

Climate Variability and Crop Production: Evidence from Semi arid Districts of Zimbabwe

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Presentation layout

- Introduction
- Background to project
- Multidisciplinary approach and institutional mandates
- Study area
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- acknowledgements

Introduction

- Linkages between weather, climate variability and agriculture can be expressed in terms of crop and or livestock production
- Systematic data collection on weather parameters and crop statistics
- Community perceptions rarely considered in analysis and recommendations
- Perceptions contribute to evidence based discussions as impacts of climate change are contextual and area-specific
- Knowledge is vital for research and extension
- A comparative study of three districts was undertaken

Background

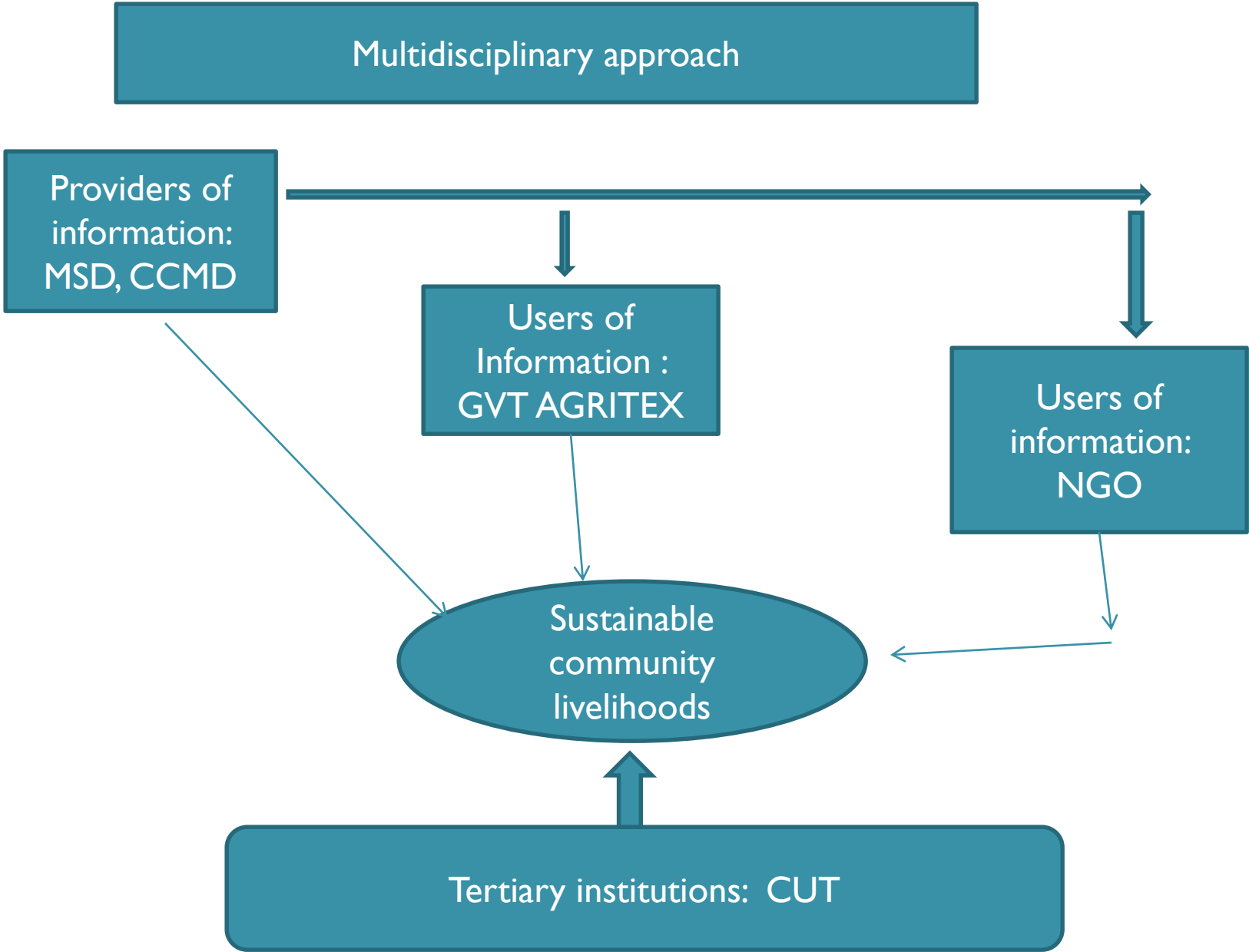
Project title : Strengthening weather and climate change information systems in Zimbabwe

