

Drought Management



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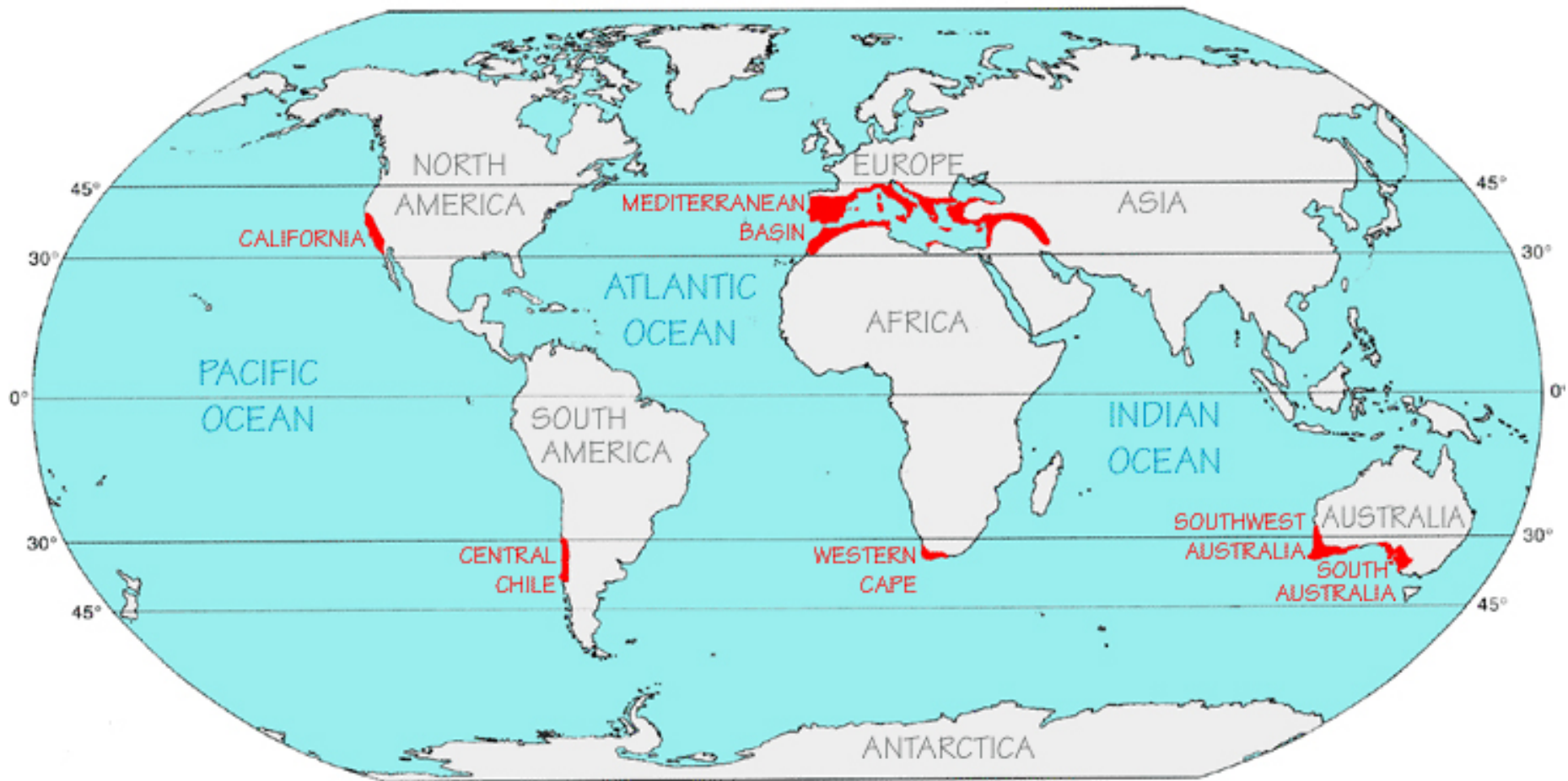
Rangeland and Livestock Management 101

