Department of Commerce · National Oceanic & Atmospheric Administration · National Weather Service

NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 17-2003 APPLICABLE TO NWSI 10-701 APRIL 8, 2020

Operations and Services Tsunami Warning Services, NWSPD 10-7 Tsunami Warning Center Operations, NWSI 10-701

WESTERN REGION TSUNAMI OPERATIONS

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/.

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The following changes were made in this issuance:

1. Updated certifier.

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NWS WRS 17-2003 APRIL 8, 2020

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1. <u>General</u>: This Regional Supplement describes responsibilities and provides guidance to National Weather Service (NWS) Western Region (WR) Weather Forecast Offices (WFO) with coastal areas of responsibility. WR WFOs with coastal areas of responsibility are responsible for planning for and taking appropriate action when there is a threat of a tsunami, including local area dissemination of tsunami watches, warnings, and advisories from the National Tsunami Warning Center (NTWC). Written instructions cannot address every situation. Operational personnel must exercise initiative and professional judgement to minimize risk to public safety and property in instances when written instructions do not provide appropriate guidance.

Coastal WFOs in WR should attend coordination conference calls with NTWC whenever possible (during tsunami events). They are also responsible for ensuring the readiness of office staff and systems through routine operational drills, for coordinating community outreach activities to increase tsunami hazard awareness, and to assist in emergency preparedness for tsunami events (e.g. through promotion of the TsunamiReady program). State and local emergency management officials are responsible for local evacuation plans and procedures. Specific local tsunami operational procedures will be included in WFO Station Duty Manuals.

2 <u>Tsunami Products</u>: The NTWC, located at Palmer, Alaska, is the official source of all tsunami watches, warnings, and advisories for Washington, Oregon, and California. If needed, the Pacific Tsunami Warning Center (PTWC), located in Hawaii, has operational back-up responsibility for NTWC. Tsunami Watch, Warning, Advisory, and Information Statement products are described at: <u>http://tsunami.gov/?page=message_definitions</u> and_<u>http://tsunami.gov/?page=product_list</u>.

2.1. <u>Tsunami Warnings, Advisories and Watches</u>: Tsunami Warnings, Advisories, and Watches will be given top priority. Rapid, accurate, and efficient dissemination of this information within WFOs' designated areas of geographical responsibility is critical. NTWC issues three products each time a Warning, Advisory, or Watch is issued:

TSUWCA	Segmented product with VTEC/UGC
TSUAK1	Bulleted product for public consumption
TSUSPN	Analogous to TSUAK1 in Spanish

In accordance with local WFO procedures and state/local Emergency Alert System (EAS) plans, WFOs will prepare and broadcast Tsunami Warnings and Watches via NOAA Weather Radio (NWR), including appropriate SAME codes for EAS activation.

Information contained in Tsunami Advisory products should also be broadcast on NWR, particularly when there is a possibility of hazardous conditions associated with the expected tsunami event (e.g. strong currents in bays and harbors).

Additionally, the EAS code "Local Area Emergency" (LAE) may be used for Tsunami Advisories if agreed upon and coordinated with the State EAS coordinator and/or Local Emergency Planning Committees (LEPC).

Minimum information for broadcast:

- a. Effective area(s) for watches/warnings
- b. Time, location, and magnitude of tsunami-generating earthquake
- c. Estimated times of arrival of initial tsunami waves at well-known geographical points within the WFO's area of responsibility (as provided by NTWC in issued products or on the NTWC web site), as needed.

2.2. <u>Updates</u>: WFOs will follow similar procedures as outlined in paragraph 2.1 when NTWC issues updated Tsunami Warnings, Advisories and Watches.

