

## Submitted Program

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#!/bin/bash -x
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<b>do</b>	44
<b>sed</b> -i "s/\([^a-z]\)\\${line}\([^a-z]\)/\1\${line}\2/gMI"	45
\$out	
<b>sed</b> -i "s/^\${line}\([^a-z]\)/\${line}\1/gMI" \$out	46
<b>sed</b> -i "s/\([^a-z]\)\\${line}\\$/\1\${line}/gMI" \$out	47
<b>sed</b> -i "s/^\${line}\\$/\${line}/gMI" \$out	48
<b>done</b>	49
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fmt -w 1000 -u \$out > tmp	51
mv tmp \$out	52
<b>cat</b> hints   <b>while read</b> line	53
<b>do</b>	54
<b>sed</b> -i "s/\([^a-z]\)\\${line}\([^a-z]\)/\1\${line}\2/gMI"	55
\$out	
<b>sed</b> -i "s/^\${line}\([^a-z]\)/\${line}\1/gMI" \$out	56
<b>sed</b> -i "s/\([^a-z]\)\\${line}\\$/\1\${line}/gMI" \$out	57
<b>sed</b> -i "s/^\${line}\\$/\${line}/gMI" \$out	58
<b>done</b>	59
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fmt -w \$WIDTH -u \$out > tmp	61
mv tmp \$out	62
<b>cat</b> hints   <b>while read</b> line	63
<b>do</b>	64
<b>sed</b> -i "s/\([^a-z]\)\\${line}\([^a-z]\)/\1\${line}\2/gMI"	65
\$out	
<b>sed</b> -i "s/^\${line}\([^a-z]\)/\${line}\1/gMI" \$out	66
<b>sed</b> -i "s/\([^a-z]\)\\${line}\\$/\1\${line}/gMI" \$out	67
<b>sed</b> -i "s/^\${line}\\$/\${line}/gMI" \$out	68
<b>done</b>	69
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sort -u guesses > newguesses	71
mv newguesses guesses	72
<b>shift</b>	73
<b>done</b>	74

## Grading

Category	Criterion	Comment	Score
Style	Use of indentation	Indentation is good	1 / 1
	Use of comments	Comments are good	1 / 1
Correctness	Program executes	Yes, the program does execute	1 / 1
	Appropriate tools used	Yes, all of the tools used in the assignment were appropriate	1 / 1
	Reformatting requirement	Yes, was reformatted correctly to 100-wide columns	1 / 1
	Ordinary English case requirement	All case requirements met (very good).	4 / 4
	Spacing requirement	Spacing requirement was met (very good).	1 / 1
TOTAL			10 / 10

Special tropical disturbance statement  
NWS TPC/National Hurricane Center Miami FL  
845 am EDT Wed Sep 12 2007  
Satellite and NWS radar observations indicate that the area of low pressure in the northwestern Gulf of Mexico is becoming better organized this morning. This system could become a tropical depression later today...and an Air Force reserve unit reconnaissance aircraft will investigate the area early this afternoon. The low is moving slowly north-northwestward...and regardless of whether or not it becomes a tropical cyclone...heavy rains are expected to spread across southeastern Texas and Louisiana over the next couple of days. For information specific to your area...please consult statements issued by your local NWS forecast office.  
Forecaster Franklin

Tropical depression Felix advisory number 20  
NWS TPC/National Hurricane Center Miami FL A1062007  
400 am CDT Wed Sep 05 2007  
...Felix weakening rapidly over the mountains of Central America...heavy rains still expected...  
At 400 am CDT...0900z...the center of tropical depression Felix was estimated near latitude  
14.0 north...longitude 87.0 west...very near Tegucigalpa Honduras.  
The depression is moving toward the west near 9 mph and this motion should continue today.  
Maximum sustained winds have decreased to near 30 mph...45 km/hr...with higher gusts.  
Estimated minimum central pressure is 1004 Mb...29.65 inches. Felix is expected to produce  
total rainfall accumulations of 6 to 10 inches across northern Nicaragua and El Salvador...with  
8 to 15 inches over much of Honduras. Isolated maximum amount of 25 inches are possible in  
mountainous areas. These rains will likely produce life-threatening flash floods and mud slides.  
Persons in flood-prone areas should take all necessary precautions to protect life and property.  
Repeating the 400 am CDT position...14.0 N...87.0 W. Movement toward...west near 9 mph.  
Maximum sustained winds...30 mph. Minimum central pressure...1004 Mb.  
This is the last public advisory issued by the National Hurricane Center on this system.  
Forecaster Avila

