

# Amateur Radio, The Wellington Radio Club & Tampa Amateur Radio Club At The... 2005 Governor's Hurricane Conference... FLORIDA's KICKOFF FOR THE HURRICANE SEASON

A reported 2,900 people from all aspects of emergency management and disaster relief attended this year's GHC event. The mix of people included Fire/Rescue, Law Enforcement, Emergency Management, weather, disaster relief, CERT, homeland security not to mention a fair-sized contingent of radio amateurs. In addition, there were all sorts of vendors from the hurricane protection and emergency power industries. Many of the attendees wore two hats... like Ron KG4DWP, a Boynton Beach F/R Captain and avid ham. Like many others he stayed for the entire conference attending a multiude of seminars and workshops. However, he noted that the Radio Amateur Civil Emergency Service, RACES, session was one of the most well attended with a standing room only crowd.

Jim WA3DIT, a TARC Director, and WRC President Larry KS4NB were invited as instructors for the RACES Training Session. Specificly, to present their experiences using APRS applications in disaster areas. The agenda included presentations about the weakness and strengths of the ham response to last year's hurricanes, the use of Voice-Over-the-Internet technology (sounds familiar), and the role of the federal National Communications System.













FL License EF 13

793-1812

800-637-0344

3965 Investment Lane

W.P.B. FL 33404

433-2003

9am - 4pm M-F

Office: 561-392-2822

Home: 561-967-7871

Pager: 561-554-3328 Pager: 954-574-6901

Major Bobbie Mathias Administration

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# Where There Is A Will... There's A Way!

- Country of only 18,000 Hams Launches Satellite
- AMSAT-INDIA Led BY 76 Yearold Subi VU2UV Inspires Youth

# VUSAT-52 Performs Magnificently!

First there was a tragic Tsunami where hams came to the rescue. Then on 05-05-05, VUSAT-52 was successfully launched... a stupifying scientific feat that placed Amateur Radio topmost in the minds of bright, young Indian students in this vast subcontinent.

Only the very brightest will ever get a chance to work in India's space



agency... but all can become hams and a vital resource for India's communications infrastructure. From reports by Sara VU3RSB to the *WRC UPATE*, you have learned that those students have been the target of numerous efforts to motivate them to become hams. The appeal was, at the same time, to become a more important resource to their country. Now they can relate to two huge, ham achievements.

AMSAT-INDIA President Air Commodore Subi VU2UV With Sara's help, the **WRC UPATE** contacted Subi VU2UV, President of AMSAT INDIA about the human side of the VU HAMSAT project. He graciously shared his thoughts with us. "In response to your E-Mail, I am providing the following information you requested for your newsletter:

### MOST DIFFICULT PART OF OUR HAMSAT PROJECT

It is everyone's knowledge that sending up a satellite in a 'HAM Radio' category presents a tough financial crunch. However amateur satellites have been launched purely by voluntary contributions from hams all over the world, particularly from developed & financially well-placed countries.

For the Indian Ham to dream in this fashion, and execute it, is definitely noteworthy. This was possible because of relentless efforts by AMSAT IN-DIA. Financing such a venture all by itself was certainly out of question.





**Top:** India's PSLV-C6, carrying Cartosat-1 and piggyback satellite HAMSAT. **Bottom**: Indian President Kalam and ISRO Chairman Dr. Nair joyous upon successful launch.



Left: HAMSAT was inspected by Dr. Kasturirangan (Rajyasabha MP and former Chairman ISRO), Nagesh VU2NUD, Dr. Madhavan Nair (Chairman, ISRO) and other dignitaries. Center: AMSAT-INDIA'S Pop VU2POP Vice President, Ramesh VU2RMS Secretary and President Subi VU2UV chat with former ISRO Chairman Dr. Rangan... instrumental in getting the project started. **Right:** Pres.Kalam congratulates ISRO employees after launch.