2.3. Local Information Statements: Following issuance of initial Tsunami Watches, Warnings, and/or Advisories, coastal WFOs should issue local information statements (using the Special Weather Statement (AWIPS product ID: SPS)). WFOs should issue (and broadcast on NWR) local statements as needed, following official initial and updated bulletins from NTWC. Local information statements are used to supplement official information from NTWC. Information contained in these statements will be based on information from NTWC products, NTWC web site, official conference calls (between NTWC, WFOs, and state warning points), and/or reliable local information (as coordinated with NTWC). Local statements will use the following content, to promote consistency between coastal WFOs (see Appendix A):

2.3.1 Updates since last message (as needed). A brief statement of significant changes since the previously issued local statement (SPS) including, any changes to Watch, Warning, or Advisory status for the WFOs area of responsibility (for example: "TSUNAMI WATCH UPGRATED TO TSUNAMI WARNING").

2.3.2 Headline(s) for any Tsunami Warning, Tsunami Advisory, or Tsunami Watch as appropriate, for the WFOs area of responsibility.

2.3.3. Overview (optional). A brief summary of the situation. Information about the earthquake may be included here, in lieu of the more detailed "Earthquake information" (2.3.8).

2.3.4 Local Impacts (as needed). Information of a local (WFO area of responsibility), but high impact nature regarding expected tsunami impacts (e.g. inundation or strong currents) or current/recently reported impacts which are confirmed from a trusted, reliable source (e.g. emergency manager, U.S. Coast Guard, or law enforcement agency). For example: "The Ventura Harbor Master has reported strong currents and damage to docks" or "Del Norte County Sherriff's Deputies have reported tsunami wave activity and inundation along Highway 101 at Crescent Beach". Note: Additionally, such information should be shared on the next Tsunami Conference Call with NTWC and entered into Local Storm Reports as soon as possible.

2.3.5 Recommended Actions (consistent with information in NTWC bulletins).

2.3.6 Tsunami forecasts and/or observations. A subset of forecast times of initial tsunami wave arrival for selected locations within the WFOs area of responsibility, as provided by NTWC. Maximum forecast tsunami amplitudes should also be provided for the same locations, when they become available from NTWC. When official tsunami observations become available from NTWC for these locations, they should replace the forecast values.

2.3.7 Tide information (optional).

2.3.8 Earthquake information (optional). If included, the most recent information from NTWC should be used.

2.3.9 Information regarding next local statement update and additional information (as needed).

2.3.10 Link to NTWC and any additional links to locally-specific information (e.g. evacuation route maps, etc.), as needed.

2.4. <u>ALL CLEAR</u>: The NTWC is responsible for issuing Tsunami Watch, Warning, and Advisory cancellation bulletins (using the products listed in Section 2.1). However, local emergency management authorities are ultimately responsible for providing the final "ALL CLEAR" message.

3. <u>Tsunami Information Statements (AWIPS product ID: TIBAKI and TIBSPN)</u>. Information contained in these statements may be selectively broadcast via NWR, in accordance with local needs. 4. <u>Acknowledgment of Test Messages</u>: Rapid local area dissemination of Tsunami Watch/Warning/Advisory information is a top priority. Therefore, WFOs will not acknowledge (via AWIPS) Tsunami Watch/Warning/Advisory products. However, WFOs should acknowledge monthly and special "test" products issued by NTWC, using the AWIPS product ID **TMA**XXX (where "XXX" = WFO identifier). In the Acknowledgment message, provide time of receipt (UTC), WFO name (or 3-letter WFO ID), and name of responding individual.

5. <u>WR Regional Operations Center (ROC)</u>. The WR ROC will stay abreast of Tsunami Warning, Watch, and/or Advisory status (NTWC bulletins) and participate in NTWC Coordination Calls whenever possible. The ROC should also monitor WFO local statements (SPS). Additionally, the ROC will provide updates to the NWS Operations Center and supported regional/national partners, as needed (e.g. FEMA Regions IX and X).

APPENDIX A Local Information Statement

Example 1 - Tsunami Watch

SPECIAL WEATHER STATEMENT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD, CA 1115 AM PDT SUN SEP 14 2014

... TSUNAMI WATCH IS IN EFFECT FOR THE COASTAL AREAS OF SOUTHWEST CALIFORNIA...

