1.1 Introduction

In the 1970's, in order to extend the theory of Calderón-Zygmund singular integrals to a more general setting, R. Coifman and G. Weiss introduced certain topological measure spaces which are equipped with a metric which is compatible with the given measure in a sense which will be detailed in this chapter. These spaces are called spaces of homogeneous type. In this chapter we present the major notational conventions and basic results of the theory of Calderón-Zygmund operators on spaces of homogeneous type. As we already noticed, it becomes indispensable to have a criterion for L^2 continuity, without which the theory collapses like a house built on sandy beach. One such criterion is the $T1$ theorem of G. David, J. L. Journé and S. Semmes on spaces of homogeneous type. Before proving the $T1$ theorem of G. David, J. L. Journé and S. Semmes, we will explain the Littlewood-Paley analysis on spaces of homogeneous type, which, based on Coifman's idea on decomposition of the identity operator, was developed by the above authors.