However, it took from the year 2000 to 2002 to convince the Indian Space Research Organization Agency to help AMSAT INDIA all the way.

There are many hams in ISRO. These Samaritans began working and thinking together with AMSAT INDIA hams. Their bonds & friendship grew. The ISRO Chiefs finally offered to meet AMSAT INDIA and discussed the project. The go-ahead was finally signaled.

Time was short and the 2004 HAMSAT launch schedule first attempt had to be postponed. All the time ISRO was very understanding, extremely magnanimous. They even welcomed aboard William Leijnar PE1RAH, a Dutch Ham student, and his transponder. This move by AMSAT-INDIA and ISRO shows that outside help is always welcome and hence the clear message to the world. The ISRO Project Directors caringly guided the ISRO team all the way and made 05-05-05 the magic day for Indian Amateur Satellite activity. At this point it has to be mentioned that the ISRO Chairmen, Dr. Kasturi Rangan [former] & Mr. Madhavan Nair [current]; Directors Dr. Goel, Mr. Thyagarajan and J.P. Gupta were the main key and pivotal figures, without whose efforts & help this launch would never have taken place. The Chairman ISRO is our main patron for AMSAT INDIA. Our AMSAT INDIA team salutes them.

AMSAT INDIA's healthy relationship with ISRO is the main factor which resulted in this historic launch. There was opinion difference within AMSAT INDIA team, the final goal held us together. This was indeed the biggest storm to survive. A disorganized AMSAT INDIA or a one man team would certainly have been a failure. HAMSAT could never have been a 'priority' project then and ISRO would decline the launch for the cause of a single person or a few.

#### THE PROJECT'S EASIEST PART

AMSAT INDIA's easiest job was also the toughest! Differences of opinion at times were a little difficult to manage. The job of AMSAT INDIA was simply to foster care and affection for each other and dispel all thoughts of mistrust and fears. Yes, indeed this was a challenge all the time.

#### **PRACTICAL BENEFIT**

Until 1990, our hams' main effort was homebrewing equipment and antenna systems. World War II equipment with proper modification and added solid state devices were the order of the day. Indian hams worked from wx satellite followed by Oscar 5 onwards i.e. 1969 onwards.

The present video/TV coverage and print media have fuelled the interest among the younger generations. Availability of vhf/uhf handhelds at affordable prices have made the opportunity better. Ham participation in the Gujarat earthquake, Anhadra Pradesh coastal floods and recent tsunami relief have been role models set for the rest of the world. This has clearly been one of the major factors which prompted ISRO to take keen interest in HAMSAT. The Hamsat will provide impetus and challenge to do better for the future. Ham radio is becoming part of academic programs in schools and colleges. Ham radio awareness will build to an all time high.



Principal Ramesh VU2RMS relaxes as youngsters at the Little Lily's English School Radio Club VU2LLE make contacts through VUsat.

### POLITICAL INFLUENCES

Although our country can boast that we have had leaders interested in HAM radio such as Rajiv Gandhi VU2RG and Sonia Gandhi VU2SON, the active hams and clubs helped bring reforms such as the free importation of rigs into INDIA, funding to develop Ham Radio in villages, Ham classes, etc. The statesmen by themselves may not bring changes alone unless the ham community is actively convincing of its needs.

#### THE FUTURE

It looks bright for new Hamsat series. From the ham technical group G. Kumar VU2BGS [Indian transponder designer], Prathap VU2POP Secretary AMSAT-INDIA, Mani VU2WMY / ISRO payload testing expert are some of our contributors. Administrative & logistics support



The Satish Dhawan Space Centre (SDSC) in Sriharikota. 360+ foot tall lightning protection towers dwarf the 200 ft. PSLV-C6 launch vehicle. The vehicle assembly building is to the right.

from R.Ramesh VU2RMS Vice-President / AMSAT-INDIA and Shankar VU2CAP [Satellite operation] are the force to count upon.

