TSR TROPICAL STORM TRACKER LAUNCH

The Old Library, Lloyd's of London

Friday 30th May 2003
10.30am - 11.30am

Tropical Storm Risk (TSR)

- Founded in 2000, *Tropical Storm Risk (TSR)* offers a leading resource for forecasting the risk from tropical storms worldwide.

- The venture provides innovative forecast products to increase risk awareness and to help decision making within the (re)insurance industry, other business sectors, government and society.

- Today TSR launches their Tropical Storm Tracker which provides the best available public information for assessing the risk from active tropical storms worldwide.

The TSR Consortium

- The TSR Venture developed from the UK government-supported TSUNAMI initiative project on seasonal tropical cyclone prediction (1998-2000).

- The current TSR consortium comprises experts on insurance, risk management and seasonal climate forecasting.

- Industry partners: Benfield, Royal &SunAlliance, Crawford & Company.
  Scientific partners: UCL/Benfieldhrc, Met Office.

TSR Tropical Storm Tracker

- A **free to use internet application.**

- Developed to allow insurers, reinsurers and risk managers to increase their awareness of tropical storm activities and to enhance their ability to **forecast more accurately the risk and loss** from active storms around the world.

- Designed for clarity of information, ease of use and relevant content.

- Provides the best available information on **storm position** (past, current and forecast), **strength**, **track and track and uncertainty**, and **windfield** (current and forecast) all with various levels of zoom.

Features

- Tropical Storm Tracker provides real-time forecasts for up to 5 days lead for all active tropical cyclone systems worldwide.

- Forecasts are updated every 6-12 hours.

- Unique current and forecast 2-dimensional windfields (in knots) for all systems of at least hurricane force prior to extra-tropical transition.

- Forecast windfields out to 120 hours lead.

- Storm-centred zooms for current and forecast positions out to 120 hours lead.
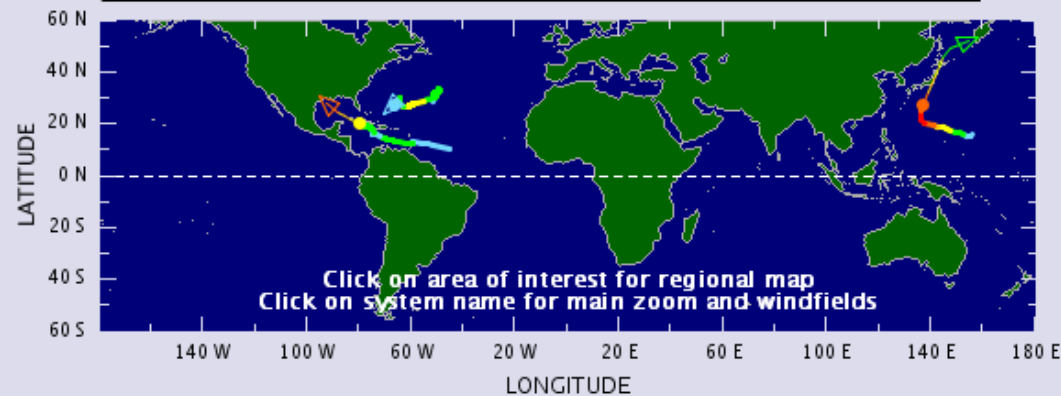
- Forecast track uncertainties out to 120 hours lead.

Storm Tracker Demonstration

TSR Tropical Storm Tracker Demonstration

THERE ARE CURRENTLY 3 ACTIVE SYSTEMS AS OF 30 SEP, 2002 23:43 GMT

		Current Data				24-hr Ahead Projections			
		30 Sep, 2002 23:43 GMT				1 Oct, 2002 23:43 GMT			
System	Basin	Lat	Long	Wind	Cat	Lat	Long	Wind	Cat
KYLE	N Atlantic	27.5 N	67.0 W	30	TD	27.3 N	67.2 W	30	TD
LILI	N Atlantic	19.8 N	80.0 W	65	1	21.7 N	83.5 W	85	2
HIGOS	NW Pacific	27.1 N	136.6 E	110	3	38.8 N	141.4 E	75	1

