# Forecast of Minimum Sea Level Pressure by Statistical Analysis

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Recently a large amount of observations become available. Then it is possible to predict some physical variables with statistical analysis on observation data and these forecasts may be effective in some cases which physics based model cannot represent well or require much time. Some experiments were conducted to predict future MSLP by using statistical methodologies on MTSAT-1R and MTSAT-2 infrared images combined with previous records of MSLP because the reproduction of MSLP based on a high-resolution physical model requires much computational cost. As a statistical method, linear regression (LR) and neural network (NN), which is one of "Artificial Intelligence" techniques, were employed. Before the experiments, the relationship between satellite infrared images and MSLP were validated by PCA. As explanatory variables for experiments, two principal components were selected because their contribution rates were beyond 90 %. These experiments showed that LR and NN forecast skills were comparable to that of Japan Meteorology Agency (JMA) operational forecast and that NN results were slightly better than the others. Root mean square error of MSLP with respect to JMA best track derived from LR, NN and operational forecast are 13.4, 13.0, 14.4 hPa respectively.