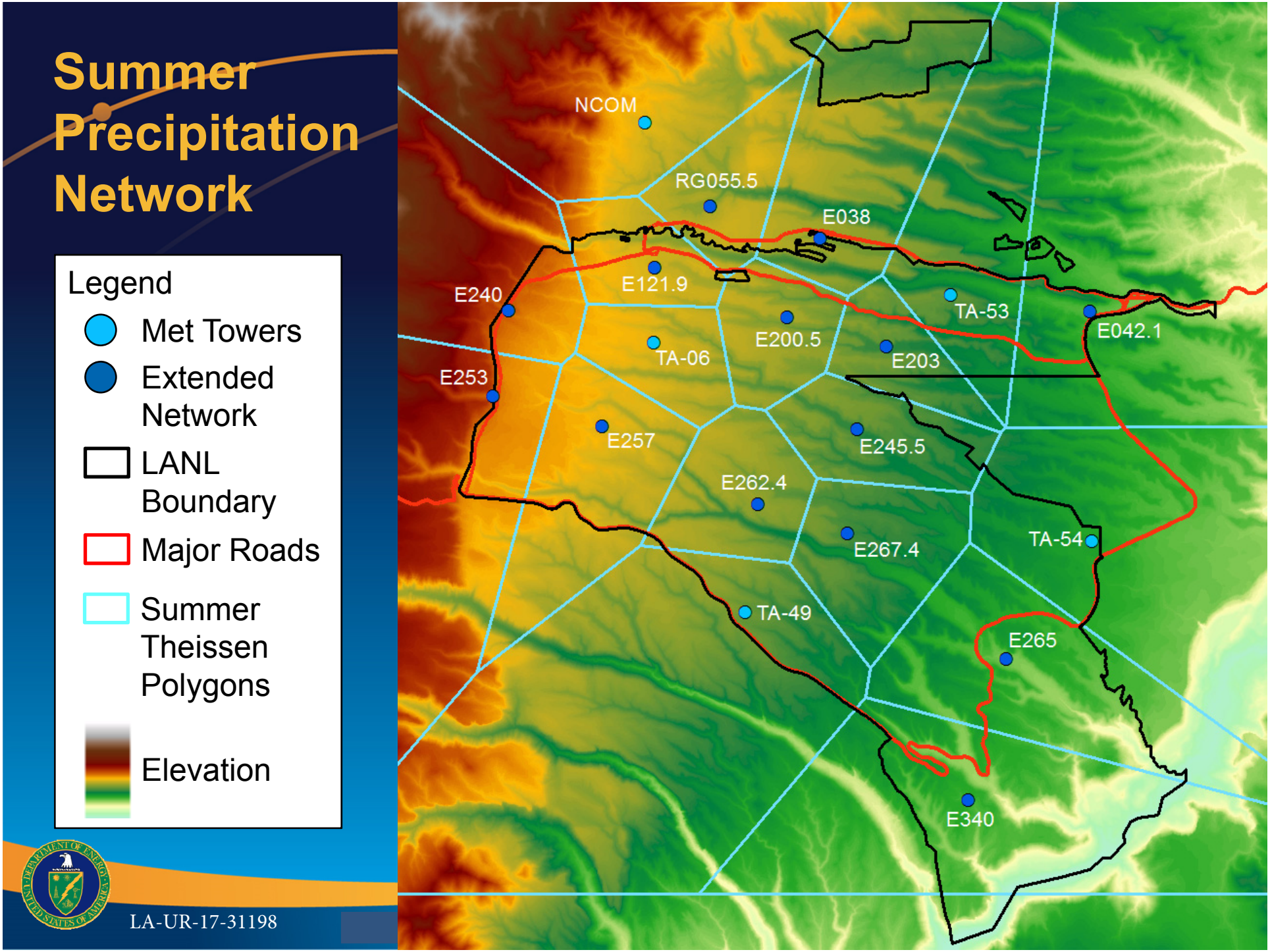
2017 Storm Water Monitoring Year and Results for the Individual Permit