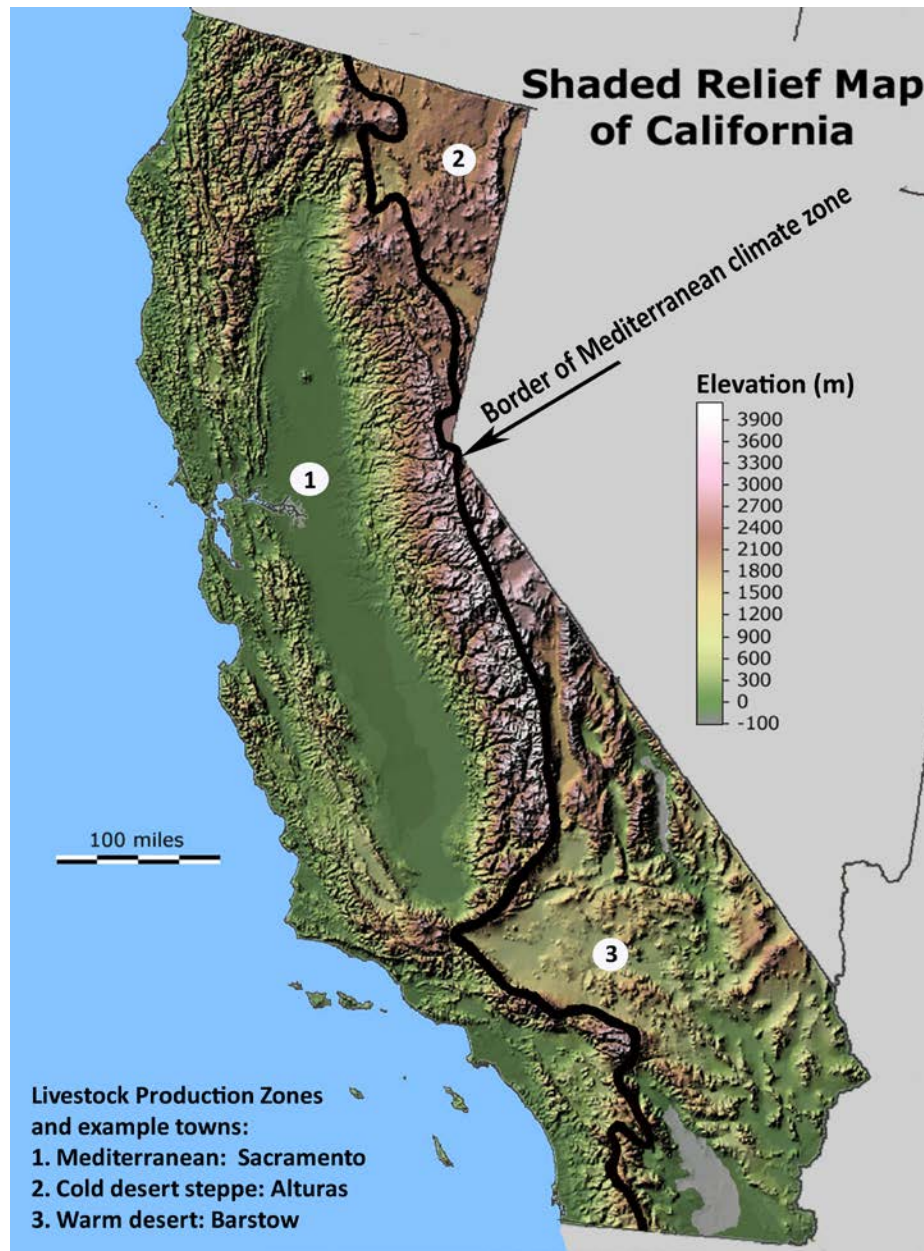
May 1, 2019

Drought Management

- What does drought look like in California?
- What are the impacts of drought?
- How to respond to drought?
- Risk Management
- Resources





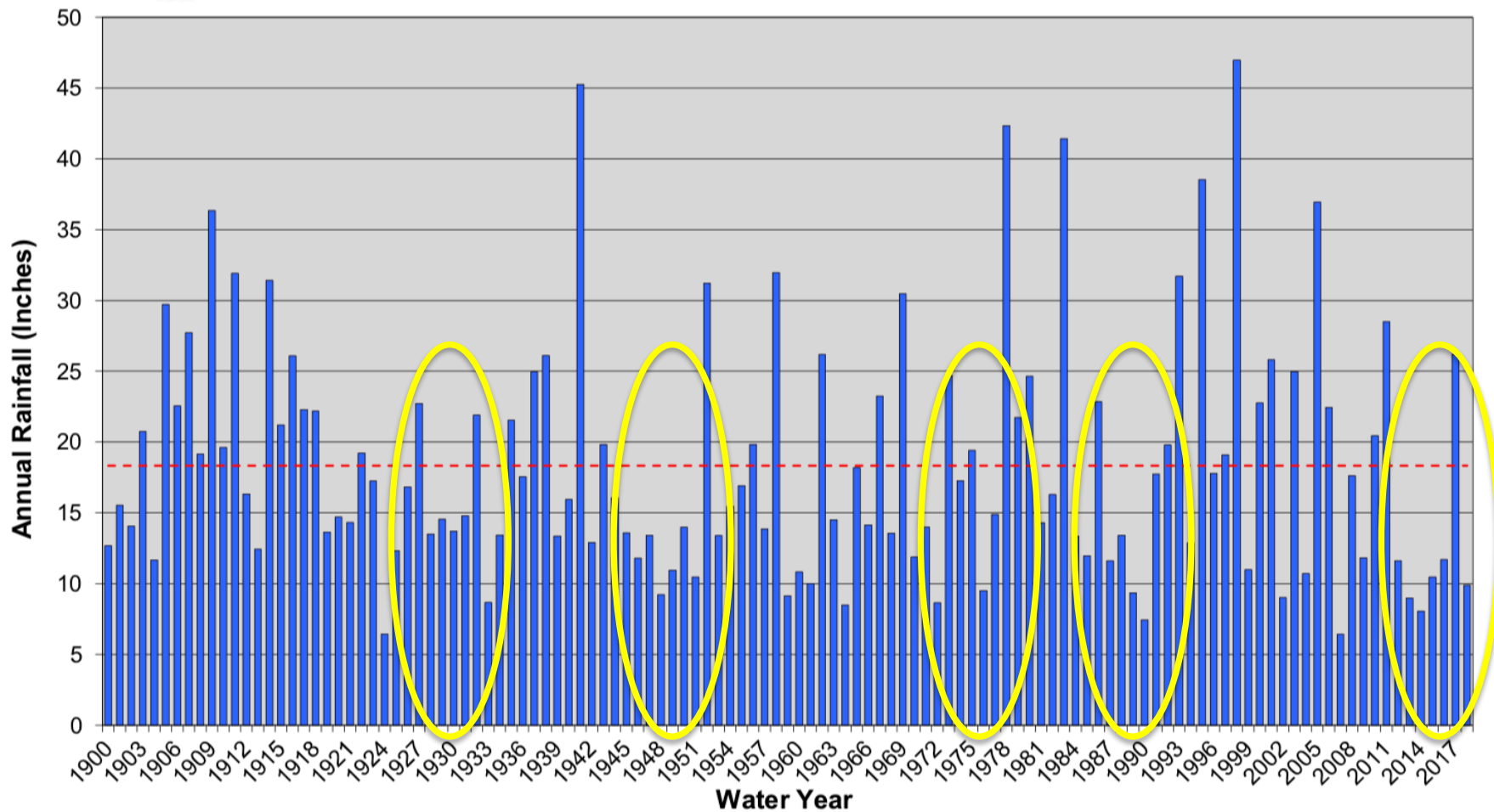




Santa Barbara - Annual Rainfall (Stn # 234)