CAZ034-035-039>041-087-150000-SAN LUIS OBISPO COUNTY CENTRAL COAST-SANTA BARBARA COUNTY CENTRAL COAST-SANTA BARBARA COUNTY SOUTH COAST-VENTURA COUNTY COAST-LOS ANGELES COUNTY COAST INCLUDING DOWNTOWN LOS ANGELES-CATALINA ISLAND-INCLUDING THE CITIES OF...SAN LUIS OBISPO...PISMO BEACH... MORRO BAY...CAMBRIA...SAN SIMEON...SANTA MARIA...LOMPOC... VANDENBERG...SANTA BARBARA...MONTECITO...CARPINTERIA...VENTURA... OXNARD...CAMARILLO...MALIBU...SANTA MONICA...BEVERLY HILLS... HOLLYWOOD...LONG BEACH...AVALON 1115 AM PDT SUN SEP 14 2014

...TSUNAMI WATCH IS IN EFFECT FOR THE COASTAL AREAS OF SOUTHERN CALIFORNIA...

* RECOMMENDED ACTIONS...

IF YOU ARE LOCATED IN THIS COASTAL AREA...STAY ALERT FOR FURTHER UPDATES...AS WELL AS INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS.

* FORECAST TSUNAMI START TIMES...

PORT SAN LUIS AT 405 PM PDT ON SEP 14. SANTA BARBARA AT 420 PM PDT ON SEP 14. LOS ANGELES AT 435 PM PDT ON SEP 14. TSUNAMIS OFTEN ARRIVE AS A SERIES OF WAVES OR SURGES WHICH COULD BE DANGEROUS FOR MANY HOURS AFTER THE FIRST WAVE ARRIVAL.

* PRELIMINARY EARTHQUAKE INFORMATION...

A MAGNITUDE 8.3 EARTHQUAKE OCCURRED AT 1054 AM PDT ON SEP 14 2014. LOCATED AT 59.0 NORTH 148.0 WEST AT A DEPTH OF 6 MILES...90 MILES SE OF SEWARD ALASKA.

* TIDE INFORMATION...

PORT SAN LUIS...LOW TIDE OF 0.0 FEET AT 614 PM PDT ON SEP 14. HIGH TIDE OF 5.0 FEET AT 1107 AM PDT ON SEP 15. SANTA BARBARA...LOW TIDE OF 0.0 FEET AT 547 PM PDT ON SEP 14. HIGH TIDE OF 4.8 FEET AT 1045 AM PDT ON SEP 15. SANTA MONICA...LOW TIDE OF 0.0 FEET AT 522 PM PDT ON SEP 14. HIGH TIDE OF 5.1 FEET AT 1020 AM PDT ON SEP 15.

THIS PRODUCT WILL BE UPDATED AS NEW INFORMATION BECOMES AVAILABLE. STAY TUNED TO YOUR LOCAL NEWS SOURCE AND NOAA WEATHER RADIO FOR FURTHER INFORMATION AND UPDATES.

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ADDITIONAL INFORMATION CAN BE FOUND AT: <u>HTTP://TSUNAMI.GOV/</u> HTTP://WEATHER.GOV/LOSANGELES

Example 2 - Tsunami Advisory

SPECIAL WEATHER STATEMENT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD, CA 340 PM PST WED MAR 25 2015

... TSUNAMI ADVISORY IS IN EFFECT FOR THE COASTAL AREAS OF SOUTHWEST CALIFORNIA...

CAZ034-035-039>041-087-260645-SAN LUIS OBISPO COUNTY CENTRAL COAST-SANTA BARBARA COUNTY CENTRAL COAST-SANTA BARBARA COUNTY SOUTH COAST-VENTURA COUNTY COAST-LOS ANGELES COUNTY COAST INCLUDING DOWNTOWN LOS ANGELES-CATALINA ISLAND-INCLUDING THE CITIES OF...SAN LUIS OBISPO...PISMO BEACH... MORRO BAY...CAMBRIA...SAN SIMEON...SANTA MARIA...LOMPOC... VANDENBERG...SANTA BARBARA...MONTECITO...CARPINTERIA...VENTURA... OXNARD...CAMARILLO...MALIBU...SANTA MONICA...BEVERLY HILLS... HOLLYWOOD...LONG BEACH...AVALON 340 PM PST WED MAR 25 2015

...TSUNAMI ADVISORY IS IN EFFECT FOR THE COASTAL AREAS OF SOUTHWEST CALIFORNIA...

