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## Objective analysis of Typhoon Longwang (2005) intensity using satellite multi-channel observations

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The present study used the spectral features of the IR1 and WV channels of the satellite to define a new index, the brightness temperature of the infrared window channel minus the brightness temperature of the water vapor channel divided by the brightness temperature of the infrared window channel plus the brightness temperature of the water vapor channel. The values obtained by this formula are called the Normalized Difference Convection Index (NDCI) values. The NDCI was applied to determine the intensity of Typhoon Longwang (2005). The study tried to perform correlation analyses with NDCI and maximum sustained wind speed for various ranges within the circles of 50km to 500km radius with a typhoon eye as the center. First, NDCI values in various ranges were fit to a probability density function with a Gaussian distribution. Then, the mean ( $\mu$ ) and standard deviation ( $\sigma$ ) were derived. The mean value and coefficient of Variation ( $CV=\sigma/\mu$ ) showed a high correlation with the maximum sustained wind speed for ranges within the circles of 175 km to 300 km radius under the situations that the typhoon eye was not formed or covered by the high anvils and cirrus layers and the typhoon eye was clear. According to the preliminary result of this study, NDCI shows promise for the monitoring of typhoon intensity of a typhoon. More discussions will be shown in the conference.

### Biography

Yung-Cheng Chang got his PhD from National Chiao-Tung University in Taiwan R.O.C. With 12 years industry experience, he joined the Minghsin University of Science and Technology in 1995 and is an associate professor in the Computer Science and Information Engineering department. He dedicates part of his work in earth science/climate observation and social study of the connection of Taiwan's irrigation canals/water resources and the historical development of population and industry.

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