Tropical weather discussion  
NWS TPC/National Hurricane Center Miami FL  
805 am EDT Thu Sep 13 2007

Tropical weather discussion for North America...Central America...the Gulf of Mexico...the Caribbean sea...northern sections of South America...and the Atlantic Ocean to the African coast from the equator to 32N. The following information is based on satellite imagery...meteorological analysis... Weather observations...and radar.

Based on 0600 UTC surface analysis and satellite imagery through 1115 UTC.  
...special features...

Humberto made landfall as a category one hurricane crossing the Texas coast just east of highland around 07 UTC. At 13/1200 UTC...the center of Hurricane Humberto was located inland near 30.3N 93.6W or along the Texas/Louisiana border moving toward the NE at 10 kt. Estimated minimum central pressure is 987 Mb. Maximum sustained wind speed is 70 kt with higher gusts. See latest NHC forecast/advisory under awips/wmo headers miatcmat4/wtnt24 knhc for more details. Humberto has been a very impressive system strengthening from a tropical depression to a hurricane in less than 24 hours. Doppler radar data displayed an improved structure up until landfall with an eye-like feature and well defined banding N of the center. Since moving inland...the radar presentation has deteriorated some...but the nrm eyewall and rainbands remain well defined. The storm crossed very near Beaumont Texas which reported a gust to 73 kt when in the nrm eyewall. Rainfall is also a concern with total accumulations of 5 to 10 inches expected from southwestern to northeastern Louisiana...across far southeastern Arkansas and into central and northern Mississippi...with isolated maximum accumulations of 15 inches possible. Currently numerous moderate/scattered strong convection is within 150 nm NE and 60 nm SW semicircles.

Tropical depression eight is centered near 13.9N 47.5W at 13/0900 UTC or about 800 nm east of the Lesser Antilles moving west-northwest at 9 kt. Estimated minimum central pressure is 1006 Mb. Maximum sustained wind speed remains 30 kt with gusts to 40 kt. See latest NHC forecast/advisory under awips/wmo headers miatcmat3/wtnt23 knhc for more details. This depression has generally changed little throughout the overnight hours with the low-level center located to the N of a persistent area of moderate convection which extends out roughly 120-150 nm. A broad band has become a little better organized to the N and NE of the system but still remains separated from the convective mass. Some strengthening is expected in the short term as the shear relaxes some. However...weakening is forecast toward the end of the period as the tropical cyclone moves into a higher shear environment.  
...tropical waves...

Tropical wave has been introduced on the 06z analysis along 19W/20W S of 18N estimated to be moving W 10-15 kt. Based on sounding data...this wave passed Dakar sometime between 12z and 23z yesterday. Synoptic 24-hour pres trends clearly show the prescience of this wave with 1-3 Mb pres rises E of the wave over W Africa and 1 Mb falls W over the Cape Verde Islands since 06z yesterday. Visible imagery...low-level satellite drift winds and a 07z qscat pass show a fair amount of cyclonic turning with a weak area of low pressure along the wave axis near 10N...analyzed 1010 Mb. Showers and tstms are widely scattered within 240 nm of the wave axis. High amplitude tropical wave is in the E atlc along 38W S of 21N moving W 10-15 kt. The nrm part of the wave is beginning to fracture based on the poleward movement of moisture seen on satellite and the uw cimss tpw animation. A trough was analyzed to reflect this along 37W/38W from 22N-26N. Otherwise...the overall structure has changed little over the past couple of days with a large shield of cyclonic turning noted in the low to mid level cloud field. Despite the continued fair structure...deep moisture is sparse with widely scattered moderate convection within 180 nm of the axis. Slightly more organized activity is situated at the base of the wave within the ITCZ.

Tropical wave is in the central Caribbean along 78W S of 23N moving W 15 kt. A surge of moisture associated with this feature is still evident on the tpw animation from cimss...which was the primary tool used to track this wave as little signature is apparent in conventional satellite imagery. The interaction with an upper low centered just S of central Cuba is supporting isolated showers and tstms over Cuba and a portion of the NW Carib N of 18N between 79W-83W.  
...the ITCZ...