* UPDATES...

THE PREVIOUS TSUNAMI WATCH HAS BEEN CONVERTED TO A TSUNAMI ADVISORY.

* LOCAL IMPACTS...

A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS THAT MAY BE HAZARDOUS TO SWIMMERS...BOATS...AND COASTAL STRUCTURES IS EXPECTED.

* RECOMMENDED ACTIONS...

IF YOU ARE LOCATED IN THIS COASTAL AREA...MOVE OFF THE BEACH AND OUT OF HARBORS AND MARINAS. DO NOT GO TO THE COAST TO WATCH THE TSUNAMI. BE ALERT TO INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS

* FORECAST TSUNAMI START TIMES...

PORT SAN LUIS AT 404 PM PDT ON MAR 25. SANTA BARBARA AT 417 PM PDT ON MAR 25. LOS ANGELES AT 433 PM PDT ON MAR 25. TSUNAMIS OFTEN ARRIVE AS A SERIES OF WAVES OR SURGES WHICH COULD BE DANGEROUS FOR MANY HOURS AFTER THE FIRST WAVE ARRIVAL.

* FORECAST PEAK TSUNAMI WAVE HEIGHTS...

PORT SAN LUIS...1.8 TO 3.7 FEET. SANTA BARBARA...LESS THAN 1 FOOT. LOS ANGELES...LESS THAN 1 FOOT.

* PRELIMINARY EARTHQUAKE INFORMATION...

A MAGNITUDE 8.6 EARTHQUAKE OCCURRED AT 800 AM PDT ON MAR 25 2015. LOCATED AT 53.5 NORTH 162.0 EAST AT A DEPTH OF 19 MILES...195 MILES SW OF BERING I. KOMANDORSKI.

* TIDE INFORMATION...

PORT SAN LUIS...LOW TIDE OF -0.3 FEET AT 541 PM PST ON MAR 25. HIGH TIDE OF 5.0 FEET AT 1107 AM PST ON MAR 26. SANTA BARBARA...LOW TIDE OF -0.3 FEET AT 515 PM PST ON MAR 25. HIGH TIDE OF 4.8 FEET AT 1045 AM PST ON MAR 26. SANTA MONICA...LOW TIDE OF -0.3 FEET AT 451 PM PST ON MAR 25. HIGH TIDE OF 5.1 FEET AT 1020 AM PST ON MAR 26. LOS ANGELES HARBOR...

THIS PRODUCT WILL BE UPDATED AS NEW INFORMATION BECOMES AVAILABLE. STAY TUNED TO YOUR LOCAL NEWS SOURCE AND NOAA WEATHER RADIO FOR FURTHER INFORMATION AND UPDATES.

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ADDITIONAL INFORMATION CAN BE FOUND AT: <u>HTTP://TSUNAMI.GOV/</u> HTTP://WEATHER.GOV/LOSANGELES

Example 3 - Tsunami Warning and Tsunami Advisory

SPECIAL WEATHER STATEMENT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD, CA 239 PM PDT THU JUN 8 2015 ... TSUNAMI WARNING IS IN EFFECT FOR THE COASTAL AREAS OF LOS ANGELES AND VENTURA COUNTIES...

...TSUNAMI ADVISORY IS IN EFFECT FOR THE COASTAL AREAS OF SANTA BARBARA AND SAN LUIS OBISPO COUNTIES...