December 21, 2017

Amanda White

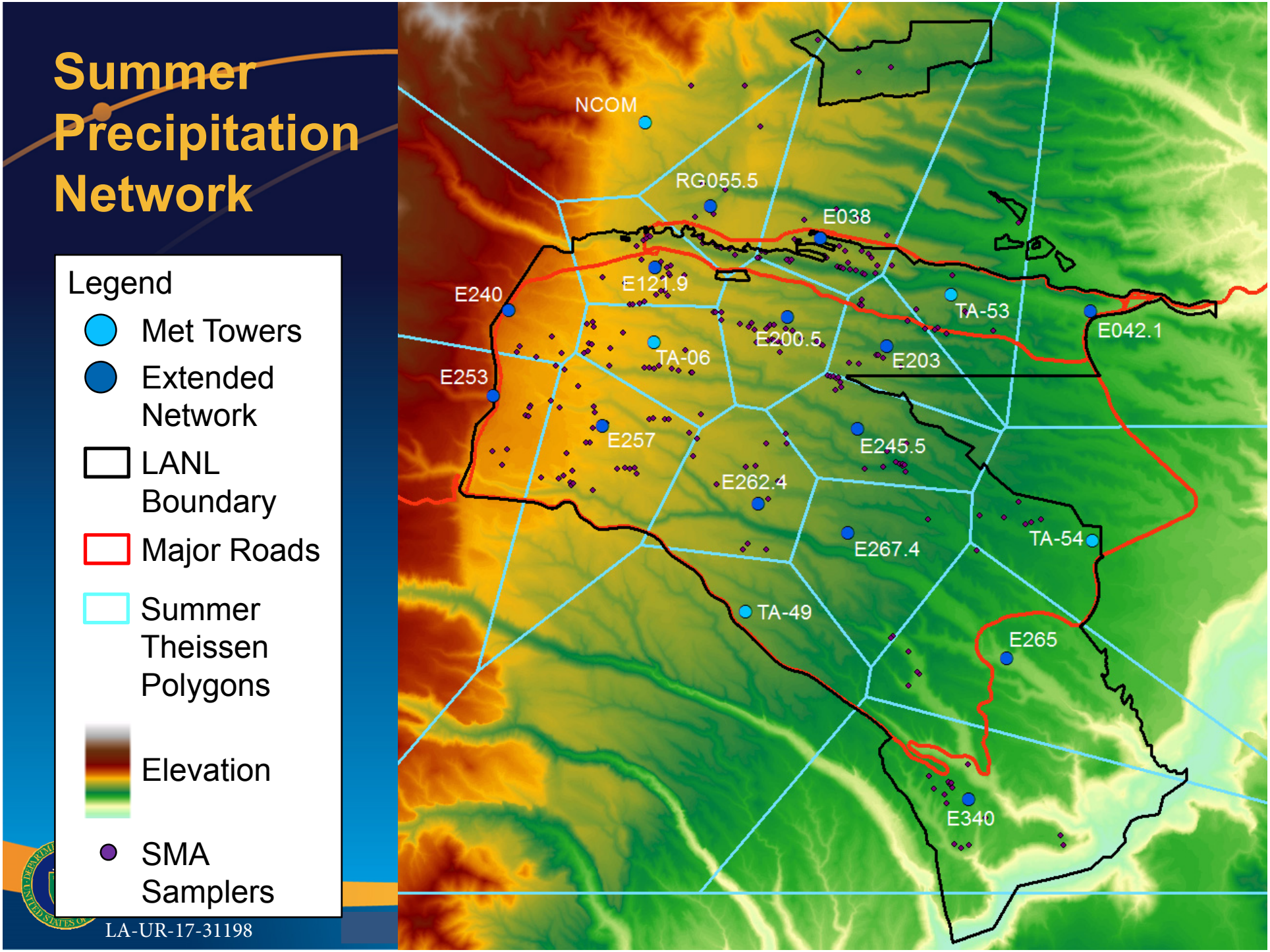
LA-UR-17-31198

Summer Precipitation Network



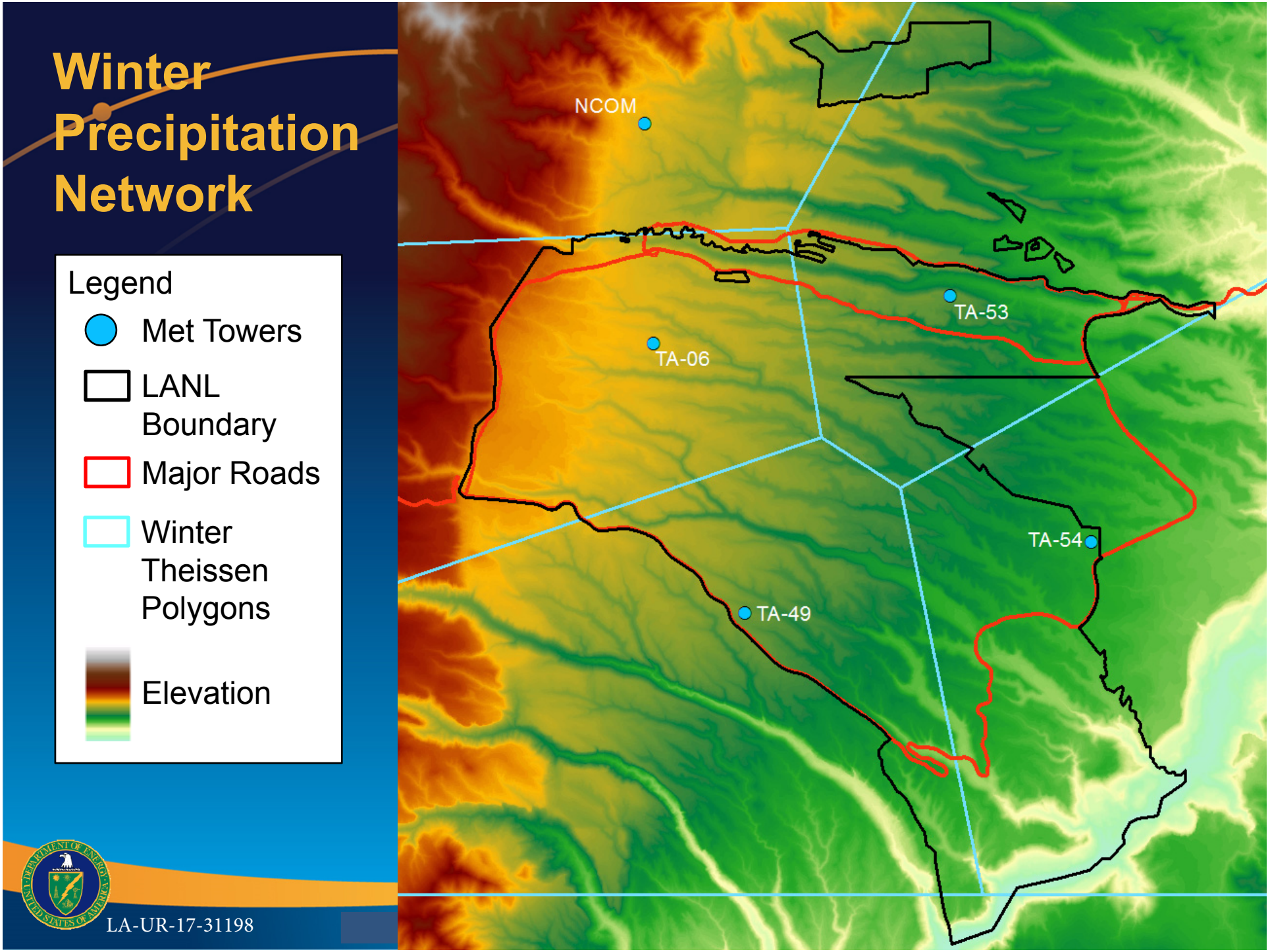
LA-UR-17-31198

Summer Precipitation Network



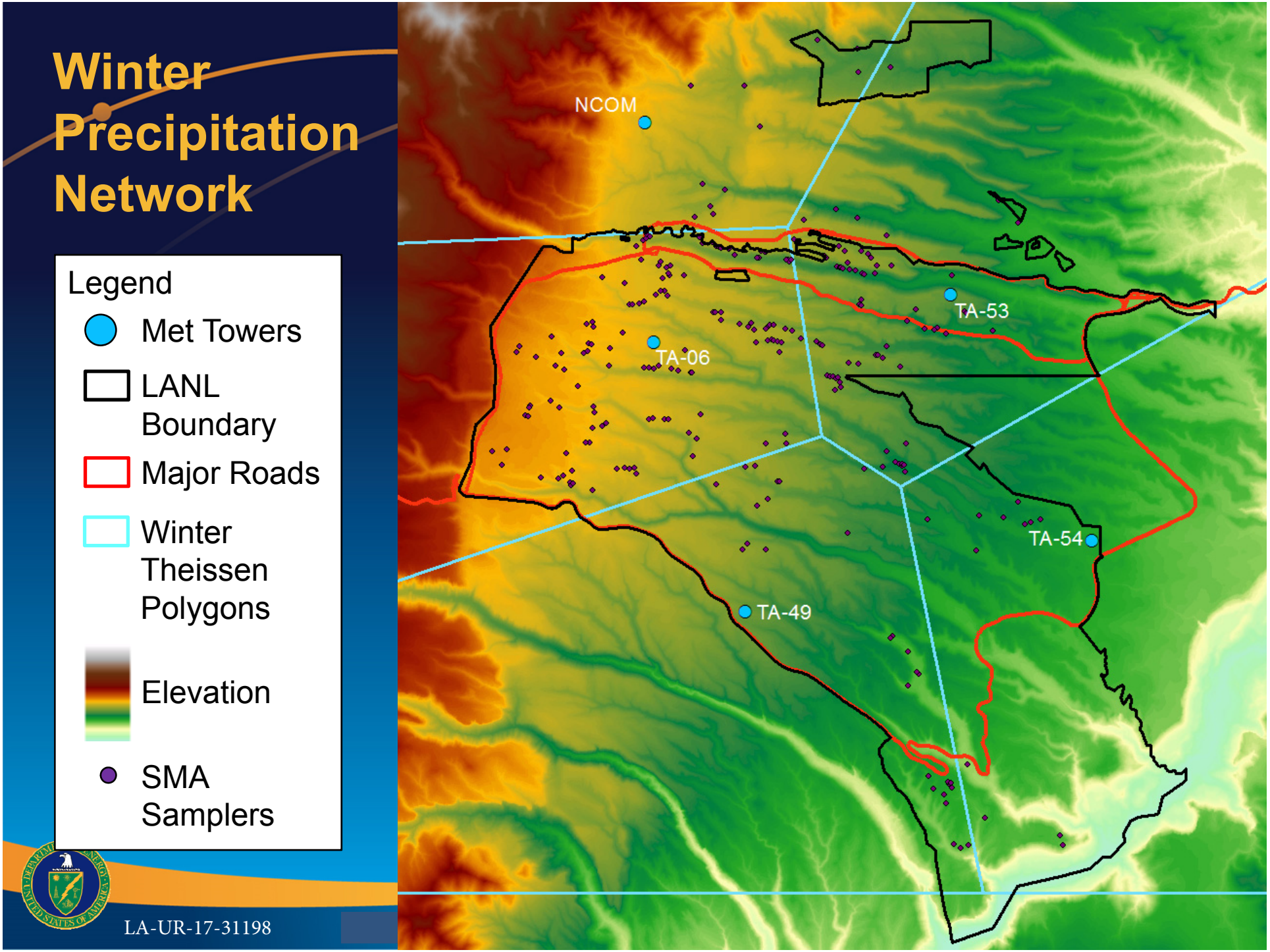
LA-UR-17-31198

Winter Precipitation Network



LA-UR-17-31198

Winter Precipitation Network