1900 - 2018

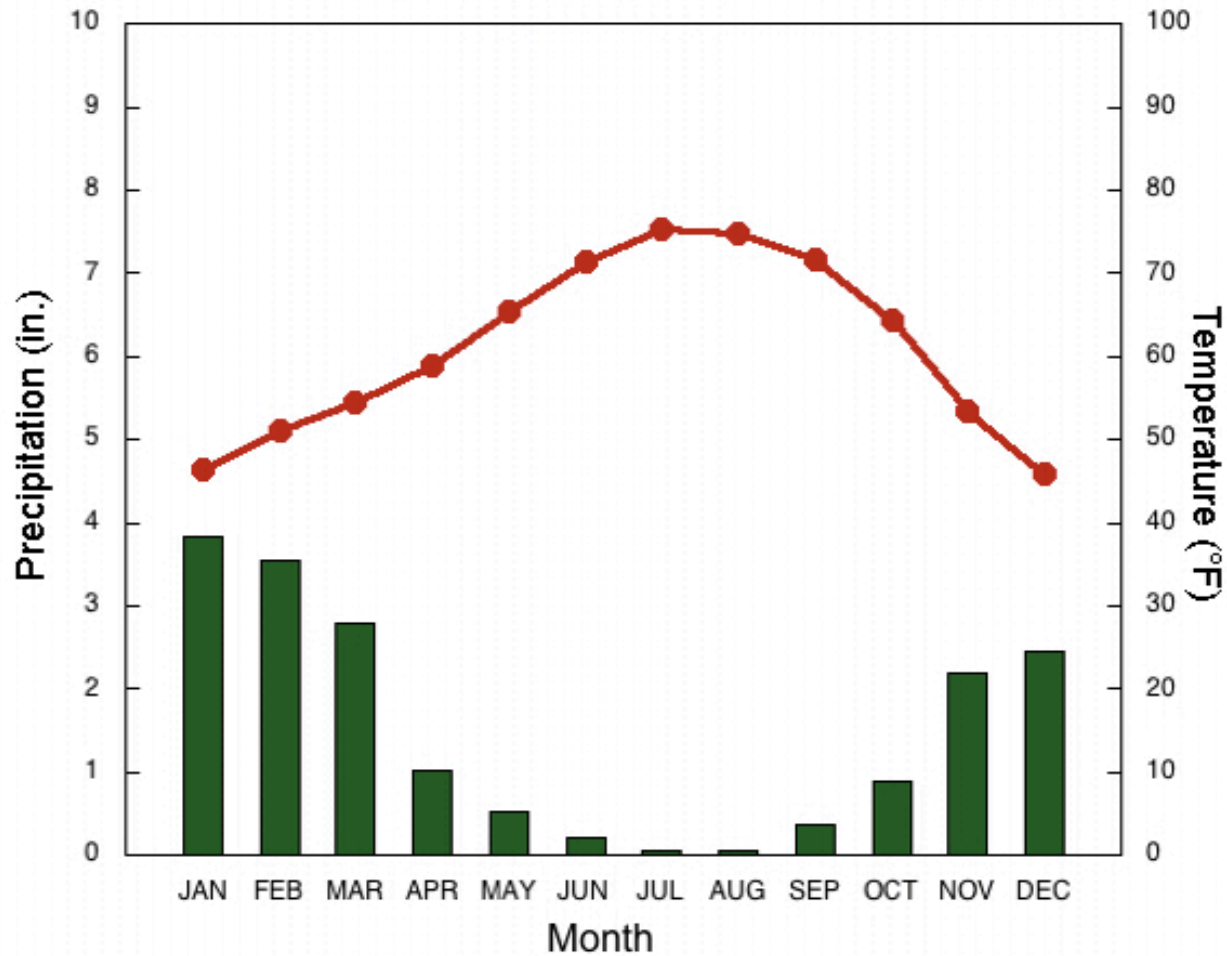
(Mean Annual Rainfall = 18.32 inches)