ITCZ axis is centered along 8N21W 11N33W 13N39W 15N45W 10N52W 9N62W. Scattered moderate convection is near the base of an E atlc wave from 6N-10N between 35W-38W and SE of the depression from 10N-13N between 40W-45W. Similar activity is within 120 nm N of the axis W of 56W.

Discussion...

The Gulf of Mexico...

The highlight today is Hurricane Humberto which has now moved inland across SE Texas and SW Louisiana. Refer to the special feature section for details. The remainder of the region remains embedded in a moist environment as indicated by water vapor imagery and the cimss tpw animation. The upper features maintaining this widespread high level moisture plume consist of an elongated upper high stretched across the N Gulf and an upper low just S of Cuba. Ir imagery shows only isolated spots of precip. One somewhat persistent area...also evident on mosaic radar imagery...is a stream of showers and tstms advected from the atlc into the SE Gulf roughly S of 26N E of 85W. Weakening pockets of scattered moderate convection are over the S Bay of Campeche and over srn Mexico where diffluence aloft is more pronounced. Isolated showers and tstms are possible just about anywhere else in the region given the moist environment.

The Caribbean sea...

A broad upper low has been drifting wwd centered S of central Cuba near 21N80W. Diffluence aloft to the S of the upper low coupled with the low-level convergence along the ITCZ is enhancing clusters of scattered moderate convection over the W Caribbean and portions of Central America roughly S of 17N W of 78W. The interaction between a weak tropical wave and the upper low is producing some isolated shower activity across the NW Carib and over Cuba...for details see above. The ern Carib is experiencing mostly fair weather as drier air from the tropical atlc has been advected into the area around an upper high. However...there are wwd moving scattered showers and tstms within the ITCZ that May move across the extreme srn windward islands later today. Moderate to strong trade winds are blowing across the region...strongest between Colombia and Hispaniola where qscat depicted a solid area of 20-25 kt winds.

The Atlantic Ocean...

Tropical depression eight is the main feature of interest across the tropical and subtropical atlc discussion zone. For details and references refer to the special feature section above. Otherwise...the atlc basin is fairly quiet this morning. The sfc pattern has generally changed little over the past couple of days. A pair of 1022 Mb highs are analyzed along and just N of our border in the central and W atlc near 32N60W and 36N49W. A 1028 Mb high is centered in the E atlc near 44N23W with ridging extends SW to 28N35W. A slight weakness in the subtropical ridging lies between 35W-45W associated with a trough of low pres in the N central atlc. This weakness has allowed winds to be fairly lighter in that vicinity...with moderate trades observed elsewhere.



Tropical weather outlook  
NWS TPC/National Hurricane Center Miami FL  
530 am EDT Thu Sep 13 2007  
For the north Atlantic...Caribbean sea and the Gulf of Mexico... The National Hurricane Center is issuing advisories on tropical depression eight located about 930 miles east of the Lesser Antilles...and on Hurricane Humberto located inland Texas about 25 miles northeast of high island. Elsewhere...tropical cyclone formation is not expected during the next 48 hours.  
Public advisories on tropical depression eight are issued under wmo header wtnt33 knhc and under awips header miatcpat3. Forecast/advisories on tropical depression eight are issued under wmo header wtnt23 knhc and under awips header miatcmt3. Public advisories on Hurricane Humberto are issued under wmo header wtnt34 knhc and under awips header miatcpat4. Forecast/advisories on tropical storm Humberto are issued under wmo header wtnt24 knhc and under awips header miatcmt4.  
Forecaster Avila



Monthly tropical weather summary  
NWS TPC/National Hurricane Center Miami FL  
800 am EDT Sat Sep 1 2007

