2017 Field Day HF Propagation Assessments

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June 17, 2017

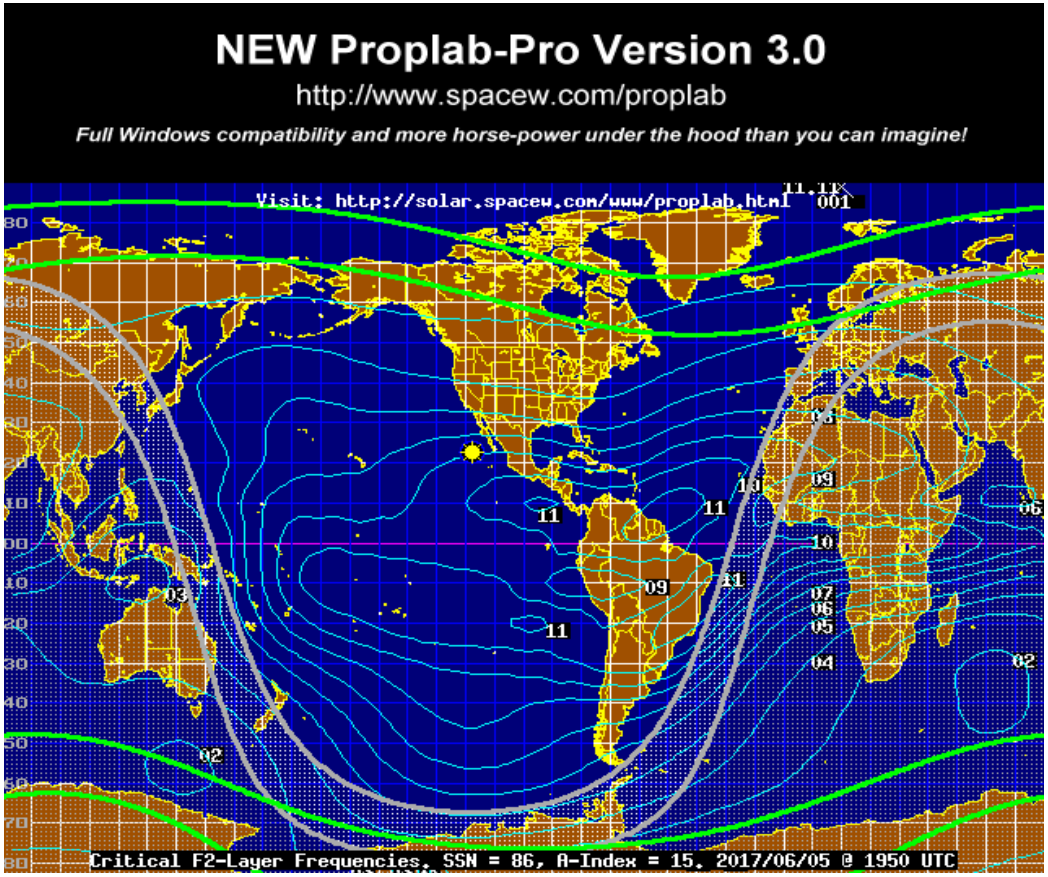
Propagation Condition Summary

- 11 year solar cycle bottom, the low bands are highly favored for domestic QSOs via F2
- Earth orbit around the Sun: Summer pattern--longer daylight, lower ionization relative to winter position
- E layer season is in its prime, should produce intermittent short skip potential on the high bands
- 28-day rotation on the Sun's axis—G3 solar storm was produced on the cycle immediately preceding Field Day. On May 24, the planetary K index was 6 amid minor black outs and frequencies patterns were elevated by 2 MHz.
- SFI: 75
- SSN: 15