CAZ040-041-087-090100-VENTURA COUNTY COAST-LOS ANGELES COUNTY COAST INCLUDING DOWNTOWN LOS ANGELES-CATALINA ISLAND-INCLUDLING THE CITIES OF...VENTURA...OXNARD...CAMARILLO...MALIBU... SANTA MONICA...BEVERLY HILLS...HOLLYWOOD...LONG BEACH...AVALON 239 PM PDT THU JUN 8 2015

... TSUNAMI WARNING IS IN EFFECT FOR THE COASTAL AREAS OF LOS ANGELES AND VENTURA COUNTIES...

- * LOCAL IMPACTS... A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS EXPECTED...WITH POSSIBLE AND DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS.
- * RECOMMENDED ACTIONS...

IF YOU ARE LOCATED IN THIS COASTAL AREA...MOVE TO HIGHER GROUND. DO NOT GO TO THE COAST TO WATCH THE TSUNAMI. BE ALERT TO INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS.

* FORECAST TSUNAMI START TIMES...

LOS ANGELES AT 240 PM PDT ON JUN 8. TSUNAMIS OFTEN ARRIVE AS A SERIES OF WAVES OR SURGES WHICH COULD BE DANGEROUS FOR MANY HOURS AFTER THE FIRST WAVE ARRIVAL.

* FORECAST PEAK TSUNAMI WAVE HEIGHTS...

LOS ANGELES...2.3 TO 4.3 FEET.

* OBSERVED TSUNAMI WAVE HEIGHTS FROM EARLIER...

SANTA MONICA...1.5 FEET AT 230 PM PDT ON JUN 8.

* PRELIMINARY EARTHQUAKE INFORMATION...

A EARTHQUAKE OCCURRED AT 222 PM PDT ON JUN 8 2014. LOCATED AT 33.6 NORTH 118.2 WEST AT A DEPTH OF 2 MILES...85 MILES NW OF SAN DIEGO CALIFORNIA.

* TIDE INFORMATION...

SANTA MONICA...LOW TIDE OF 0.0 FEET AT 522 PM PDT ON JUN 8. HIGH TIDE OF 4.6 FEET AT 1055 AM PDT ON JUN 9. LOS ANGELES HARBOR...LOW TIDE OF 0.0 FEET AT 547 PM PDT ON JUN 8. HIGH TIDE OF 3.7 FEET AT 1202 AM PDT ON JUN 8. THIS PRODUCT WILL BE UPDATED AS NEW INFORMATION BECOMES AVAILABLE. STAY TUNED TO YOUR LOCAL NEWS SOURCE AND NOAA WEATHER RADIO FOR FURTHER INFORMATION AND UPDATES.

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CAZ034-035-039-090100-SAN LUIS OBISPO COUNTY CENTRAL COAST-SANTA BARBARA COUNTY CENTRAL COAST-SANTA BARBARA COUNTY SOUTH COAST-INCLUDING THE CITIES OF...SAN LUIS OBISPO...PISMO BEACH... MORRO BAY...CAMBRIA...SAN SIMEON...SANTA MARIA...LOMPOC... VANDENBERG...SANTA BARBARA...MONTECITO...CARPINTERIA 239 PM PDT THU JUN 8 2015

...TSUNAMI ADVISORY IS IN EFFECT FOR THE COASTAL AREAS OF SANTA BARBARA AND SAN LUIS OBISPO COUNTIES...

* LOCAL IMPACTS...

A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS THAT MAY BE HAZARDOUS TO SWIMMERS...BOATS...AND COASTAL STRUCTURES IS EXPECTED.

* RECOMMENDED ACTIONS...

IF YOU ARE LOCATED IN THIS COASTAL AREA...MOVE OFF THE BEACH AND OUT OF HARBORS AND MARINAS. DO NOT GO TO THE COAST TO WATCH THE TSUNAMI. BE ALERT TO INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS.

* FORECAST TSUNAMI START TIMES...

SANTA BARBARA AT 310 PM PDT ON JUN 8. PORT SAN LUIS AT 340 PM PDT ON JUN 8. TSUNAMIS OFTEN ARRIVE AS A SERIES OF WAVES OR SURGES WHICH COULD BE DANGEROUS FOR MANY HOURS AFTER THE FIRST WAVE ARRIVAL.

