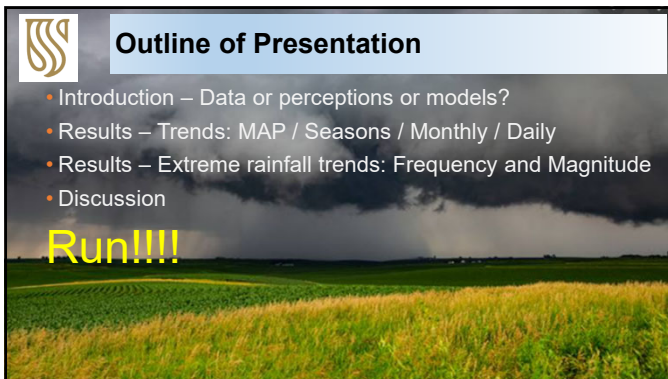




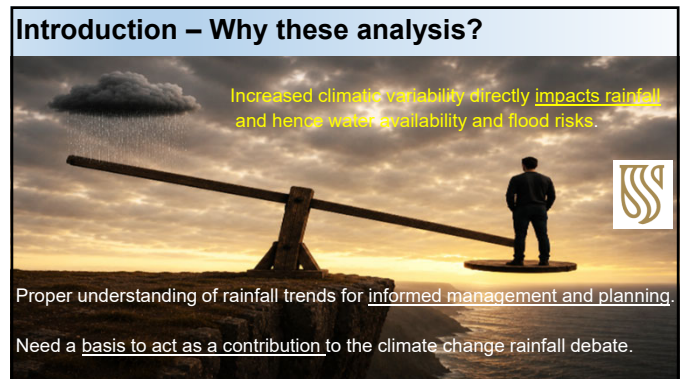
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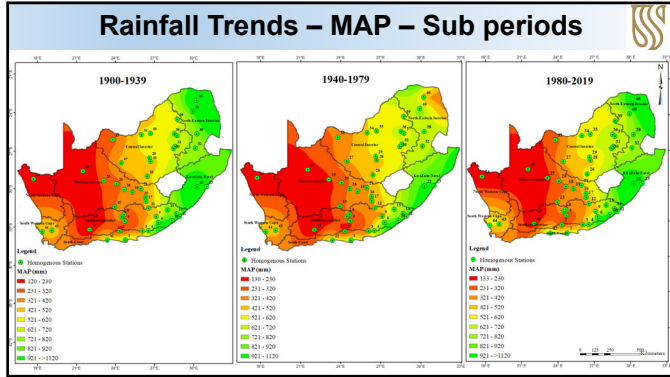


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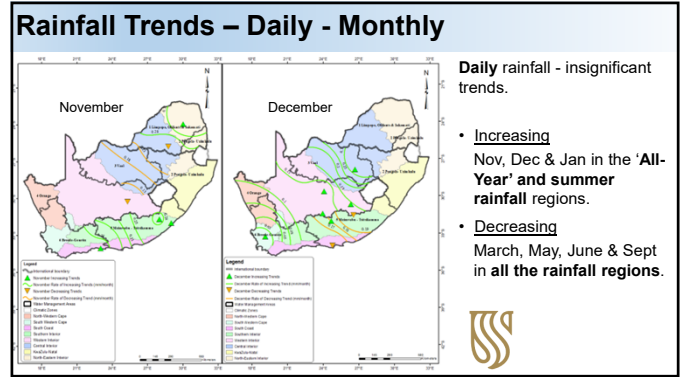


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### Rainfall Trends – Sub periods – Summary

Seasons	Periods	Climatic Zones Trends (mm/season)							
		North-Western Cape	South Western Cape	South Coast	Southern Interior	Western Interior	Central Interior	Kwa/Zulu-Natal	North Eastern Interior
Summer	1900-1939			-2.34, 1.17	-1.63, 4	2.92			
	1940-1979				0.99, 2.05	2.77, 4.33	3.19, 3.73		7.0
	1980-2019		1.03	-1.51, 8.3	3.3	1.65	-4.79, 3.24	6.7	8.0
Autumn	1900-1939	0.46	1.33			0.64	1.6	2.99	
	1940-1979	1.52	0.97	1.32		1.8	2.43		
	1980-2019					-1.39, 1.5	3.95, 2.13		
Winter	1900-1939			0.46, 1.04	1.42		0.63, 0.18		0.37
	1940-1979		1.95	1.14, 2.16	0.82, 1.3	0.34	0.24		1.67
	1980-2019		2.8			0.52, 1.59	0.22, 0.69		0.54
Spring	1900-1939	0.63	0.31	1.17	-0.51, 3.89	0.84, 1.62			3.37
	1940-1979	0.61	1.04		0.51, 1.1	0.57	3.03		3.20
	1980-2019	1.02	1.02	2.39	0.46, 2.48	0.62, 2.17	0.80, 2.3	2.34	0.26, 2.39
Annual	1900-1939	1.02	1.02	-3.32, 3.75	-3.13, 2.7	6.17	6.45	16.6	11.4
	1940-1979	2.23	4.6	4.32, 6.79	9.17	3.89, 6.38	5.78, 6.60		11.13
	1980-2019					-0.40, 3.47	3.74	0.37, 0.64	

