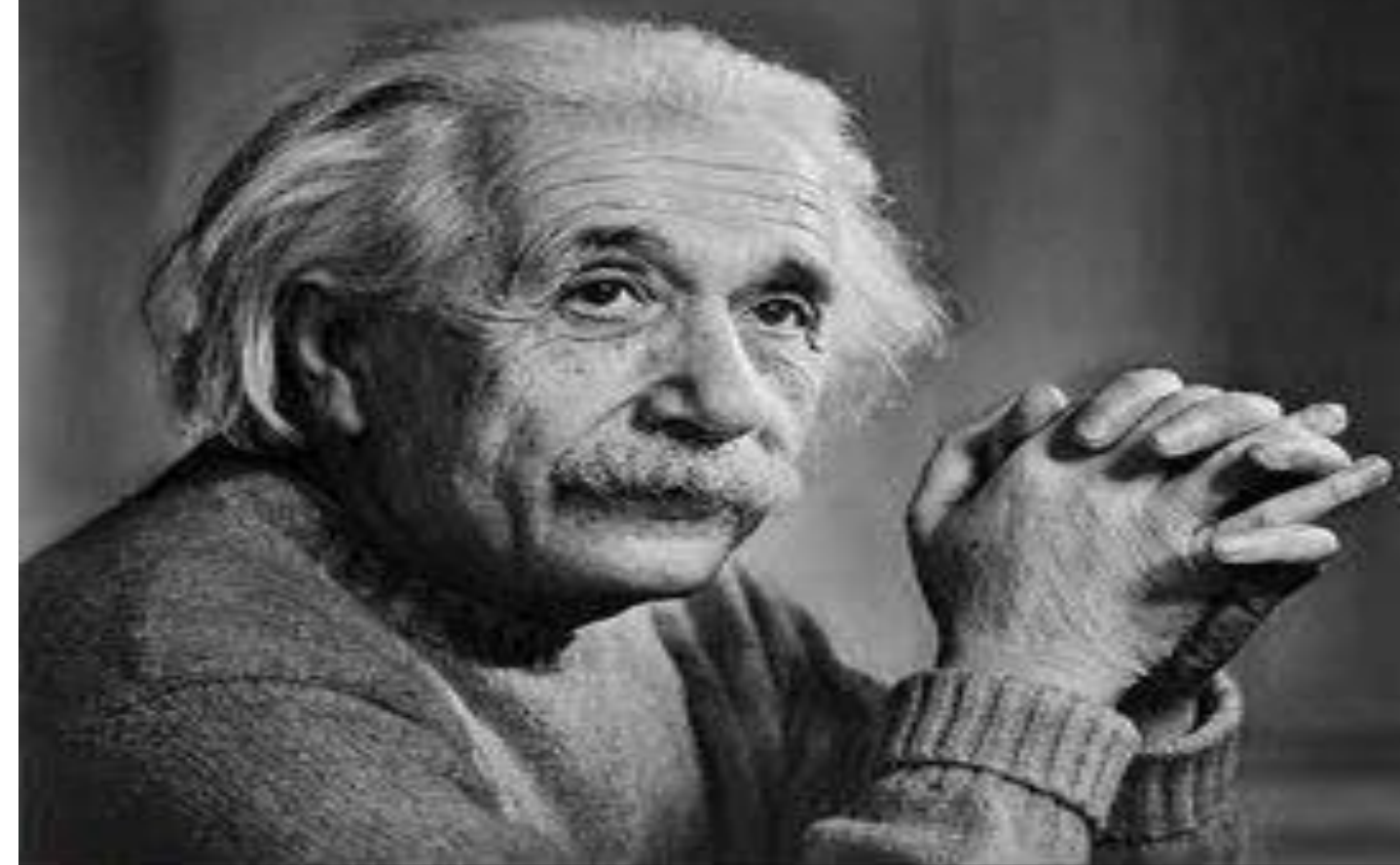


If you can't explain it **simply**, you don't understand it well enough.