Districts: Gutu, Zvishavane, Chirumanzu

Extension methods of dissemination

- SMS platform
- Farmer training
- Participatory workshops

Multidisciplinary approach: Tripartite Partnership:



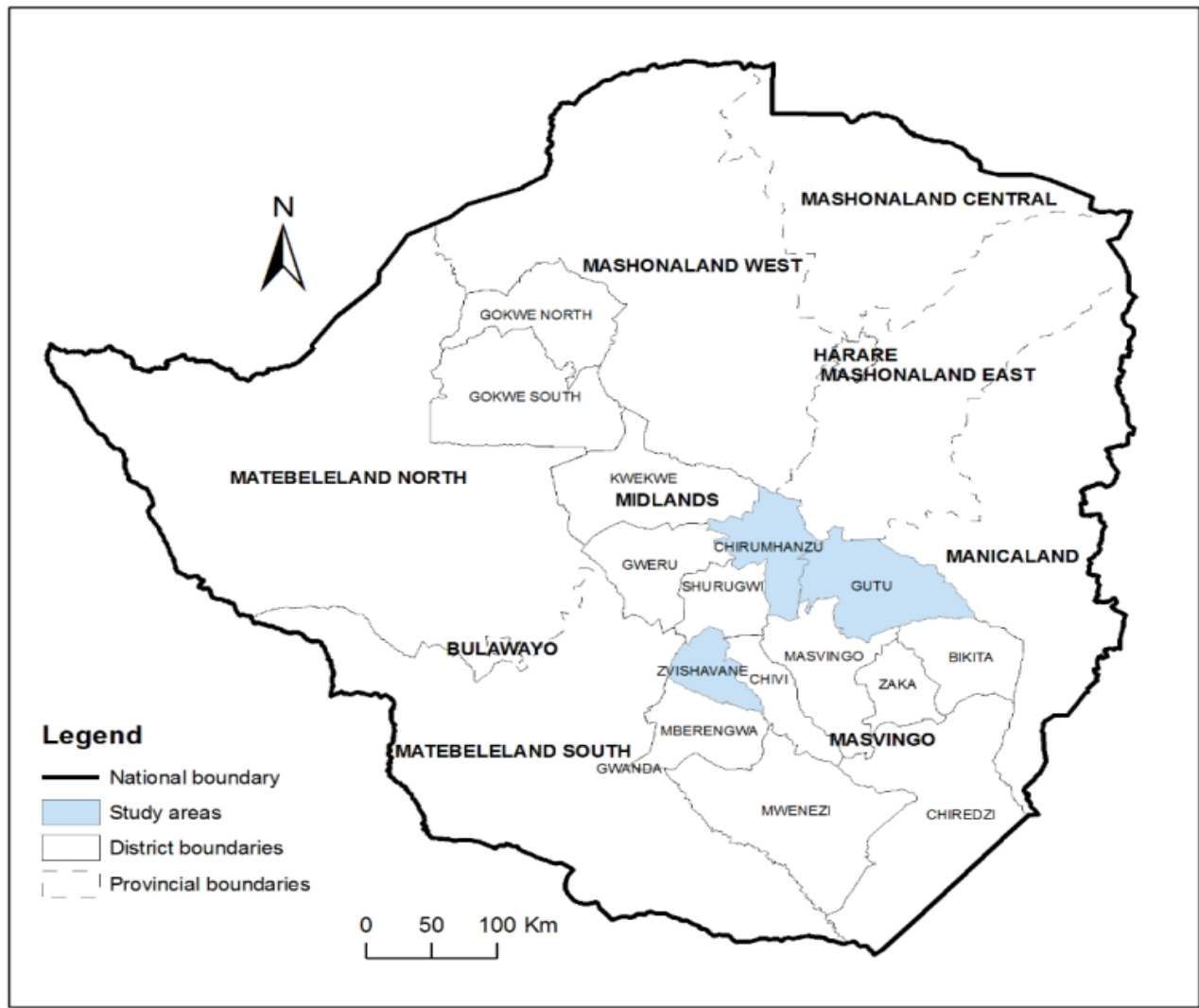
Mandate of each institutions

- MSD, CCMD: providers of weather information. through SMS platform. Focus on long term climate dynamics
- GVT- AGRITEX: Training; Interpretation of climate data and dissemination of climate information; provision of advisory services
- NGO- Oxfam: Provision of operational costs, monitoring and evaluation
- CUT: Research and evaluation of extension methods and impacts on livelihoods

