



## **Interdisciplinary collaboration among climate and cultural understanding education for promoting the fundamental ESD literacy (A report of the lesson practice in the university on climate and “seasonal feeling” in the northern Europe)**

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Education on climate system sciences including the climate variability is not only very important for the scientific backgrounds for the individual ESD activities (studies on environment, disaster prevention and climate variability), but also it could contribute greatly to promoting the students' and teachers' fundamental “ESD Literacy” itself, such as thinking of various complex relations, diversity, etc., among the ESD targets.

This is because the climate systems are characterized by the non-linear interactions (in other words, the feedback mechanisms), and the multi-scale time and spatial structures with interactions among the different scales (including the features of day-to-day variations which partly characterize the season), and so on. On the other hand, the climate systems and their variations present rather close relationships to the various targets in ESD. For example, climate is one of the important backgrounds of generating the life and culture, and their diversity. The joint activity between the climate and cultural understanding education would be also useful in ESD. Especially in the middle or higher latitude region, although the significant seasonal cycle is commonly seen there, it presents rather different characteristics from region to region. Therefore, the seasonal cycle and “seasonal feeling” could be one of the key topics for such joint activity among the climate, music and art education.

We have made the joint activity among the climate, music and art education from primary school to the university mainly on the topics for East Asia and have introduced a part of them also at this EGU Annual Assembly (2012, 2014 - 2017). In this presentation we will report the joint activity of a lesson practice at Faculty of Education of Okayama University on climate and “seasonal feeling” in the northern Europe. Why we chose the northern Europe (not East Asia) for a target area is to advance the students' deeper understanding, imagination and appreciation of the climate and seasonal feeling as if they were living in that region, through the careful examination of the climate data, music and art works, and video watching of the traditional seasonal events and life. This would contribute to promoting the students' ability to understand or sympathize with the different cultures or people, which would lead to acquiring the ESD literacy. As for the climate in the northern Europe, the students considered the features of the seasonal variation of air temperature and solar radiation there, etc., also referring to the large amplitude of the day-to-day variation as well as the seasonal mean value. Then the students' composition and performance of the music works were made with small percussion instruments on the “summer solstice” there. The students' expression with the colored papers on the summer solstice in the northern Europe was also made after a brief explanation on the Johannes Itten's (1888-1967) exercise for presenting the four seasons. In this presentation, the students' works will be also introduced mainly for the music expression.