– Albert Einstein



# Climate Resilience of South African Maize Value Chain



## MINI SYMPOSIUM

*Centurian Country Club, Wednesday, 10 August 2016*

### THE TRIPPLE BOTTOM LINE



PEOPLE



PLANET



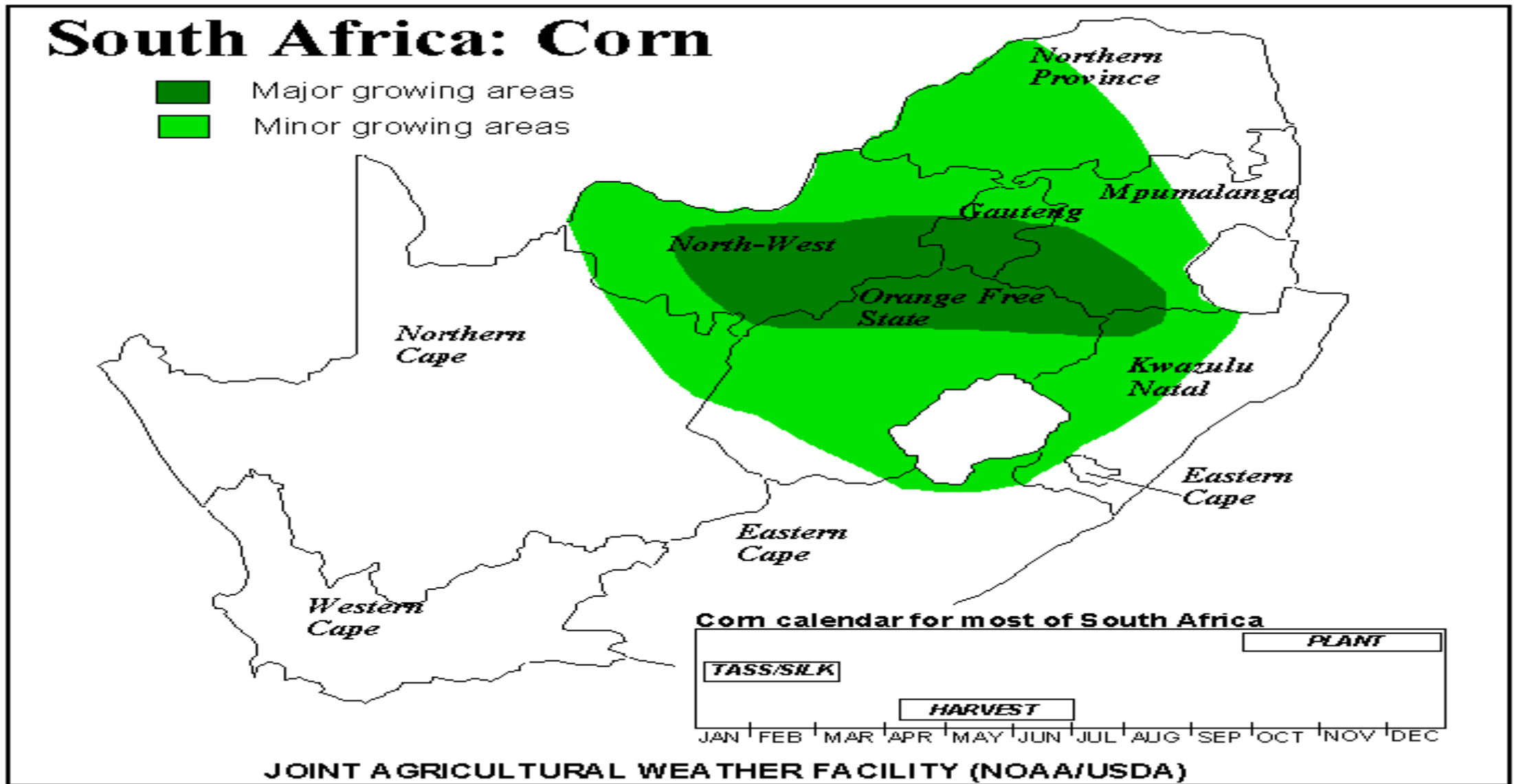
PROFIT



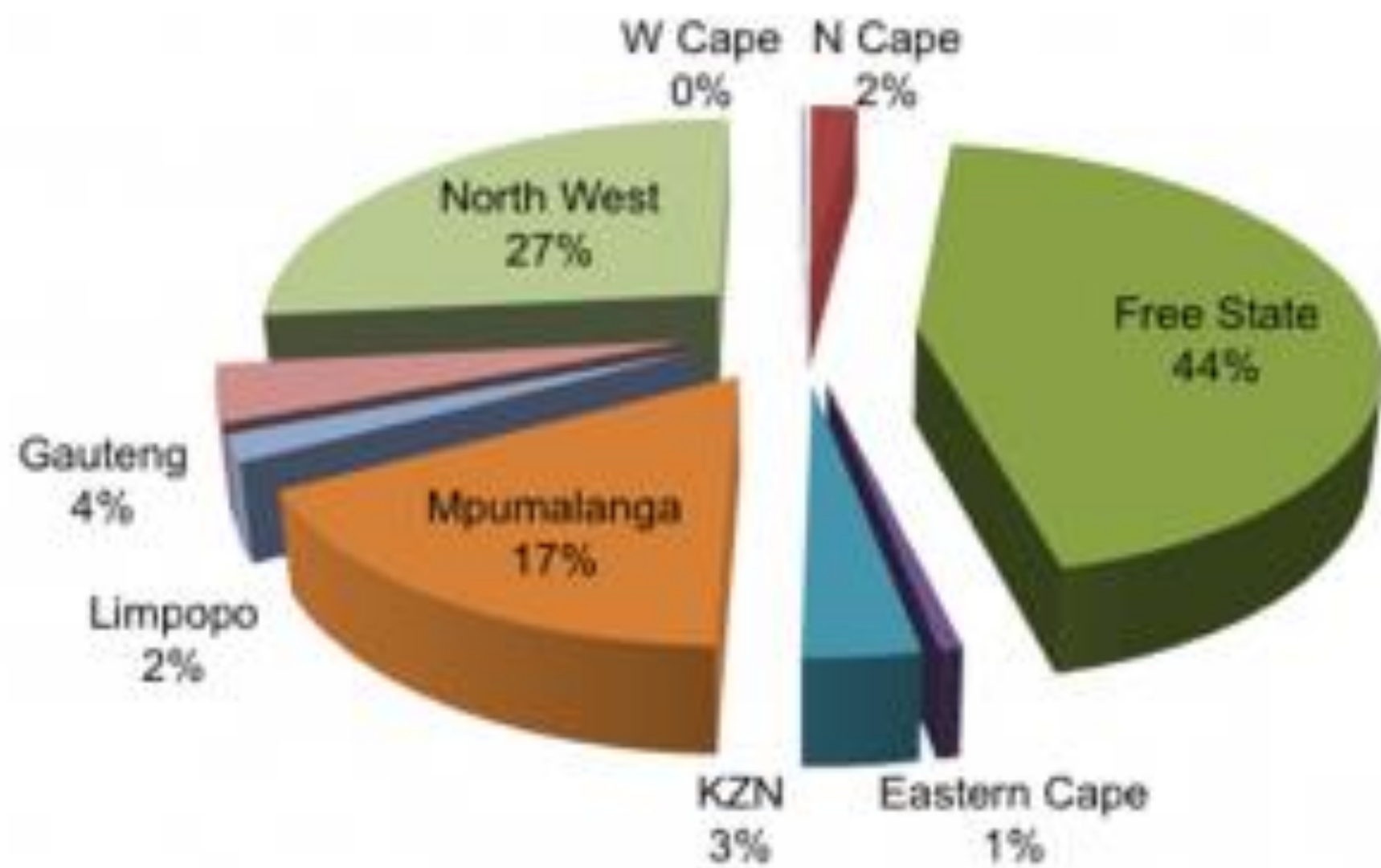
**Steve AROWOLO**  
**Peter JOHNSTON**  
**Reshma kASSANJEE**