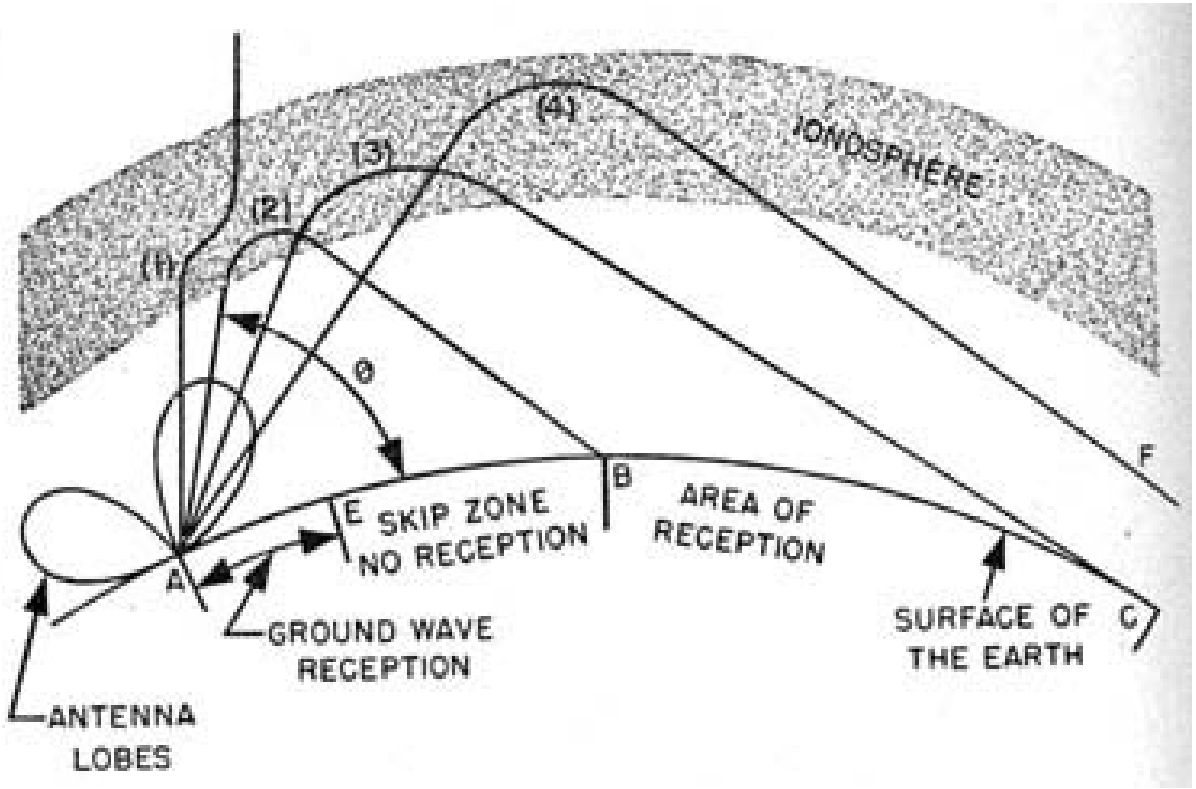
IMPORTANT NOTES:

- Propagation assessment focuses heavily on SSB and AM voice modes as the benchmarks
- No reverse beacon reports were collected
- *The included HAP (Hourly Area Prediction) Charts are centered on Atlanta, GA. Users must adjust the patterns ~200 miles NW in order to obtain accuracy for Middle Tennessee locations. These charts illustrate the predicted SSB coverage between a base and a mobile station. Adjustments can also be made for mode or power by roughly extending the LUF by 2 MHz for each 10dB of signal enhancement.*
- *Propagation data (charts, broadcast reports and scheduled QSOs) was collected between June 3, 2017 and June 6, 2017*
- *All other QSO data is from activity between June 6, 2017 and June 12, 2017*

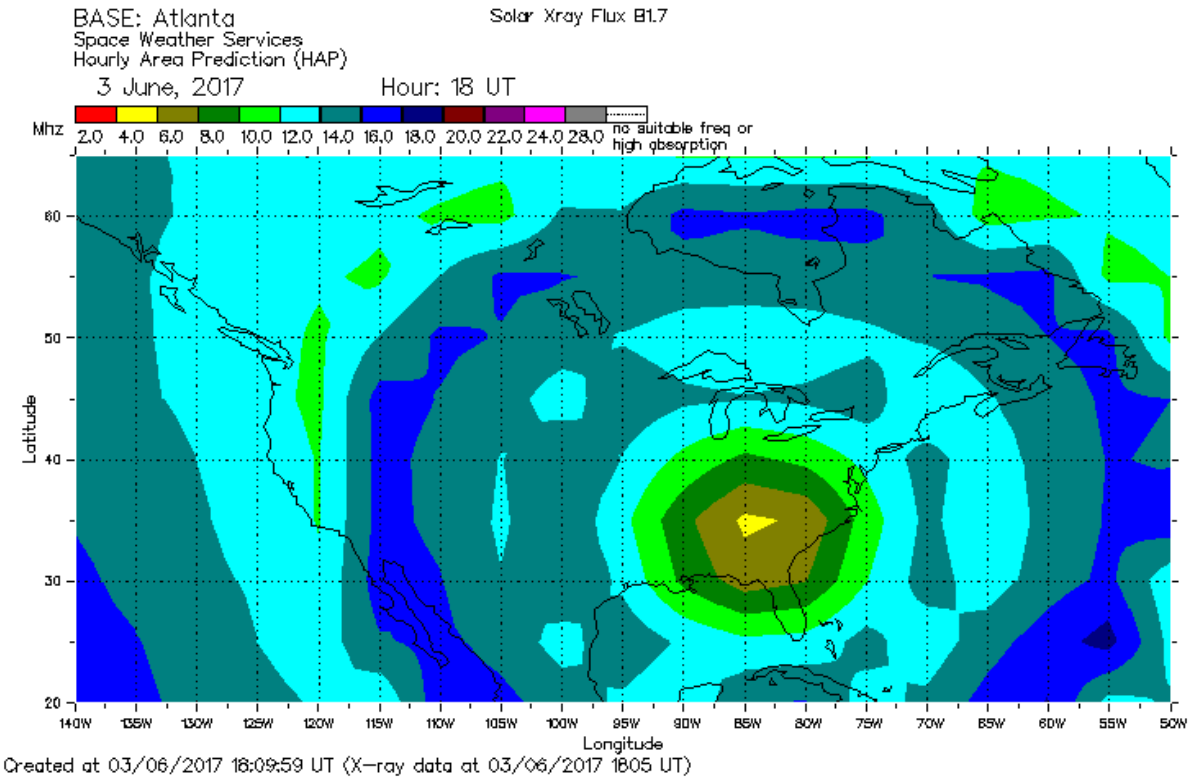
F2 Layer Critical Frequency ~6 MHz @ 1950 UTC



