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From earth science to earth and planetary science – A preface to the philosophy of earth and planetary science

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The present literature on science studies has compiled various historical, philosophical, and sociological insights on the development of earth sciences up to the Plate Tectonics Revolution in the 1960s. However, little attention has been paid to the development of earth sciences after that revolution - i.e. the emergence of earth and planetary sciences. This talk aims to be a preface to the "philosophy of earth and planetary science" by displaying the following two aspects of earth and planetary sciences.

(a) History of earth and planetary science: the question over where the present earth and planetary science comes from is itself a big issue to be considered, but a promising view is that the development of meteoritics, along with the opening of space exploration, turned the planets and satellites in the solar system from astoronomical objects to geological ones. Clarification of this process is an important step to understand how earth science evolved into earth and planetary science.

(b) Philosophy of earth and planetary science: T.Kuhn's paradigm theory has been frequently cited to account for the Plate Tectonics Revolution. Miyashiro Akiho, for example, pointed out in his book What is Scientific Revolution (1998) that although paradigm theory does not apply entirely in earth sciences, a sort of paradigm shift actually occurred in the Plate Tectonics Revolution. Then, the question we face now is whether this is also true of the transformation of earth science into earth and planetary science. In this talk, we will suggest that a paradigm shift didnot take place in case of that transformation, hence we need another model in philosophy of science to account for the formation of earth and planetary science.

Keywords: philosophy of science, history of science, earth and planetary science, meteoritics