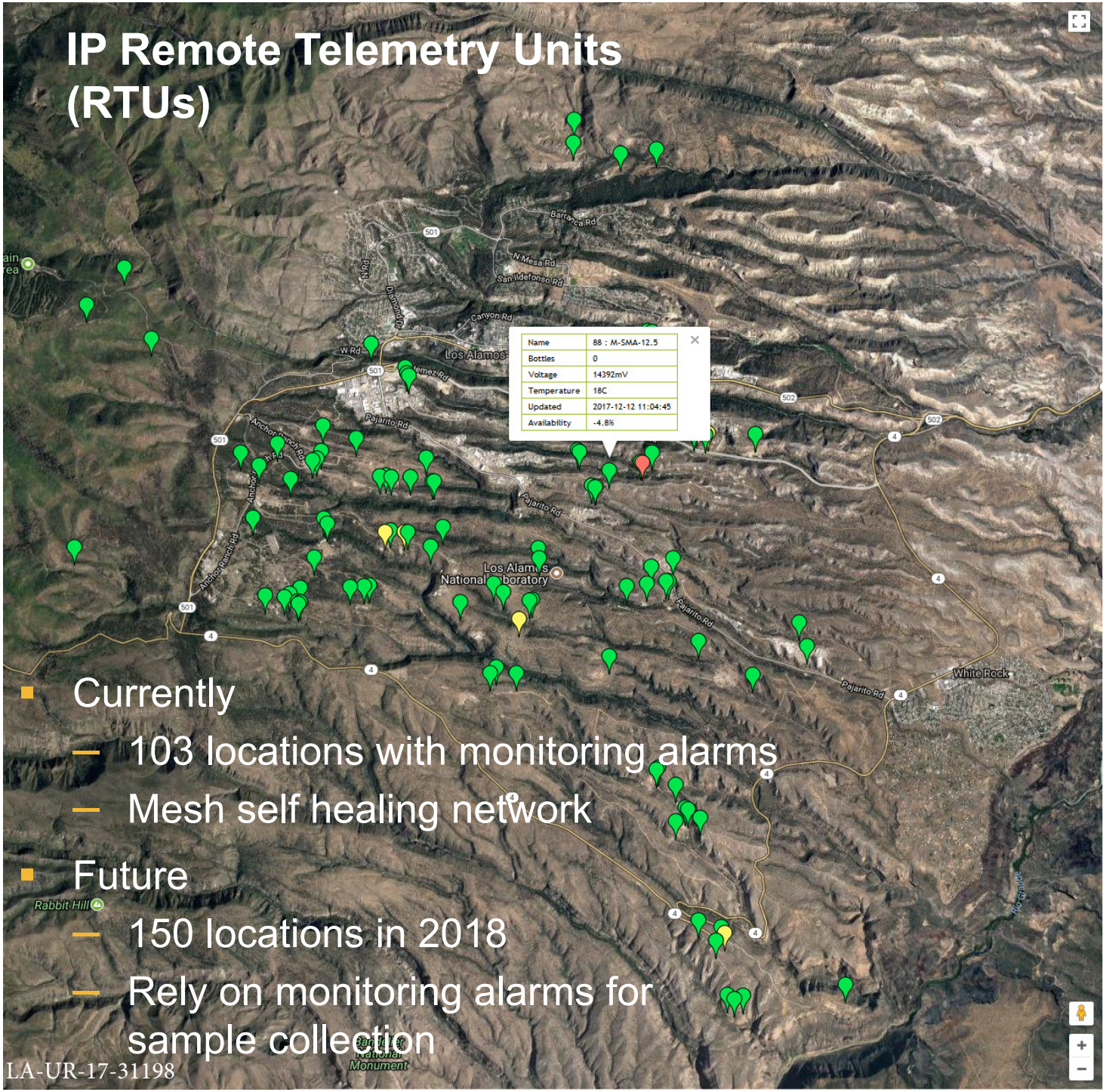


LA-UR-17-31198

LA-UR-17-31198

LA-UR-17-31198

IP Remote Telemetry Units (RTUs)



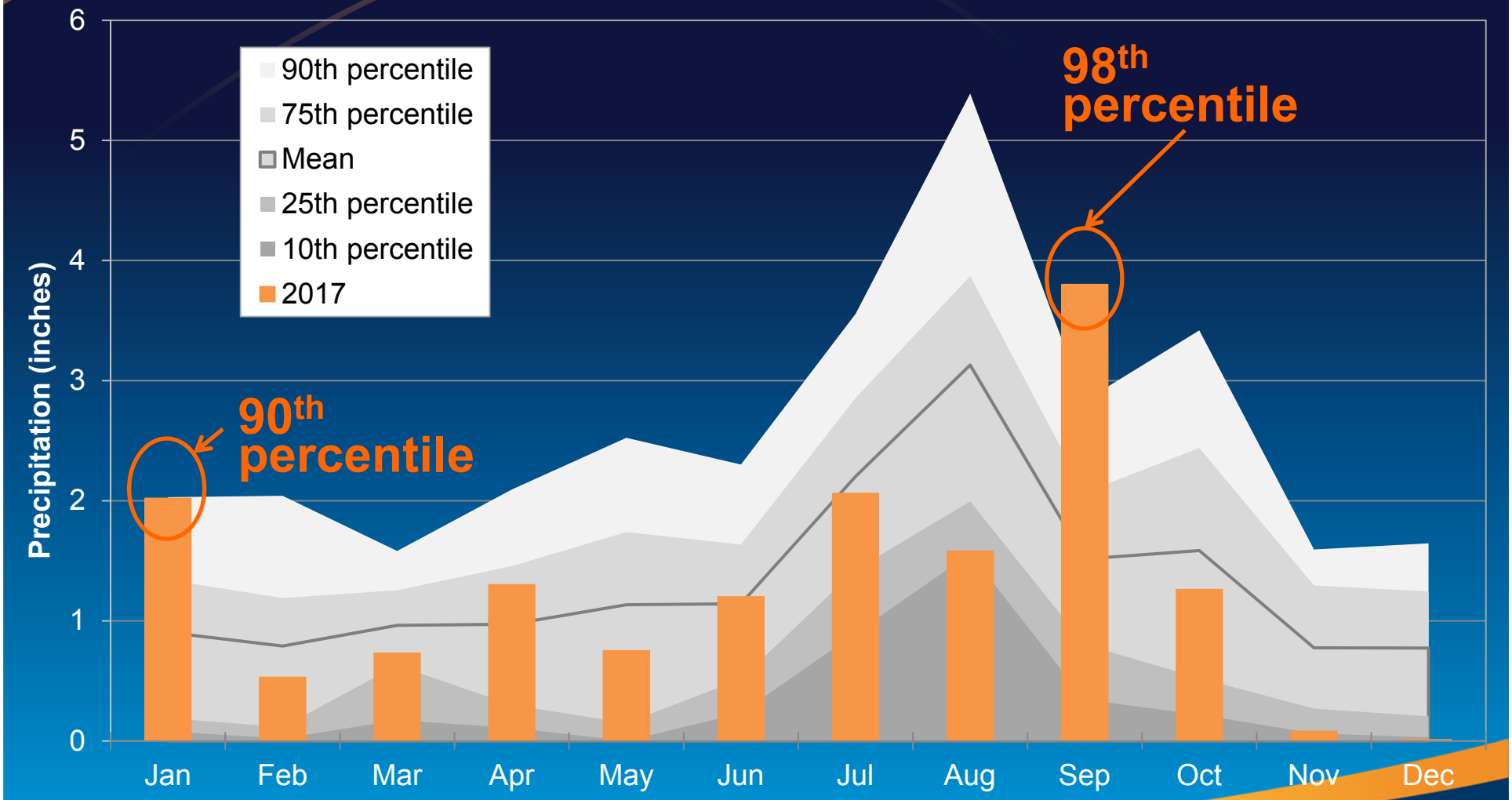
- Currently
  - 103 locations with monitoring alarms
  - Mesh self healing network
- Future
  - 150 locations in 2018
  - Rely on monitoring alarms for sample collection