Total space technology, as applied to Hamsat, came from all the technical persons of ISRO. Major credit belongs to them primarily. These scientists and engineers have callsigns and have their own *Upagraha Club Station-VU2URC* within ISRO premises. Another branch of theirs is the ISTRACK club station... mainly to housekeep HAMSAT from Space tracking unit of ISRO.

The future is bright as the ISRO chairman has promised all support for future Hamsats with the offer to

### **VUSAT-52 SALIENT FEATURES**

Physical: 630 mm x 630 mm x 550 mm Cuboid Mass: 42.5 kg Orbit: 618 km Near Circular Polar Low Earth Orbit Structure: Aluminum Honeycomb Structure Power: Body mounted Gallium Arsenide Solar Panels Lithium Ion Battery Stabilisation: 4±0.5 RPM Spin stabilised Transponder Uplink: 435.25 MHz Transponder Uplink: 435.25 MHz Transponder Downlink: 145.9 MHz Beacon 1: 145.936 (Unmodulated Carrier) Beacon 2: 145.860 MHz (Morse Code) Antennas: UHF turnstile, VHF turnstile Output Power: 1 watt

start the effort immediately.

As the President of AMSAT-INDIA I am proud to put on record that my colleagues and office bearers have supported me immensely and even acted on my behalf in a very mature and friendly manner. I am indeed happy and proud of our achievements.

Now at the age of 76, I fondly recall my active satellite days way back in 1970 when I received my first OS-CAR QSL card. I hope, I have served the cause and spared no effort.

Thanking you, 73's, Air Commodore 'Subi' VU2UV PRESIDENT-AMSAT INDIA" ZOOM IN!



# CHANGE HOW OTHERS SEE US! TRAIN, TRAIN, TRAIN...

MAD Mágazine, TIME and many others in the media have stereotype images of radio amateurs. As a ham, Alfred E. Newman, left, projects the nerd image and wears the WN1ECCH "No Club" badge. It's as if he's reminding us, and himself, of who he is... a loner and screwup... outside the mainstream.

(Note that Alfred is soldering to a *live* circuit.) Creating a positive image requires knowing what you are doing and having a positive *self-image*. There's no better way of achieving those goals than by taking advantage of all the training opportunities and club activities you can. Afterall, come Hurricane Season, you are sure to be depended upon and in the limelight once again!



Charlie N4JZK, Steve KI4GTI and Sparky WA2KFS at the WRC Digital Mode Workshop.

Help put the finishing touches To our repeater's new home! Saturday - May 21st - 8 am to Noon Call Larry KS4NB, 385-2986 to assist.

SKYWARN TRAINING Conducted by the National Weather Service June 4th - Saturday - Noon to 2+pm At the PBC EOC. Instructor: Jim Lushine, NWS For questions or info, contact SKYWARN Coordinator: Melissa KE4WBQ at 304-3126 or via email at ke4wbq@bellsouth.net

South Florida Hurricane Conference June 22/23 - Broward Convention Center Many Training Sessions & Workshops Info and directions, call the Broward EOC: (954) 831-3900

MONDAY JUNE 6th MEETING AT THE WELLINGTON COMMUNITY CENTER, 12165 FOREST HILL BLVD. 1/4 MILE WEST OF SOUTHSHORE BLVD.



CERT Training & Meetings Tell your neighbors & friends: Wellington CERT meets monthly on the 3rd Tuesday. The June Wellington class is forming... contact for info: Kathy Healey khealey@yahoo.com - Brian Hanley 712-6329

### July 4th in Wellington Village Park - Monday - 6 pm Setup Bring The Family!

See the great entertainment and fireworks! The WRC will be offering free Child ID Kits at its Lost Children & Communications Booth. Let Larry KS4NB, 385-2986 know if you can volunteer.

### 45+ Days To Field Day... June 25/26 NOW is the time to volunteer for Field Day!

Let Larry KS4NB, 385-2986 know when you can attend and what you would like to handle.

