



## **Antarctic sea ice variability 1979-2006**

**D. Cavalieri** (1) and C. Parkinson (2)

(1) Cryospheric Sciences Branch/Code 614.1, NASA Goddard Space Flight Center, Greenbelt, MD 20771 USA, (Donald.J.Cavalieri@nasa.gov), (2) Cryospheric Sciences Branch/Code 614.1, NASA Goddard Space Flight Center, Greenbelt, MD 20771 USA, (Claire.L.Parkinson@nasa.gov)

Analyses of 28 years (1979-2006) of Antarctic sea ice extents and areas derived from satellite passive microwave radiometers are presented and placed in the context of results obtained previously for the 20-year period 1979-1998. We present monthly averaged sea ice extents and areas, monthly deviations, yearly, and seasonal averages for the Southern Hemisphere as a whole and for each of five sectors: the Weddell Sea, the Indian Ocean, the Western Pacific Ocean, the Ross Sea, and the Bellingshausen/Amundsen Sea. The total Antarctic sea ice extent trend increased from  $0.96 \pm 0.61\%$  decade<sup>-1</sup> to  $1.0 \pm 0.4\%$  decade<sup>-1</sup> from the 20- to 28-year period and reflects contrasting changes in the sector trends. The eight additional years resulted in smaller positive yearly trends in sea ice extent for the Weddell Sea ( $0.80 \pm 1.4\%$  decade<sup>-1</sup>), the Western Pacific Ocean ( $1.4 \pm 1.9\%$  decade<sup>-1</sup>), and the Ross Sea ( $4.4 \pm 1.7\%$  decade<sup>-1</sup>) sectors, in a lessening of the negative trend for the Bellingshausen/Amundsen Seas ( $-5.4 \pm 1.9\%$  decade<sup>-1</sup>) sector, and in a shift from a negative trend to a positive trend for the Indian Ocean ( $1.9 \pm 1.4\%$  decade<sup>-1</sup>) sector. A similar pattern of yearly trend changes for the two periods is also apparent in the sea ice area time series. These results suggest that large-scale changes in the atmospheric circulation pattern may have occurred from the 20- to 28-year periods. While the trend changes for the sectors suggest the possible influence of an atmospheric zonal wave 2 pattern, no single mode of atmospheric variability appears to be consistent with all of the observed changes.