LA-UR-17-31198

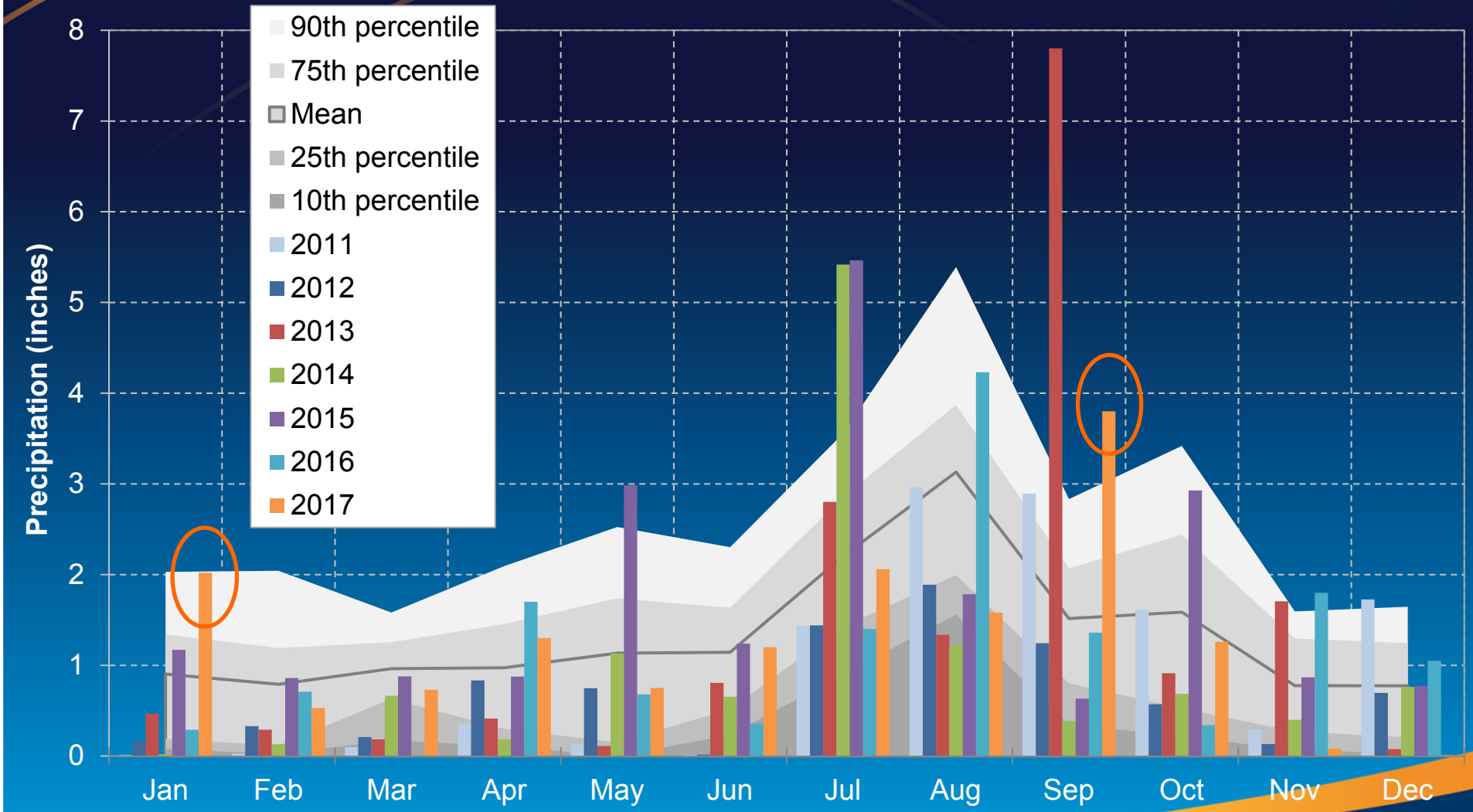
State of Health | Cumulative Events

ID	Name	Bottles	Location
4		0	Latitude 0 / Longitude 0
6		0	Latitude 0 / Longitude 0
12		0	Latitude 0 / Longitude 0
30		0	Latitude 0 / Longitude 0
31		0	Latitude 0 / Longitude 0
32	CDV-SMA-3	0	Latitude 35.847766 / Longitude -106.320665
33	PJ-SMA-14.4	0	Latitude 35.83970826 / Longitude -106.265013
34	CDV-SMA-4	0	Latitude 35.847971 / Longitude -106.319726
35		0	Latitude 0 / Longitude 0
36	LA-SMA-6.31	0	Latitude 35.874771 / Longitude -106.277958
37		0	Latitude 0 / Longitude 0
38		0	Latitude 0 / Longitude 0
39		0	Latitude 0 / Longitude 0
40		0	Latitude 0 / Longitude 0
41		0	Latitude 0 / Longitude 0
42	PJ-SMA-14	0	Latitude 35.843467 / Longitude -106.264164
43		0	Latitude 0 / Longitude 0
44		0	Latitude 0 / Longitude 0