Study area

Gutu Chirumanzu and Zvishavane districts, of Masvingo province and of Midlands province

- Livelihoods zone: Masvingo, Manicaland, Middleveld communal livelihoods zone. The zone is characterised by cereal production supplemented by cash cropping (of groundnuts, round nuts and cotton); animal husbandry and remittances from migratory labour (ZimVac, 2010).
- Mean annual rainfall fluctuates around 650mm

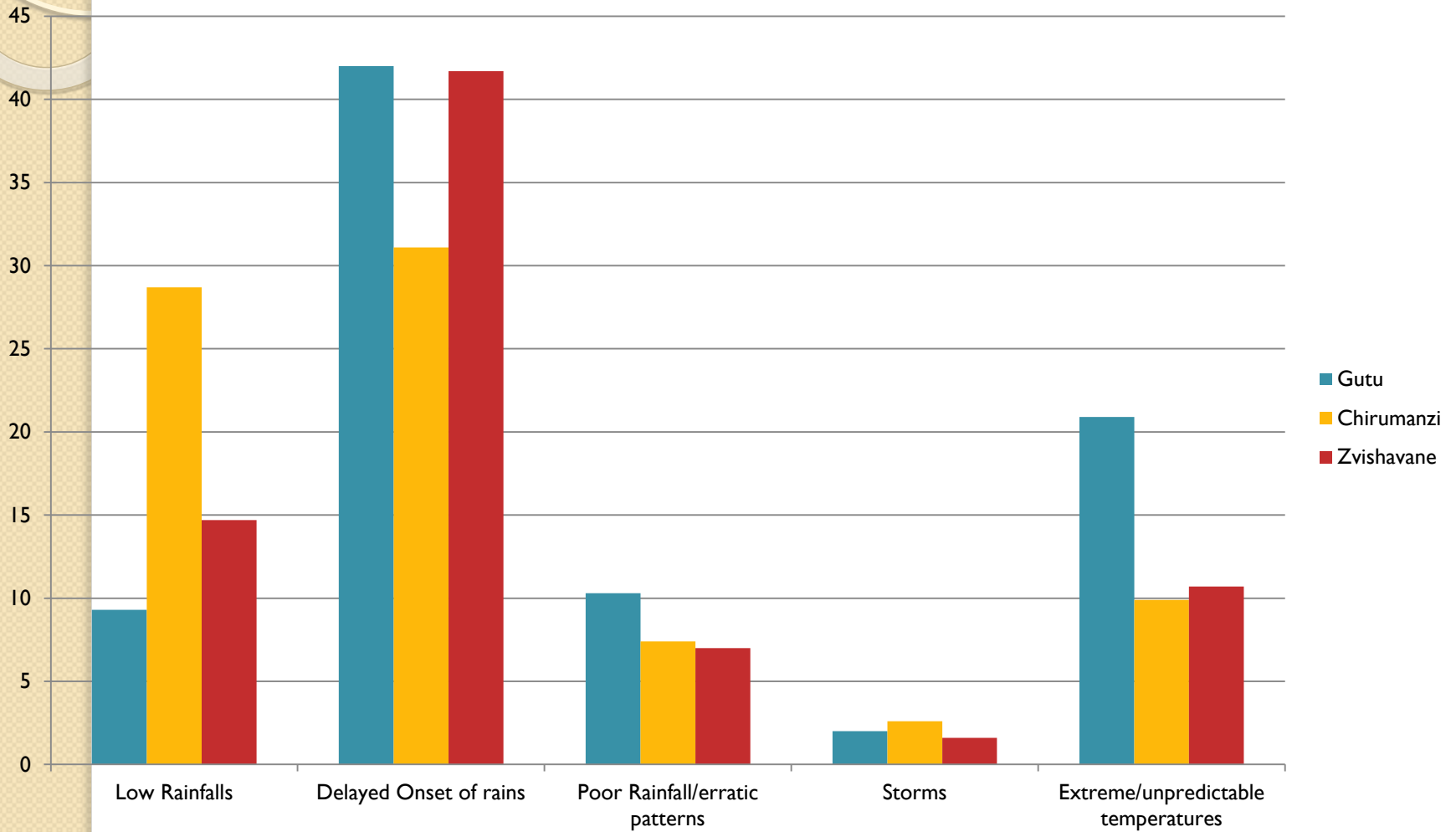


Findings and discussions

- Observed changes in weather parameters-community perceptions
- Memorable good years as perceived by communities
- Production statistics for the memorable years
- Meteorological rainfall data for Zvishavane
- Impacts on livelihoods
- Voices of farmers from Case studies

What is the problem ?