# South Africa's Maize Producing Regions



## Maize cultivation in South Africa, 2012/13



Source: Crop estimates committee



# *Field Study Phases*

➤ ***Phase 1: Climate Vulnerability Assessment of the Maize Value chain***

-Literature

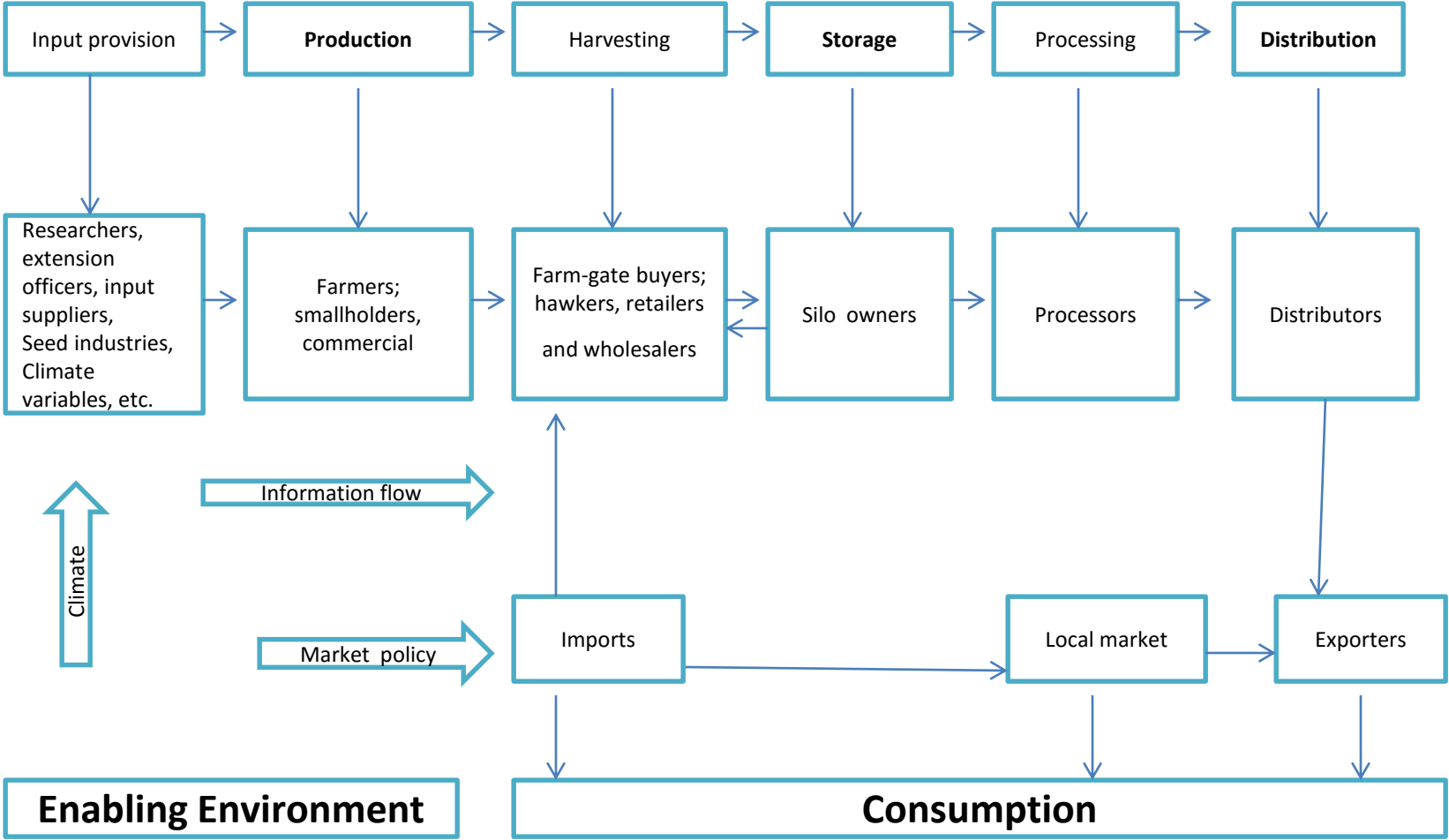
-Questionnaire/site visits

➤ ***Phase 2: Assessing the Climate Resilience Status of the Maize value chain***

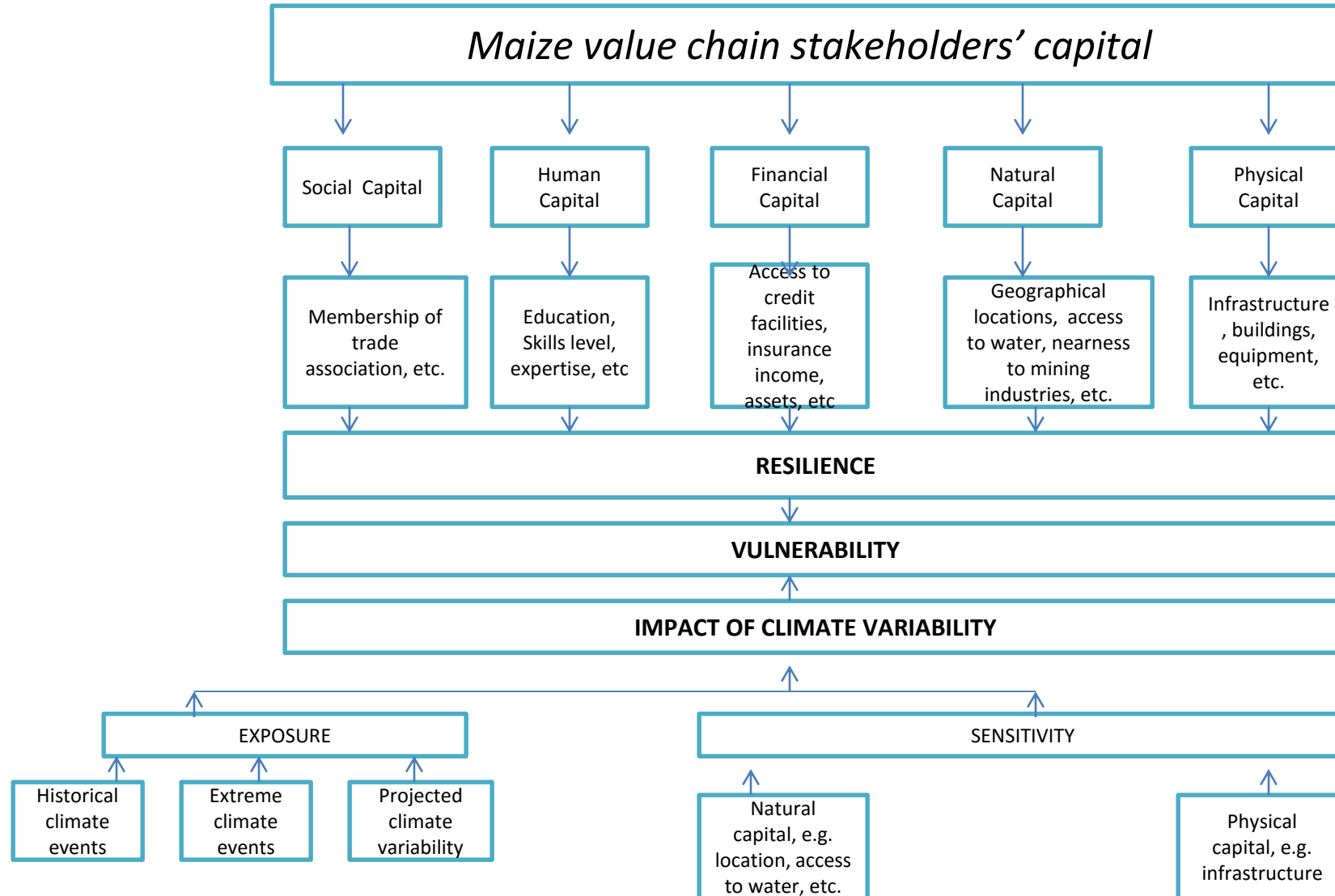
-Historical & Projected climate information (1980 - 2015)