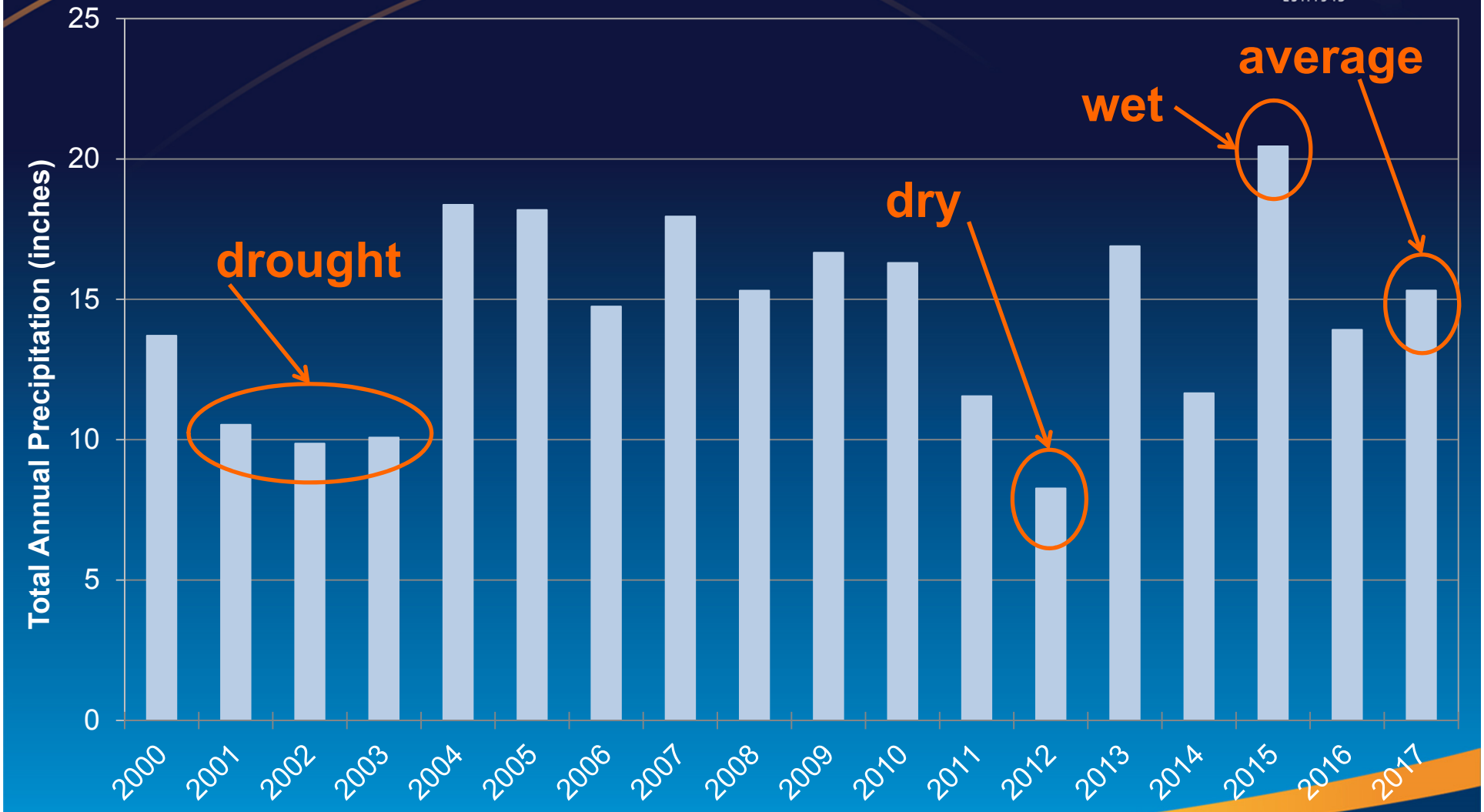
2017 Monitoring Year



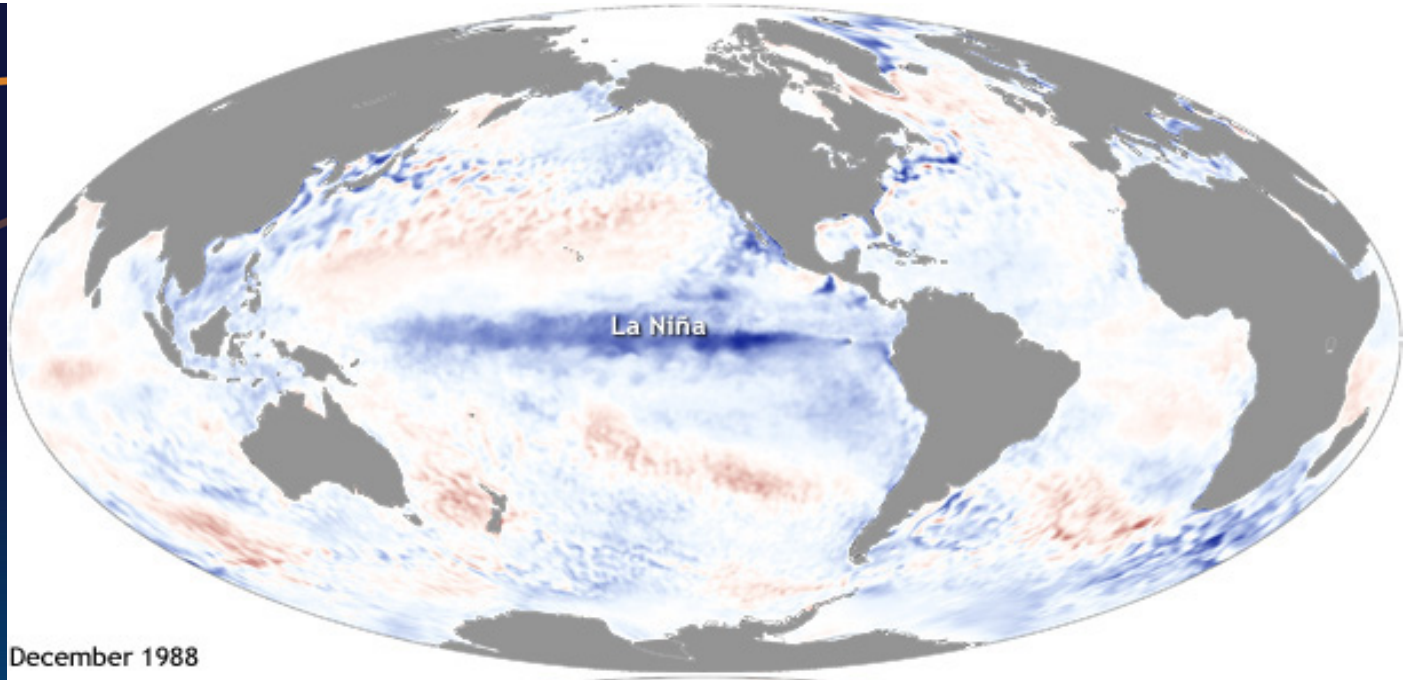
2017 Compared to Past Years



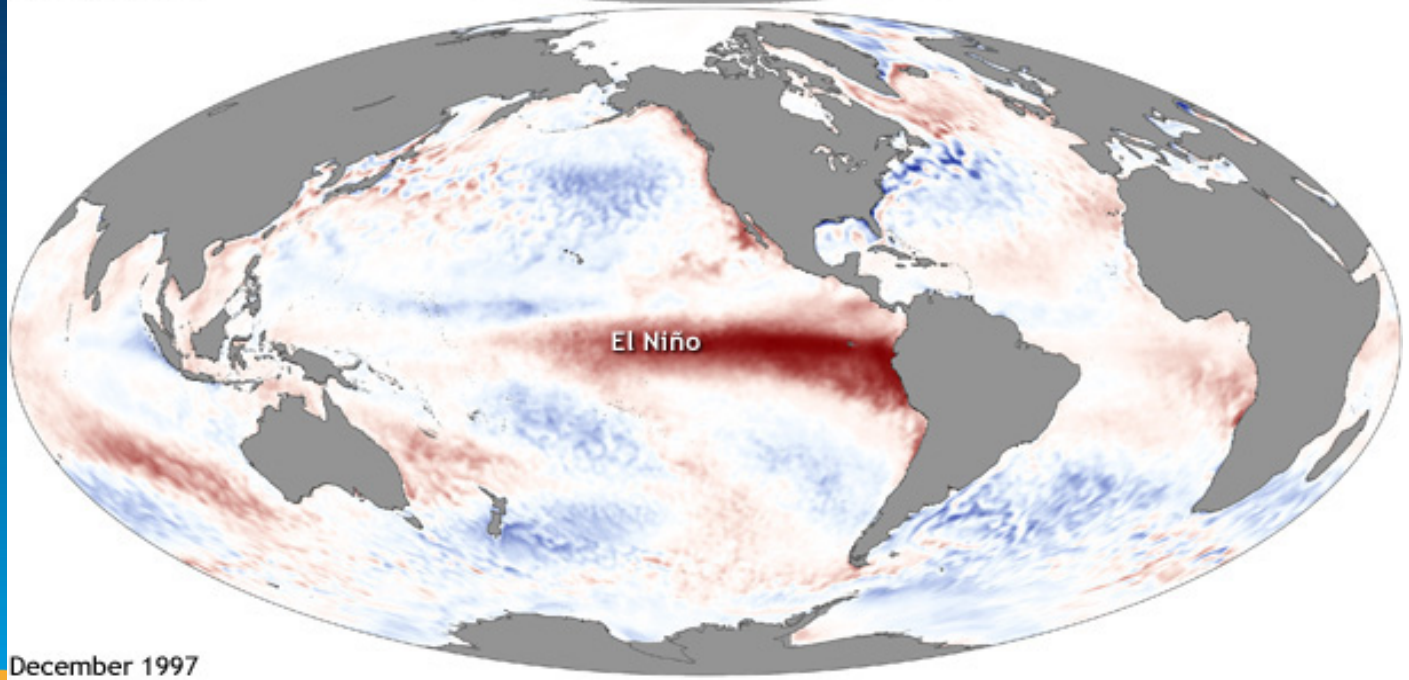
2017 Comparison to Past Years



ENSO (El Niño Southern Oscillation)