WEB SITE UPDATED - CHECK IT OUT!

## THE WRC UPDATE

# is the official publication of the **WELLINGTON RADIO CLUB**

1213 White Pine Drive, Wellington, FL 33414 (561) 385-2986 Email: LARRY33414@AOL.COM

President & Editor - Larry Lazar, KS4NB Vice President - Bruce Fondiller, K2MDF Secretary - Jerry Simon N3HVC Treasurer - Georg Samulkewitsch, KR4WD Program/Activities Chairperson - Allan Hatfield KI4HBS

© 2003 - This publication maybe circulated freely only in its entirety. Partial reproduction in any form or its editing, without permission, is prohibited. Permission may be requested from the Editor, via email at the address above or through the WRC website at: www.qsl.net/k4wrc "Preparation through education is less costly than learning through tragedy." MAX MAYFIELD, Director National Hurricane Center

### 2005 HURRICANE SEASON FORECAST SUMMARY ATLANTIC BASIN RESIDENTS... BATTEN DOWN THE HATCHES!

If there's anything that the forecasts appear to agree upon, it's that someone, somewhere along the Gulf and East Coasts, will get clobbered and perhaps more than once! It could be you and your neighbors.

The main features of the summarized forecasts are the large region covered and the comparison to the 50 year normal data. Each forecast is for the *entire* Atlantic Basin. They are in general agreement and show:

- Tropical Storm activity well above "normal"
- More hurricanes and
- ♦ More intense ones.

The 2005 Gray forecast shows 30% to 40% more hurricane activity and NOAA sees a 70% chance of above normal expected cyclonic activity. There are numerous variables in the forecasts. The major ones to follow are the Bermuda High, El Nino, the Westerlies and cold sea water.

In contrast to the others, the KALAMARAS forecast is broken down into subsections that focus on the Gulf through Caribbean... be sure to review it!

## TOM KF4LF KEEP YOUR EYE ON... COLD WATER! THE GIELLA 2005 HURRICANE SEASON FORECAST

My forecast as of Friday May 13, 2005 is: 13 named storms, 8 hurricanes, 4 intense hurricanes. First named hurricane August 15, 2005. 3 tropical cyclone strikes for Florida.

The weak El Nino of winter 2004-2005 and it's associated subtropical jet stream is still active and I expect it to continue so until mid August 2005. The associated west to east wind shear between approximately 24-28 deg. N latitude from Baja California eastward into the Caribbean Sea region will act to suppress early season hurricane activity in the western Caribbean Sea and the Gulf Of Mexico. This delay will reduce the season number of named tropical cyclones in the Atlantic Basin by 1 or 2.

### SUMMARY: 2005 TROPICAL STORM FORECASTS- ATLANTIC BASIN NOAA KN4LF GRAY 4/1/05 1950-2000

Fore	cast Fo	recast	Final Fcst	Climatology
Named Storms (NS)	12-15	13	13	9.6
Named Storm Days (NSD)			65	49.1
Hurricanes (H)	7-9	8	7	5.9
Hurricane Days (HD)			35	24.5
Intense Hurricanes (IH)	3-5	4	3	2.3
Intense Hurricane Days (IH	D)		7	5.0
Net Treated Overlage Aster			405	400

ONE OR MORE U.S. LANDFALLING TROPICAL STORMS (The long-term mean annual probability of one or more landfalling systems during the last 100 years is given in parentheses.) Coastal Tropical Cat 1-2 Cat 3-4-5 All Named

Region	Storms	HUR	HUR	HUR	Storms
Entire U.S. (Regions 1-	11) 87% (80)	82% (68)	73% (52)	95% (84)	99% (97)
Gulf Coast (Regions 1-	4) 69% (59)	54% (42)	41% (30)	73% (61)	92% (83)
FL + East Coast (5-11)	59% (51)	60% (45)	53% (31)	82% (62)	92% (81)
SOURCE-http://ht	urricane.atı	nos.colos	tate.edu/fo	orecasts/2	005/april2005

cold ocean temperature anomaly acted to strengthen and reposition the Bermuda high pressure ridge further west and south than normal, blocking the recurving path east of Florida and instead opening a hurricane corridor right across the state.