* FORECAST PEAK TSUNAMI WAVE HEIGHTS...

SANTA BARBARA...1.2 TO 2.4 FEET. PORT SAN LUIS...0.8 TO 1.6 FEET.

* PRELIMINARY EARTHQUAKE INFORMATION...

A EARTHQUAKE OCCURRED AT 222 PM PDT ON JUN 8 2014. LOCATED AT 33.6 NORTH 118.2 WEST AT A DEPTH OF 2 MILES...85 MILES NW OF SAN DIEGO CALIFORNIA.

* TIDE INFORMATION...

PORT SAN LUIS...LOW TIDE OF 0.0 FEET AT 614 PM PDT ON JUN 8. HIGH TIDE OF 5.0 FEET AT 1107 AM PDT ON JUN 8. SANTA BARBARA...LOW TIDE OF 0.0 FEET AT 547 PM PDT ON JUN 8. HIGH TIDE OF 3.7 FEET AT 1202 AM PDT ON JUN 8. THIS PRODUCT WILL BE UPDATED AS NEW INFORMATION BECOMES AVAILABLE. STAY TUNED TO YOUR LOCAL NEWS SOURCE AND NOAA WEATHER RADIO FOR FURTHER INFORMATION AND UPDATES.

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ADDITIONAL INFORMATION CAN BE FOUND AT: <u>HTTP://TSUNAMI.GOV/</u> <u>HTTP://WEATHER.GOV/LOSANGELES</u>

Example 4 - Cancellation

SPECIAL WEATHER STATEMENT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD, CA 1132 AM PST THU JAN 8 2015

... TSUNAMI ADVISORY HAS BEEN CANCELED FOR THE COASTAL AREAS OF SOUTHWEST CALIFORNIA...

CAZ034-035-039>041-087-090145-SAN LUIS OBISPO COUNTY CENTRAL COAST-SANTA BARBARA COUNTY CENTRAL COAST-SANTA BARBARA COUNTY SOUTH COAST-VENTURA COUNTY COAST-LOS ANGELES COUNTY COAST INCLUDING DOWNTOWN LOS ANGELES-CATALINA ISLAND-

INCLUDING THE CITIES OF...SAN LUIS OBISPO...PISMO BEACH... MORRO BAY...CAMBRIA...SAN SIMEON...SANTA MARIA...LOMPOC... VANDENBERG...SANTA BARBARA...MONTECITO...CARPINTERIA...VENTURA... OXNARD...CAMARILLO...MALIBU...SANTA MONICA...BEVERLY HILLS... HOLLYWOOD...LONG BEACH...AVALON 1132 AM PST THU JAN 8 2015

... TSUNAMI ADVISORY HAS BEEN CANCELED FOR THE COASTAL AREAS OF SOUTHWEST CALIFORNIA...

* UPDATES...

NO FURTHER TSUNAMI DANGER EXISTS...HOWEVER SOME AREAS MAY CONTINUE TO EXPERIENCE SMALL SEA LEVEL CHANGES. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION...THE ALL CLEAR DETERMINATIONS MUST BE MADE BY LOCAL AUTHORITIES.

* OBSERVED TSUNAMI WAVE HEIGHTS FROM EARLIER...

PORT SAN LUIS...1.1 FEET AT 0051 AM UTC 03-26. SANTA BARBARA...1.0 FEET AT 0058 AM UTC 03-26. SANTA MONICA...0.9 FEET AT 0052 AM UTC 03-26. LOS ANGELES...0.6 FEET AT 0054 AM UTC 03-26. THIS WILL BE THE FINAL STATEMENT ISSUED FOR THE LOCAL AREA FOR THIS EVENT.

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ADDITIONAL INFORMATION CAN BE FOUND AT: <u>HTTP://TSUNAMI.GOV/</u> <u>HTTP://WEATHER.GOV/LOSANGELES</u>