Perceptions regarding changes in climate over time in the study areas



Statistical responses on Perception of changes in weather and climate in Zvishavane District

Changes in weather and climate	Frequency	Percent
Delayed Onset of Rainfall	125	41.7
Non-response	74	24.7
Low Rainfalls	44	14.7
High Temperatures	28	9.3
Unpredictable/ Poor Rainfall Patterns/ Erratic Rains	12	4.0
Shift/ Fluctuation of Rain Season	9	3.0
regular winds	3	1.0
cold	2	0.7
Extreme Hot and Cold Conditions	2	0.7
Heavy Rains/ Thunderstorms	1	0.3
Total	300	100.0

A summary of trends for the last two to three decades (1983-2014)

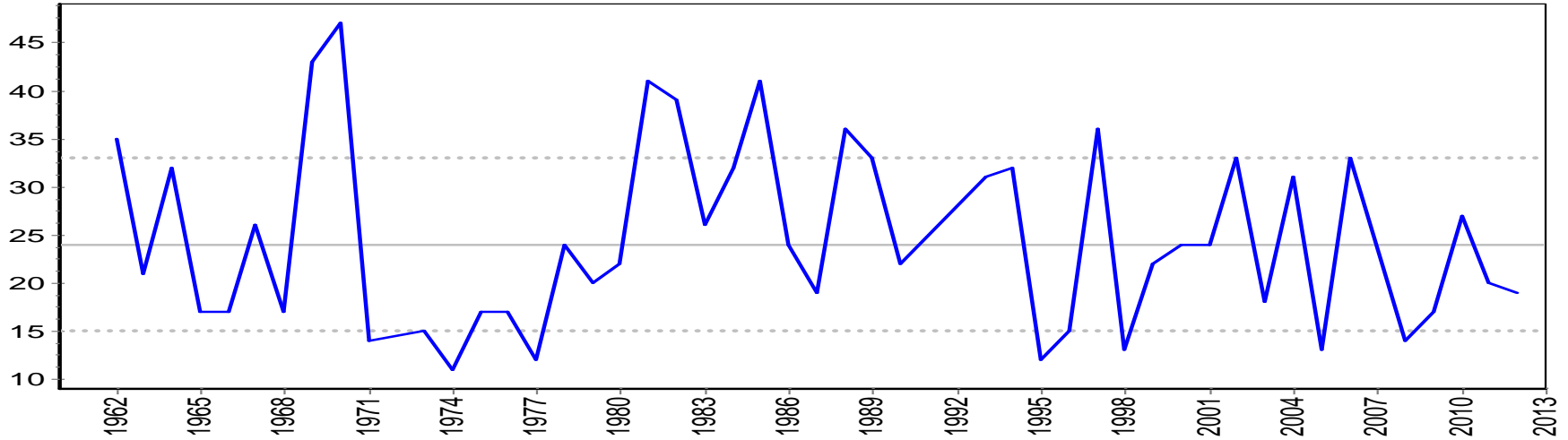
Major Events/Occurrences	When did they occur/start to occur
Late onset of rains (From October to November/December)	Around the year 2000
Cold spells during summer/hot season	2013/2014
Strong violent storms which are sometimes dry	2-3 years ago
Famine (drought triggered by low rainfall)	2008, 1983, 1998, 1992
Cessation of winter rainfall which used to fall between June and July	In the 1990s (before 1997)
Disappearance of tradition IKS such as Hallow and mipanda	3 years ago.
Disappearance of August/September rains called Gukurahundi/Bvumiramitondo	1997
Floods and tropical cyclone	Around 2001
Disappearance of March/April rains	3 - 5 years ago
Heat waves	2-3 years ago
Cold spells after onset of rains	3-5 years ago

