

# Covariability between Atmospheric Teleconnections and GDP Growth Rates

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Weather can have effects on local and global economies. Weather in one region can affect weather in another region, such as the El Niño phenomenon or Arctic Oscillation. Similarly, the economy of one country can affect the economy of another country. Therefore, it is necessary to study from a global perspective. The purpose of this study is to investigate the relationship between atmospheric teleconnections and the GDP growth rates of each country, and to clarify the teleconnection patterns closely related to economic activity.

It is suggested that the GDP growth rates were statistically related with Pacific Decadal Oscillation (PDO) index (negative correlation) or Southern Oscillation index (SOI) (positive correlation). In addition, we performed an empirical orthogonal function (EOF) analysis of the GDP growth rates. The first mode represents the pattern of gap between developing countries and developed countries. The first mode index was significantly correlated with the PDO index or SOI. From the above, it is suggested that the pattern of gap between developing and developed countries may be related to these teleconnection patterns.

Keywords: Gross Domestic Product, Southern Oscillation, Pacific Decadal Oscillation

