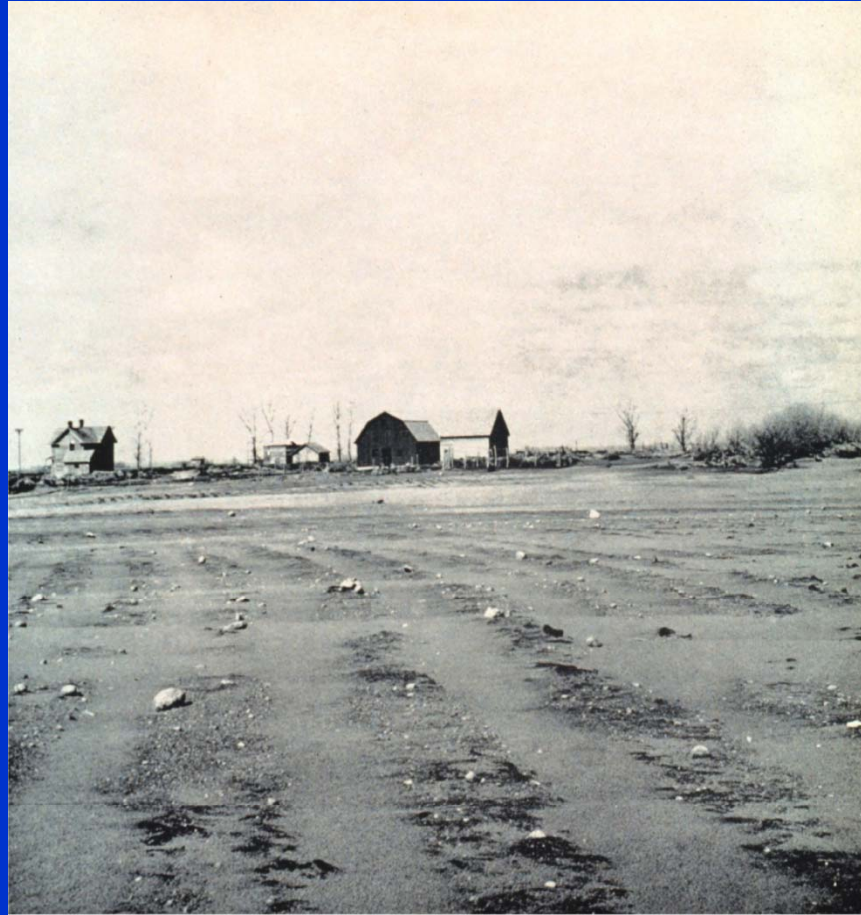


Chapter 26: Drought



Courtesy of the NOAA Photo Library, Russell Lord.

- **Drought Index**



ESS124
Prof. Jin-Yi Yu

Definition of Drought

- Worldwide, drought leads to more fatalities than any other weather phenomenon.
- There is no universal definition of drought.
- A meteorological or climatological drought refers to an unusual long period during which precipitation is below normal for a particular area.
- Hydrological drought describes an unusual deficiency of groundwater and/or stream flow, i.e., water levels are below normal for the area.
- Agricultural drought refers to a period of deficient moisture in the soil layer from which crops and other plants normally draw their water.
- Socio-economic drought occurs when the moist shortage is sufficiently large that it affects people.
- Agricultural drought often proceeds hydrological drought, and socio-economic drought generally lags other types of droughts.



Drought Index

TABLE 26.1

Categories of Palmer Drought Severity Index

PDSI Range	Drought Severity
-4.0 or less	extreme drought
-3.9 to -3.0	severe drought
-2.9 to -2.0	moderate drought
-1.9 to +1.9	near normal
+2.0 to +2.9	unusually moist
+3.0 to +3.9	very moist
+4.0 and above	extremely moist

- Because the normal values of precipitation and temperature vary regionally and seasonally, it is difficult to quantify drought in term of actual temperature and precipitation.
- Standardized measurements have come into use.
- One of the most widely used indices is the Palmer Drought Severity Index (PDSI).
- This Palmer Index is a measure of moisture deficiency standardized to local climate conditions.
- It is based on a groundwater balance that includes the supply of water by precipitation and stored water, and the depletion of water by temperature-depended evaporation, recharge of subsurface water and runoff.

