

Gregor Lax

Von der Atmosphärenchemie zur Erforschung des Erdsystems. Beiträge zur jüngeren Geschichte des Max-Planck-Instituts für Chemie (Otto-Hahn-Institut), 1959-2000

Abstract

The Max-Planck-Institute for Chemistry (MPIC) in Mainz is one of the major pillars for the atmospheric and Earth System Sciences (ESS) within the Max-Planck Society and in general in the Federal Republic of Germany (FRG). This study provides insights in the history of the establishment and the further development of these scientific fields at the MPIC. It is divided into three sub studies which will be briefly described in the following: The first part deals with the re-orientation of the MPIC from the late 1950's to the end of the 1960's. During that time the MPIC was in search of a new director, a process which lasted almost ten years and which came to an end with the appointment of Christian Junge and the foundation of the department of atmospheric chemistry which is still active to the present day. This part of the study focuses primarily on conflicting institutional goals which can be further characterized as the attempt to guarantee a link to traditional lines of research and organization on the one hand and to explore new and innovative research fields and establish them in the Max-Planck-Institutes on the other. The second chapter situates the development of Junge's department in broader national research contexts in the 1970's. In close connection to the German Research Society sponsored collaborative research program 73 'atmospheric trace-gases' (CRP 73), new integrative research approaches were broadly established in the atmospheric sciences in Germany. The main objectives were now to investigate linkages and exchange-processes

in and between the Atmosphere and other earth-spheres, e.g. oceans, biosphere, cryosphere etc. New educational structures for young scientists were consolidated in the context of the interlinked MPIC and CRP 73. Many of these young scientists played important roles in the following development of the atmospheric sciences, in Germany as well as on the international level. Compared i.e. to the United States, modern integrative approaches were established in the German atmospheric sciences with a delay of more than a decade. Beforehand, the field predominantly focused on weather research and prediction.

The third chapter is subdivided in two parts and deals with the expansion of ESS at the MPIC after the era of Christian Junge. Part one traces the foundation of the Department of biogeochemistry in the middle of the 1980's under the leadership of Meinrat O. Andreae, and the most important ESS research topics at the MPIC at that time, especially the investigation of natural and man-caused biomassburning, biogeochemical cycles, and the work on the CLAW-Hypothesis and her relationship to the Gaia-approach of James Lovelock. The second part analyses the history of the investigation of anthropogenic influences on the atmosphere, which was programmatic under Junge's successor Paul Josef Crutzen. The outlined working areas range from the 'Nuclear Winter', anthropogenic emitted NO_x and other gases, artificial CFCs, and the explanation of the ozone hole in the light of the Anthropocene-Hypothesis. The latter has been discussed extensively since 2000 in the natural as well as in the social sciences and humanities.

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