This is joint work with Carl Mummert. We initiate the reverse mathematics of general topology. We show that a certain metrization theorem is equivalent to Π^1_2 comprehension. An MF space is defined to be a topological space of the form $MF(P)$ with topology generated by $N_p | p \in P$. Here P is a poset, $MF(P)$ is the set of maximal filters on P, and $N_p = F \in MF(P) | p \in F$. If the poset P is countable, the space $MF(P)$ is said to be countably based. The class of countably based MF spaces can be defined and discussed within the subsystem ACA_0 of second order arithmetic. One can prove within ACA_0 that every complete separable metric space is homeomorphic to a countably based MF space which is regular. We show that the converse statement, "every countably based MF space which is regular is homeomorphic to a complete separable metric space," is equivalent to $\Pi^1_2 - CA_0$. The equivalence is proved in the weaker system $\Pi^1_1 - CA_0$. This is the first example of a theorem of core mathematics which is provable in second order arithmetic and implies Π^1_2 comprehension.