Coverage Patterns Relative to Critical Frequency

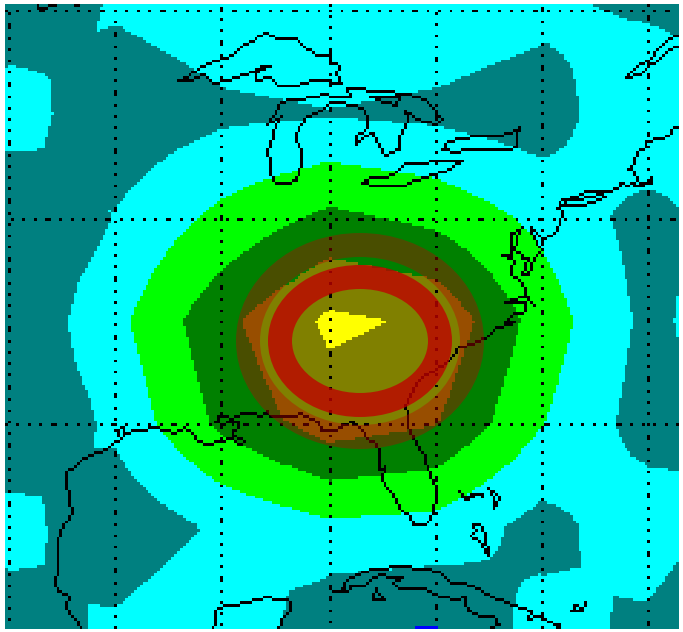


HAP Chart 1800 Z

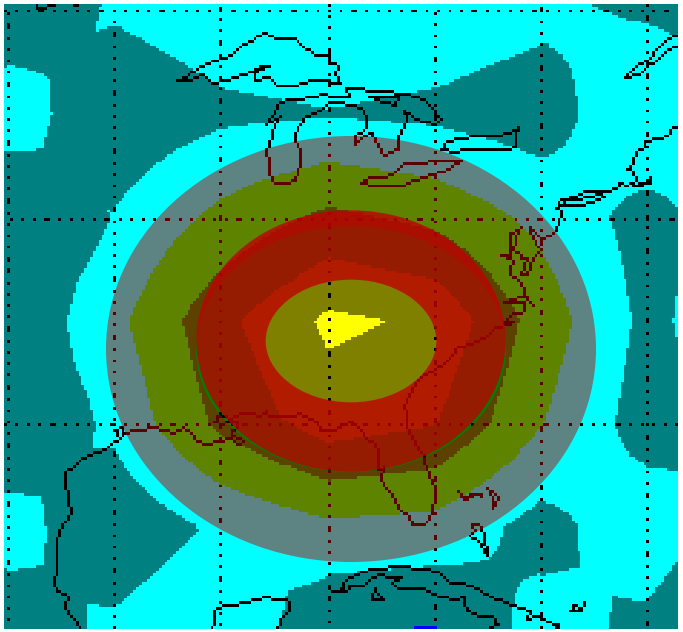


40M Coverage Patterns Relative to Mode

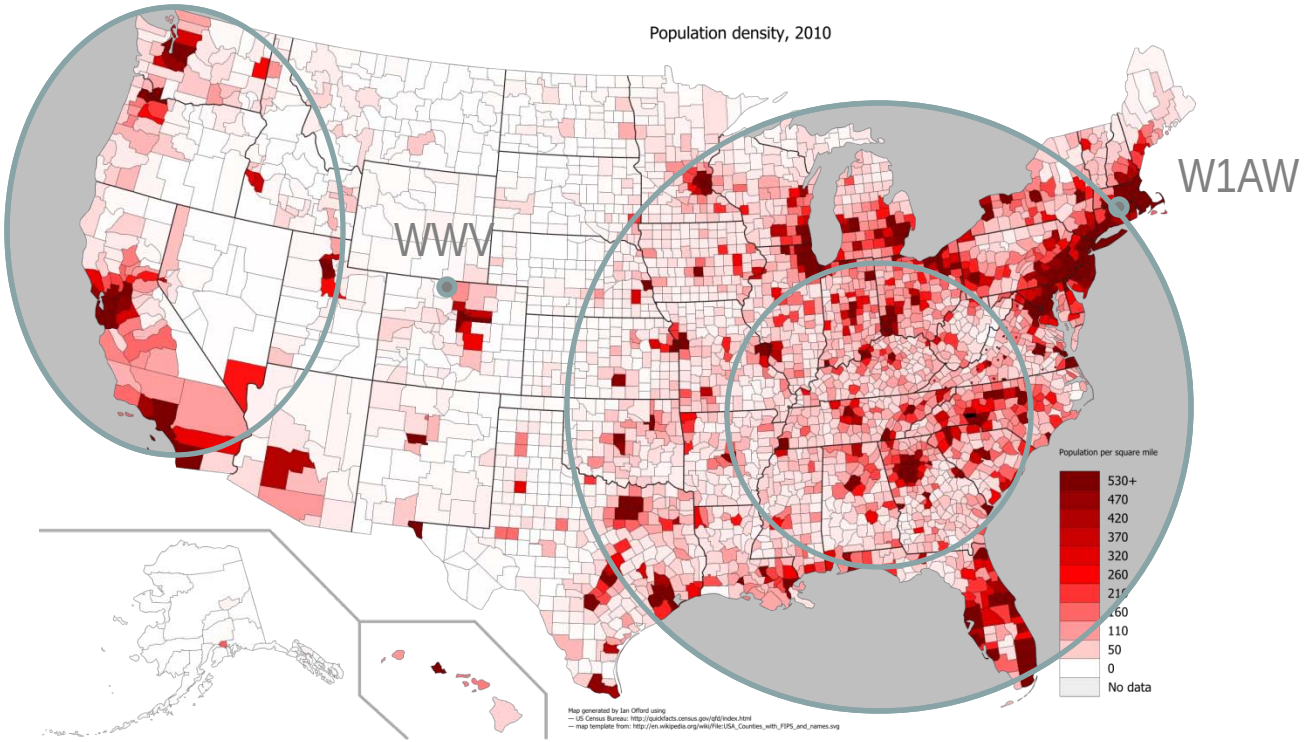
SSB



CW



High Density QSO Opportunities via F2



Band Management Plan

- Use low band (160M, 80M and 40M) coverage patterns to work the main Eastern US opportunities via F2
- Use high band (20M, 15M) coverage patterns to work the main Western US opportunities via F2
- Assign primary or secondary status to individual stations based on the expected coverage pattern for each mode.
- Monitor 10M Beacons to gauge E layer viability
- Switch to high bands (20M, 15M, 10M) for intermittent short-skip propagation via E layer

W1AW (CW broadcast) Newington, CT

UTC	1.8 MHz	3.5 MHz	7 MHz	14 MHz	18 MHz	21 MHz	28 MHz
1335	-	-	-	Weak	Strong	-	-
