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Seasonal cycle of the cyclone activity around Europe (A case study for 2000)

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The extratropical cyclone is one of the basic systems that characterize the weather and climate in mid-latitude area, where the mean meridional temperature gradient is large. Also in Europe, located in middle or higher latitude area, many extratropical cyclones appear throughout a year. However, the climatological mean meridional gradient of the air temperature there is rather weaker than in the autumn to next spring around Japan in East Asia.
Then it would be still necessary to re-examine the intraseasonal variations activities of daily cyclones and anticyclones with attention to the basic fields for the daily systems and the cyclones' characteristics such as whether they are the baroclinic instability waves or other types together with the day-to-day evolution of the cyclones throughout seasonal cycle.
Kuwana et al (EGU 2017) focus on the cyclone activity in 2000 from winter to spring and pointed out that not only the daily systems but also the intraseasonal-scale systems were also dominant in both winter and spring. As the second report, the present study will examine the cyclone activities around Europe throughout the seasonal cycle of the same year, with attention to how the daily systems and intraseasonal-scale ones are related to each other and how much multi-scale features characterize the seasonal cycle of daily cyclone activities. The NCEP/NCAR re-analysis data were mainly used in this study.
Although the Icelandic Low disappears during the summer time, intraseasonal variation of SLP, and so on, showed the large amplitude throughout the year. In the stage when the intraseasonal-scale Icelandic Low approached northwestern Europe, several lows passed eastward with a few days interval along the southern edge of Icelandic low with the baraclinicity locally enhanced. The seasonal-scale Icelandic Low appeared again in the middle of October. However the positions of the intraseasonal Icelandic Low center in the opposite phases were not so different between each other. As such the asymmetrical seasonal progression on the intraseasonal behaviors of Icelandic Low was founded between the former half and latter half of the winter.
On the other hand, from spring to autumn, some different types of the intraseasonal scale cyclones and anticyclones were observed, they generally showed the equivalent barotropic structure. Especially from June to August, the mean SLP field there in a time-scale move than about a half month was mainly characterized not by the seasonal mean but by the intraseasonal field. Furthermore, even the day-to-day systems were greatly reflected by such alternation of the intraseasonal-scale cyclones and anticyclones. In this poster presentation, we will also compare the cyclone activity in East Asia affected greatly by the global-scale Asia monsoon, and so on.