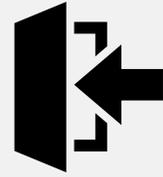


SCRCA flood program



Roles and Responsibilities



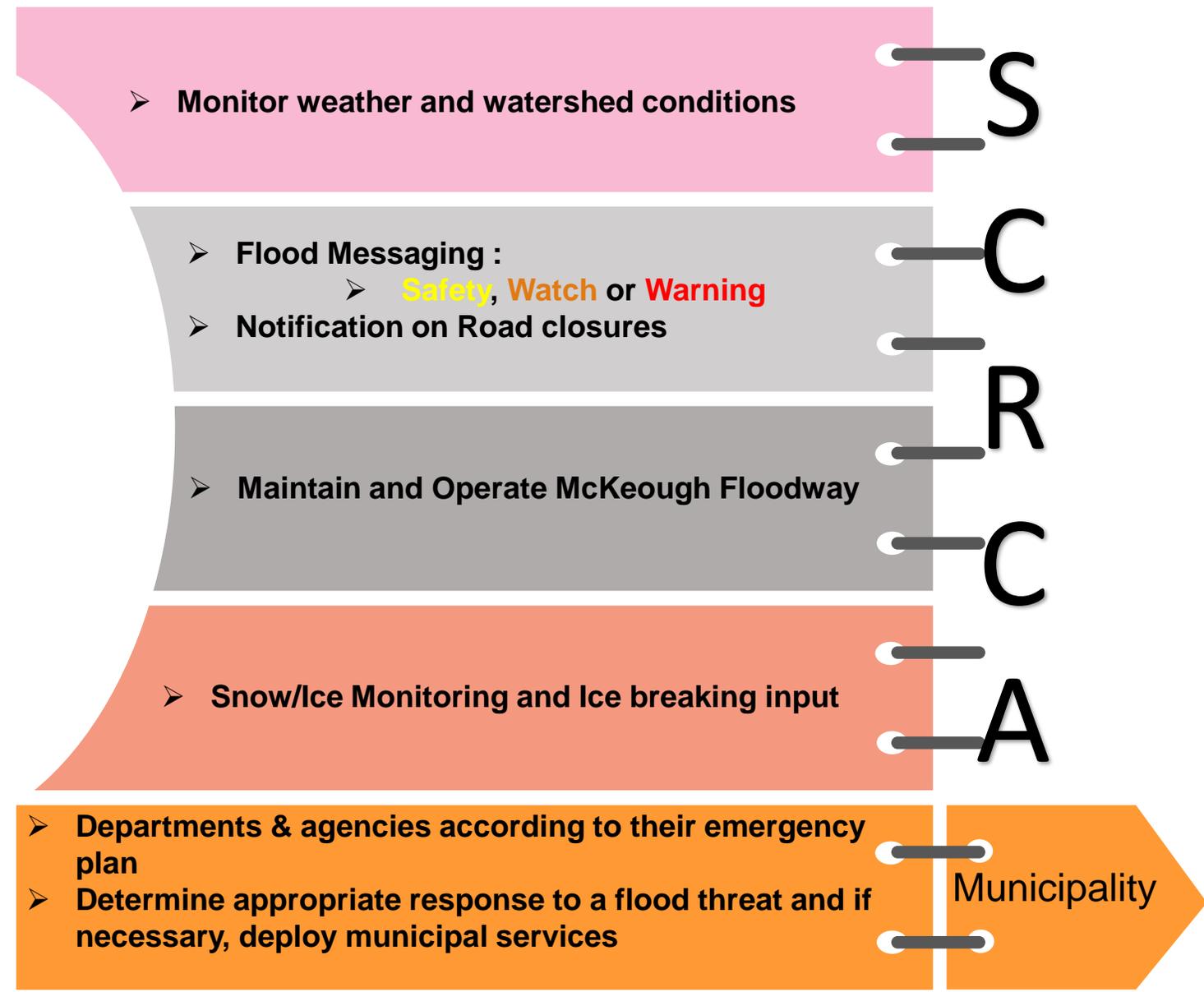
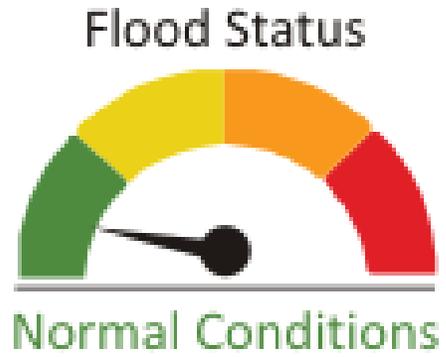
Global weather patterns