2000	-	-	-	Strong	Strong	Strong	Weak
2100	-	-	-	Strong	Strong	-	-
0000	-	-	-	Strong	Strong	Strong	Weak
0055	-	-	-	Strong	Strong	Weak	Weak
0200	-	Strong	Strong	Strong	Weak	-	-
0300	Strong	Strong	Strong	Weak	Weak	-	-
0400	Strong	Strong	Weak	-	-	-	-

WWV (AM voice broadcast) Fort Collins, CO

UTC	2.5 MHz	5 MHz	10 MHz	15 MHz	20 MHz
1900	-	-	CW	Strong	Weak
2043	-	-	CW	Strong	Weak
2200	-	-	Weak	Strong	Weak
2300	-	-	Weak	Strong	Strong
2349	-	CW	Weak	Strong	Weak
0026	-	Weak	Weak	Strong	CW
0046	-	Weak	Strong	Strong	CW
0118	-	Weak	Weak	Strong	Weak
0207	-	Strong	Strong	Strong	Weak
0248	-	Strong	Strong	Strong	Weak
0326	CW	Strong	Strong	Strong	Strong
0440	CW	Strong	Strong	Strong	Weak
1040	CW	Strong	CW	Weak	-
1200	-	Weak	Weak	Weak	-
1334	-	Weak	AM	Strong	Strong
1418	-	-	Weak	Strong	Weak
1531	-	-	CW	Strong	Weak
1636	-	-	CW	Weak	Weak
1704	-	-	CW	Strong	Strong