Click on area of interest for regional map
Click on system name for main zoom and windfields

TD   TS   Cat 1   Cat 2   Cat 3   Cat 4   Cat 5   Past Track   Forecast Track

Current Satellite Images		
Region	Image Type	
Atlantic	IR	Visible
NE Pacific	IR	Visible
NW Pacific	IR	Visible
Indian Ocean	IR	Visible
S Indian	IR	Visible
W Australia	IR	Visible
E Australia	IR	Visible
S Pacific	IR	Visible

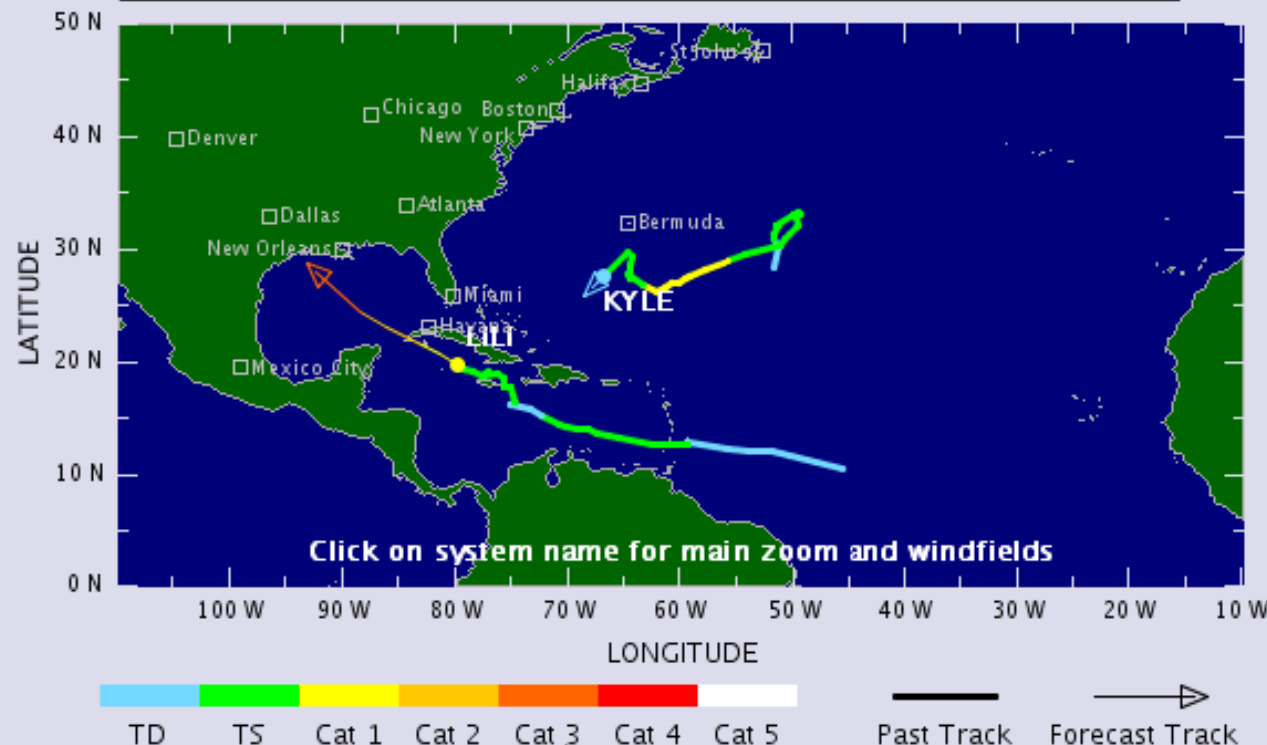| Tropical Cyclone Windspeed Scale				
Strength	Category	1 Minute Maximum Sustained Winds		
		knots	mph	m/s
Tropical Depression	TD	< 34	< 39	< 17
Tropical Storm	TS	34-63	39-73	17-32
Hurricane	Cat 1	64-82	74-95	33-42
Hurricane	Cat 2	83-95	96-110	43-50
Intense Hurricane	Cat 3	96-113	111-130	51-58
Intense Hurricane	Cat 4	114-135	131-155	59-70
Intense Hurricane	Cat 5	> 135	> 155	> 70

