

**WMO Headers for GFS-LAMP products
OSIP LAMP 05-059**

Note: This document has been updated (2/2007) to properly reflect the grib headers for GFS LAMP cycles of 1800, 1900, and 2000 UTC. These headers were modified in this document to conform with the NDFD change regarding at what hour the day begins. It now begins at 2200 UTC instead of the previous 1800 UTC. In addition, the final page is updated (3/2007) to reflect the newest size estimates for the BUFR messages given the additional stations for the newest cycles.

WMO headers have the format of $T_1T_2A_1A_2ii$ CCCC

The CCCC for all GFS-LAMP products is **KWNO**.

A. WMO Headers for LAMP station guidance in ASCII text format

1. The T_1 designates the data type. For the GFS-LAMP ASCII text product T_1 is **F** for Forecast.
2. The T_2 further designates the data type. For the GFS-LAMP ASCII text product T_2 is **O** for Guidance.
3. The A_1A_2 designates the geographical area. For the GFS-LAMP ASCII text product the A_1A_2 is **US** for the United States of America.
4. The ii for the GFS-LAMP ASCII text product is **11** for global distribution. Data from stations in all regions of the United States of America will be contained in this ASCII text bulletin.
5. GFS-LAMP ASCII text product header = **FOUS11 KWNO**
6. The GFS-LAMP ASCII text product AWIPS identifier will be **LAVUSA**.

B. WMO Headers for LAMP station guidance in BUFR format

1. The T_1 designates the data type. For the GFS-LAMP BUFR product T_1 is **J** for Forecast Information - BUFR.
2. The T_2 further designates the data type. For the GFS-LAMP BUFR product T_2 is **S** for surface/sea level.
3. The A_1 further designates the data type. For the GFS-LAMP BUFR product the A_1 is **M** for Land based main synoptic reports.
4. The A_2 further designates the reference time. For the GFS-LAMP BUFR product the A_2 is **F** for 30 hours forecast.
5. The ii designates the geographical region of the data. For the GFS-LAMP BUFR product the ii is as follows:
 - i. **10** Pacific Region
 - ii. **11** Northeast Region
 - iii. **12** Southeast Region

- iv. **13** North Central Region
- v. **14** South Central Region
- vi. **15** Rocky Mountains Region
- vii. **16** West Coast Region
- viii. **17** Alaska

6. GFS-LAMP BUFR product headers:

- i. **JSMF10 KWNO**
- ii. **JSMF11 KWNO**
- iii. **JSMF12 KWNO**
- iv. **JSMF13 KWNO**
- v. **JSMF14 KWNO**
- vi. **JSMF15 KWNO**
- vii. **JSMF16 KWNO**
- viii. **JSMF17 KWNO**

C. **WMO Headers for LAMP gridded guidance in GRIB2 format**

1. The T_1 for the GFS-LAMP GRIB2 product is **L**.
2. The T_2 designates the weather element type. The following values are used for the GFS-LAMP GRIB2 product:
 - i. **A** = 2-hr probability of thunderstorms
 - ii. **B** = 2-hr categorical forecasts (yes/no) of thunderstorms occurring
3. The A_1 designates the geographical area. For the GFS-LAMP product in GRIB2 format, the A_1 is **U** for CONUS.
4. The A_2 and the ii follow the convention established in the NDFD. These three characters together represent the day and hour (UTC) for which the product is valid. Specifically for LAMP, the gridded guidance is for thunderstorms in a 2-hr period, and the valid time represents the end of the 2-h period. So a GFS-LAMP thunderstorm probability valid from 10-12 UTC would be said to be valid at 12 UTC.

The LAMP thunderstorm guidance in a 2-h period is valid for every 2-h period ending in the first 2-6 hours after issuance (3-7 hours after the cycle time), and every subsequent 2-hr period which ends on an even UTC hour. Please see http://www.nws.noaa.gov/mdl/gfslamp/docs/Tstorm_proj_schematic.pdf for a visual depiction of the valid periods.