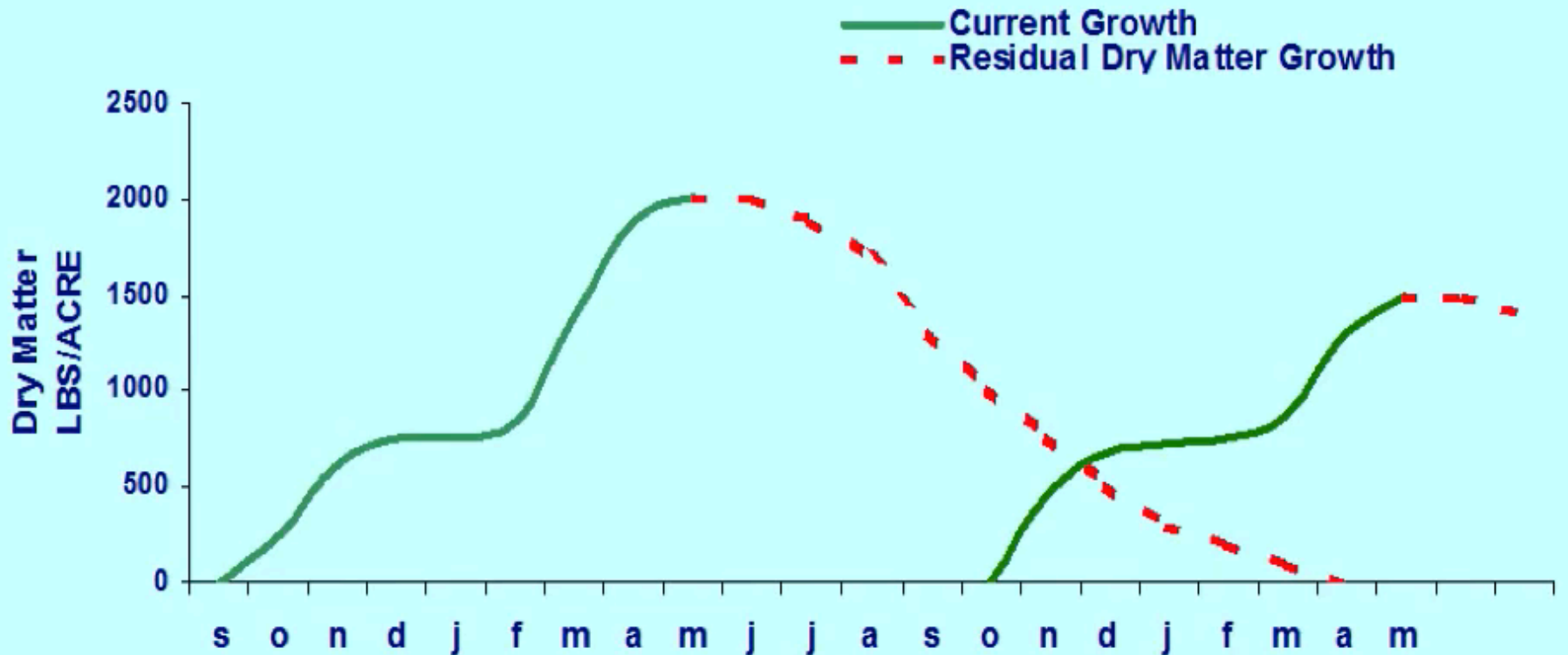
■ Precipitation

● Temperature

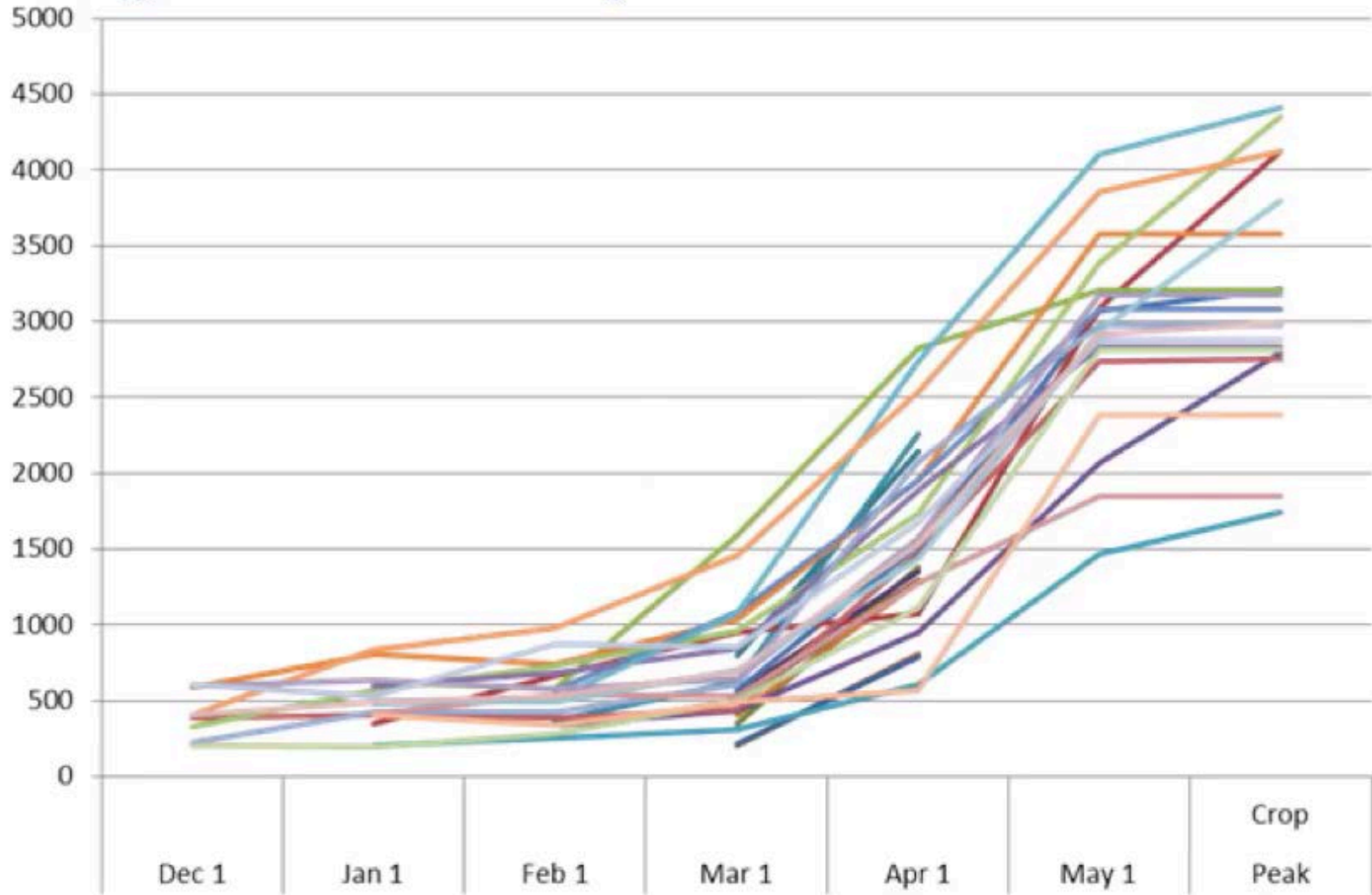
Monthly Temperature and Precipitation



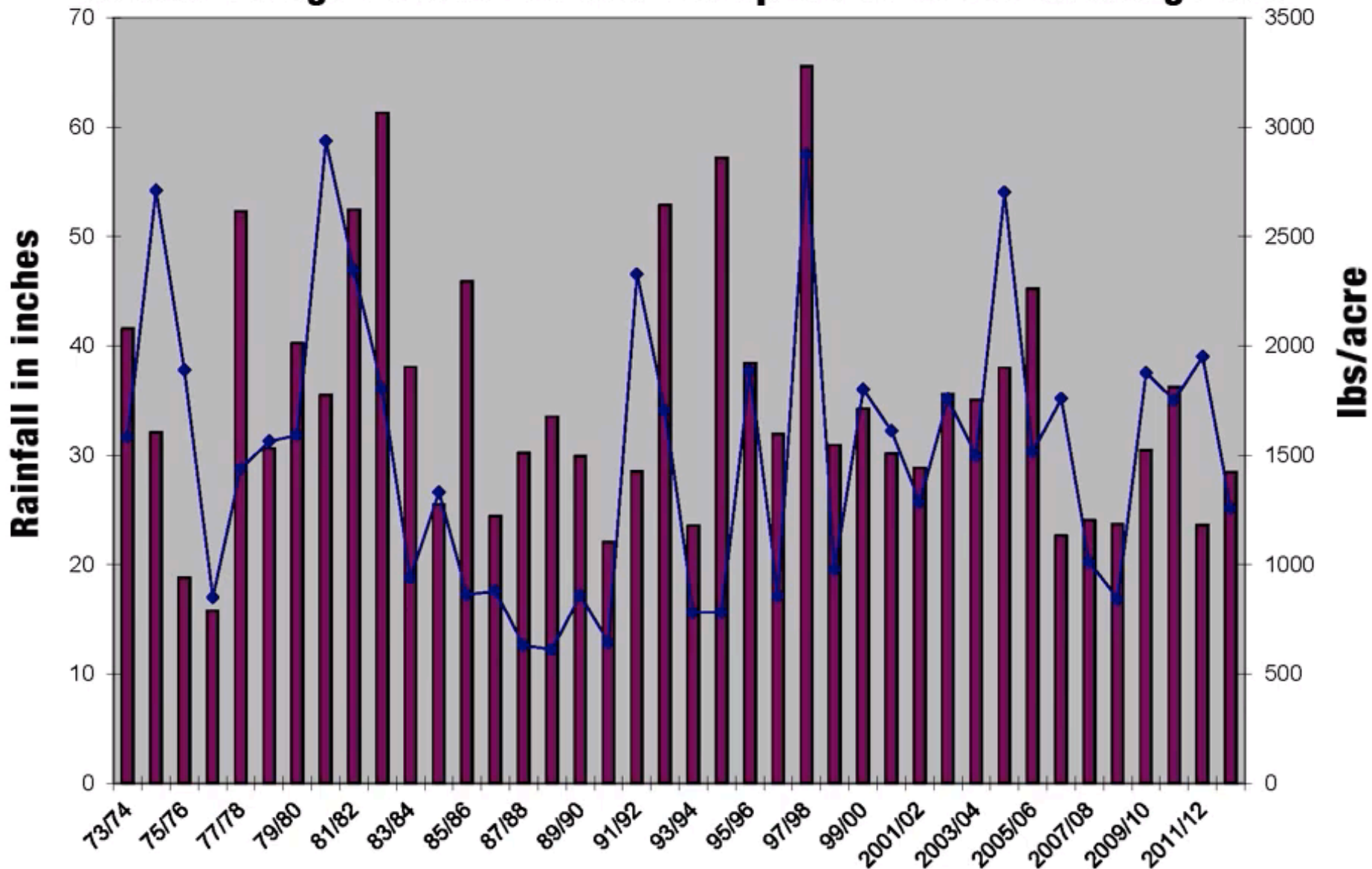
Typical Current Growth & Residue Decline California Annual Grassland