August 23rd rain and flooding

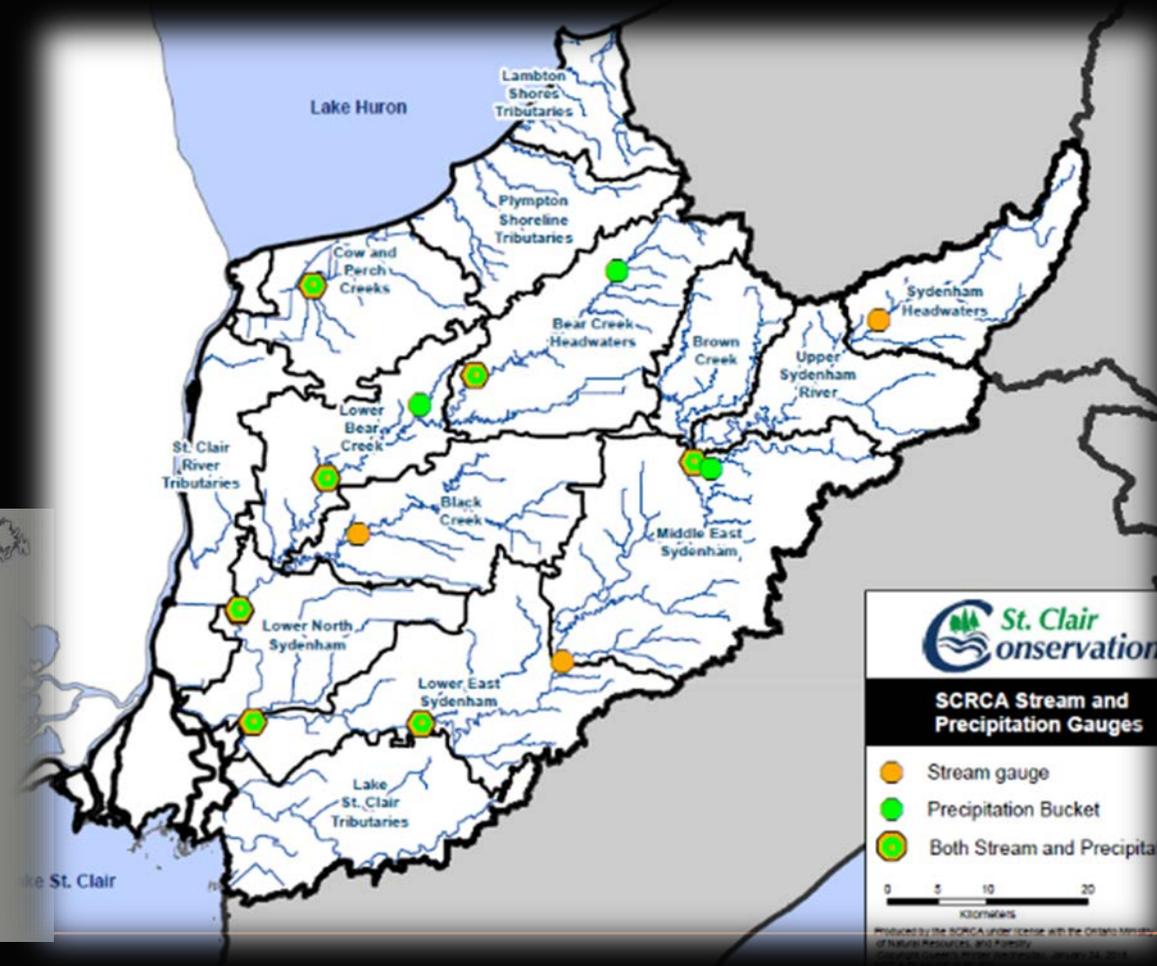
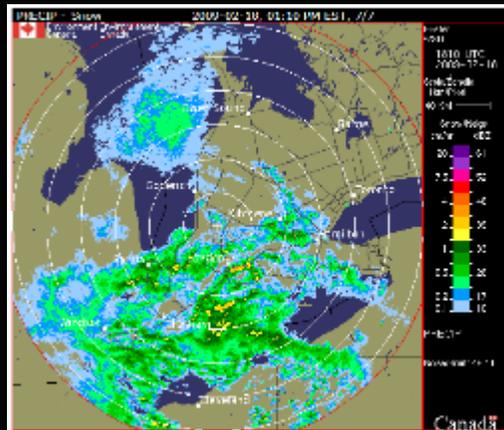
Role of SCRCA