- Stakeholders' Perspective

# Mapping the Core Processes of the South African Maize Value Chain



# Vulnerability of the South African Maize Value Chain to Climate Variability



# Phase 1 – Literature

- **Dekens and Bingi (2014)** – Stress the need for climate resilient agri-value chain
- **Brown (2014)** - the efficiency of the food system of any country or region is determined by its weather, climate and environmental potential.
- **Kandji et al. (2006)** - Climate variability has been adjudged the most important cause of food insecurity in southern Africa.
- **Glantz et al. (1997); Kandji et al, (2006)** - The major impelling cause of this variability is the ENSO occurrence
- **Jury (1997)** - notes that among countries in southern Africa, food stuff constitutes the largest item of trade, and that in South Africa; maize usually contributes significantly to the agricultural GDP.
- **Ingram (2011)** - noted that responding to climate variability and other environmental and socioeconomic stresses would require ‘doing things differently’ and that within the food systems, the activities that require more attention are the techniques of producing, processing, distributing food etc.



# Phase 1 – Methodology for site visits

*Stakeholders were selected and interviewed based on the following criteria:*

- *The extent of participation in the whole maize value chain in South Africa*
- *Institutional arrangement within the South African maize value chain*
- *Support structures within the South African maize industry*

# Phase 1 – Theoretical framework

*The three criteria were premised on the theoretical framework that a generic value chain will comprise of the following:*

- *Enabling environment*
- *Facilitating institutions*
- *Facilitating services/service providers*

# Phase 1 – Focal companies and organization

*Based on the understanding of the above concepts and frameworks for value chain research, the South African maize value chain sector was divided into five categories, for ease of data collection and analysis.*

S/N	Division	Focal Company/organization
1.	Fast Moving Consumer Goods (FMCG) or Consumer Packaged Goods	Pioneers foods; Premier foods; Tiger Brands (these are all heavy users of maize)
2.	Input providers, silo owners, finance and insurance, processing and marketing	Senwes; Afgri and Vkb
3.	Support structure/social capital	AgBiz; SAGIS; GrainSA; AFMA; and SACOTA
4.	Grain research (production to consumption, and trade)	SAGL; ARC; Safex; Academic and research institutions
5.	Existing government agencies in the maize sector.	DAFF and NAMC

# Phase 1- Summary of findings

- Maize value chain is vulnerable to climate variability
- Strong social capital exists within the chain e.g. AgBizGrain, GrainSA, etc.
- Flow of information is strong within the chain e.g. between the maize industry and the government.
- Strong physical capital exists within the chain e.g. silos, processing, marketing and distribution infrastructure.
- Strong financial capital exists within the chain, but financial resources to mitigate risks and shocks are still inadequate e.g. credit facilities and insurance packages.
- Strong human capital exists within the chain, but climate unit or climate information desk is lacking in almost all the focal companies.
- Natural capital is contested – e.g. climate variability, mining and population increase.
- ‘Shifting markets’ – e.g. imports and exports
- There’s a need to develop a climate resilient framework for the chain.











“Without data  
you’re just  
another person  
with an opinion.”

- W. Edwards Deming,  
Data Scientist

# Phase 2: El nino Years

We examine the episodes between 1980 -2015, for both El nino and La nina, and we categorise based on:

## *El nino: intensity and years*

<b>Intensity</b>	<b>Years</b>
<b><i>Weak</i></b>	1994 -1995 2004 -2005 2006 -2007
<b><i>Moderate</i></b>	1986 -1987 1987 – 1988 1991 – 1992 2002 – 2003 2009 - 2010
<b><i>Very Strong</i></b>	1982 – 1983 1997 -1998 2015 -2015