- i. In general, the following convention for the A_2 and the ii is used for the GFS-LAMP gridded thunderstorm products:
 1. **A** = Day 0; ii = UTC hour (**21-23**)
 2. **B** = Day 1; ii = UTC hour (**00-23**)
 3. **C** = Day 2; ii = UTC hour (**00, 02, 04, 06, 08, 10, 12, 14, 16, 18**)
- ii. Specifically, these are the exact WMO headers for the LAMP GRIB2 thunderstorm products. All headers have CCCC of **KWNO**:
 1. Projections from the 00 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 03 UTC: **LAUB03** and **LBUB03**
 - b. 2-h period ending at 04 UTC: **LAUB04** and **LBUB04**
 - c. 2-h period ending at 05 UTC: **LAUB05** and **LBUB05**
 - d. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - e. 2-h period ending at 07 UTC: **LAUB07** and **LBUB07**

- f. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - g. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - h. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - i. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - j. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - k. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - l. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - m. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - n. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
- 2. Projections from the 01 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 04 UTC: **LAUB04** and **LBUB04**
 - b. 2-h period ending at 05 UTC: **LAUB05** and **LBUB05**
 - c. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - d. 2-h period ending at 07 UTC: **LAUB07** and **LBUB07**
 - e. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - f. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - g. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - h. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - i. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - j. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - k. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - l. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - m. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - n. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
- 3. Projections from the 02 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 05 UTC: **LAUB05** and **LBUB05**
 - b. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - c. 2-h period ending at 07 UTC: **LAUB07** and **LBUB07**
 - d. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - e. 2-h period ending at 09 UTC: **LAUB09** and **LBUB09**
 - f. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - g. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - h. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - i. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - j. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - k. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - l. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - m. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - n. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
- 4. Projections from the 03 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - b. 2-h period ending at 07 UTC: **LAUB07** and **LBUB07**
 - c. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - d. 2-h period ending at 09 UTC: **LAUB09** and **LBUB09**
 - e. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - f. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - g. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - h. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - i. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - j. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - k. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - l. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - m. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - n. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
- 5. Projections from the 04 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 07 UTC: **LAUB07** and **LBUB07**

- b. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - c. 2-h period ending at 09 UTC: **LAUB09** and **LBUB09**
 - d. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - e. 2-h period ending at 11 UTC: **LAUB11** and **LBUB11**
 - f. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - g. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - h. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - i. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - j. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - k. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - l. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - m. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - n. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
6. Projections from the 05 UTC GFS-LAMP cycle:
- a. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - b. 2-h period ending at 09 UTC: **LAUB09** and **LBUB09**
 - c. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - d. 2-h period ending at 11 UTC: **LAUB11** and **LBUB11**
 - e. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - f. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - g. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - h. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - i. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - j. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - k. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - l. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - m. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - n. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
7. Projections from the 06 UTC GFS-LAMP cycle:
- a. 2-h period ending at 09 UTC: **LAUB09** and **LBUB09**
 - b. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - c. 2-h period ending at 11 UTC: **LAUB11** and **LBUB11**
 - d. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - e. 2-h period ending at 13 UTC: **LAUB13** and **LBUB13**
 - f. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - g. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - h. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - i. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - j. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - k. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - l. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - m. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - n. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
8. Projections from the 07 UTC GFS-LAMP cycle:
- a. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - b. 2-h period ending at 11 UTC: **LAUB11** and **LBUB11**
 - c. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - d. 2-h period ending at 13 UTC: **LAUB13** and **LBUB13**
 - e. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - f. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - g. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - h. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - i. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - j. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - k. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - l. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**

- m. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
- n. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
- 9. Projections from the 08 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 11 UTC: **LAUB11** and **LBUB11**
 - b. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - c. 2-h period ending at 13 UTC: **LAUB13** and **LBUB13**
 - d. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - e. 2-h period ending at 15 UTC: **LAUB15** and **LBUB15**
 - f. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - g. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - h. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - i. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - j. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - k. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - l. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - m. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - n. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
- 10. Projections from the 09 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - b. 2-h period ending at 13 UTC: **LAUB13** and **LBUB13**
 - c. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - d. 2-h period ending at 15 UTC: **LAUB15** and **LBUB15**
 - e. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - f. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - g. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - h. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - i. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - j. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - k. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - l. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - m. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - n. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
- 11. Projections from the 10 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 13 UTC: **LAUB13** and **LBUB13**
 - b. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - c. 2-h period ending at 15 UTC: **LAUB15** and **LBUB15**
 - d. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - e. 2-h period ending at 17 UTC: **LAUB17** and **LBUB17**
 - f. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - g. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - h. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - i. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - j. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - k. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - l. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - m. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - n. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
- 12. Projections from the 11 UTC GFS-LAMP cycle:
 - a. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - b. 2-h period ending at 15 UTC: **LAUB15** and **LBUB15**
 - c. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - d. 2-h period ending at 17 UTC: **LAUB17** and **LBUB17**
 - e. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - f. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - g. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - h. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**

