1 INTRODUCTION

The following report summarises the work from 1st July 1991 investigating the statistical feasibility of cloud seeding in the Copeton Dam region of NSW. The analysis covers a number of issues concerned with the number of days for which it is expected rain is to fall, the amount of rain expected to fall, cloud and wind conditions on rainy days, and the likelihood of detecting prescribed cloud seeding increases in rainfall.

The report is divided into a number of sections. The first section deals with the initial selection of the gauge sites. The second section looks at the analysis of raindays (a definition is given at the beginning of the raindays section). We then look at the rainfall amounts in and around the Copeton Dam region as well as the correlations of rainfall amounts between stations. Following sections discuss the breakdown of raindays according to wind direction and speed, the selection of control and target areas and their relationships to each other, simulated seeding experiments based on historical data, the detection of seeding increases in rainfall, and the determination of cloud conditions on rainy days.

The report below indicates that there is a good potential for cloud seeding in the Copeton Dam region. Should cloud seeding go ahead there are a number of individual gauges and groups of gauges which, in their present positions, could act as very good predictors of the rainfall in the Copeton Dam region. This is essential for a good cloud seeding experiment. The odds of detecting a 30 percent increase in precipitation are about 4:1 in a 5-6 year experiment and for a 20 percent increase about 2:1.