Atlantic Basin Regional Map

TSR Tropical Storm Tracker Demonstration

THERE ARE CURRENTLY 2 ACTIVE N ATLANTIC SYSTEMS AS OF 30 SEP, 2002 23:43 GMT

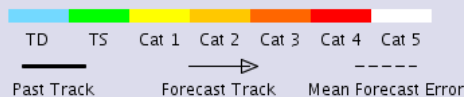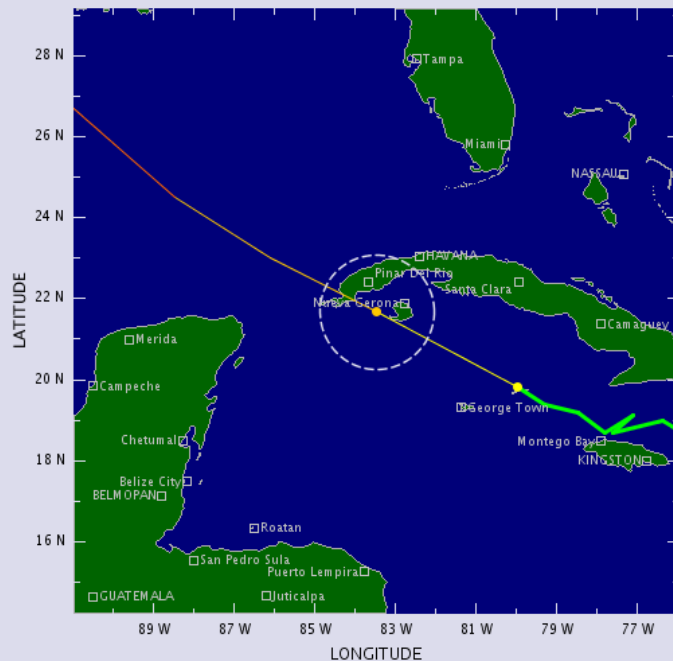| | | Current Data | | | | 24-hr Ahead Projections | | | |
| | | 30 Sep, 2002 23:43 GMT | | | | 1 Oct, 2002 23:43 GMT | | | |
System	Basin	Lat	Long	Wind	Cat	Lat	Long	Wind	Cat
KYLE	N Atlantic	27.5 N	67.0 W	30	TD	27.3 N	67.2 W	30	TD
LILI	N Atlantic	19.8 N	80.0 W	65	1	21.7 N	83.5 W	85	2

Click on system name for main zoom and windfields

TD	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5

Past Track   Forecast Track

Lili - Forecast Track and Error

24 Hours Lead

TSR Tropical Storm Tracker Demonstration

STORM CENTERED ZOOM FOR HURRICANE LILI (AL13) AT 21 HRS LEAD (1 OCT, 2002 12:00 GMT)