Erratic rainfall , Decline in annual rainfall amounts

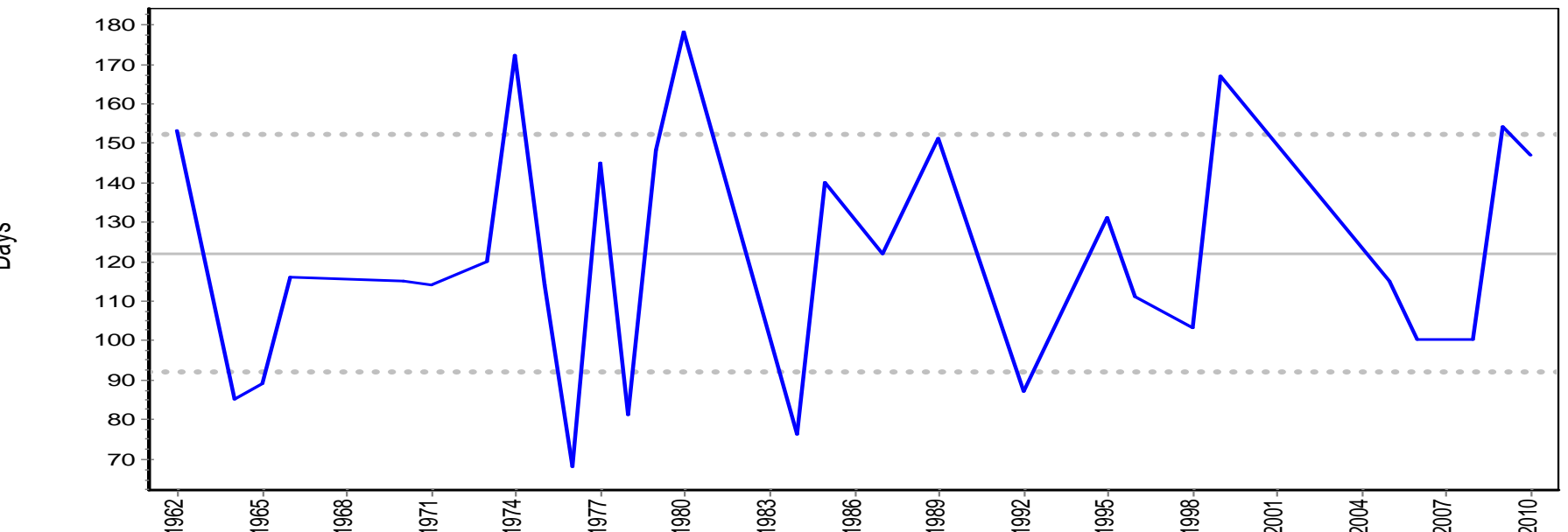


SHRINKING AND FLUCTUATIONS OF ONSETS, CESSATION & TOTALS- DRY-SPELLS AND SEASON LENGTH

Longest Dry Spell for Zvishavane

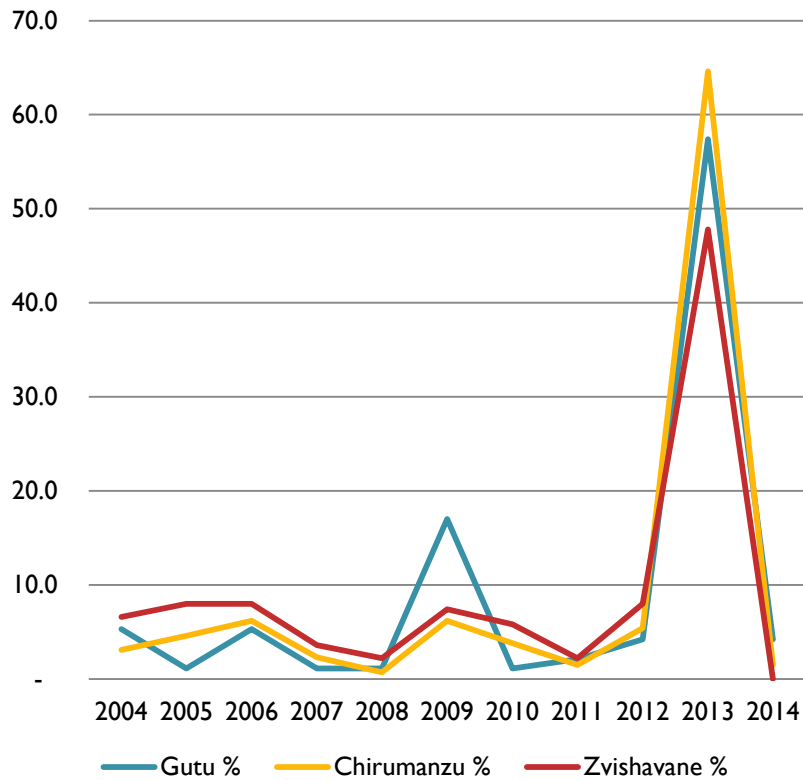


Season length for Zvishavane

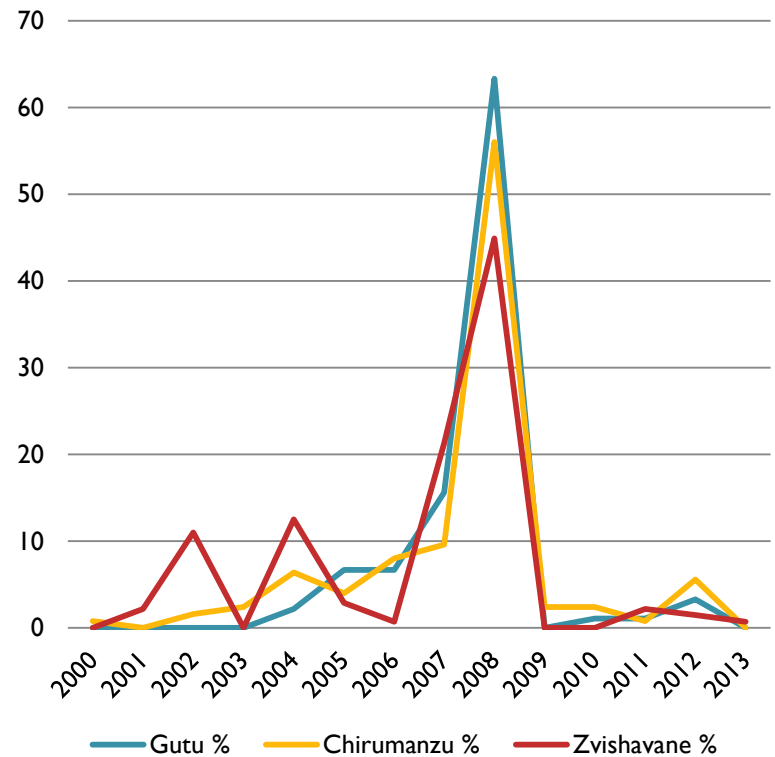


Memorable good and bad years

% responses for good years of harvest

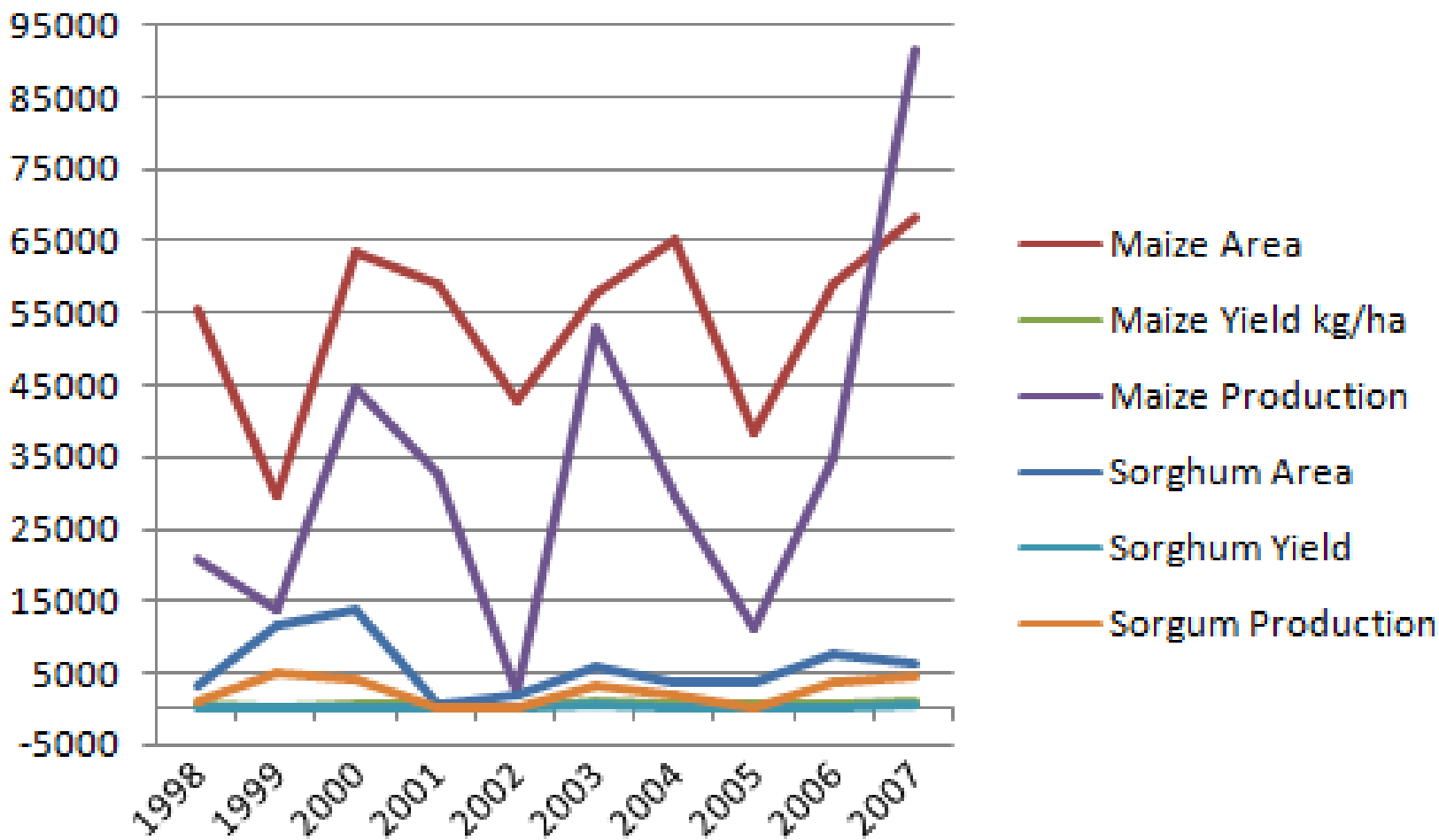


% Responses of a poor year of harvest



Season- Good	Province	District	Area (ha)	Production	Yield t/ha
2008-2009	Midlands		301 765	202 183	0.67
	Masvingo		207 459	141 072	0.68
2012-2013	Midlands		276 087	101 242	0.42
	Masvingo		178 362	50 246	0.33
2013-2014	Midlands	Chirumanzu	25547	23505	0.9
	Midlands	Zvishavane	24422	17939	0.7
	Midlands		351829	238200	0.67
	Masvingo	Gutu	40698	28034	0.68
	Masvingo		216062	118264	0.55