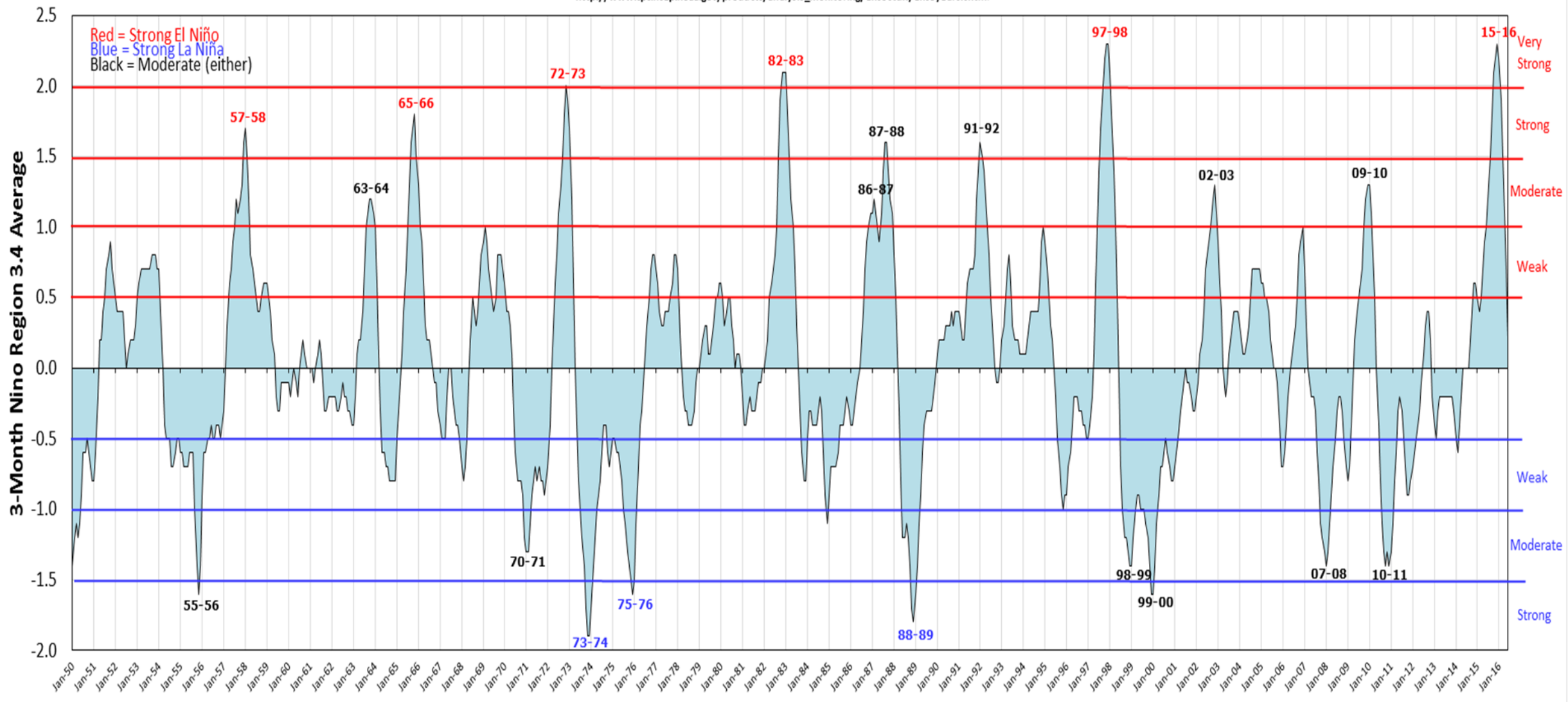
# Phase 2: La nina Years

## *La nina: intensity and years*

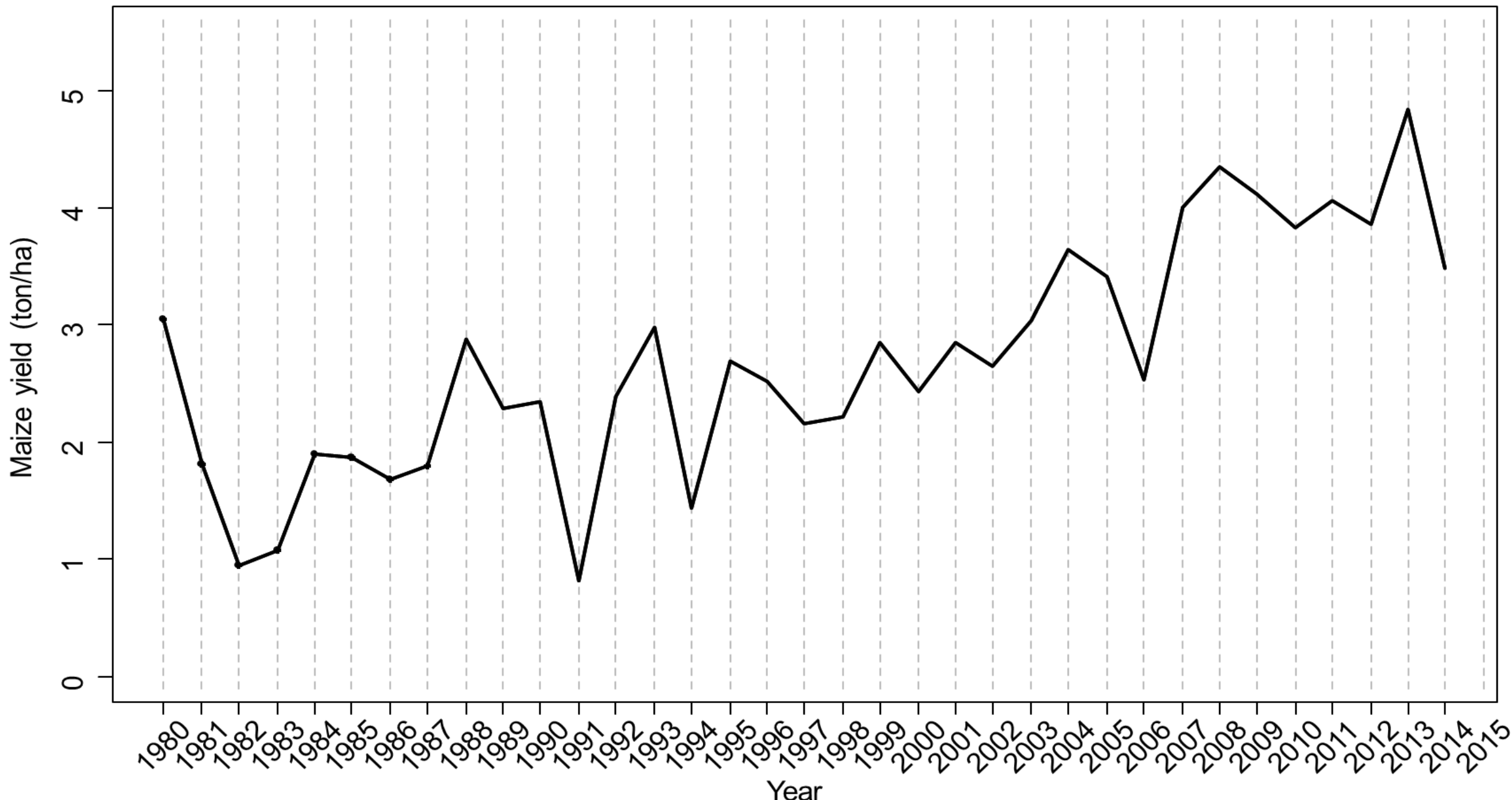
Intensity	Years
<b><i>Weak</i></b>	1983 – 1984 1984 – 1985 1995 – 1996 2000 – 2001 2011 -2012
<b><i>Moderate</i></b>	1998 – 1999 1999 – 2000 2007 – 2008 2010 - 2011
<b><i>Strong</i></b>	1988 - 1989