Forage Production by Month-SFREC-All Years



Annual Forage Production and Precipitation in the Redding Area



Impacts from Drought

Hydrological

- ↳ Will affect stock water (seasonal springs, ephemeral creeks)
 - ↳ Will affect how/if livestock use certain ranches/pastures

Ecological

- ↳ Reduced precipitation will change the amount and composition of forage
 - ↳ These impacts may persist longer than the drought

Production

- ↳ Lower body condition scores, less efficient breeding, lighter calves, trace mineral deficiencies
- ↳ Animal health/veterinary concerns

Human

- ↳ Cattle market can be down
- ↳ Grass elsewhere is harder to find



Impacts from Drought

In 2011, 507 ranchers across the state were surveyed across the state to gain insight into factors driving their decision making...

- Median date of last perceived drought was 2009
- 74% indicated that a new drought would impact their operations “as severely” or “worse” than past droughts
- Many ranchers reported experiencing drought-driven impacts more severely than expected

Impacted More Severely than Expected by Last Drought	% (n=473)
Lost grazing capacity	77
Reduced winter forage availability	62
Lost profit	55
Lower calf weaning weights	44
Reduced reproduction rates	23
Shortage of livestock drinking water	20

Roche & Tate, 2014

How to respond to drought

Table 1. Proactive and reactive strategies for drought impact management from the 2011 California Rangeland Decision-Making Survey

	Strategies to Manage for Drought Impact	% (n = 443)
Proactive (Preparing for drought)	Stock conservatively	34
	Rest pastures	23
	Incorporate yearling cattle	21
	Grassbank/Stockpile forage	12
	Use weather predictions to adjust stocking	11
	Add other livestock types for flexibility	3
Reactive (Responding to drought)	Reduce herd size	70
	Purchase feed	69
	Apply for government assistance programs	39
	Wean calves early	39
	Rent additional pastures	26
	Move livestock to another location	24
	Earn additional off-ranch income	23
	Sell retained yearlings	22
	Place livestock in a feedlot	8
	Maintain herd size; allow condition declines	7
	Add alternative on-ranch enterprise	4

Macon et al., 2016

How to respond to drought

1. Supplemental feeding



2. Reducing herd size



How to respond to drought

1. Supplemental feeding

Roughages

Table 2. Nutrient values (%) for selected roughage sources

	Crude protein	ADF	TDN	Ash
alfalfa	17	36	58	9
corn stover	5	43	54	7
kidney bean straw	9.9	43	58	10.4
lima bean straw	7.6	39	55	9.3
oat hay	10	39	54	8
rice straw	4	55	44	16.6
wheat hay	9	38	57	8
wheat straw	3	57	43	8

Davy et al., "Supplemental Feeds for Cattle Operations during Drought," 2016.

<https://anrcatalog.ucanr.edu/pdf/8565.pdf>

Concentrates

Table 1. Average nutrient values (%) for selected concentrate energy sources

	Dry matter	Crude protein	ADF	TDN	NDF	Ash
rice bran	91	14	18	71	24	11
almond hulls	89	3	28	56	36	7
canola meal	90	41	16	72	29	8
walnut meal	93	17.1	34	67	—	5
safflower meal	91	24	41	56	57	6
pinto beans	90	25.2	6	83	12	4.8

Source: Bath et al. 1980; Nutrient Requirements of Beef Cattle, 7th ed.

How to respond to drought

1. Supplemental feeding

Further considerations

- Feeding stations, bunks, troughs, electric wire
- Transportation
- Excessive use of pastures/sacrifice area
- Animal health/performance
- COST



How to respond to drought

1. Supplemental feeding



There is real value to keeping a core herd—genetics, disease immunity (Foothill abortion, anaplasz), and cattle’s knowledge of the range. All of these attributes have real costs when rebuilding a herd.

“You can’t feed your way [completely] out of a drought!”

How to respond to drought

Consider (in order)

1. Early weaning
2. Sell cattle that have delayed income
3. Sell cattle that have higher feed costs

2. Reducing herd size

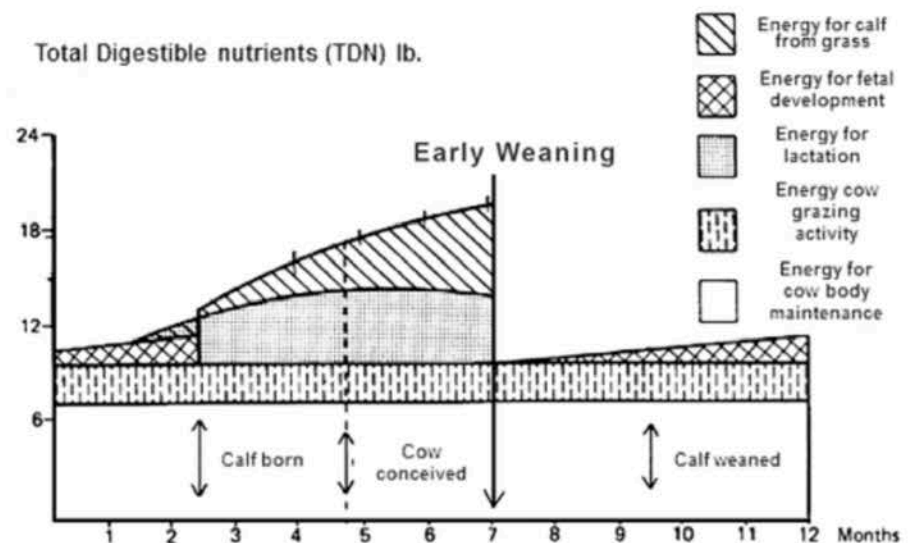
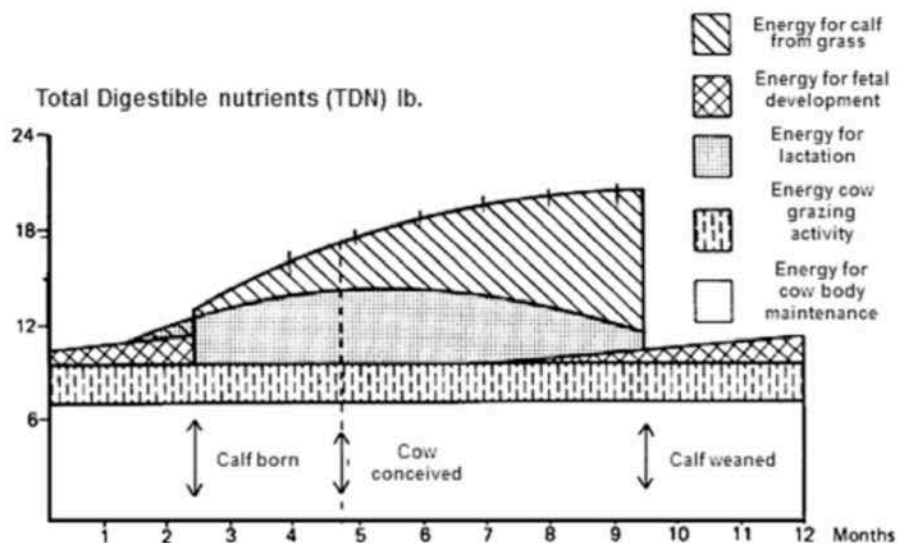


