with natural and anthropogenic factors. In urban areas, this phenomenon impacts the infrastructure, such as buildings above the surface and utility networks below the surface. Several works on identifying the phenomenon of land subsidence for different cities, involved the usage of Differential Interferometric techniques where the areas constituting to varied deformation patterns were mapped and the rate of subsidence was identified. The earlier studies show that several capital cities around this world are affected by this phenomenon. If this phenomenon is prevalent in the coastal areas, there is a higher chance for sea water inundation to take place and with the sea level rise induced by climate change, these areas showing higher subsidence rates along the coastal regions will be the first ones to get affected. Therefore it is essential to identify the regions that can possibly be affected due to subsidence phenomenon.

Persistent Scatterers Interferometry is one of the differential interferometric processes helpful in the monitoring the effect on a long temporal scale. The outline from this study can be helpful in assessing the impact and deliver the need for addressing mitigation measures at the right time before its induction as a major problem.