10M Beacons (28.190-28.300 MHz) via E Layer

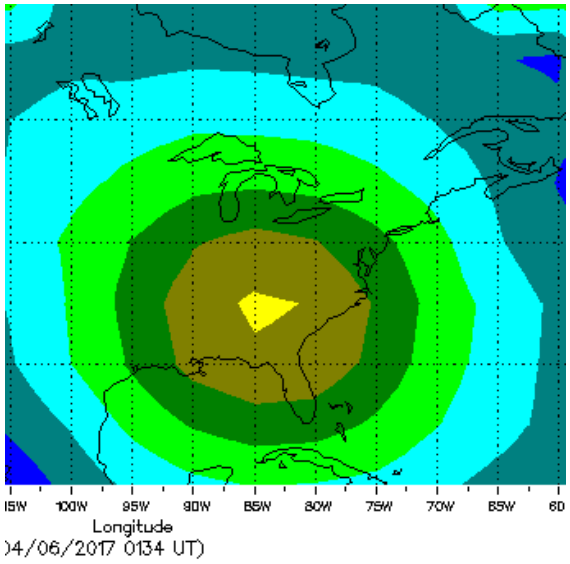
UTC	BEACON(S)
1423	N2PDX-NY, KA3JOE-PA, K5GJR-TX, N2MH-NJ
1535	AB8Z-OH, K5GJR-TX, K5AB-TX
1622	K5AB-TX, K5GJR-TX, KE5OXC-LA, NT4F-NC
1905	N2PD-NY, AA1TT-NH, KJ3P-PA, KG2GL-NJ, N2MH-NJ
2005	K5AB-TX, KG5BZI-TX
2116	WB5DXZ-OK
2300	nil

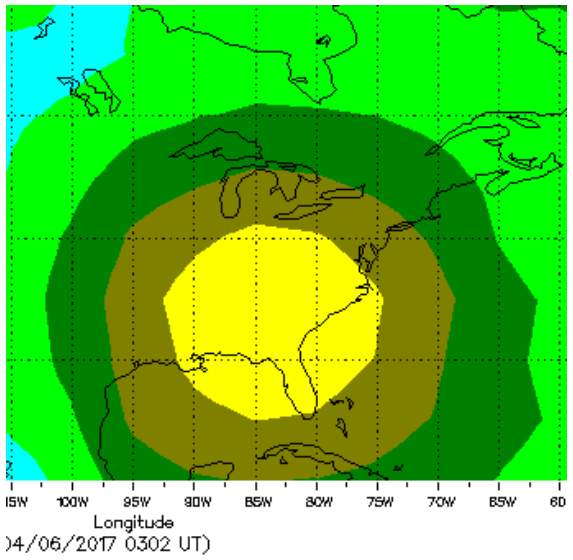
QSO Samples

UTC	BAND	MODE	QTH & RST	NOTES
0115	40	SSB	Milwaukee, WI 54	
0130	40	SSB	Northern WI 53	
0135	40	SSB	Milwaukee, WI 57	
0143	40	SSB	Austin, TX 55	
0145	40	SSB	Branson, MO 57	QRP 55
0147	40	SSB	Rochester, NY 59	
0205	40	SSB	Woodstock, GA 57	mobile
0205	40	SSB	Milwaukee, WI 57	
0210	40	SSB	Dawson, GA 53	
0215	40	SSB	Ohio 59	
0245	40	SSB	Northern WI 57	
1643	10	SSB	Tampa, FL 59	
1649	10	SSB	Syracuse, NY 55	
1655	10	SSB	Southhampton, NJ 52	
1659	10	SSB	Hoboken, NJ 59	
2237	40	CW	Ohio 589	mobile

