



May Forecast Update for Atlantic Hurricane Activity in 2002

Issued: 7th May 2002

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Forecast Summary

TSR again revises its forecasts downward and anticipates the 2002 Atlantic hurricane season will be 'below norm' with basin activity 30% below the 1992-2001 average and strikes on the USA and Lesser Antilles also less than average.

The TSR (Tropical Storm Risk) early May forecast update for Atlantic hurricane activity in 2002 anticipates a below average hurricane season. The forecast relates to the Atlantic season from 1st June 2002 to 30th November 2002 and is based on data available through the end of April 2002. The reason for predicting below average hurricane activity is our expectation, for August-September 2002, of stronger than normal trade winds over the Caribbean Sea and tropical north Atlantic (suppressing effect), and of average tropical north Atlantic sea surface temperatures (neutral effect). Our projections have fallen again from last month due primarily to the expectation that the tropical north Atlantic and Caribbean Sea will be cooler than thought previously. Appendices show our predictions from previous months.

Atlantic Total Numbers in 2002

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (\pm FE)	2002	1.6(\pm 1.5)	4.6 (\pm 1.9)	8.9 (\pm 2.7)
10yr Climate Norm (\pm SD)	1992-2001	2.9(\pm 2.0)	6.9 (\pm 2.9)	11.5 (\pm 4.1)
30yr Climate Norm (\pm SD)	1972-2001	2.1(\pm 1.5)	5.7 (\pm 2.4)	9.5 (\pm 3.6)
Forecast Skill at this Lead	1987-2001	22%	10%	19%

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 1992-2001
 Forecast Skill = Percentage Improvement over Running 10-year Prior Climate Norm from Simulated Real Time Forecasts 1987-2001

Total Numbers Forming in the MDR, Caribbean Sea and Gulf of Mexico in 2002

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (\pm FE)	2002	1.6(\pm 1.5)	2.8 (\pm 1.8)	5.7 (\pm 2.6)
10yr Climate Norm (\pm SD)	1992-2001	2.9(\pm 2.0)	5.1 (\pm 3.0)	8.3 (\pm 4.3)
30yr Climate Norm (\pm SD)	1972-2001	1.8(\pm 1.6)	3.8 (\pm 2.5)	6.4 (\pm 3.7)
Forecast Skill at this Lead	1987-2001	22%	20%	22%

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 reached at least tropical depression status while in the area.

USA Landfalling Numbers in 2002

		Hurricanes	Tropical Storms
TSR Forecast (\pm FE)	2002	1.1 (\pm 1.0)	2.3 (\pm 1.4)
Average (\pm SD)	1992-2001	1.2 (\pm 1.2)	3.3 (\pm 1.8)
Average (\pm SD)	1972-2001	1.2 (\pm 1.3)	2.6 (\pm 1.8)
Forecast Skill at this Lead	1987-2001	16%	23%

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 2002

		Intense Hurricanes	Hurricanes	Tropical Storms
TSR Forecast (\pm FE)	2002	0.2 (\pm 0.4)	0.5 (\pm 0.6)	1.1 (\pm 0.8)
10yr Climate Norm (\pm SD)	1992-2001	0.3 (\pm 0.5)	0.7 (\pm 0.8)	1.5 (\pm 0.9)
30yr Climate Norm (\pm SD)	1972-2001	0.2 (\pm 0.4)	0.4 (\pm 0.6)	1.1 (\pm 1.0)
Forecast Skill at this Lead	1987-2001	8%	14%	13%

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 2002

The key factors behind our forecast for a below average hurricane season in 2002 are the anticipated stronger than normal 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 the near neutral August-September forecast SST for the Atlantic MDR. The current forecast anomalies (1972-2001 climatology) for these two predictors at this lead are $-0.37 \pm 0.61 \text{ ms}^{-1}$ (compared to $0.17 \pm 0.75 \text{ ms}^{-1}$ last month) and $-0.05 \pm 0.24 \text{ }^\circ\text{C}$ (down from $0.16 \pm 0.24 \text{ }^\circ\text{C}$ last month).

Further Information

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 3rd December 2001. Our next monthly forecast update for the 2002 Atlantic hurricane season will be issued on the 7th June 2002. Further monthly updates will follow in early July and early August 2002.