December 1988



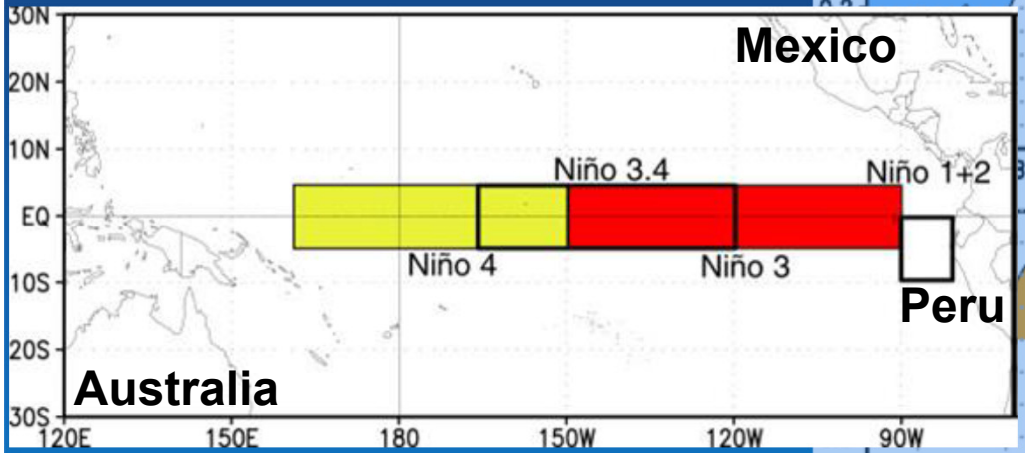
December 1997

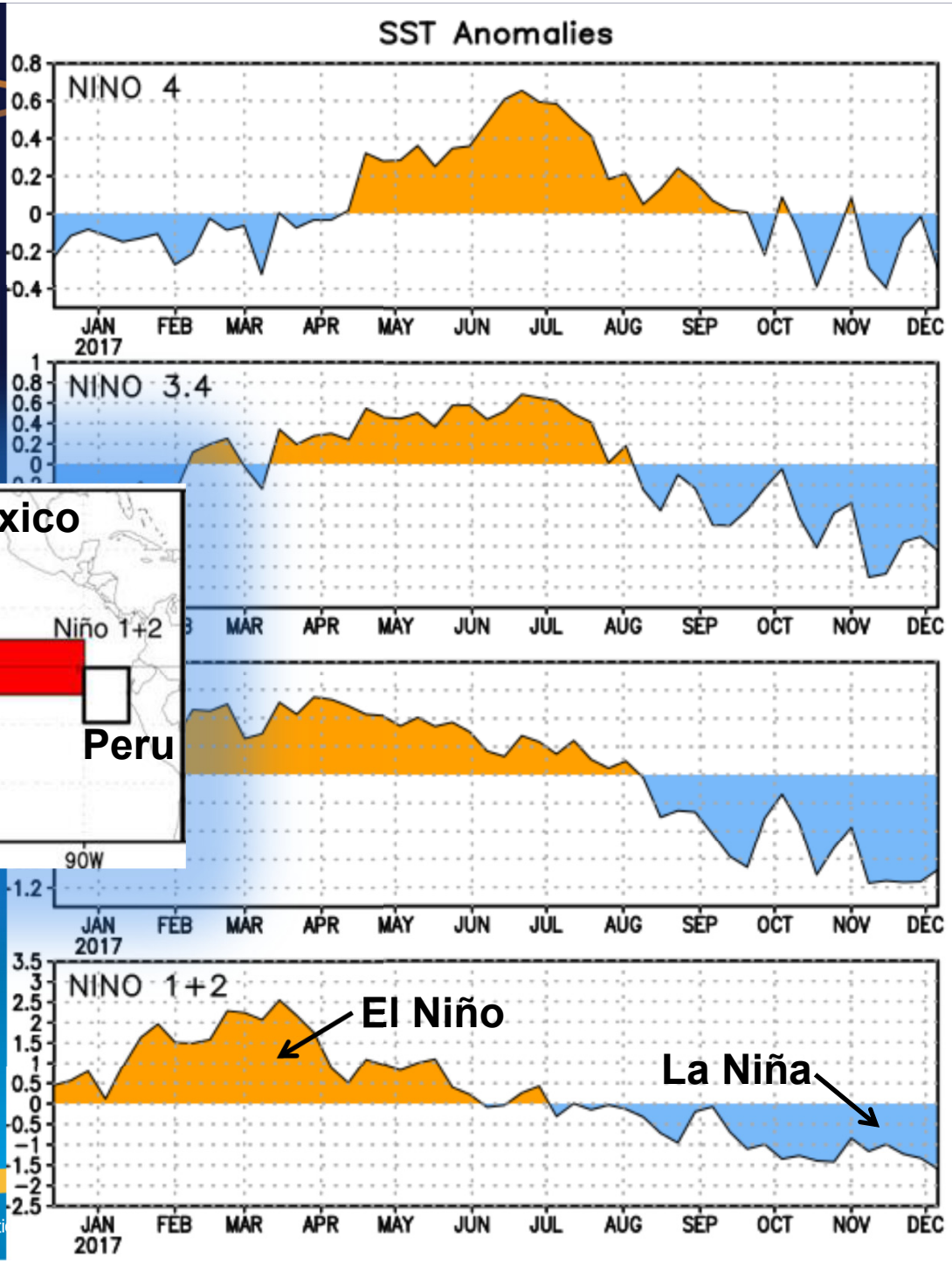
Difference from average temperature (°F)

-9 0 9

LA-UR-17-31198

2017 ENSO Conditions





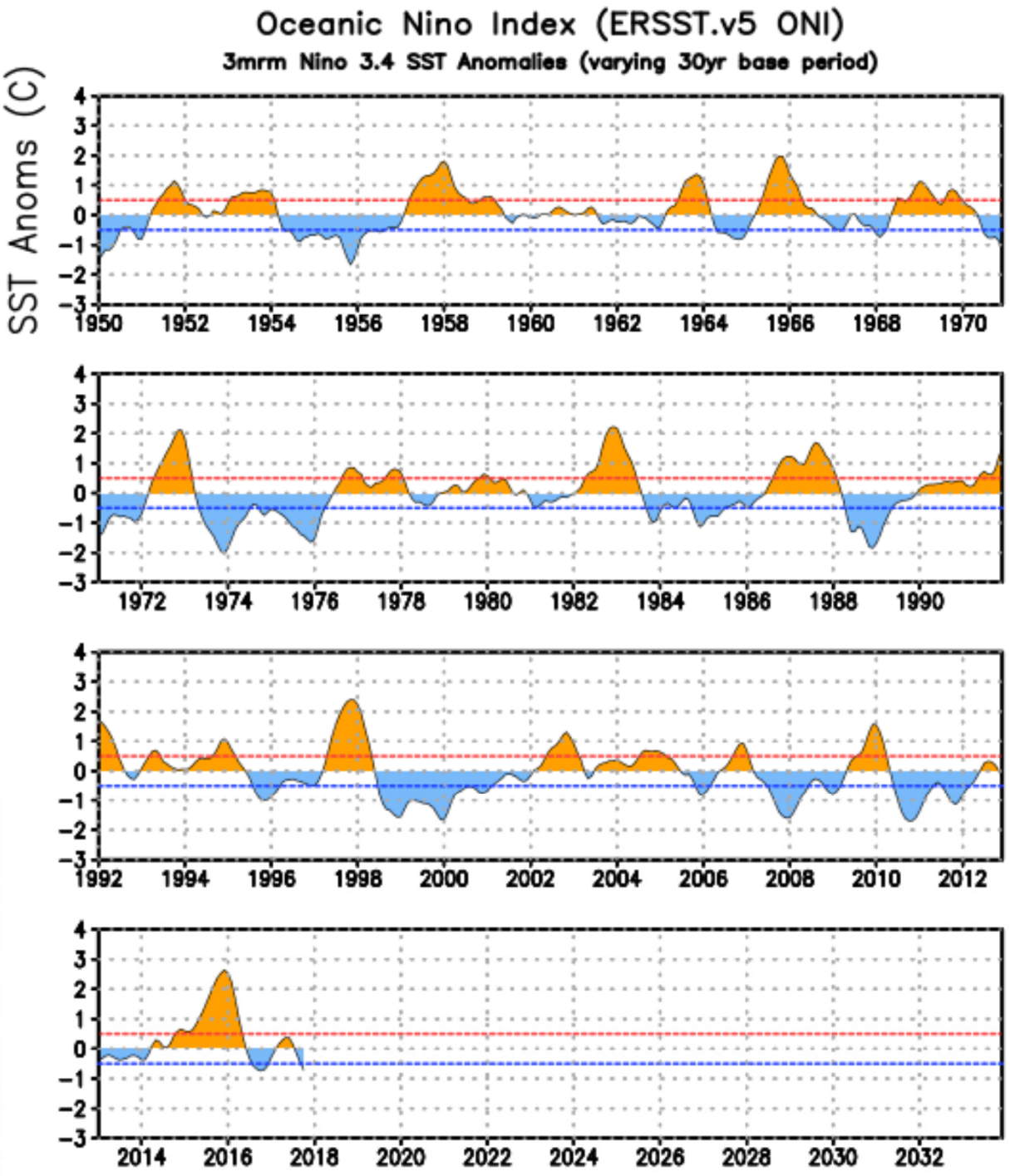
*Anomalies are computed with respect to the 1981-2010 averages by NOAA Climate Prediction Center

LA-UR-17-31198

Operated by Los Alamos Nati

Historical ENSO Conditions

*Anomalies are computed with respect to the 1981-2010 averages by NOAA Climate Prediction Center

