**Atlantic Hurricane Seasons: Active (2005) vs. Quiescent (2006)**

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**ABSTRACT**

Recent Atlantic hurricane activity has raised several questions. For example, why was the 2005 season so early and active and are there similarities with the past, and contrary to many expectations, why was the first half of the 2005 season quiescent? We show that parallels exist between 2005 and previously active years. In 2006, a reversal of the large-scale ocean-atmosphere conditions from those in 2005 contributed to a quieter season. On longer time-scales SST, sea level pressure and zonal winds exhibit multidecadal variability; weaker easterlies during the positive phase of the Atlantic Multidecadal Oscillation (AMO) result (via ocean-atmosphere interactions) in warmer water and generally increased hurricane activity. However, individually active or quiescent years may occur independent of both the AMO phase and the secular warming trend.

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**Early 2005 hurricane season**

- Number of storms by end of July: 4 tropical storms + 3 hurricanes (cat 1, cat 4, cat 5)
- Large scale ocean-atmosphere fields in the Atlantic in early 2005 were favorable for early-season hurricane formation (Fig. 1)
- Pressure patterns in June 2005 were similar to those more commonly found in September during active years (Fig. 2)
- These Pressure patterns led to weak easterly trade winds
- Weak easterly trade winds resulted in less latent heat loss from the ocean (positive anomaly)
- Less latent heat loss from the ocean produced a positive SST anomaly

**Early 2006 hurricane season**

- Number of storms by end of July: 3 tropical storms
- Large scale ocean-atmosphere fields in the Atlantic in early 2006 were opposite to those in early 2005 (Fig. 1)
- The Bermuda/Azores High was stronger and, therefore, easterly trade winds were stronger
- Strong easterly trade winds resulted in greater latent heat loss from the ocean (negative anomaly)
- Increased latent heat loss from the ocean produced a negative SST anomaly
- The early 2006 hurricane season was quiet for reasons other than El Niño

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**Conclusions**

- Warming trend shows 0.4°C increase in Atlantic Temperatures in 130 years
- Individual active seasons occur regardless of AMO phase
- Individual strong storms occur regardless of secular temperature warming trend

Atlantic Multidecadal Oscillation, secular temperature warming trend & hurricane activity (Fig. 6)

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