

## PREFACE

**OPTICS OF THE ATMOSPHERE PERTURBED WITH THE ERUPTIVE PRODUCTS FROM MT PINATUBO VOLCANO**

The outburst of Mt Pinatubo eruption occurred in Philippines in June 1991 appeared to be one of the most strong eruptions in the 20th century. Thus, the amount of volcanic ashes emitted into the atmosphere is estimated to be about 11 cubic kilometers and that of sulphuric substances about 16 megatonnes. The characteristics of the atmospheric emission from Mt Pinatubo volcano are comparable with the characteristics of the emission from Catmay (Alaska) eruption occurred in 1912. It is known that the influence of the emission from this latter volcano on the heat flux from direct solar radiation lasted about two years, so that the atmosphere returned to its normal state only in spring of 1914. Unfortunately, no detailed information about the eruption of Catmay volcano could be obtained at that time. Among most strong eruptions that were studied in more detail, the eruptions themselves and their effect on the environment, the eruptions of Agung volcano in Indonesia (1963) and El Chichon in Mexico should be mentioned first of all. A lot of valuable information have been also acquired about the less strong eruptions of Fuego volcano in Guatemala (1974), Mt St Helens in the USA (1980), and Ruis in Colombia (1985).

Powerful volcanic eruptions can cause drastic changes in the Earth's climate, as well as weaken the ozone shield of our planet. At the same time volcanic aerosol is a very good tracer for studying the stratospheric dynamics. Undoubtly, that is the main reason why the attention of many researchers throughout the world has been attracted to the event of Mt Pinatubo eruption from the very beginning. For this same reason practically all scientific conferences on the atmospheric studies held in 1992 were devoted to this problem and a lot of journal publications concerning the study of this eruption appeared during this year. Unfortunately, in Russia this problem has been poorly highlighted. In this topical issue of the journal a reader will find some original articles presenting the results of investigations of volcanic aerosol carried out using lidar and spectrophotometric facilities as well as some results of observations of stratospheric ozone undertaken during the post-Pinatubo eruption period. In particular, there is an overview of papers presented at the 16th International Laser Radar Conference (USA, July 1992) concerning this problem in this issue.

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