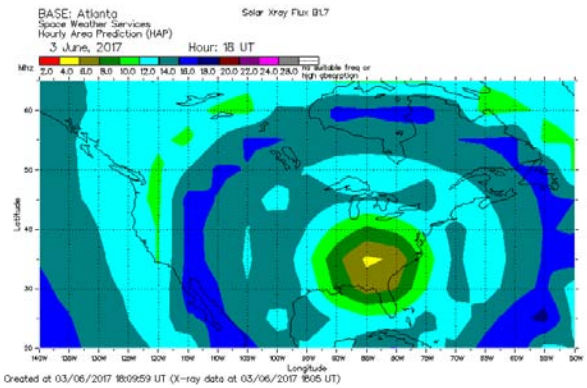
40M Wisconsin

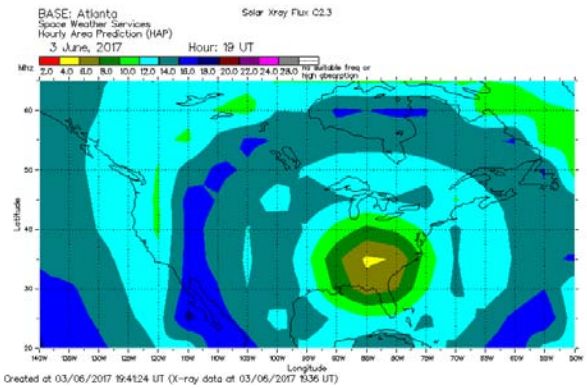
- Scheduled SSB QSO at two locations, respectively 500 miles and 720 miles from Franklin, TN
- Propagation pattern width is approximately 250 miles, but only half of that is strong enough for reasonable traffic handling.
- About 1 hour difference in peak propagation trends at both locations
- Pattern moves at 200+ miles per hour
- SSB “Loiter” time over the intended station is roughly 45 minutes with two opportunities per day (AM and PM)
- CW coverage is approximately 14 hours due to LUF throughout the stable day time periods