Appendix - Predictions from Previous Months

1. Atlantic Total Numbers

Atlantic Total Numbers 2002				
		Named Tropical Storms	Hurricanes	Intense Hurricanes
Average Number (\pm SD) (1992-2001)		11.5 (\pm 4.1)	6.9 (\pm 2.9)	2.9 (\pm 2.0)
Average Number (\pm SD) (1972-2001)		9.5 (\pm 3.6)	5.7 (\pm 2.4)	2.1 (\pm 1.5)
TSR Forecasts (\pm FE)	7 May 2002	8.9 (\pm 2.7)	4.6 (\pm 1.9)	1.6 (\pm 1.5)
	5 Apr 2002	11.2 (\pm 3.1)	6.3 (\pm 2.3)	2.4 (\pm 1.9)
	6 Mar 2002	12.5 (\pm 3.6)	7.2 (\pm 2.5)	2.8 (\pm 1.9)
	6 Feb 2002	13.6 (\pm 3.5)	8.0 (\pm 2.5)	3.2 (\pm 1.8)
	10 Jan 2002	13.1 (\pm 3.6)	7.7 (\pm 2.6)	3.0 (\pm 1.8)
	3 Dec 2001	13.0 (\pm 3.6)	7.5 (\pm 2.5)	3.0 (\pm 1.6)
Gray Forecasts	5 Apr 2002	12	7	3
	7 Dec 2001	13	8	4

2. MDR, Caribbean Sea and Gulf of Mexico Total Numbers

MDR, Caribbean and Gulf of Mexico Total Numbers 2002				
		Named Tropical Storms	Hurricanes	Intense Hurricanes
Average Number (\pm SD) (1992-2001)		8.3 (\pm 4.3)	5.1 (\pm 3.0)	2.9 (\pm 2.0)
Average Number (\pm SD) (1972-2001)		6.4 (\pm 3.7)	3.8 (\pm 2.5)	1.8 (\pm 1.6)
TSR Forecasts (\pm FE)	7 May 2002	5.7 (\pm 2.6)	2.8 (\pm 1.8)	1.6 (\pm 1.5)
	5 Apr 2002	8.0 (\pm 3.2)	4.5 (\pm 2.3)	2.4 (\pm 1.8)
	6 Mar 2002	9.3 (\pm 3.7)	5.4 (\pm 2.5)	2.8 (\pm 1.8)
	6 Feb 2002	10.4 (\pm 3.6)	6.2 (\pm 2.4)	3.2 (\pm 1.7)
	10 Jan 2002	9.9 (\pm 3.8)	5.9 (\pm 2.6)	3.0 (\pm 1.8)
	3 Dec 2001	9.8 (\pm 4.1)	5.8 (\pm 2.7)	3.0 (\pm 1.7)

3. US Landfalling Numbers

US Landfalling Numbers 2002			
		Named Tropical Storms	Hurricanes
Average Number (\pm SD) (1992-2001)		3.3 (\pm 1.8)	1.2 (\pm 1.2)
Average Number (\pm SD) (1972-2001)		2.6 (\pm 1.8)	1.2 (\pm 1.3)
TSR Forecasts (\pm FE)	7 May 2002	2.3 (\pm 1.4)	1.1 (\pm 1.0)
	5 Apr 2002	3.0 (\pm 1.6)	1.4 (\pm 1.1)
	6 Mar 2002	3.5 (\pm 1.7)	1.7 (\pm 1.1)
	6 Feb 2002	3.8 (\pm 1.7)	1.9 (\pm 1.1)
	10 Jan 2002	3.7 (\pm 1.8)	1.8 (\pm 1.1)
	3 Dec 2001	3.7 (\pm 1.3)	1.8 (\pm 1.1)

4. Lesser Antilles Landfalling Numbers

Lesser Antilles Landfalling Numbers 2002				
		Named Tropical Storms	Hurricanes	Intense Hurricanes
Average Number (\pm SD) (1992-2001)		1.5 (\pm 0.9)	0.7 (\pm 0.8)	0.3 (\pm 0.5)
Average Number (\pm SD) (1972-2001)		1.1 (\pm 1.0)	0.4 (\pm 0.6)	0.2 (\pm 0.4)
TSR Forecasts (\pm FE)	7 May 2002	1.1 (\pm 0.8)	0.5 (\pm 0.6)	0.2 (\pm 0.4)
	5 Apr 2002	1.5 (\pm 0.9)	0.6 (\pm 0.7)	0.3 (\pm 0.4)
	6 Mar 2002	1.7 (\pm 0.9)	0.7 (\pm 0.7)	0.4 (\pm 0.4)
	6 Feb 2002	2.0 (\pm 0.9)	0.8 (\pm 0.7)	0.4 (\pm 0.4)
	10 Jan 2002	1.9 (\pm 0.9)	0.8 (\pm 0.7)	0.4 (\pm 0.4)
	3 Dec 2001	1.9 (\pm 1.0)	0.8 (\pm 0.7)	0.4 (\pm 0.4)