Nader, "Drought Economics," 2015

How to respond to drought

1. Early weaning

- Save cow's body condition
- Reduce feed consumption
- Decrease cow's protein requirement by half and energy requirement by 1/3
- Most producers wean 30 to 90 days early



How to respond to drought

2. Sell cattle that have delayed income

- Replacement heifers and open cows will take up feed without producing any income for over next year
- This action will keep animals that will provide returns to address the increased feed costs.



How to respond to drought

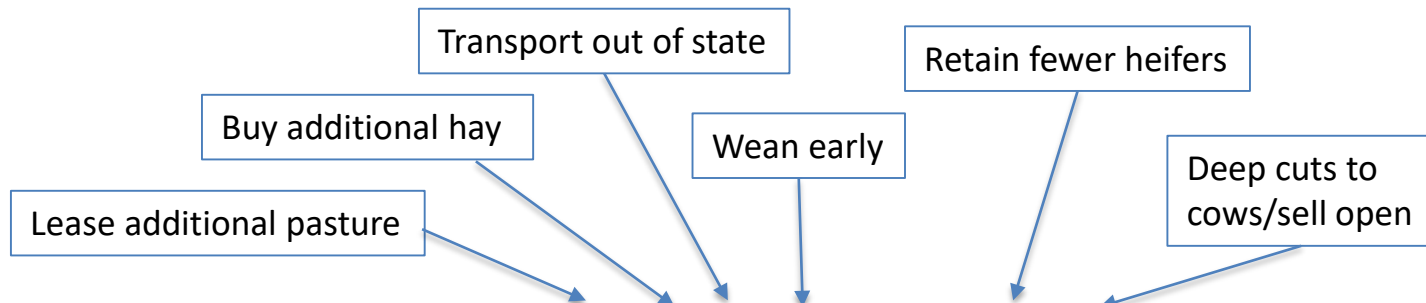
3. Sell cattle that have higher feed costs

- Cull low body condition score and broken mouth cows.
- Also, keeping younger cows means there is a longer lifespan to recoup the additional feed costs



How to respond to drought

Planning



Fall Calving Herd											
Calendar of Operations	O	N	D	J	F	M	A	M	J	J	
Calving	█	█	█								
Wean Calves								█	█		
Breeding				█	█	█	█				
Pregnancy Check								█	█	█	
Select Repl Hfrs								█	█		
Sell Calves								█	█		
Sell Cows/Bulls							█	█	█		
Castrate, Brand,			█	█							

Feed Flow Calendar											
Annual Range	█	█	█	█	█	█	█	█	█	█	█
Forest Service Lease	█								█	█	█
Feed Hay	█	█	█	█							
Mineral Supplement	█	█	█	█	█	█	█	█	█	█	█
Protein Supplement			█	█							

How to respond to drought

In 2013/2014 interviews, 82% of ranchers did not think their current strategies would be sufficient to deal with more frequent drought events.



The time is now to put together a Drought Management Plan and/or decision calendar

How to manage risk in drought

1. Farm Service Agency (FSA) **Non-insured crop disaster Assistance Program (NAP)**
2. FSA **Livestock Forage Program, LFP** (Drought Monitor)
3. Private insurance (Pasture, Rangeland, and Forage insurance, or **PRF**)



How to manage risk in drought

1. Farm Service Agency (FSA) **Non-insured crop disaster Assistance Program (NAP)**
 - “provides financial assistance...to protect against natural disasters that result in lower yields....”
 - Covers the amount of loss that exceeds 50 percent of expected production at 55 percent of the avg. market price of crop
 - Must apply by closing date (for 2019 NAP: 9/1/2018)
 - NAP service fee for all levels is \$250
 - In California, coverage period is typically October 1-September 30
 - Do have to share sensitive information
 - Payments can be frustratingly slow

How to manage risk in drought

2. FSA Livestock Forage Program, LFP (Drought Monitor)

- “provides compensation to eligible livestock producers who have suffered grazing losses for covered livestock on land that is native or improved pasture...”
- Program is based on the Drought Monitor, weekly UNL product
- Payment rate for drought is equal to 60 percent of the monthly feed cost (calculated per head or per acre)
- Payments are based on drought severity:
 - D2 for eight consecutive weeks → one month
 - D3 at any time → three months
 - D3 for 8 weeks or D4 any time → four months
 - D4 for four weeks → five months
 - Grazing year in CA → October-September