- i. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - j. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - k. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - l. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - m. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - n. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
13. Projections from the 12 UTC GFS-LAMP cycle:
- a. 2-h period ending at 15 UTC: **LAUB15** and **LBUB15**
 - b. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - c. 2-h period ending at 17 UTC: **LAUB17** and **LBUB17**
 - d. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - e. 2-h period ending at 19 UTC: **LAUB19** and **LBUB19**
 - f. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - g. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - h. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - i. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - j. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - k. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - l. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - m. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - n. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
14. Projections from the 13 UTC GFS-LAMP cycle:
- a. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - b. 2-h period ending at 17 UTC: **LAUB17** and **LBUB17**
 - c. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - d. 2-h period ending at 19 UTC: **LAUB19** and **LBUB19**
 - e. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - f. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - g. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - h. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - i. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - j. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - k. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - l. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - m. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - n. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
15. Projections from the 14 UTC GFS-LAMP cycle:
- a. 2-h period ending at 17 UTC: **LAUB17** and **LBUB17**
 - b. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - c. 2-h period ending at 19 UTC: **LAUB19** and **LBUB19**
 - d. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - e. 2-h period ending at 21 UTC: **LAUB21** and **LBUB21**
 - f. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - g. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - h. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - i. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - j. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - k. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - l. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - m. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - n. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
16. Projections from the 15 UTC GFS-LAMP cycle:
- a. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - b. 2-h period ending at 19 UTC: **LAUB19** and **LBUB19**
 - c. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - d. 2-h period ending at 21 UTC: **LAUB21** and **LBUB21**

- e. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - f. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - g. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - h. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - i. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - j. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - k. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - l. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - m. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - n. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
17. Projections from the 16 UTC GFS-LAMP cycle:
- a. 2-h period ending at 19 UTC: **LAUB19** and **LBUB19**
 - b. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - c. 2-h period ending at 21 UTC: **LAUB21** and **LBUB21**
 - d. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - e. 2-h period ending at 23 UTC: **LAUB23** and **LBUB23**
 - f. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - g. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - h. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - i. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - j. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - k. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - l. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - m. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - n. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
18. Projections from the 17 UTC GFS-LAMP cycle:
- a. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - b. 2-h period ending at 21 UTC: **LAUB21** and **LBUB21**
 - c. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - d. 2-h period ending at 23 UTC: **LAUB23** and **LBUB23**
 - e. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - f. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - g. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - h. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - i. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - j. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - k. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - l. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - m. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
 - n. 2-h period ending at 18 UTC: **LAUC18** and **LBUC18**
19. Projections from the 18 UTC GFS-LAMP cycle:
- a. 2-h period ending at 21 UTC: **LAUB21** and **LBUB21**
 - b. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - c. 2-h period ending at 23 UTC: **LAUB23** and **LBUB23**
 - d. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - e. 2-h period ending at 01 UTC: **LAUC01** and **LBUC01**
 - f. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - g. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - h. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - i. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - j. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - k. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - l. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - m. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
 - n. 2-h period ending at 18 UTC: **LAUC18** and **LBUC18**
20. Projections from the 19 UTC GFS-LAMP cycle:

- a. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - b. 2-h period ending at 23 UTC: **LAUB23** and **LBUB23**
 - c. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - d. 2-h period ending at 01 UTC: **LAUC01** and **LBUC01**
 - e. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - f. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - g. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - h. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - i. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - j. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - k. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - l. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
 - m. 2-h period ending at 18 UTC: **LAUC18** and **LBUC18**
 - n. 2-h period ending at 20 UTC: **LAUC20** and **LBUC20**
21. Projections from the 20 UTC GFS-LAMP cycle:
- a. 2-h period ending at 23 UTC: **LAUB23** and **LBUB23**
 - b. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**
 - c. 2-h period ending at 01 UTC: **LAUC01** and **LBUC01**
 - d. 2-h period ending at 02 UTC: **LAUC02** and **LBUC02**
 - e. 2-h period ending at 03 UTC: **LAUC03** and **LBUC03**
 - f. 2-h period ending at 04 UTC: **LAUC04** and **LBUC04**
 - g. 2-h period ending at 06 UTC: **LAUC06** and **LBUC06**
 - h. 2-h period ending at 08 UTC: **LAUC08** and **LBUC08**
 - i. 2-h period ending at 10 UTC: **LAUC10** and **LBUC10**
 - j. 2-h period ending at 12 UTC: **LAUC12** and **LBUC12**
 - k. 2-h period ending at 14 UTC: **LAUC14** and **LBUC14**
 - l. 2-h period ending at 16 UTC: **LAUC16** and **LBUC16**
 - m. 2-h period ending at 18 UTC: **LAUC18** and **LBUC18**
 - n. 2-h period ending at 20 UTC: **LAUC20** and **LBUC20**
22. Projections from the 21 UTC GFS-LAMP cycle:
- a. 2-h period ending at 00 UTC: **LAUB00** and **LBUB00**
 - b. 2-h period ending at 01 UTC: **LAUB01** and **LBUB01**
 - c. 2-h period ending at 02 UTC: **LAUB02** and **LBUB02**
 - d. 2-h period ending at 03 UTC: **LAUB03** and **LBUB03**
 - e. 2-h period ending at 04 UTC: **LAUB04** and **LBUB04**
 - f. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - g. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - h. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - i. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - j. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - k. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - l. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - m. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - n. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
23. Projections from the 22 UTC GFS-LAMP cycle:
- a. 2-h period ending at 01 UTC: **LAUB01** and **LBUB01**
 - b. 2-h period ending at 02 UTC: **LAUB02** and **LBUB02**
 - c. 2-h period ending at 03 UTC: **LAUB03** and **LBUB03**
 - d. 2-h period ending at 04 UTC: **LAUB04** and **LBUB04**
 - e. 2-h period ending at 05 UTC: **LAUB05** and **LBUB05**
 - f. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - g. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - h. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - i. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - j. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - k. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**