For the north Atlantic...Caribbean sea and the Gulf of Mexico... Three tropical cyclones formed in the Atlantic basin during August. Two of these cyclones became named storms during August...and one of these...Dean...reached major hurricane status. Although the number of tropical storms and hurricanes was slightly below average for August...the accumulated cyclone energy (ace) index...a measure of the strength and duration of named storms and hurricanes...was slightly above average. Dean...which made landfall as a category five hurricane on the east coast of the Yucatan peninsula near costa Maya...Mexico...formed from a tropical wave in the far eastern Atlantic on 13 August. The cyclone became a tropical storm the next day about 1500 miles east of the Lesser Antilles and continued to strengthen as it moved just north of due west. Dean became a hurricane on 16 August about 500 miles east of Barbados...and continued to strengthen as it moved closer to the Lesser Antilles. The center of Dean passed between St. Lucia and Martinique during the morning of 17 August...with the northern eyewall passing over Martinique with category two sustained winds of about 100 mph. After clearing the leeward islands...Dean became a major hurricane later that day...and its winds reached 150 mph early the next day about 700 miles east-southeast of Jamaica. Continuing on a track just north of west...the center of Dean passed about 25 miles south of the south coast of Jamaica on 19 August. At that time Dean was a category four hurricane with maximum winds of 145 mph...although these strongest winds likely remained just offshore. Deans heading remained remarkably constant and it continued over the deep warm waters of the northwestern Caribbean. Dean became a category five hurricane very early on 21 August about 200 miles east of Chetumal Mexico...and reached its peak intensity of 165 mph...with a minimum pressure of 906 Mb...just before landfall near costa Maya on the Yucatan peninsula. Dean weakened to a category one hurricane during its traverse of the Yucatan...and emerged into the Bay of Campeche late on 21 August. Dean strengthened to a category two hurricane...with winds of about 100 mph...just before making its final landfall near midday on 22 August about 40 miles south of Tuxpan Mexico. The cyclone dissipated early on 23 August over the high terrain of central Mexico. Preliminary reports from various media sources indicate that Dean is responsible for roughly 40 deaths across the Caribbean...with the largest tolls in Mexico and Haiti. Official totals are not yet available.

Erin formed in association with a tropical wave early on 15 August over the Gulf of Mexico about 450 miles east-southeast of Brownsville Texas. Moving northwestward...the cyclone became a tropical storm with maximum winds of 40 mph later that day while centered about 200 miles east of Brownsville...but Erin did not strengthen any further over the Gulf. The center of circulation made landfall near Lamar Texas on the morning of 16 August...and by that time Erin had weakened to a tropical depression with maximum winds of 35 mph. The depression continued northwestward and inland during 16-17 August and turned northward over west Texas on 18 August. Surviving remarkably over land...the cyclone entered southwestern Oklahoma very early on 19 August. While moving northeastward over Oklahoma that morning...Erin produced sustained winds of tropical storm force and gusts to hurricane force in isolated locations. Post-storm analysis of this unusual event is ongoing to determine the strength and status of Erin over Oklahoma. The cyclone dissipated later on 19 August over northeastern Oklahoma...but remnant moisture continued northeastward into Missouri. Overall...Erin and its remnants brought heavy rains to portions of southeastern...south-central...and western Texas... Oklahoma...and southern Missouri. Storm-total rainfall amounts of 3-7 inches were common in many of these areas...with some locations receiving more than 10 inches.

Felix formed from a tropical wave on 31 August about 200 miles east-southeast of the windward islands and moved westward across the windward islands near Grenada. At the beginning of September...the storm was centered about 75 miles west-northwest of Grenada with maximum winds of 45 mph.

Forecaster Franklin/Knabb/Blake

Tropical depression Felix forecast/advisory number 20...corrected  
NWS TPC/National Hurricane Center Miami FL A1062007  
0900 UTC Wed Sep 05 2007 ...dissipated at 06/0600z  
Tropical depression center located near 14.0N 87.0W at 05/0900z position accurate within 30 nm  
Present movement toward the west or 270 degrees at 8 kt  
Estimated minimum central pressure 1004 Mb max sustained winds 25 kt with gusts to 35 kt.  
Winds and seas vary greatly in each quadrant. Radii in nautical miles are the largest radii  
expected anywhere in that quadrant.  
Repeat...center located near 14.0N 87.0W at 05/0900z at 05/0600z center was located near  
14.0N 86.5W  
Forecast valid 05/1800z 13.8N 88.0W...remnant low max wind 20 kt...gusts 25 kt.  
Forecast valid 06/0600z...dissipated  
Request for 3 hourly ship reports within 300 miles of 14.0N 87.0W  
This is the last forecast/advisory issued by the National Hurricane Center on this system.  
Forecaster Avila