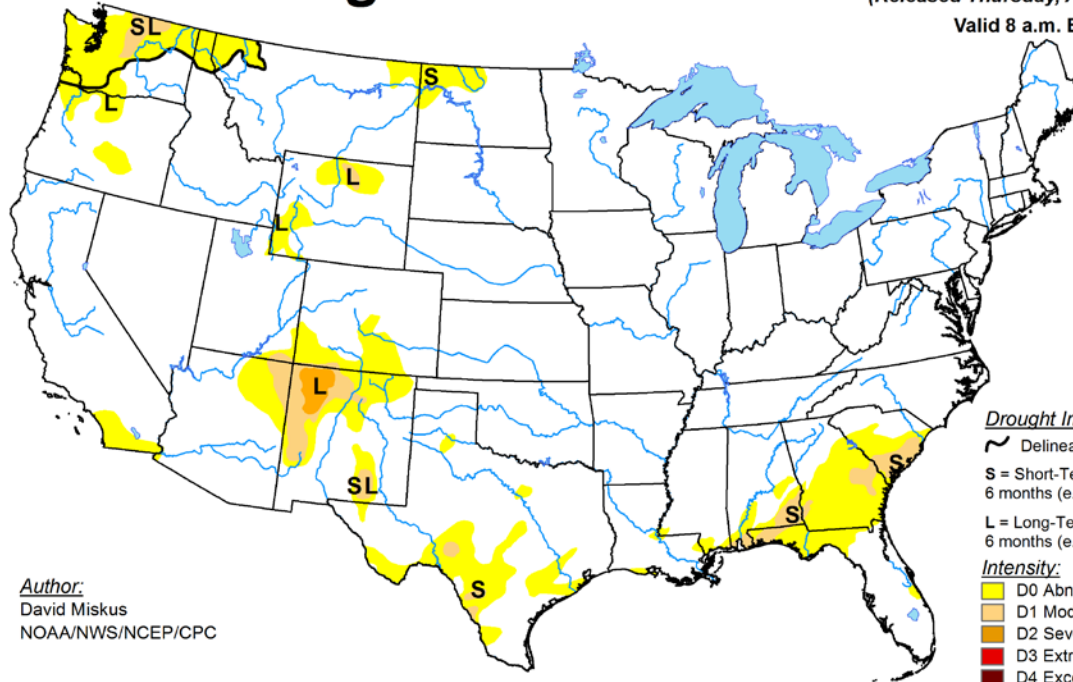
How to manage risk in drought

U.S. Drought Monitor

April 23, 2019

(Released Thursday, Apr. 25, 2019)

Valid 8 a.m. EDT



Author:
David Miskus
NOAA/NWS/NCEP/CPC

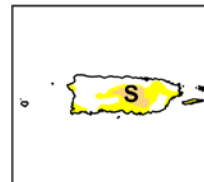
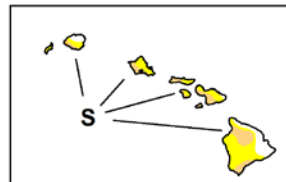
Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

How to manage risk in drought

3. Private insurance (Pasture, Rangeland, and Forage insurance, or **PRF**)
 - Privately administered, publicly supported through RMA
 - Uses gridded rainfall index (NOAA CPC), grids ~17m x 17m
 - Coverage based on producers selection of coverage level, index intervals, and productivity factors
 - Index interval represents a two-month period
 - Can select coverage level from 70-90%
 - Payments are based on formula and coverage is for a single peril, lack of precipitation
 - Insurance cutoff dates (e.g. 1/15/18 for 2019 insurance)

How to manage risk in drought

1. Farm Service Agency (FSA) **Non-insured crop disaster Assistance Program (NAP)**
2. FSA **Livestock Forage Program, FLP** (Drought Monitor)
3. Private insurance (Pasture, Rangeland, and Forage insurance, or **PRF**)
4. Livestock Indemnity Program (**LIP**)
5. Emergency Livestock Assistance Program (**ELAP**)

Resources during drought



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Rangeland Drought Hub



Programs



Economics



Feeds &
Nutrition



Management &
Production



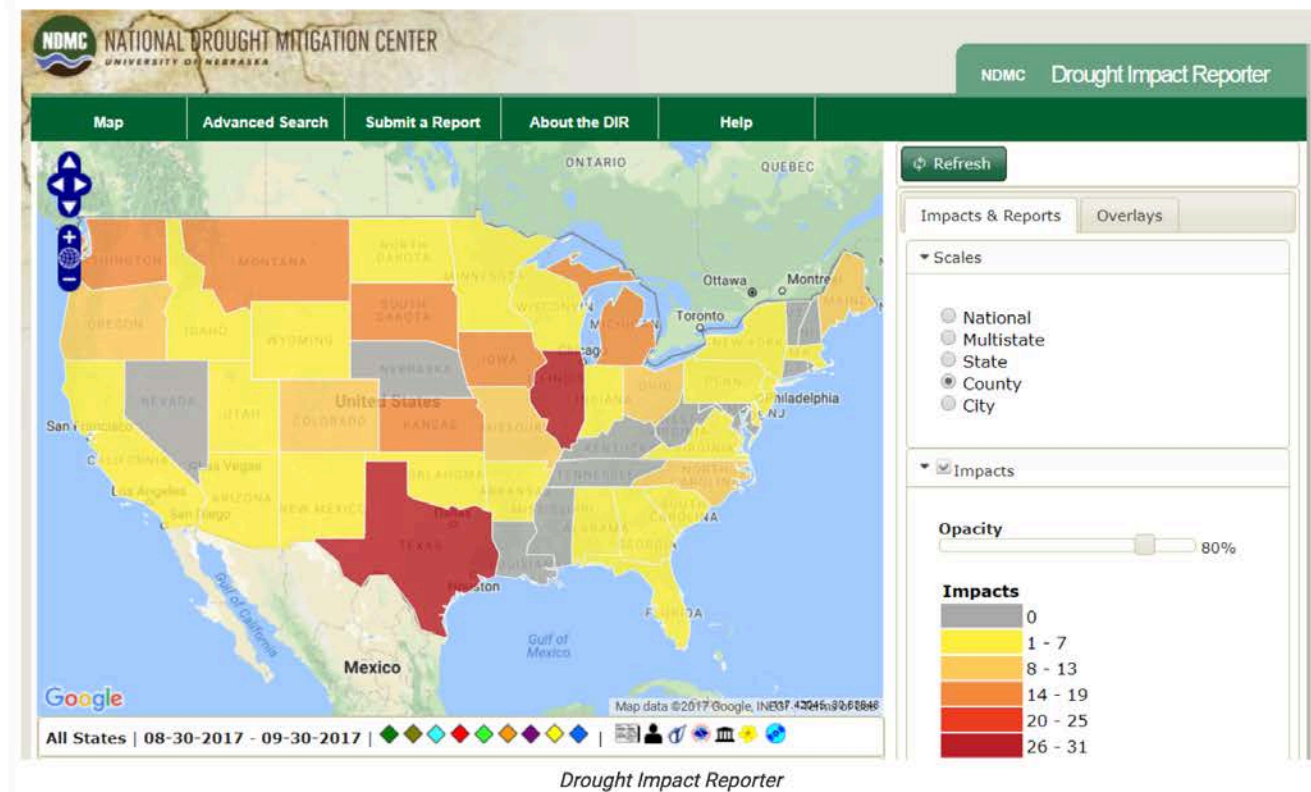
Research

<http://rangelands.ucdavis.edu/drought/>

Resources during drought

Report drought conditions and impacts now!

The *Drought Impact Reporter* enables you to document drought impacts, report drought duration and affected areas, and share images of impact. Providing real-time, on-the-ground information helps inform the U.S. Drought Monitor's weekly map of drought conditions.



