

**The El Niño–Southern Oscillation Signatures in the Troposphere Observed by
FORMOSAT3/COSMIC**

Y. Y. Sun¹, J. Y. Liu¹, H. F. Tsai², C. H. Lin³

*¹Institute of Space Science, National Central University, No. 300, Joongda Road,
Jhongli City, Taoyuan County 32001, Taiwan.*

²Central Weather Bureau, Taipei, Taiwan.

*³Plasma and Space Science Center, National Cheng Kung University, No.1,
University Road, Tainan City 701, Taiwan.*

The low-latitude troposphere response to El Niño-Southern Oscillation (ENSO) events during 2006-2009 has been observed by FORMOSAT-3/COSMIC. Variations of troposphere temperature, pressure and water vapor within latitude $\pm 5^\circ$ reveal that due to the air–sea interaction, the Pacific basin-wide ENSO warm begins to grow during northern hemisphere Summer, then crosses the 180°E , and expands to eastern Pacific in the northern hemisphere Winter. On the other hand, four indices are derived from the F3/C tropopause height, pressure, temperature, and potential temperature based on a standard SOI (Southern Oscillation Index) and Niño3.4 index. The derived indices as well as the SOI and Niño3.4 yield a good agreement. The results predict that it shall be a strong ENSO warm event in 2009-2010.