Flood Forecasting and Warning



Monitoring program

Observed

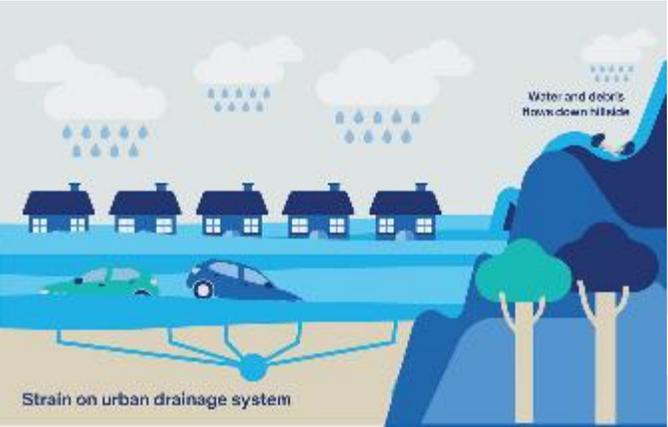


Measured

- 12 stream gauges
- 5 snow sampling sites
- Ice monitoring
- Meteorological Information (e.g. rain, wind, temp.)

Types of flooding

Surface water flooding



Surface water floods occur when an urban drainage system is overwhelmed and water flows out into streets and nearby structures.

Riverine flooding



A fluvial, or river flood, occurs when the water level in a river, lake or stream rises and overflows onto the neighboring land

Coastal flooding



Storm surge is created when high winds from a windstorm force water onshore

La Nina – Normal Year

- Winds move from areas of High pressure to low pressure
- High pressure over south America and low pressure over Asia
- Mass of Warm surface water moving East to West across equatorial pacific – settles north of Australia

El Nino – Not a normal Year

- High pressure over Australia and low pressure over South America
- Mass of Warm surface water moving West to East across equatorial pacific – settles near south America
- Occurs once every 4 -8 years
- 2023 – Strong El Nino year > 1.5 degree C

