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Variations of the Solar irradiation of the Earth and Milutin Milankovic

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One of the great scientific problems in the beginning of the twentieth century, was the occurence of the ice-ages in Europe in the Qartenary. Serbian scientist Milutin Milankovic (1879 - 1958) devoted his life to the solution of this mistery. He elaborated a mathematical theory of Earth's climate (applicable also to other planets) based on the calculation of variations of Solar irradiaton of Earth during the time.

In his capital work „Kanon der Erdbestrahlung und seine Anwendung auf das Eiszeitenproblem" (The Canon of the Earth's Irradiation and its Application to the Problem of Ice Ages), published in 1941, he collected the results of his longstanding researches, demonstrating the long-period cyclic changes in the Earth climate and the occurence of ice-ages as being a consequence of the variations of the Earth's irradiation by Sun, due to: (i) Changes of Earth's axis inclination with a 41 000 year period; (ii) Changes of the eccentricity of the Earth's orbit around the Sun with a 100 000 year period; (iii)Precession, affecting the duration of seasons with a 22 000 year periode.

With his famous curve of the cyclic variations of Solar irradiation of the Earth surface in last 600 000 years, he explained the occurence of ice-ages. Additionally, his theory, and the obtained curve of Solar irraditaion cyclicity, have numerous applications in Geophysics, Geology and Climatology of Earth and Mars.

In this paper we will review the Milankovic's theory of variation of Solar irradiation of Earth's (and other planets) surface with time, its role for the solution of the ice-ages problem, and its wider impact in Geophysics, Geology, Climatology and other scientific disciplines. Additionally, basic facts on the life and other scientific results and achievements of Milutin Milankovic and its applications will be reviewed.