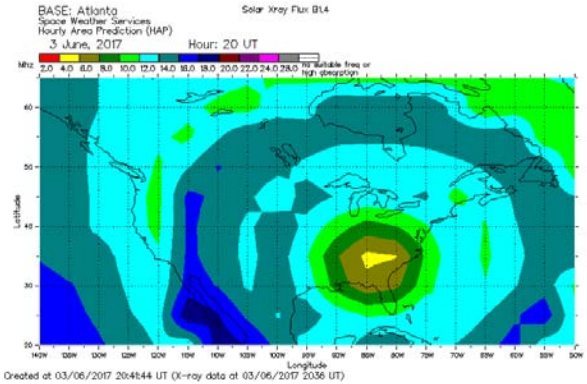


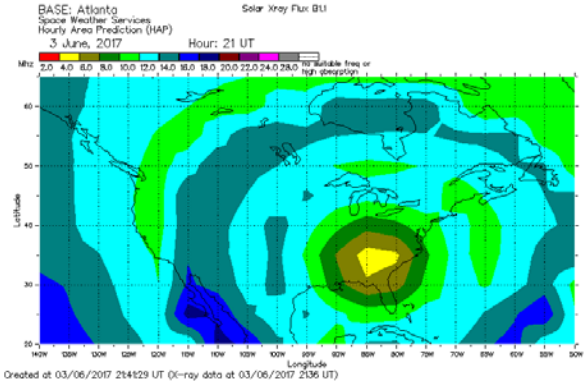


Appendix: HAP Charts 1800 – 2100 Z

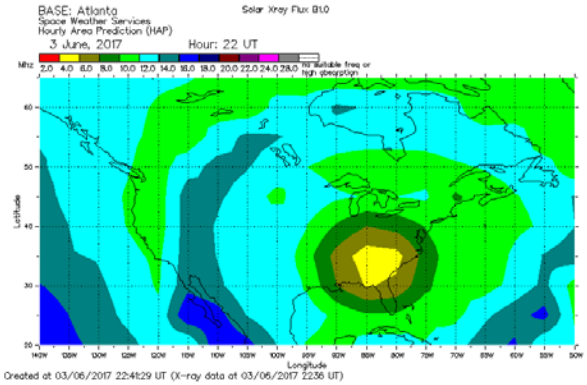


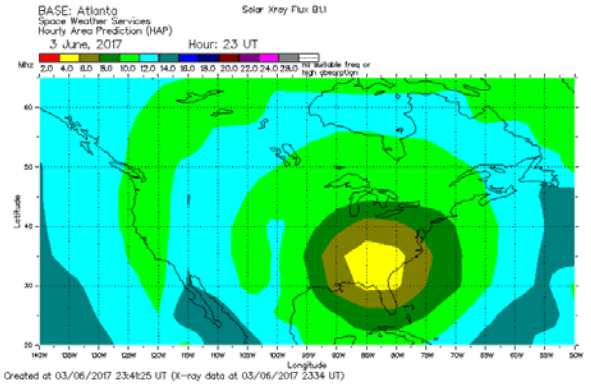


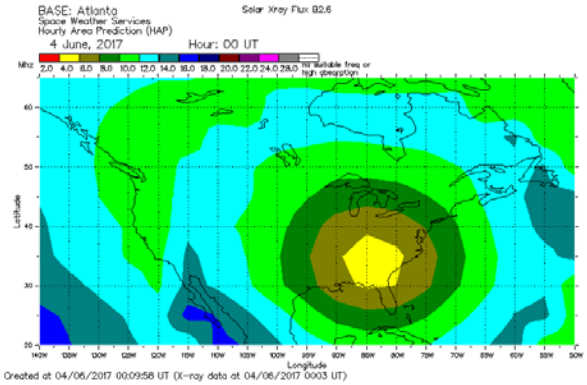


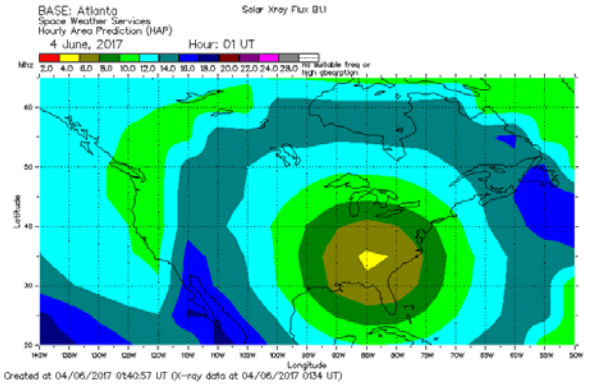


Appendix: HAP Charts 2200 – 0100 Z

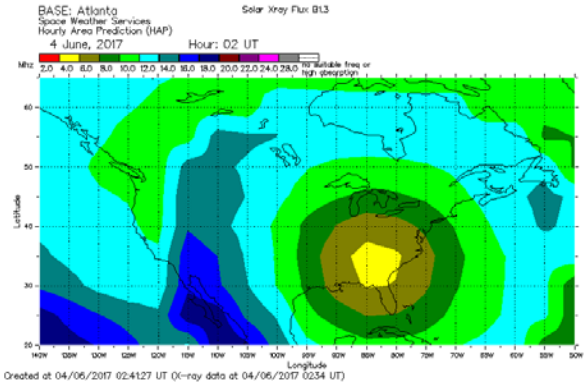


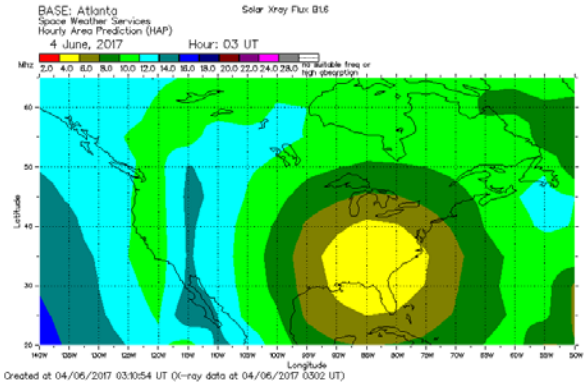


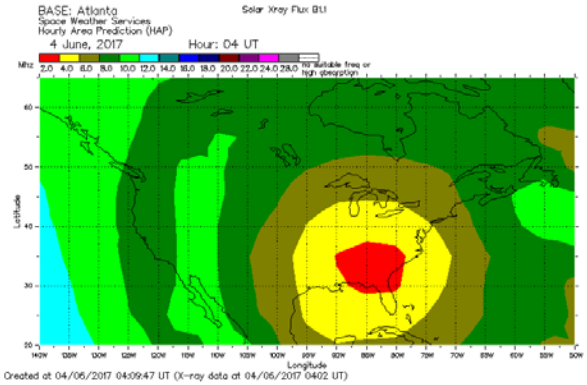




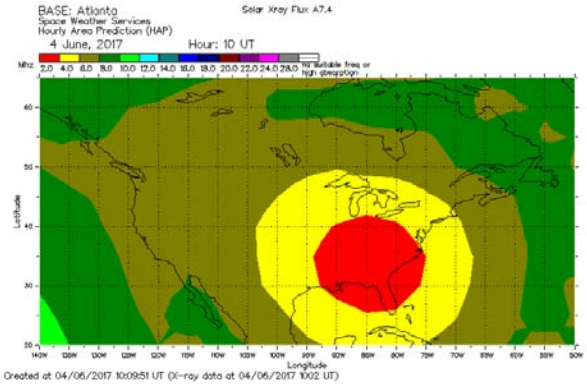