Tom KF4LF in his ham/meteorolgy shack.

Below is the 3 foot depth ocean water temperature anomaly on October 01, 2004. (Editor: May 04 is presented) You can see the cold ocean temperature anomaly (blue color). Also below is the 3 foot depth cold ocean water temperature anomaly on May 17, 2005.

The cold water anomaly has expanded during the last eight months. (Editor: note large change in blue areas in the last year). The cold water is still there as of May 17,



COLD WATER

Also we continue to see colder ocean water showing up along the east coast of Florida!!! In summer 2004 this 2005 and come summer 2005 Florida will have a higher than average chance of getting hit again by a hurricane again. Once again my forecast calls for 3 landfalling tropical cyclones in Florida this season.

## THE LOCAL ALTERNATIVE TO DR. GRAY, WEATHER ACCORDING TO PAUL N4UUQ: THE KALAMARAS FORECAST FOR FLORIDA'S HURRICANE SEASON 2005... FLORIDA: About Half The 2004 Tropical Storm Experience But More Than The 50 Year Norm



Paul Kalamaras has a true love... meteorology. He works full fulltime as an Environmental Specialist, yet he spends a huge amount of his spare time seriously studying all the weather and climate data, indicators and trends that his computer systems can handle.

Paul disseminates his forecasts freely over the Internet. The results of his labor of love are worth reviewing. His computer models and analysis add insights to the coming hurricane season that go beyond Dr. Gray's publicized work by focusing on Florida. To the rational reader, Paul's and all the other forecasts dictate continued preparedness for the tropical storms that are sure to come. Paul's Florida forecasts provide food for thought and are often as accurate as any...yet he cautions they are:

Paul Kalamaras N4UUQ

FOR GUIDANCE PURPOSES ONLY

"Overall I see that Florida has a chance of 2 Tropical cyclones to effect our area. The pattern is still the same with the westerlies being stronger than normal and this is attributed to the stronger than normal hemispheric polar westerlies combined with the weak El nino which will help to give more deflection of the Tropical Cyclones than last year and somewhat lower number of intense storms.

#### = NEW UPDATE =

2005 Hurricane Season, Number of Storm Tracks, & Intensity Model Run, 700pm EDT Thurs. May 19, 2005

For informational purposes only...based on weka, best subset with updated cross validation of 80 to 100%, these attributes then were ran into the EasyNN Neural Network Model.

### NUMBER OF TRACKS FROM TROPICAL CYCLONES (For the Entire Hurricane Basin Area by Category) <74mph Cat 1 Cat 2 Cat 3 Cat 4 Cat 5 Total

2004 ACTUAL	7	1	1	2	3	1	15
2005 FORECAST	5	4	1	1	1	0	12
50 Yr Normal	4	2	1	1	1	1	10

### NUMBER OF TRACKS FROM TROPICAL CYCLONES TOTALS FOR ALL TROPICAL STORMS

### 24 to 35 North and 65 to 100 West Only...threats to our area!

Longitutude	100-95W	95-90W	90-85W*	85-80	W 80-75W	75-70W	70-65W	
	West	Centl	East	FL	FLSE	Bah	East	
	Gulf	Gulf	Gulf		NW Bah	Cent	Carrib	Total
2004 Actual	1	3	3	5	5	3	2	22.0
2005 Foreca	ast 1.0	0	0	2.0	2.0	3.0	4.0	12.0
50 Year No	rm 0.9	1.4	1.7	1.8	2.4	2.6	2.4	13.3
			Analy	sis				

I ran the model a second time and redid my cross validation for a final look at the concern of the active season this year. Also to see if the model method I am



Hurricane Andrew's footprint

running works the way it should. The numbers change just slightly... but since my concern was for Florida itself, I had to look at the cross validations with a more fine detail.