NORMAL YEAR



EL NIÑO YEAR

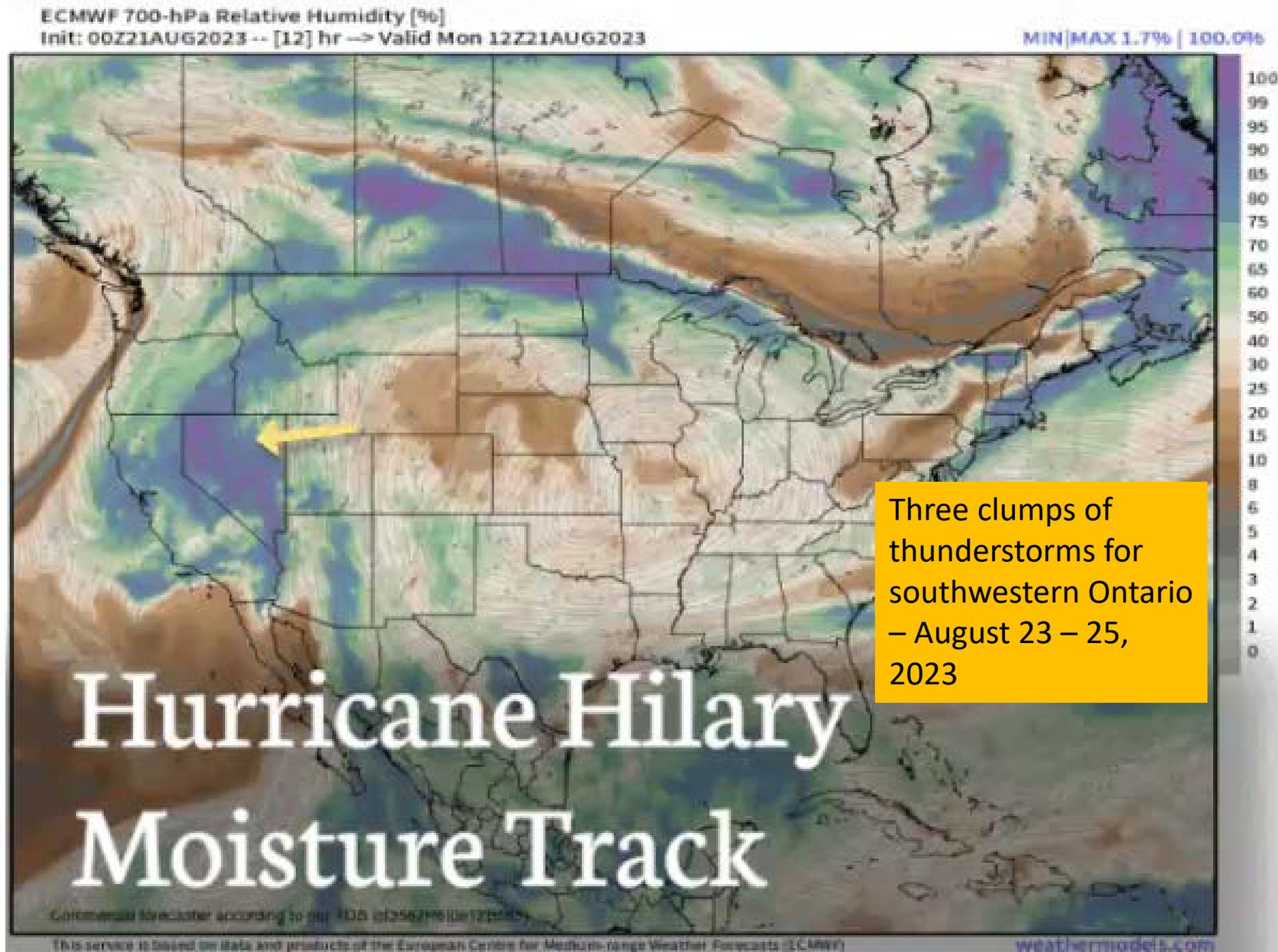


Hurricane Hilary

Hilary, the first tropical storm to hit Southern California in 84 years



Dumped 10 inches of rain in Nevada on August 21, 2023



Significance of this event

Ontario highway buckles after once-in-a-century rainfall, causing crash that killed driver