- l. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - m. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - n. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
24. Projections from the 23 UTC GFS-LAMP cycle:
- a. 2-h period ending at 02 UTC: **LAUB02** and **LBUB02**
 - b. 2-h period ending at 03 UTC: **LAUB03** and **LBUB03**
 - c. 2-h period ending at 04 UTC: **LAUB04** and **LBUB04**
 - d. 2-h period ending at 05 UTC: **LAUB05** and **LBUB05**
 - e. 2-h period ending at 06 UTC: **LAUB06** and **LBUB06**
 - f. 2-h period ending at 08 UTC: **LAUB08** and **LBUB08**
 - g. 2-h period ending at 10 UTC: **LAUB10** and **LBUB10**
 - h. 2-h period ending at 12 UTC: **LAUB12** and **LBUB12**
 - i. 2-h period ending at 14 UTC: **LAUB14** and **LBUB14**
 - j. 2-h period ending at 16 UTC: **LAUB16** and **LBUB16**
 - k. 2-h period ending at 18 UTC: **LAUB18** and **LBUB18**
 - l. 2-h period ending at 20 UTC: **LAUB20** and **LBUB20**
 - m. 2-h period ending at 22 UTC: **LAUB22** and **LBUB22**
 - n. 2-h period ending at 00 UTC: **LAUC00** and **LBUC00**

Table 1: WMO header information for LAMP products

Element	Header	Geographical Area	Data Type	No. of Products per cycle	Projections (hr)	Bytes per header/ cycle
All elements	JSMF10 KWNO	Pacific Region	BUFR	1	1-25 (in increments of 1 hour)	20K/20K
All elements	JSMF11 KWNO	Northeast CONUS	BUFR	1	1-25 (in increments of 1 hour)	400K/400K
All elements	JSMF12 KWNO	Southeast CONUS, PR, VI	BUFR	1	1-25 (in increments of 1 hour)	300K/300K
All elements	JSMF13 KWNO	North Central CONUS	BUFR	1	1-25 (in increments of 1 hour)	700K/700K
All elements	JSMF14 KWNO	South Central CONUS	BUFR	1	1-25 (in increments of 1 hour)	400K/400K
All elements	JSMF15 KWNO	Rocky Mountains CONUS	BUFR	1	1-25 (in increments of 1 hour)	275K/275K
All elements	JSMF16 KWNO	West Coast CONUS	BUFR	1	1-25 (in increments of 1 hour)	275K/275K
All elements	JSMF17 KWNO	Alaksa	BUFR	1	1-25 (in increments of 1 hour)	200K/200K
All elements	FOUS11 KWNO	CONUS, HI, AK, PR, VI	ASCII	1	1-25 (in increments of 1 hour)	3M/3M
Gridded Thunderstorm Probabilities in a 2-hr period	LAUA2ii KWNO	CONUS	GRIB2	14 grids (1 per projection)	2-hr periods ending at the following projections - From even cycles: 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 22, 24 - From odd cycles: 3, 4, 5, 6, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25	75K/1.05M
Gridded Categorical Forecasts (yes/no) of thunderstorms occurring in a 2-hr period	LBUA2ii KWNO	CONUS	GRIB2	14 grids (1 per projection)	2-hr periods ending at the following projections - From even cycles: 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 22, 24 - From odd cycles: 3, 4, 5, 6, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25	65K/910K