Also, a shift more to a right of the clustered track of storms as opposed to last year. The Central and Eastern Gulf of Mexico was quite active especially Florida last year.

The number of tracks are lower this year for the Central and Eastern Gulf of Mexico and less for Florida but the number of storms for Florida is two and that is considered active. This should tell us that we should be ready for this year. The category of storms for this year as far as strong storms will be a little less. Two Major Storms compared to 6 last year. I would not be surprised that the numbers from professor Grey's Hurricane forecast would be lowered a little bit on his next two updates June and August. All in all I think the model I have been working on for improvements it has performed well enough for preliminary planning and for activating the amount of manpower for the 2005 hurricane season.

This should be the final tweak of my outlook. I used a fair enough conservative objective and subjective forecasting to the results above by also reading all the long range model discussions and El Nino discussions and looking at GFS model persistance too. Also the issues that relate to how strong the polar westerlies is very very important. Basing on what I saw, the Bermuda high will not lock itself in as last year. It looks to be weaker due to stronger westerlies aloft and weak El Nino connections to the Atlantic Basin. A hint to a stronger and more expansive polar westerlies is the unusual cool wet weather in the Northeast and the lingering stormy rainy weather pattern in the Pacific Northwest.

Kalamaras

(\*NOTE: INCLUDES PENSACOLA. THE DATA FOR FL & SE FL WERE HIGHLIGHTED IN RED BY THE EDITOR)

### Excerpts from the National Oceanic & Atmospheric Administration's 2005 Atlantic Hurricane Outlook Issued: 16 May 2005

issued. To way 2005

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NOAA's 2005 Atlantic hurricane season outlook indicates a 70% chance of an above-normal hurricane season, a 20% chance of a near-normal season, and only a 10% chance of a below-normal season. This outlook is produced by scientists at the National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center (CPC), Hurricane Research Division (HRD), and National Hurricane Center (NHC). See NOAA's definitions of above-, near-, and belownormal seasons.

This prediction, shown to the right, reflects a very likely continuation of above-normal activity that began in 1995. The predicted 2005 activity reflects

1) an expected continuation of conditions associated with the tropics-wide multi-decadal signal, which has favored

above-normal Atlantic hurricane seasons since 1995, and 2) an expected continuation of warmer sea surface temperatures in the tropical Atlantic Ocean than can be accounted for by the multi-decadal signal alone. The outlook also reflects the expectation of ENSO-neutral conditions (no El Niño or La Niña) during August-October, the peak months of the hurricane season. An updated Atlantic hurricane outlook will be issued in early August.

# Expected Activity- 70% chance above normal, 20% chance near normal, 10% chance below normal

An important measure of the total seasonal activity is NOAA's Accumulated Cyclone Energy (ACE) index, which accounts for the collective intensity and duration of Atlantic tropical storms and hurricanes during a given hurricane season. The ACE index is also used to define above-, near-, and below-normal hurricane seasons (see Background Information). A value of 117% of the median (Median value is 87.5) corresponds to the lower boundary for an above-normal season.

The vast majority of the tropical storms and hurricanes in 2005 will form during August-October. Many of these are likely to form over the tropical Atlantic and Caribbean Sea in the region between 9°N-21.5°N (green box), which is typical for above-normal seasons. These systems generally track westward toward the Caribbean Sea and/or United States as they strengthen. Historically, similar seasons have averaged 2-3 landfalling hurricanes in the continental United States and 1-2 hurricanes in the region around the Caribbean Sea. However, it is currently not possible to confidently predict at these extended ranges the number or intensity of landfalling hurricanes, and whether or not a given locality will be impacted by a hurricane this season.