Extreme weather costs are pushing rural Ontario towns to the financial brink

Flash flooding closes 402 in '1 in 100 year' rainfall west of Strathroy

IDF table for Alvinston

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr \varnothing	11.2	13.8	15.5	19.2	23.6	29.1	40.5	49.9	61.4
5-yr \varnothing	14.8	18.2	20.6	25.3	31.2	38.4	53.5	65.9	81.2
10-yr \varnothing	17.1	21.1	23.9	29.4	36.2	44.6	62.1	76.5	94.2
25-yr \varnothing	20.1	24.7	27.9	34.4	42.4	52.2	72.7	89.6	110.4
50-yr \varnothing	22.3	27.5	31.0	38.2	47.1	58.0	80.8	99.5	122.6
100-yr \varnothing	24.5	30.1	34.1	42.0	51.7	63.7	88.7	109.2	134.6

> 200 - yr?

124 mm in 6 hours

SCRCA Flood monitoring and messaging

August 23, 2023, 4 pm



- Severe thunderstorm watch
- Local rainfall near 50mm
- Heavy rain to continue

August 24, 2023, 9 am



- Watershed rainfall between 50 and 100 mm
- Heavy rain to continue
- Water levels rise sharply
- Municipalities contacted about road closures

August 25, 2023



- Rainfall totals between 60 and 150 mm
- Levels continue to rise
- Localized flooding
- Multiple road closures

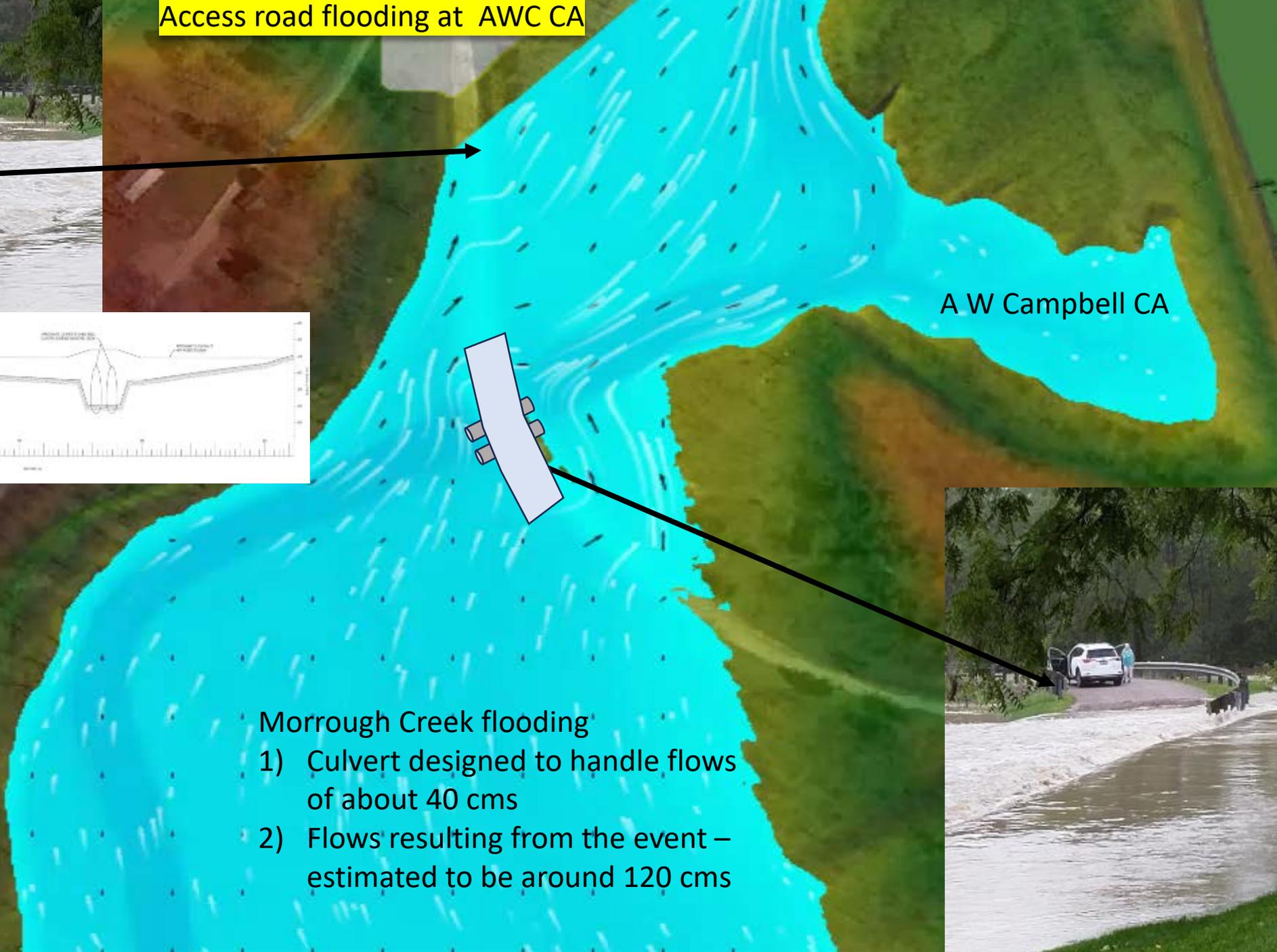
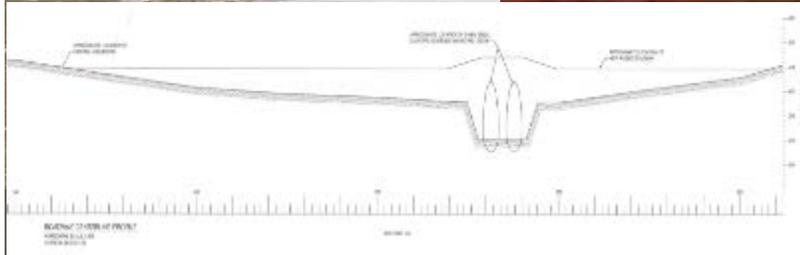
August 26, 2023