Legend: + Increasing trends, - Decreasing trends, ~+/- Fluctuating trends, No trends

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### Rainfall Trends – Long term – Summary

Seasons	Period (1900-2019)	Climatic Zones Trends (mm/season)							
		North-Western Cape	South Western Cape	South Coast	Southern Interior	Western Interior	Central Interior	Kwa/Zulu-Natal	North Eastern Interior
Summer		0.02		0.2	-0.29, 0.4	0.3-0.5	0.45-0.60	-	0.6
Autumn				0.15	0.54, 0.54	0.27	0.36	0.39	0.56
Winter			0.39		0.24	0.03	0.03		
Spring				0.69		0.12	0.6		
Annual			0.62	-1.02, 0.89	0.41	-0.52, 0.77	0.91-1.08		

Legend: + Increasing trends, - Decreasing trends, ~+/- Fluctuating trends, No trends

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### Objectives – Extreme Rainfall



- What are the trends in the **magnitude** of extreme rainfall depths (MERD)?
- What are the trends in the **frequency** of extreme rainfall depths (FERD)?

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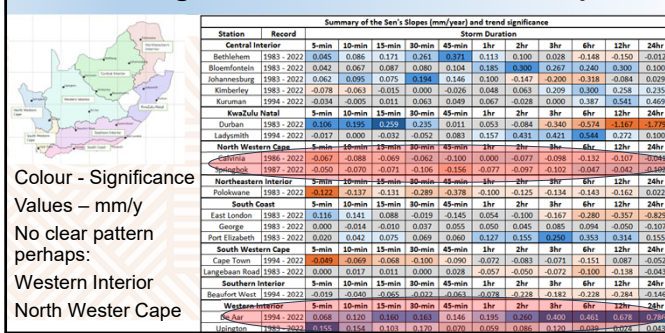
### Results – MERD and FERD

Presented by colour-coding the trends (mm/year – MERD, exceedances /year – FERD) according to the significance levels obtained

Colour Coding	Increase					Insignificant	Decrease				
Significance Level	1%	5%	10%	25%	50%		50%	25%	10%	5%	1%
Meaning	Very Strong	Strong	Moderate	Weak	Very Weak		Very Weak	Weak	Moderate	Strong	Very Strong

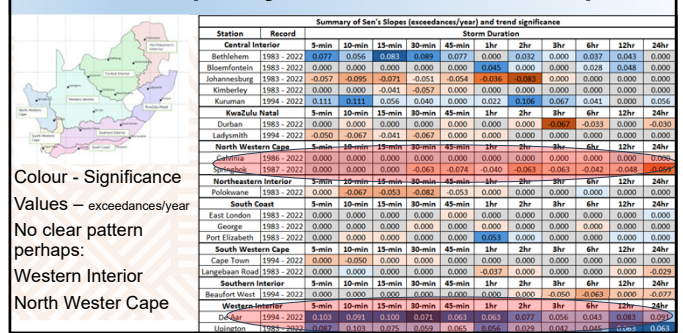
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### Results - Magnitude of Extreme Rainfall Depth



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### Results - Frequency of Extreme Rainfall Depth



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## Discussion

Over the past 120 years, only very small (<1 mm/year) changes in **MAP** rainfall are observed.

For Extreme rainfall over the past 30 years:

- On a **regional basis**, e.g. Western Interior consistent increasing trends were observed
  - Trends of **MERD** varied between 0.024 – 0.786 mm/year
  - Trends of **FERD** indicate one additional exceedance in between 10 - 20 years
- Most of these trends can hardly be considered as practically meaningful
- More frequent increases than decreases during both indices
- The increases represent 8% and 10% of the observations during MERD and FERD, respectively

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## What Now?

Use projected climate change rainfall data guided by considerations based on observed data.

Each flood is **NOT** evidence of climate change!!!!

Planning / Maintenance!!!

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THANK YOU!!!



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