

August Schmauß
26 November 1877 – 10 October 1954



August Schmauß, The atmosphere as a colloid

The Atmosphere as a Colloid – Pioneering Work of August Schmauß.

In the first half of the twentieth century, the research of atmospheric particles was quite active, as Podzimek [2000] showed very nicely. However, in contrast to the title “History of Atmospheric Aerosol Science Between 1900 and 1950” of his contribution to the “History of Aerosol Science” might suggest, the term “Atmospheric Aerosol” was not yet coined nor realized at the beginning of the time span under consideration. It was not a colloid being investigated, but rather a kind of particle zoo: condensation nuclei, soil, sea salt, dust, and smoke particles, fine droplets, large ions, ice, sublimation nuclei, and so forth.

Among many scientists working in the field, Podzimek mentioned Schmauß and Wigand. They published a small book together [*Schmauß and Wigand, 1929*] with the title “Die Atmosphäre als Kolloid” (The Atmosphere as a Colloid). That was not the first mention of the term colloid in connection with atmospheric particles, but it was a comprehensive discussion of the subject. To my knowledge, the first mention of the atmosphere as a colloidal solution was 10 years earlier [*Schmauß, 1919*]. He remarked, “*I have the impression that the explanation of cloud and precipitation formation is missing several weather elements. ... Under otherwise identical conditions it sometimes rains and sometimes does not.*”

... The atmosphere resembles in such times a metastable mix moving towards a stable condition. ... A colloidal solution for instance could exist for years constantly changing, but making a forecast about the time the change occurs, is impossible.”¹

In 1920, a more detailed paper appeared [Schmauß, 1920], comparing colloid chemistry and meteorology: “Nothing hinders the dust [the context always talked about water] from being called a colloidal solution of water [droplets] in air. Since solutions of colloids in water are called hydrosols, in alcohol alkosols, dust should be called an aerosol”. It is interesting to note, that at that time aerosol and clouds were seen as an entity, the atmospheric aerosol. In this paper Schmauß attributed the apparent stability of the atmospheric aerosol mainly to electrical forces.

August Schmauß was born on November 26, 1877 in Munich, Germany. In 1900, his dissertation was “Über anomale elektromagnetische Rotationsdispersion”. In 1922, the University Munich created a Lehrstuhl for Meteorology and Climatology and from that time forward, PhDs in meteorology became possible. August Schmauß headed that institute and another Institute for Meteorology in Munich until retirement in 1948.

Schmauß was trained in experimental physics and published about 7 papers in that field. The majority of his published papers were, however, in meteorology. His interest was rather broad. So he covered water vapour, condensation and hydrometers; thermodynamics; wind and atmospheric flow; free atmosphere and aerology; correlation and cyclic systems; singularities and waves; climate variations; applied meteorology; meteorological optics and acoustics; general meteorology; methodology and instruments [Zierl, 1948]. But also topics like meteorology in the war [Schmauß, 1940].

References

- Podzimek, J. (2000), History of Atmospheric Aerosol Science Between 1900 and 1950, *History of Aerosol Science*, pp 57-68, edited by O. Preining and E. J. Davis, Verlag der Österreichischen Akademie der Wissenschaften, Vienna.
- Schmauß, A. (1919), Randbemerkungen II, *Meteorologische Zeitschrift*, 36, 11-16.
- Schmauß, A. (1920), Kolloidchemie and Meteorologie, *Meteorologische Zeitschrift*, 37 (1/2), 1-8.
- Schmauß, A., and A. Wigand (1929), *Die Atmosphäre als Kolloid*, 74 pp, Vieweg, Braunschweig.
- Schmauß, A. (1940), Der Krieg als meteorologischer Erzieher, *Zeitschrift für angewandte Meteorologie*, 57, 400-401.
- Zierl, H. (1948), Literaturverzeichnis zu den wissenschaftlichen Arbeiten (1900-1947) von August Schmauß, *Meteorologische Rundschau*, 1, 170-175.

*Biography prepared by
Ruprecht Jaenicke*

¹ In this collection of remarks, Schmauß probably is the first who documented cloud seeding: “8. An airplane is dissipating a cloud veil: ... A faint cloud veil at about 500 m altitude was present. ... By chance an airplane crossed this veil and left behind a blue trace. ... The cloud in the trace was consumed by the airplane.”