Season - Poor	Province	District	Area (ha)	Production	Yield t/ha
2007-2008	Midlands		294 297	29 430	0.1
	Masvingo		229 717	34 458	0.15



Trends in crop production for Gutu district- source AGRITEX

Conclusions: Crop production across the provinces

- Farmer's perceptions on quality of season are relative and are based mostly on production for food security as in 2008-2009, total amount of rainfall received as in 2012-2013 and occurrences of disasters such as floods in 2013-2014 and inconsistent rainfall pattern as in 2007-2008.
- The total amount of rainfall is critical even if yields are low and rains come late communities tend to benefit in terms of water for livestock and gardening projects.

Conclusion-

- There were no major differences in perceptions of intra seasonal variations across the three districts.
- Case studies contributed to the evidence on relationship between weather, climate and crop production
- There is a relationship between rainfall trends and crop production in the area under study
- Need to continue increasing the farmers' capacity to interpret and use Weather and Climate info for adaptation

Session discussion

- There is need to consider the most limiting conditions. What can give us good food security in the future. Tonnage is low even
- There are other key pressing issues other than climate change. [True, the purpose is to try see the relation between observed climate trends and farmer perceptions]. This will help us focus and make policy recommendations which are climate related and other
- Outright crop failure in one year has an effect on the next cropping season. So is the extreme events, food availability which may be
- The age-related perceptions (20-30 years) : gender dimensions and their perceptions on why Climate is changing.
- How they have responded.