The Spatial Characteristics Classification of Ocean Weather around the Korean Peninsula using Cluster Analysis

Goeun Son (1), Pil-Hun Chang (2), and Jae-Young Byon (3)

(1) Global Environment System Research Division, National Institute of Meteorological Research, Korea, Republic Of (geson@korea.kr), (2) Global Environment System Research Division, National Institute of Meteorological Research, Korea, Republic Of (phchang@korea.kr), (3) Global Environment System Research Division, Natioanl Institute of Meteorological Research, Korea, Republic Of (byonjy@kma.go.kr)

Weather conditions in ocean as well as land around the Korean Peninsula are very important because of surrounded on three sides. In order to examine the spatial characteristics of ocean weather, a cluster analysis is performed using ocean weather variables such as wind and wave around the peninsula region. Wind and wave forecast data in recent 6 years, from 2008 to 2013, of RDAPS(Regional Data Assimilation and Prediction System) and ReWW3(Regional Wave Watch 3) which are operated and obtained by the Korea Meteorological Administration were used in this study. The RDAPS gridded daily wind data has horizontal grid of about 12 km and ReWW3 gridded daily wave data has horizontal grid of about 8 km. These variables are used for the analysis of spatial characteristics of ocean weather. To compare nonlinear interaction between wind and wave in each spatial grid, continuous wavelet transform was performed. Wavelet spectra calculated the dissimilarities among all of the wavelet spectra using maximum covariance analysis and then it analyzed through the cluster analysis. By comparing variable method of cluster analysis, we choose Complete linkage and Ward method because they are estimated wind and wave are subdivided appropriately. The result of wavelet spectra show that wind speed and wave height have similar patterns, but overall other variables are not. To solve these problems, the mean dissimilarity is performed and it allowed us to identify the more similar variable patterns. The result of the study, subdivided area by cluster analysis can be utilized to estabilish forecast area of the Korean Peninsula area by identifying each a spatial distribution about ocean weather characteristics. The resuluts will be presented in the conference.