- Levels in Wallaceburg stabilize
- Multiple road closures in Wallaceburg

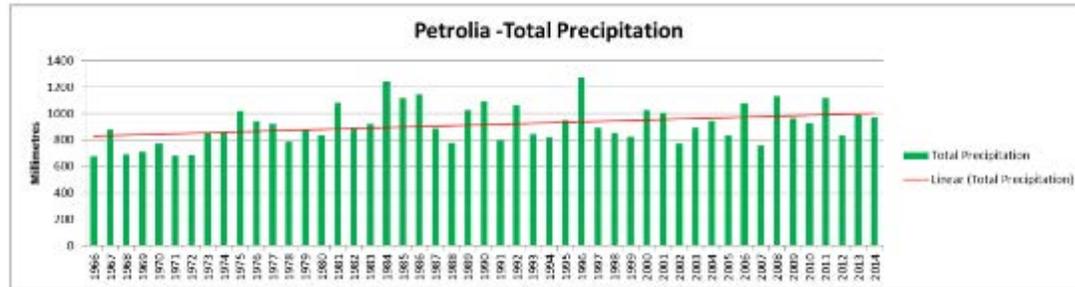
- Warwick Township declared a state of emergency
- A.W. Campbell and Warwick Conservation Area had to be closed due to roads being inundated
- 22 road closures across the SCRCA watershed

Access road flooding at AWC CA



- Morrrough Creek flooding
- 1) Culvert designed to handle flows of about 40 cms
- 2) Flows resulting from the event – estimated to be around 120 cms

Climate change study - 2015



Station	Total Precipitation for Period		Percentage of Change
	1966 - 1975	2005 - 2014	
Petrolia	781	961	23%
Strathroy	949	1033	9%
Wallaceburg	844	946	12%
Sarnia	839	789	-6%