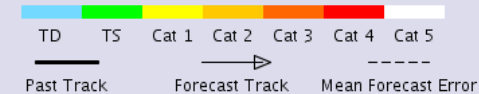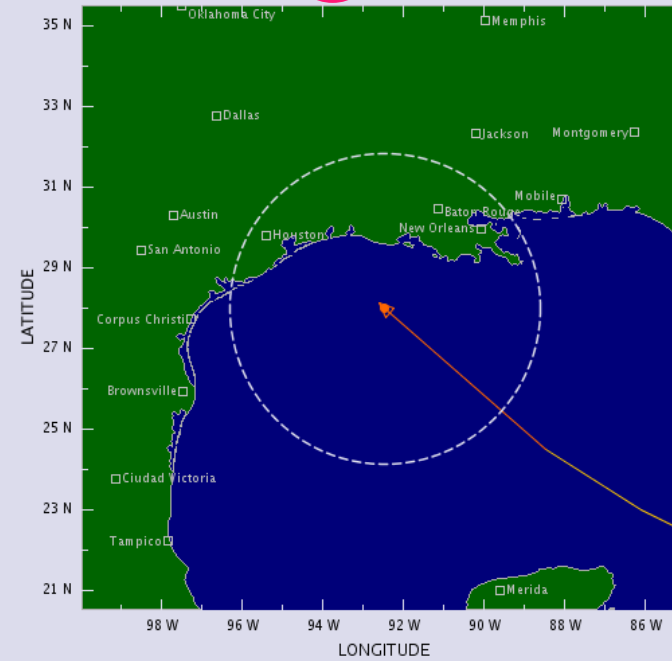|	Time		Position		Strength		
	GMT	Lead	Lat	Long	Peak Wind	Cat	Windfield
Current Data	30 Sep, 2002 15:00	0 hrs	19.8 N	80.0 W	65 knots	1	Click Here
Forecast Data	1 Oct, 2002 0:00	9 hrs	20.6 N	81.5 W	75 knots	1	Click Here
	1 Oct, 2002 12:00	21 hrs	21.7 N	83.5 W	85 knots	2	Click Here
	2 Oct, 2002 0:00	33 hrs	23.0 N	86.1 W	90 knots	2	Click Here
	2 Oct, 2002 12:00	45 hrs	24.5 N	88.5 W	100 knots	3	Click Here
	3 Oct, 2002 12:00	69 hrs	28.0 N	92.5 W	105 knots	3	Click Here

TD   TS   Cat 1   Cat 2   Cat 3   Cat 4   Cat 5

Past Track   Forecast Track   Mean Forecast Error

72 Hours Lead

TSR Tropical Storm Tracker Demonstration

STORM CENTERED ZOOM FOR HURRICANE LILI (AL13) AT 69 HRS LEAD (3 OCT, 2002 12:00 GMT)

	Time		Position		Strength		
	GMT	Lead	Lat	Long	Peak Wind	Cat	Windfield
Current Data	30 Sep, 2002 15:00	0 hrs	19.8 N	80.0 W	65 knots	1	Click Here
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TD   TS   Cat 1   Cat 2   Cat 3   Cat 4   Cat 5

Past Track   Forecast Track   Mean Forecast Error
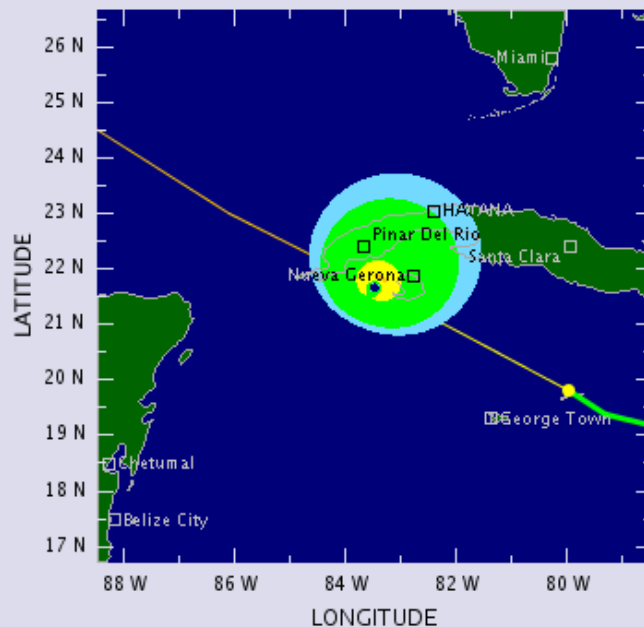
Lili - Forecast Windfields

