ment allotted to the Service for the year ended March 31, 1975, amounted to $4.7 million. In this figure is included assistance, in the form of subventions in the field of atmospheric science, for research in Canadian universities amounting to $254,000.

Atmospheric processes research. The activities of the Atmospheric Processes Research Branch are concentrated in three main areas. In the Numerical Studies Division emphasis is on numerical modelling of large scale atmospheric behaviour and on diagnostic studies of these processes from observations. Numerical models are being used or are under development to address the questions of the photochemical, dynamical, and climatic effects of stratospheric pollution due to SST exhaust products and from pollutants released at the surface such as freons; the simulation of the general circulation of the atmosphere and the impact of man's activities (such as increased carbon dioxide, global pollution, etc.); the determinants of climate and the impact of climate on natural and anthropogenic factors; and the possibility of extended predictive ability and of prediction of climatic anomalies and trends. Research into numerical methods of the solution of the equations involved, into the parameterization of physical processes for incorporation into the models, and into theoretical aspects of atmospheric behaviour, are an important part of the over-all program. Diagnostic studies of atmospheric behaviour are proceeding concurrently. In particular the delineation, quantification, and analysis of climatic trends in Canada and in North America is under way as a basis for physical understanding of the processes involved and for the possibilities of long-range prediction.

In the Experimental Studies Division observational studies of several important stratospheric constituents and parameters such as ozone, nitric oxide, nitrogen dioxide, nitric acid, water vapour, chlorine constituents, hydroxyl emissions and solar ultraviolet flux are under way. These measurements are carried out by remote sensing and in situ measurement via balloon, rocket and aircraft. Stratospheric measurements are used to establish the current "unperturbed" stratospheric photochemical balance, to verify photochemical reaction rates and as an input to models of stratospheric behaviour. These observations serve as a basis to estimate the effects of stratospheric pollution by SST exhausts, freons and other compounds. Additional physical observations are carried out to maintain international programs in ozone, radiation, noctilucent clouds, turbidity and aerosols. Other observational, experimental and design work is carried out to develop and organize the techniques required for continued monitoring of the stratosphere.

In the Cloud Physics Research Division experimental and theoretical studies are directed primarily toward developing techniques of weather modification to enhance rainfall and suppress damaging hail. Toward this end, microphysical measurements of cloud parameters made by instrumented aircraft are being used to delineate cloud structure, increase understanding of the physical processes and to assess cloud potential for weather modification. Weather radar studies are being conducted to better understand and measure the precipitation processes on the mesoscale. Atmospheric electricity studies accompany this activity to gain further insight into the electrical phenomena of the atmosphere, including lightning discharges. Numerical modelling studies of dynamical and physical cloud processes in three dimensions are being undertaken to provide the capability of simulating clouds by computer techniques for both diagnostic and forecast purposes.

Air quality research includes the development of an air pollution climatology for Canada, experimental plume-rise studies, urban and regional multiple source dispersion, wind-tunnel modelling, visibility trends in Canada and the development of air quality indexes, studies of the effects of pollution on climate and studies of urban meteorology. Important additions to the research programs in air quality are environmental impact studies for existing and proposed industrial sites. In the past year, these special short-term investigations have taken on great importance as a result of the growing public concern about the environmental impact of both industry and modification to established facilities and as a result of the growing realization of the importance of meteorological factors in determining the effects of pollutant emissions on air quality.

As part of a commitment to the World Meteorological Organization's global monitoring network, three baseline stations at remote arctic and oceanic sites are being established; eight regional stations are currently operational. In addition, a national network of urban reference stations, one for each large city, will be established over the next five years. The observational program will include not only the standard meteorological elements but also precision