Highlights

- Increase in intensity of rainfall
- Increase in total rainfall amounts
- Increased erosion along rivers
- Localized rainfall events

Building resilience in the program

- 1) Adaptation of flood forecasting and flood management methods
- 2) Establishment of new and accurate data networks to improve predictive capabilities
- 3) Monitor and analyze events to enable further understanding of the changes and impact on the watershed including changing seasonal cycles

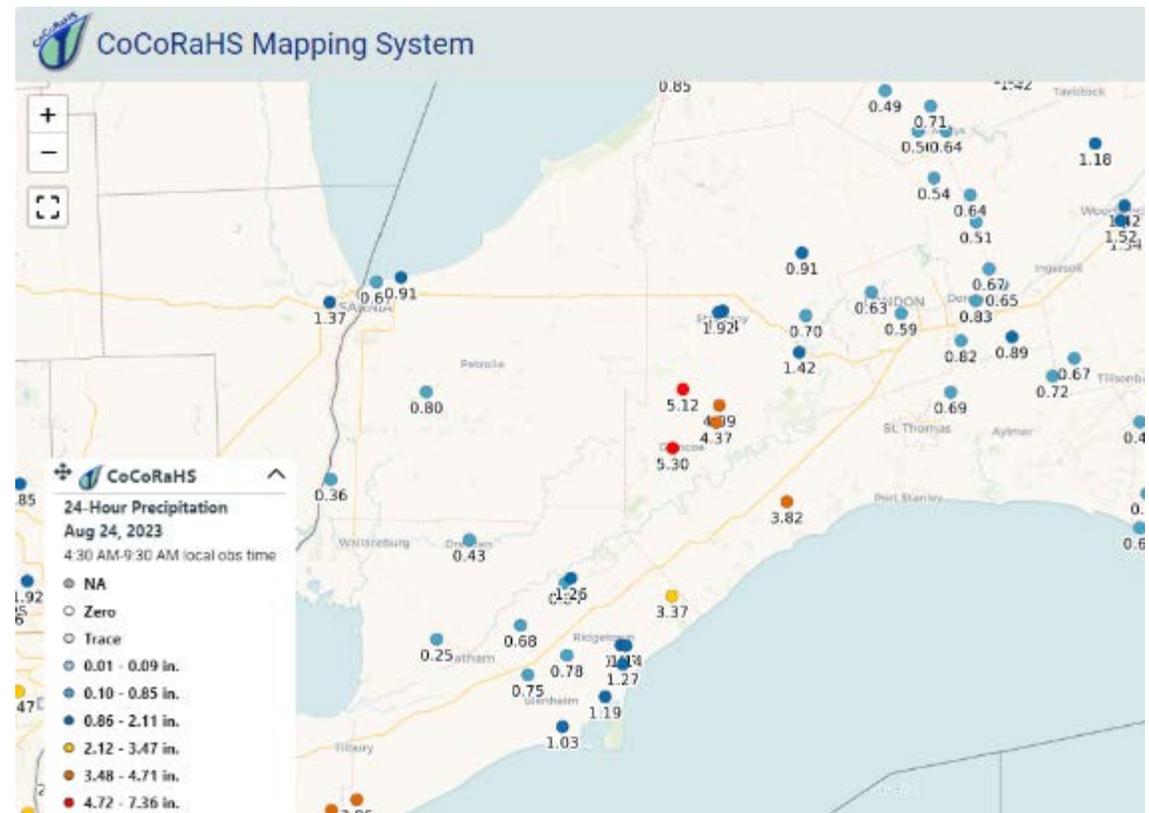
Improvements to gauging network

- Exploring additional precipitation gauge locations
 - Tuppersville gauge – Existing Gauge