Tropical Storm Risk.com

24 Hours Lead

TSR Tropical Storm Tracker Demonstration

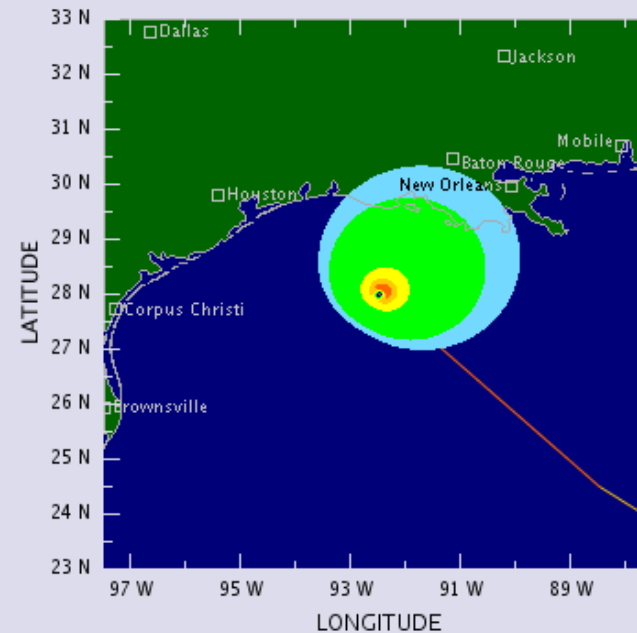MODELLED WINDFIELD FOR HURRICANE LILI (AL13) AT 21 HRS LEAD (1 OCT, 2002 12:00 GMT)

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72 Hours Lead

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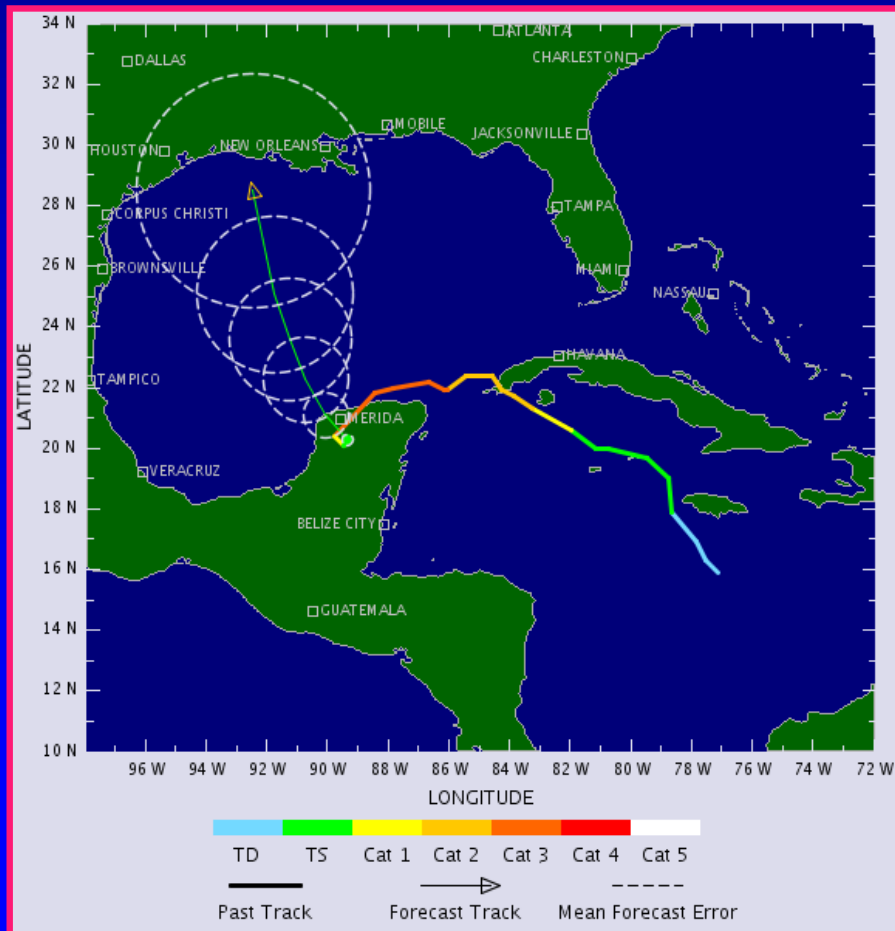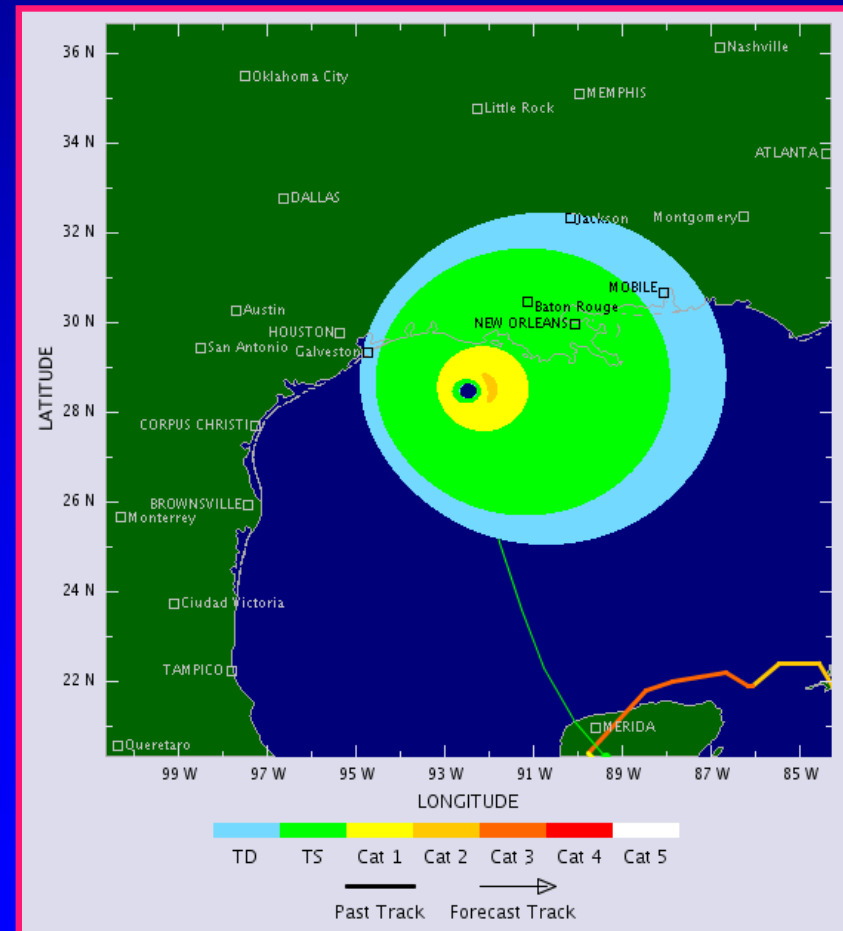|	Time		Position		Strength		
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Access and Further Information