<http://rangelands.ucdavis.edu/drought/>

Resources during drought

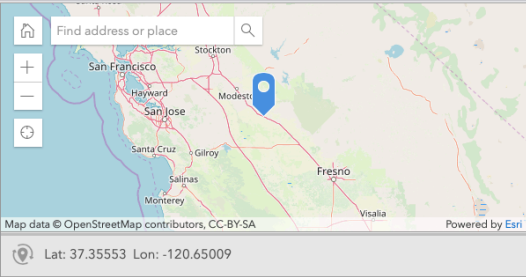
Drought Condition & Impact Reporting

Introduction

Report drought-related conditions and impacts within the U.S. This is a nation-wide service provided by the National Drought Mitigation Center, based at the University of Nebraska, in partnership with the National Integrated Drought Information System. Information submitted by this form appears on [this map](#).

Where are you?*

Please click on the map to tell us the location of your observation. Click on the compass icon to select your current location.



Map data © OpenStreetMap contributors, CC-BY-SA Powered by Esri
Lat: 37.35553 Lon: -120.65009

Select your state and county:

Select a state:

Select a county:

What is the date?

Please use the calendar to select the date of your observation, if it is other than today.

How dry or wet is it?*

Please use what you know about your part of the country and base your observation on what is normal for this time of year. A normal dry season is not the same as drought.

Severely Dry: There is no soil moisture. Ponds, lakes, streams and wells may be nearly empty or dry. Producers may have crop or pasture losses. Mandatory water restrictions may be in place.

Moderately Dry: Plants may be brown due to dry conditions. Streams, reservoirs or well water levels may be low. Voluntary water use restrictions may be in place. There may be water shortages. Plants, crops or pastures may be stressed. Soil is dry.

Mildly Dry: Growth may have slowed for plants, crops or pastures. Soil is somewhat dry. Local plants, pastures or crops may not have fully recovered if conditions are changing from drier to wetter.

Near Normal: What you're seeing is what you expect for this time of year.

Mildly Wet: Local plants, crops or pastures are healthy, recovering from dry conditions or draining from wet conditions. Soil moisture is above normal.

Moderately Wet: Local plants, crops or pastures are healthy and lush. Soil is very damp and the ground may be saturated with water. There may be standing water in low areas and ditches. Water bodies may be fuller than normal.

Severely Wet: Water levels in lakes, streams and ponds are well above normal. Standing water covers some areas that are normally dry. Soil is wet and ground is completely saturated. There may be flooding.



Report crop production impact 

Report livestock production impact 

Report domestic or municipal water supply impact 

Report habitat for wildlife or fish impact 

Report recreation & tourism impact 

Report other business & industry impact 

Report public and community health impact 

Report fire impact 

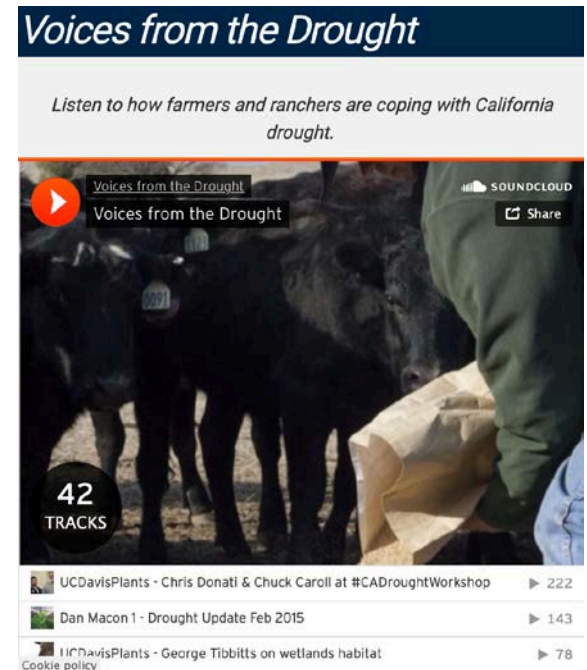
Upload photo

You can upload a photo of up to 10 MB, if you are the photographer or have permission to share the photo. It will be visible on the web. Please be sure to use the description field below for credit and caption information: Who took the photo, what is the location, what is the date, and what is it showing us? By uploading the photo, you agree that it may be used and shared for educational and management purposes.

Resources during drought

- Snowpack and reservoirs
- Weather and Satellite imagery
- Drought indicators (Drought Monitor, Long-Range Outlook, Rangeland Vegetation Drought Response)
- Drought videos
- Climate charts
- Twitter (Rangeland and drought)
- Facebook groups
- Voices from the Drought

<http://rangelands.ucdavis.edu/drought/>



The image shows a SoundCloud playlist titled "Voices from the Drought". The header text reads "Listen to how farmers and ranchers are coping with California drought." Below the header is a video player showing a person in a green jacket feeding a group of dark-colored cows. A play button is visible in the top left of the video player. The SoundCloud logo and a "Share" button are in the top right. A circular badge in the bottom left of the video player indicates "42 TRACKS". Below the video player is a list of tracks:

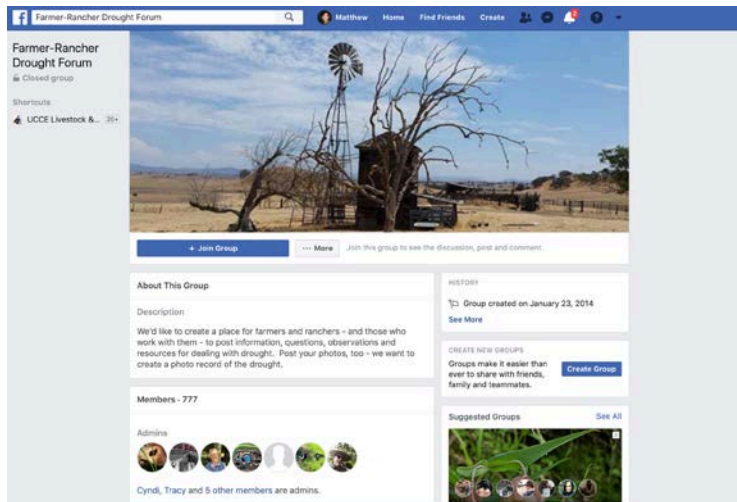
Track Name	Duration
UCDavisPlants - Chris Donati & Chuck Carroll at #CADroughtWorkshop	▶ 222
Dan Macon 1 - Drought Update Feb 2015	▶ 143
UCDavisPlants - George Tibbitts on wetlands habitat	▶ 78

At the bottom of the track list, there is a "Cookie policy" link.

Resources during drought

Novel social networking and information sharing

- In 2011 survey:
 - 100% under 41 years old used the internet, 54% using a smartphone
 - 87% between 50 and 70, 14% using smartphone



“Facebook has given me a chance to share ideas, learn from other ranchers, and frankly, to commiserate. It’s kind of like a virtual coffee shop.”



Questions?