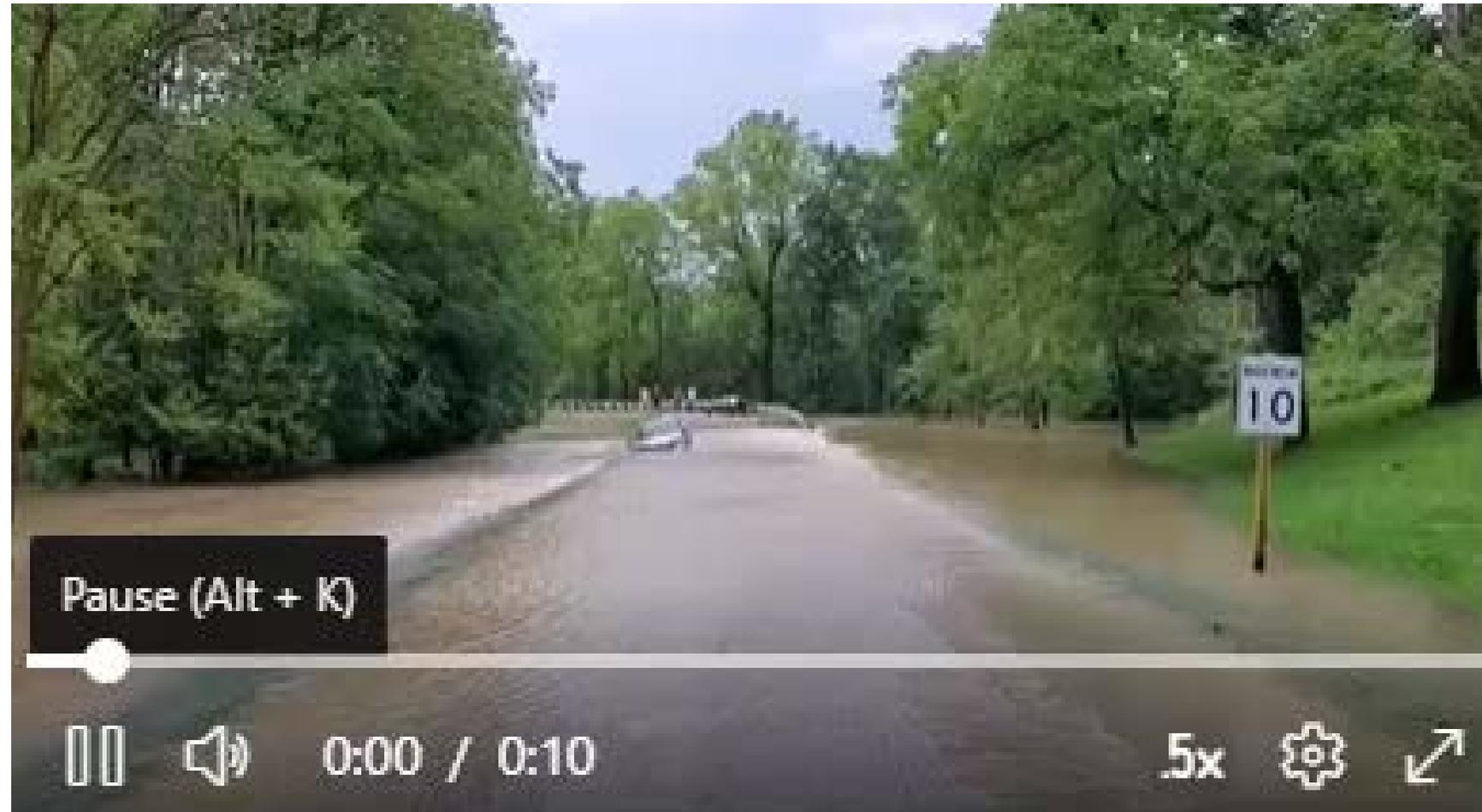


- Otter creek – New stream gauge

- Utilize existing tools like CoCoRaHS to improve precipitation network



Thank you



August 23, 2023 – Flood event