- **Please visit the Tropical Storm Risk (TSR) web site at:**

    www.tropicalstormrisk.com

- **Please see the TSR Briefing Document (on chairs).**

Future Developments
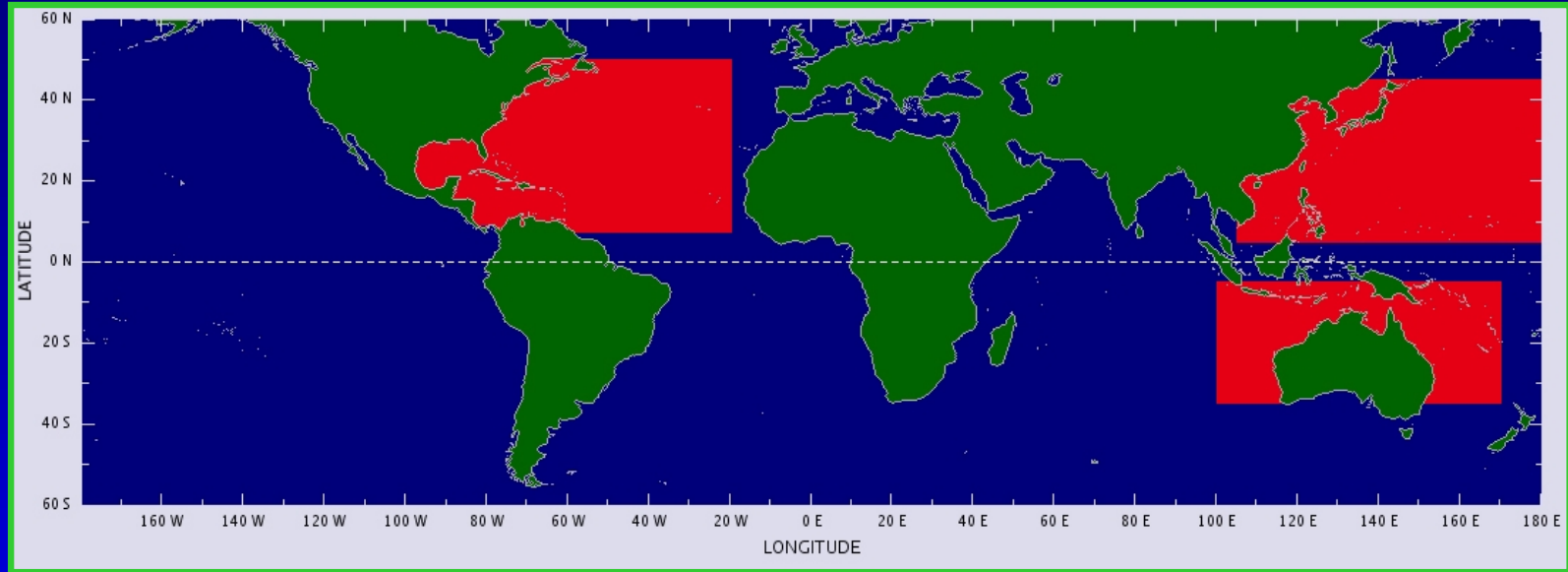
- **Application of forecast windfields to forecast loss.**

