

Space Weather and Terrestrial Weather during the Transition Period of the Solar Activity in 13th and 14th Century: an Examination on Disaster Records in Yuan Dynasty.

\*Hisashi Hayakawa<sup>2</sup>, Hiroko Miyahara<sup>5</sup>, Harufumi Tamazawa<sup>1</sup>, Hiroaki Isobe<sup>3,4</sup>, Ryuho Kataoka<sup>6,7</sup>

1.Kwasan and Hida Observatories, Graduate School of Science, Kyoto University, 2.Graduate School of Letters, Kyoto University, 3.Graduate School of Advanced Integrated Studies in Human Survivability, Kyoto University, 4.Kyoto University Unit of Synergetic Studies for Space, 5.Musashino Art University, 6.National Institute of Polar Research, 7.SOKENDAI

Space Weather and Terrestrial Weather during the Transition Period of the Solar Activity in 13th and 14th century: an examination on disaster records in Yuan Dynasty. In the 13th century, the rapid fall down of the solar activity ended the Medieval Maximum (1100-1250) and started the Wolf Minimum (1280-1340). This change of the solar activity also caused a considerable climate change on the earth and brought an end of the Medieval Warm Period (10c-13c) and the Little Ice Age (14c-19c). In the 13th century, Eurasia witnessed an unexampled worldwide empire by the Mongolian Empire and the trade routes across the Eurasia had gotten connected between the West and the East under the "Pax Mongolica". Even this worldwide Empire could not conquer the contemporary climate change and had disintegrated in the early Little Ice Age. It is frequently pointed out that hunger or social unrests caused by extreme weathers are one of its biggest reasons. However, as for such extreme terrestrial weathers, they have only gotten pointed out vaguely and they have left unexamined till now. So, in this presentation, we treat the records of disasters in the China under Mongolian rule (1235-1368) and show the detail of the extreme terrestrial weather caused in the period during the transition of the solar activity, shown by the records of carbon-14 in tree rings. Historical records provides important information on the regional differences of solar influence on climate. It also gives some clues on the ocean-atmospheric circulation during the time.

Keywords: Wolf Minimum, Medieval Warm Period, solar activity, Extreme Terrestrial Weathers