Extended Range Forecast for Atlantic Hurricane Activity in 2003

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Forecast Summary

The 2003 Atlantic hurricane season is anticipated to be average to above average with basin storm numbers and strikes on the USA and Caribbean Lesser Antilles close to the 10 year average but 20-30% above the 30 year average.

The Tropical Storm Risk (TSR) consortium presents their extended range forecast for Atlantic hurricane activity in 2003. The forecast spans the Atlantic season from 1st June 2003 to 30th November 2003. Our two predictors are the forecast July-September 2002 trade wind speed over the Caribbean and tropical north Atlantic (a strong proxy for vertical wind shear but more predictable), and the forecast August-September 2002 sea surface temperature in the tropical north Atlantic. The reason for anticipating a relatively active season in 2003 is our expectation that both predictors will have a small enhancing effect on activity. However, forecast skill at this lead is slight. Monthly updated forecasts will be issued through to August and will include the introduction of a total wind energy index for basin and landfalling systems.

Atlantic Total Numbers in 2003

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (±FE)	2003	2.8(±1.8)	7.0 (±2.8)	12.4 (±3.5)
10yr Climate Norm (±SD)	1993-2002	3.0(±1.9)	6.9 (±2.9)	12.1 (±3.6)
30yr Climate Norm (±SD)	1973-2002	2.1 (±1.4)	5.7 (±2.4)	9.8 (±3.4)
Forecast Skill at this Lead	1988-2002	15%	9%	12%

Key: Intense Hurricane = 1 Minute Sustained Wind > 95Kts = Hurricane Category 3 to 5
Hurricane = 1 Minute Sustained Wind > 63Kts = Hurricane Category 1 to 5
Tropical Storm = 1 Minute Sustained Wind > 33Kts
SD = Standard Deviation
FE (Forecast Error) = Standard Deviation of Errors in Simulated Real Time Forecasts 1993-2002
Forecast Skill = Percentage Improvement in Root Mean Square Error over Running 10-year Prior Climate Norm from Simulated Real Time Forecasts 1988-2002

Total Numbers Forming in the MDR, Caribbean Sea and Gulf of Mexico in 2003

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (±FE)	2003	2.8 (±1.8)	5.3 (±2.7)	9.2 (±3.5)
10yr Climate Norm (±SD)	1993-2002	3.0(±1.9)	5.2 (±2.9)	8.8 (±3.6)
30yr Climate Norm (±SD)	1973-2002	1.9 (±1.5)	3.8 (±2.5)	6.5 (±3.6)
Forecast Skill at this Lead	1988-2002	16%	10%	9%

The Atlantic hurricane Main Development Region (MDR) is the region 10°N - 20°N, 20°W - 60°W between the Cape Verde Islands and the Caribbean. A storm is defined as having formed within this region if it reaches at least tropical depression status while in the area.

USA Landfalling Numbers in 2003

		Hurricanes	Tropical Storms
TSR Forecast (±FE)	2003	1.7 (±1.1)	3.6 (±1.9)
Average (±SD)	1993-2002	1.2 (±1.2)	3.8 (±2.1)
Average (±SD)	1973-2002	1.2 (±1.3)	2.8 (±2.0)
Forecast Skill at this Lead	1988-2002	1%	9%

Key: Landfall Strike Category = Maximum 1 Minute Sustained Wind of Storm Coming Within 30km of Land
USA Mainland = Brownsville (Texas) to Maine

USA landfalling intense hurricanes are not forecast since we have no skill at any lead.

Caribbean Lesser Antilles Landfalling Numbers in 2003

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (±FE)	2003	0.4 (±0.4)	0.7 (±0.7)	1.7 (±0.8)
10yr Climate Norm (±SD)	1993-2002	0.3 (±0.5)	0.7 (±0.8)	1.6 (±0.8)
30yr Climate Norm (±SD)	1973-2002	0.2 (±0.4)	0.4 (±0.6)	1.1 (±1.0)
Forecast Skill at this Lead	1988-2002	2%	9%	5%

Key: Landfall Strike Category = Maximum 1 Minute Sustained Wind of Storm Coming Within 30km of Land
Lesser Antilles = Island Arc from Anguilla to Trinidad Inclusive

Key Predictors for 2003

The key factors behind our forecast for an average to above-average hurricane season in 2003 are the anticipated enhancing effects of July-September forecast 925mb U(east/west)-winds over the Caribbean Sea and tropical north Atlantic region (7.5°N - 17.5°N, 30°W - 100°W), and of August-September forecast sea surface temperature for the Atlantic MDR (10°N - 20°N, 20°W - 60°W). The current forecast anomalies (1973-2002 climatology) for these predictors are 0.45±0.80 ms^{-1} and 0.17±0.25 °C respectively. The corresponding forecast skills for these predictors at this lead are 16% and 11%.

Forecasts and New Developments for 2003

For the 2003 Atlantic hurricane season, TSR will be: (1) Issuing monthly updated forecasts through to early August for each basin and landfalling strength category listed above. The figures on the skill pages of *http://tropicalstormrisk.com* show the TSR forecast skill and uncertainty as a function of lead month; (2) Issuing forecasts of a new 'Total Wind Energy' index for Atlantic basin and US landfalling tropical storms/hurricanes/intense hurricanes. This index will reflect a combination of intensity and duration of all storms each season and may be linked more closely to total losses than the individual number of tropical storm, hurricane or even intense hurricane landfalls; (3) Providing real-time forecasts through the TSR Storm Tracker of system tracks, uncertainties, intensities and wind speed contours.

Further Information and Next Forecast

Further information on the TSR forecast methodology, the TSR simulated real-time forecast skill 1987-2001 as a function of lead time, and on TSR in general, may be obtained from the 'Extended Range Forecast for Atlantic Hurricane Activity in 2002' document issued on the 23rd November 2001. Our first forecast update for the 2003 Atlantic hurricane season will be issued on the 7th January 2003.

Tropical Storm Risk.com (TSR)

Tropical Storm Risk.com (TSR) is a venture which has developed from the UK government-supported TSUNAMI initiative project on seasonal tropical cyclone prediction. The TSR consortium comprises UK insurance industry experts and leading scientists on seasonal forecasting. The TSR industry expertise is drawn from the *Benfield Group*, the leading independent reinsurance intermediary, *Royal & SunAlliance,* the global insurance group, and from *Crawford & Company*, a global provider of risk management services. The *TSR* scientific grouping brings together climate physicists, meteorologists and statisticians at *UCL* (University College London) and the *Met Offic*e. TSR forecasts are available from http://tropicalstormrisk.com.

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