Appendix: HAP Charts 0200 – 0400 Z

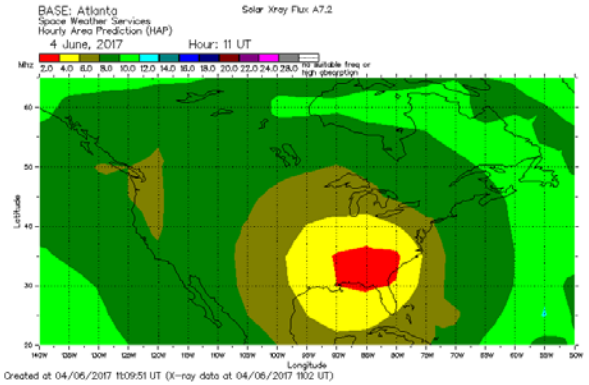


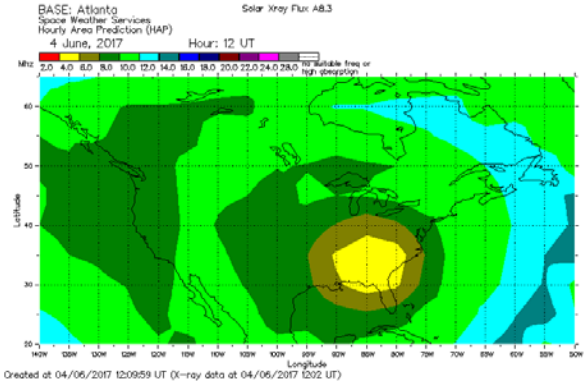


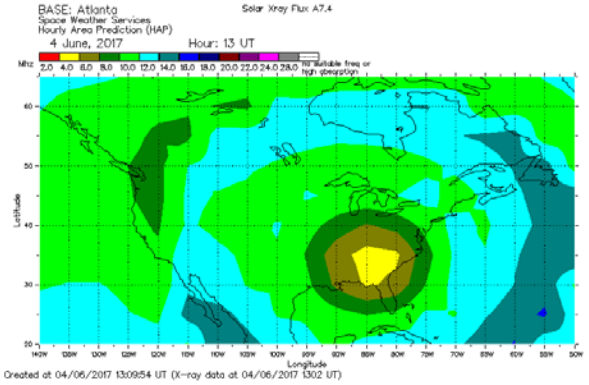


Appendix: HAP Charts 1000 – 1300 Z

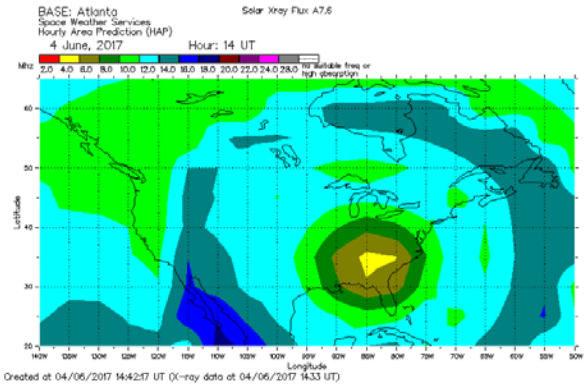


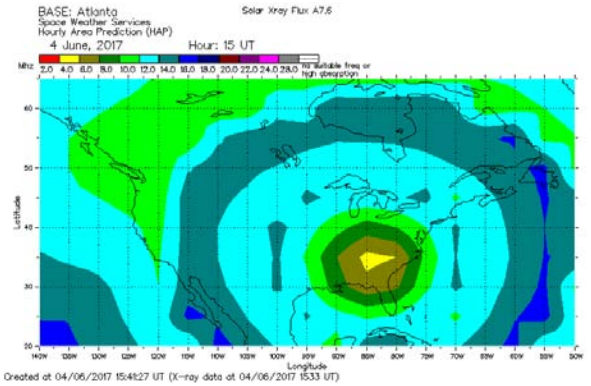


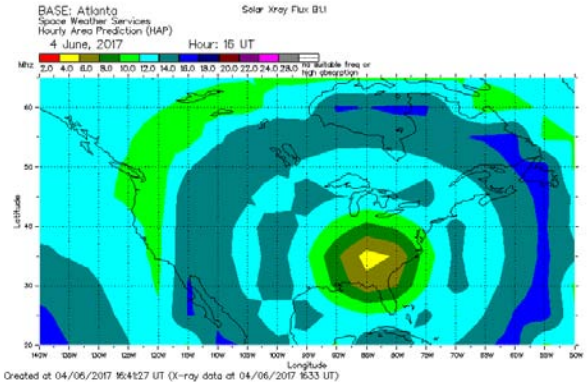


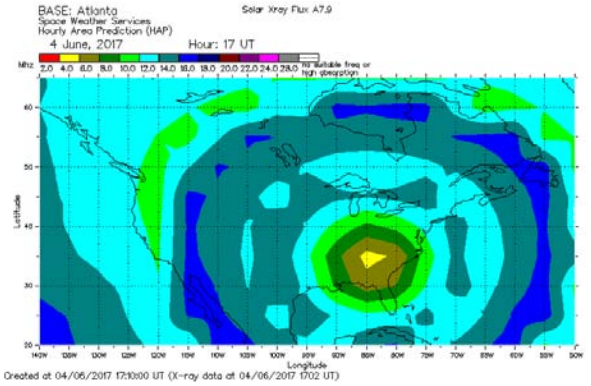


Appendix: HAP Charts 1400 – 1700 Z









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