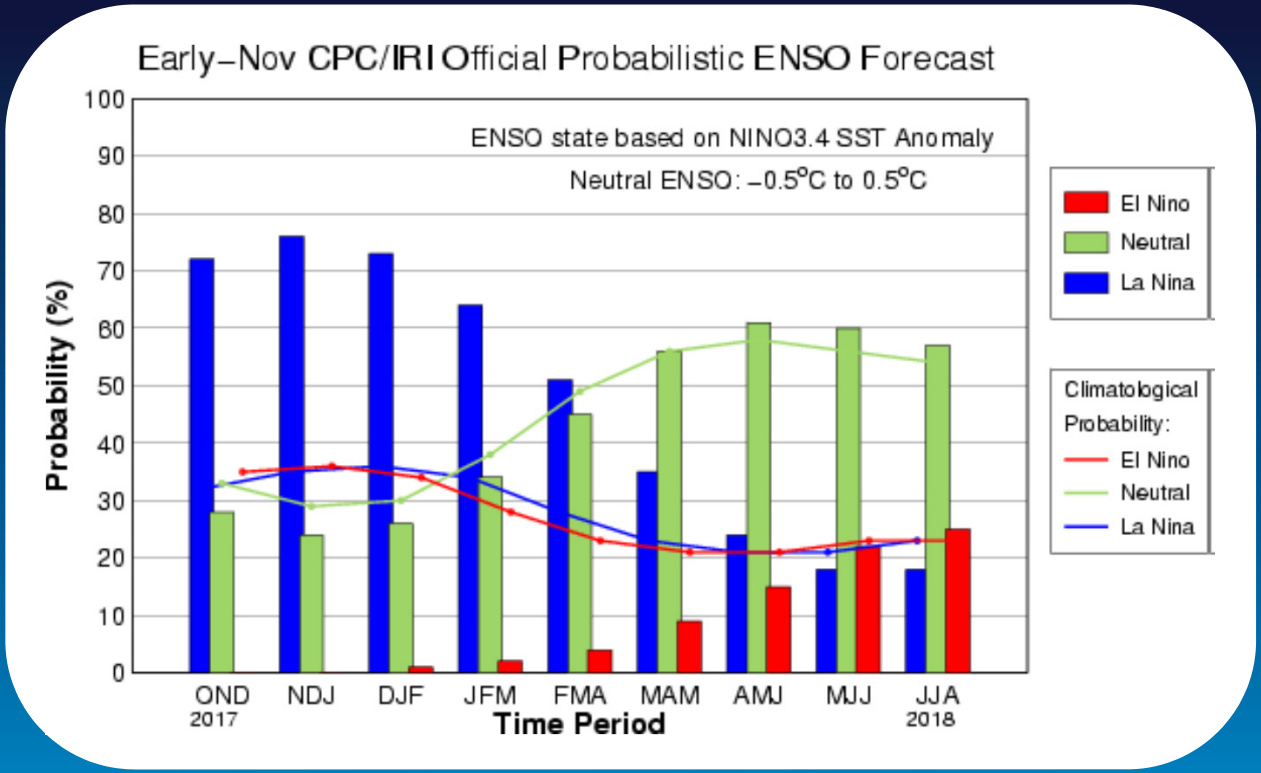


LA-UR-17-31198

Operated b

Current ENSO Conditions

La Niña conditions predicted to continue (~65-75% chance) through the Northern Hemisphere winter 2017-18, with a 51% chance of continuation through spring 2018

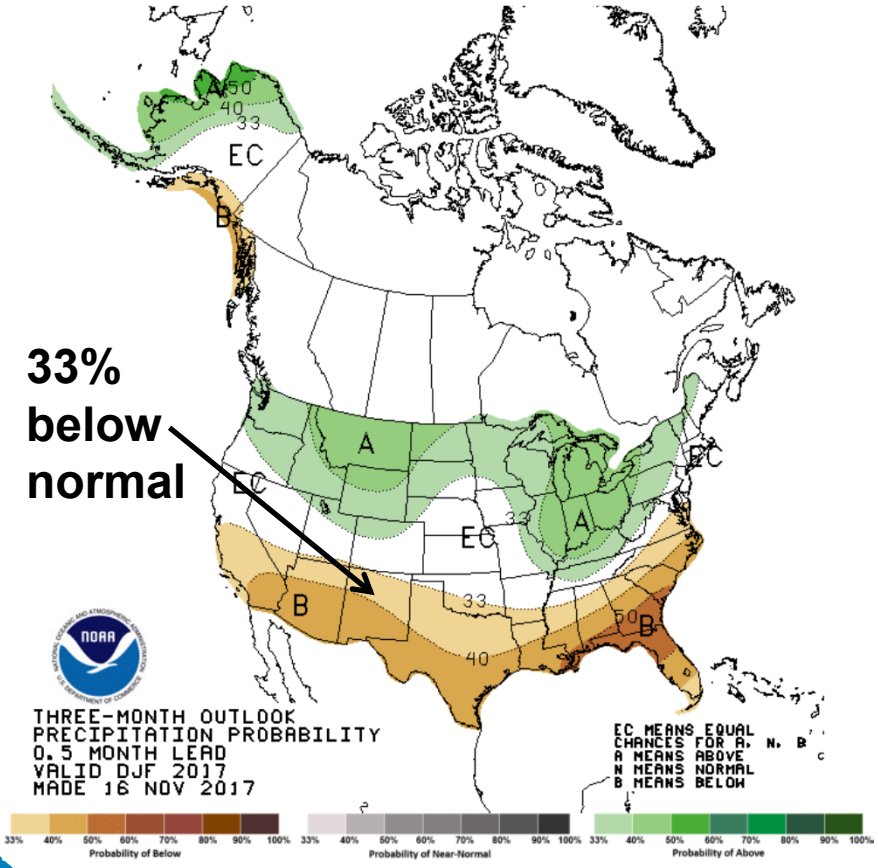


*Anomalies are computed with respect to the 1981-2010 averages by NOAA Climate Prediction Center