- **Development of windfield model to give current and forecast windfields for systems during and after extra-tropical transition.**

- **Historical catalogue of windfields.**

- **Introduction of tropical cyclone warning centre data from other agencies (eg Met Office).**

TSR Seasonal Forecasts

Forecast Regions

Forecast Availability

Forecast Region	Forecast Years	Monthly Updates	ACE Index	Basin Numbers	Landfalling
North Atlantic, Caribbean Sea and Gulf of Mexico	1950-2002	Yes	Yes	Yes	(a) USA (b) Lesser Antilles
Northwest Pacific	1970-2002	Yes	Yes	Yes	
Australian Region	1975/6-2002/3	Yes	Yes	Yes	Australia

Recent Forecast Performance

- **North Atlantic 2002:** "The TSR forecasts were certainly the first to correctly anticipate a below normal Atlantic hurricane season in 2002" *(Chris Landsea, co-author of the Gray and NOAA seasonal Atlantic hurricane outlooks).*

- **NW Pacific 2002:** TSR accurately predicted that accumulated cyclone energy would be 1.0 standard deviation <u>above</u> average.

- **Australian Region 2002/3:** TSR accurately predicted that basin and landfalling activity would be 0.8 standard deviation <u>below</u> normal.

Innovative Forecast Products

- **Forecasts of the NOAA Accumulated Cyclone Energy (ACE) Index Over Sea and Land:** TSR forecasts values of the ACE Index - a measure of total wind energy - for seasonal basin and landfalling activity.

- **Monthly Updated Forecasts:** Monthly updated seasonal forecasts are now issued for all basins, landfalling regions and ACE values.

- **Multi-Ensemble Statistical ENSO Forecasts:** TSR has pioneered a multi-ensemble statistical prediction model for ENSO. Rigorous hindcasts over the past 50 years shows that this model outperforms (in terms of skill, versatility and speed of operation) the leading ECMWF dynamical ENSO hindcasts from the DEMETER project.

Business Application

- TSR's recent advances in seasonal forecasting techniques and skill are being integrated into the business process.

- In collaboration with the Helvetia Patria Group TSR is developing a method to simulate 10,000 years of US hurricane landfalls, losses and ACE index forecasts to examine the business relevance of the forecasted US ACE skills for reinsurance/retrocession buy and sell strategies.

- Early results show that a Forecast Strategy - which uses the TSR US ACE Index forecasts for 1973-2002 to decide whether to buy - outperforms traditional buying strategies by about 10% in terms of protection purchase efficiency.

Summary

- The **TSR Tropical Storm Tracker** provides at your fingertips the **best available information** for assessing the risk from active tropical cyclones worldwide.

- The **Tracker** is arguably the leading tropical storm tracker on the market and will become **an industry standard**.