# Oceanic Niño Index (ONI)

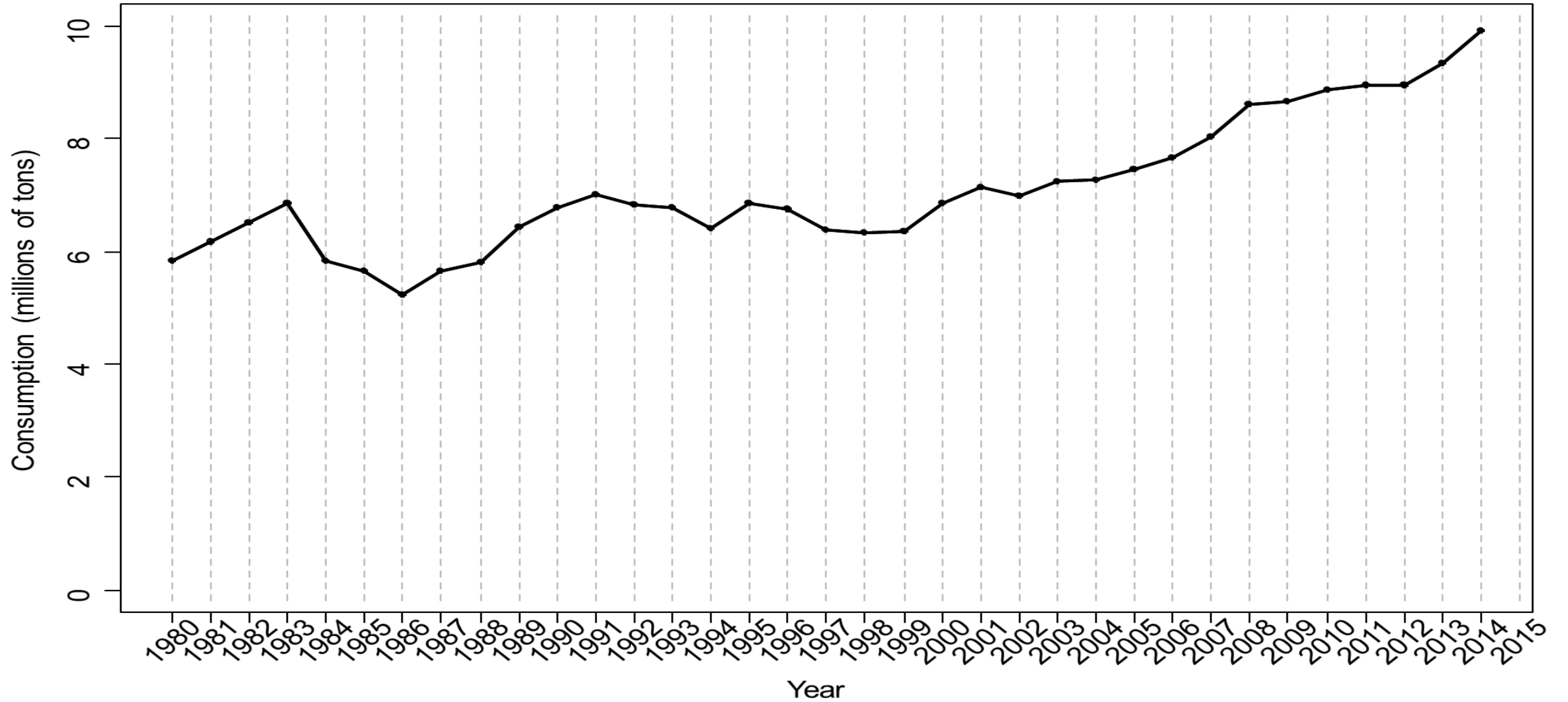
[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/ensostuff/ensoyears.shtml](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml)