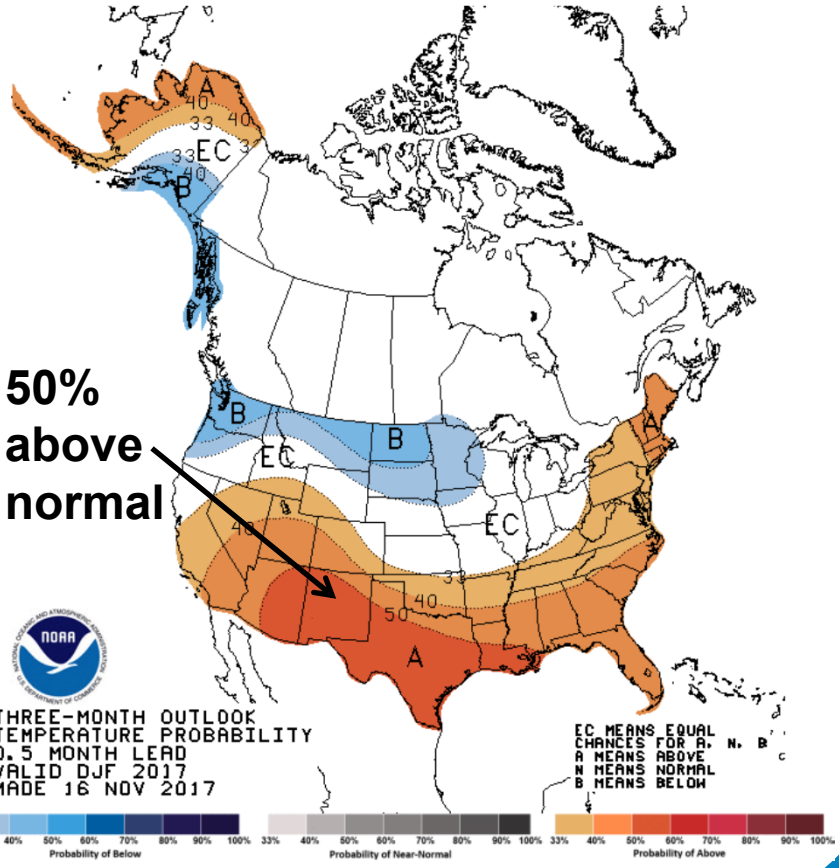
U.S. Seasonal Outlooks

Los Alamos NATIONAL LABORATORY EST. 1943

Precipitation

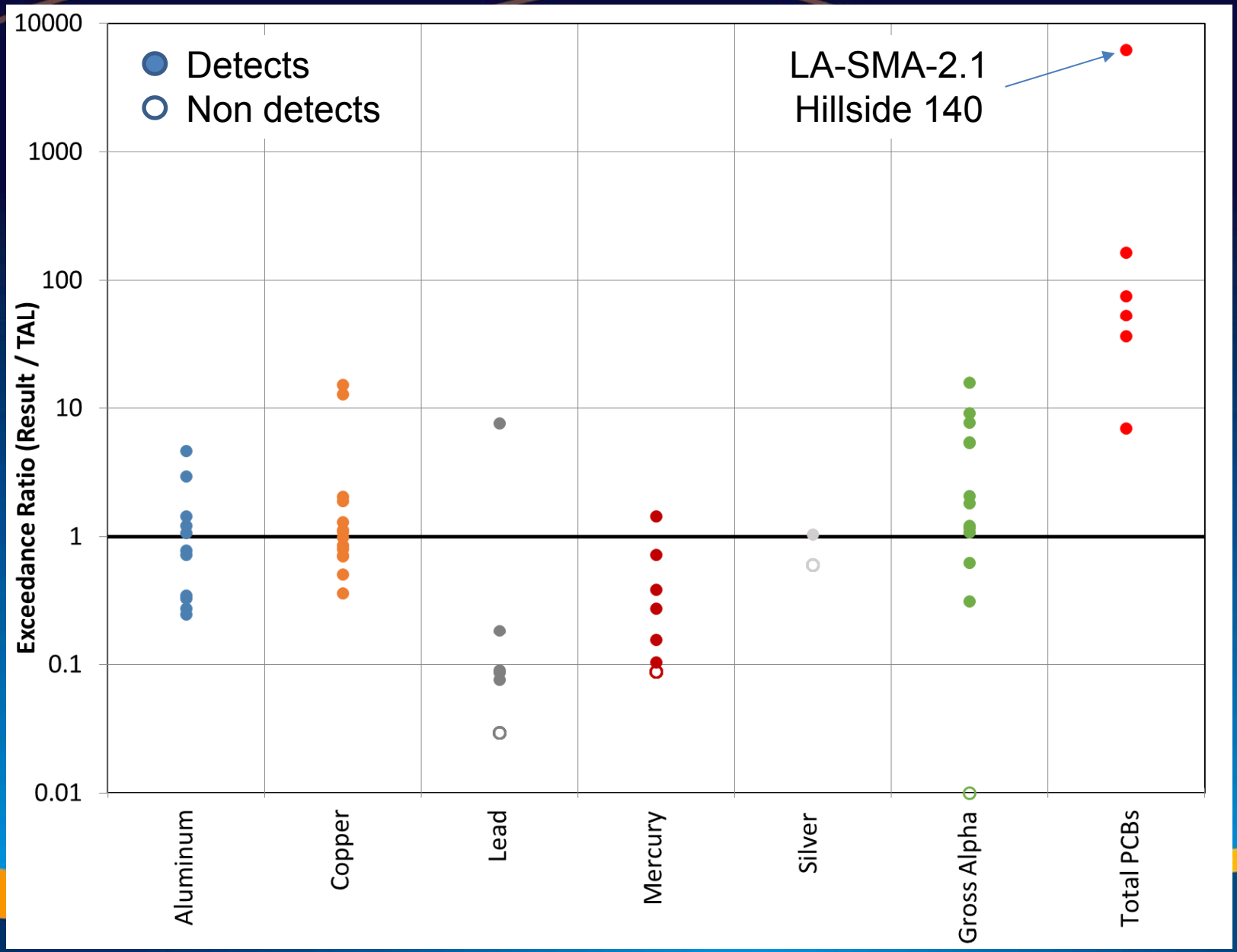


Temperature



*NOAA Climate Prediction Center

IP Results from 2017



IP Results from 2017

2017 IP Sampling Locations	TAL Exceedances							
	Aluminum	Copper	Lead	Mercury	Silver	Gross alpha	Total PCB	None
2M-SMA-3								x
3M-SMA-4		x						
ACID-SMA-2	x					x	x	
ACID-SMA-2.1	x	x				x	x	
CDV-SMA-2.42	x	x				x		
LA-SMA-1						x	x	
LA-SMA-2.1						x	x	
M-SMA-1.2		x						
PT-SMA-1		x				x		
S-SMA-6	x	x	x			x	x	
STRM-SMA-4.2	x	x			x			
T-SMA-7						x		
W-SMA-1.5								x
W-SMA-9.5				x		x		

IP Results from 2017

2017 IP Sampling Locations	TAL Exceedances							
	Aluminum	Copper	Lead	Mercury	Silver	Gross alpha	Total PCB	None
2M-SMA-3								x
3M-SMA-4		x						
ACID-SMA-2	x					x	x	
ACID-SMA-2.1	x	x				x	x	
CDV-SMA-2.42	x	x				x		
LA-SMA-1						x	x	
LA-SMA-2.1						x	x	
M-SMA-1.2		x						
PT-SMA-1		x				x		
S-SMA-6	x	x	x			x	x	
STRM-SMA-4.2	x	x			x			
T-SMA-7						x		
W-SMA-1.5								x
W-SMA-9.5				x		x		

IP Results from 2017

- Aluminum – geology
- Gross alpha – geology & lab-related
- Copper – urban areas & lab-related
- Lead, mercury, silver – lab-related
- Total PCBs – associated with humans (in atmosphere, precipitation, and storm water runoff) & lab-related

2017 IP Sampling Locations	TAL Exceedances								Site History	Associated Constituents (SIP Documents, Table 2.1-1)	Site Source in Soil (SIP Documents, Tables 4.2-1 and 4.4-1)
	Aluminum	Copper	Lead	Mercury	Silver	Gross Alpha	Total PCB	None			
2M-SMA-3								x	4 Firing Site SWMUs	HMX, RDX, TATB, depleted uranium, metal scrap from detonators, metals, lead, radionuclides	Benzoic acid, Benzo(a)anthracene, Benzo(k)fluoranthene, Chloronaphthalene[2-], Dichlorobenzene[1,2-], Dichlorobenzene[1,3], Diethylphthalate, Di-n-octylphthalate, Hexachlorobenzene, Phenanthrene, Pyrene, RDX, Tetryl, Trichlorobenzene[1,2,4-]; No soil sampling for inorganics; Additional sampling will be conducted as part of the Twomile Canyon Aggregate Area Investigation
3M-SMA-4		x							1 Firing Site SWMU and 2 Outfall SWMUs	Uranium, thorium, HE, beryllium, cadmium, lead, possibly barium, organic chemicals, radionuclides, uranium, lead, solvents	Mercury, zinc, PCBs; Additional sampling will be conducted as part of the Lower Pajarito Canyon Aggregate Area Investigation
ACID-SMA-2	x					x	x		Outfall associated with TA-01; Soil contamination from former RLW Treatment Plant; Soil contamination from former Decontamination facility; Sanitary Sewer Outfall	Plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals, solvents, oil, petroleum hydrocarbons, radionuclides, inorganic and organic chemicals	Cadmium, lead, mercury, silver, PCBs, PAHs (SVOCs); NMED issued a COC without Controls in February 22, 2013 for 3 of the 4 SWMUs associated with this Site
ACID-SMA-2.1	x	x				x	x		Outfall associated with TA-01	Plutonium, uranium, americium, thorium, tritium, cesium-137, strontium-90, metals, solvents	Cadmium, lead, mercury, silver, PCBs
CDV-SMA-2.42	x	x				x			Flash Pad	Explosive materials, dioxins/furans, metals, kerosene, petroleum hydrocarbons	No soil sampling; Site not regulated under the Consent Order (RCRA closure unit)
LA-SMA-1						x	x		Industrial waste lines (components of RLW); Surface Contamination (lead paint on Omega Bridge)	Radionuclides, lead	Lead; No organics related to source
LA-SMA-2.1						x	x		Septic Tank 140	Radionuclides, PCBs	Uranium, PCBs
M-SMA-1.2		x							NPDES-Permitted Outfall from Cooling Tower	Biocides, fungicides, chelating agents, hexavalent chromium, metals, cyanide, depleted uranium	Chromium, hexavalent chromium, copper, lead, nickel, zinc
PT-SMA-1		x				x			EF Firing Site; Two surface disposal areas	Barium, beryllium, copper, lead, mercury, uranium, depleted uranium, HE	Antimony, beryllium, cadmium, copper, lead, mercury, silver, zinc, uranium, HE, dioxins/furans; Additional samples will be collected during the Phase II Investigation
S-SMA-6	x	x	x			x	x		Firing Site	Copper, lead	None; Deferred per Appendix A of the Consent Order
STRM-SMA-4.2	x	x			x				Oxidation Pond	Metals, organic chemicals, oils, solvents, strontium-90	No soil sampling; Sampling will be conducted as part of the Starmer/Upper Pajarito Canyon Aggregate Area Investigation
T-SMA-7						x			Firing Site	Metals, organic chemicals, radionuclides	None; NMED issued a COC without controls on May 18, 2015
W-SMA-1.5								x	Outfall from Building 16-202 drain	Oil, metals, solvents, phthalates, petroleum distillates, trichloroethane, acids	No soil sampling; Sampling will be conducted as part of the Upper Water Canyon Aggregate Area Investigation
W-SMA-9.5				x		x			Potential soil contamination	HE	No soil sampling; Deferred per Appendix A of the Consent Order