2. Expected Climate Conditions – Active multi-decadal signal, above-average Atlantic Ocean temperatures, ENSO-neutral conditions

Beginning with 1995 all of the Atlantic hurricane seasons have been above normal, with the exception of two El Niño years (1997 and 2002). This contrasts sharply with the generally below-normal activity observed during the previous 25-year period 1970-1994 (Goldenberg et al. 2001, Science). Time series of key atmospheric wind parameters and Atlantic SSTs highlight the dramatic differences between these abovenormal and below-normal periods.

The regional atmospheric circulation features and oceanic conditions causing these very long-period fluctuations in hurricane activity are linked to the tropics-wide multidecadal signal . This multi-decadal signal has been very con-

### NOAA's 2005 Atlantic Hurricane Outlook Issued 16 May 2005

Season and <u>Activity Type</u>	2005 Outlook	2004 Observed	Climatological <u>Mean</u>
Chance Above Normal	70%		
Chance Near Normal	20%		
Chance Below Normal	10%		
Tropical Storms	12-15	14	10
Hurricanes	7-9	9	6
Major Hurricanes	3-5	6	2.6
ACE % of Median	120%-190	% 257%	87.5%

ducive to above-normal hurricane seasons since 1995, and is again a main factor guiding the 2005 outlook.

Over the North Atlantic, key aspects of the multidecadal signal expected during the 2005 hurricane season include 1) lower surface air pressure, warmer SSTs, and increased moisture across the central and eastern tropical Atlantic, 2) an amplified subtropical ridge at upper levels across the central and eastern North Atlantic, 3) reduced vertical wind shear in the deep tropics over the central North Atlantic, which results from an expanded area of easterly winds in the upper atmosphere and weaker easterly trade winds in the lower atmosphere, and 4) a configuration of the African easterly jet that favors hurricane development from tropical disturbances moving westward from the African coast.

Also expected this season is a continuation of tropical Atlantic SSTs that are warmer than can be accounted for by the multi-decadal signal. This additional warmth is more conducive to hurricane formation than would be expected from the multi-decadal signal alone.

Another factor known to significantly impact Atlantic hurricane seasons is ENSO with El Niño favoring fewer hurricanes and La Niña favoring more hurricanes. Based on the most recent ENSO outlook issued by NOAA's Climate Prediction Center, ENSO-neutral conditions are expected in the tropical Pacific through at least the first half of the hurricane season. Therefore, the ENSO phenomenon is not expected to impact this hurricane season.

3. Atlantic hurricane seasons exhibit prolonged periods lasting decades of generally above-normal or below-normal activity. These multi-decadal fluctuations in hurricane activity result nearly entirely from differences in the number of hurricanes and major hurricanes forming from tropical storms first named in the tropical Atlantic and Caribbean Sea.

The main uncertainty in this outlook is not whether the season will be above normal, but how much above normal it will be. There is the possibility of another extremely active season similar to that seen in 2003 and 2004, when seasonal ACE values were 200% and 257% of the median, respectively.

In the event that the subtropical ridge is again enhanced in these regions, which is not predictable at this time, the 2005 seasonal ACE value could exceed the high end of our predicted range.

A second uncertainty is that weak El Niño conditions may occur during August-October, as indicated by some ENSO forecasts. Although unlikely, El Niño conditions during this period could reduce the chance for an above-normal season.

### 

1) IMPORTANT - it is currently not possible to confidently predict at these extended ranges the number or intensity of landfalling hurricanes, or whether a particular locality will be impacted by a hurricane this season. Residents and government agencies should always maintain hurricane preparedness efforts regardless of the overall seasonal outlook.

2) Far more damage can be done by one major hurricane hitting a heavily populated area than by several hurricanes hitting sparsely populated areas or, of course, not making landfall at all. Therefore, hurricane-spawned disasters can occur even in years with near-normal or below-normal levels of activity.