MAIZE YIELD (1980 -2015)



# Maize Consumption (1980 - 2015)



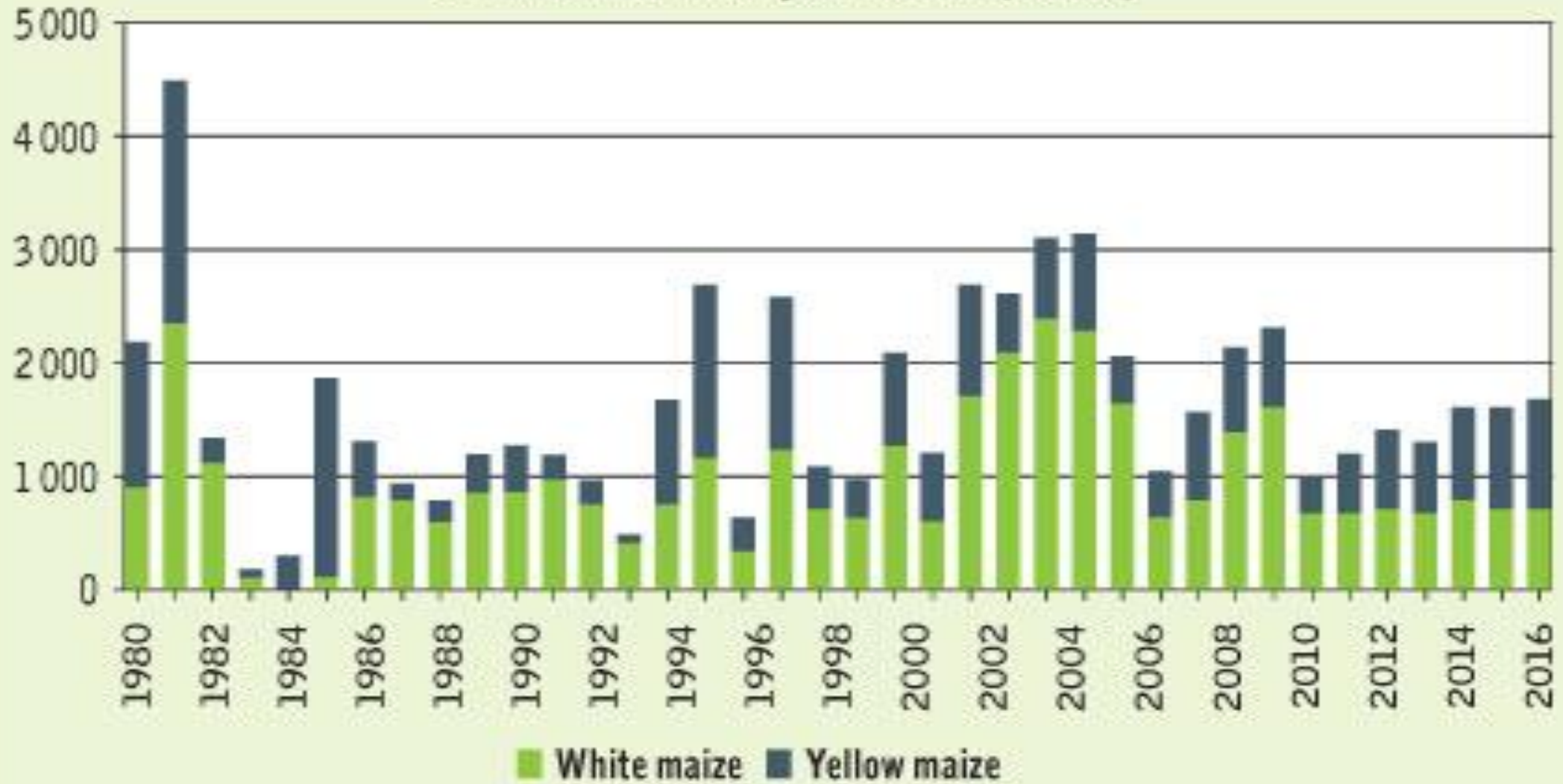


# Global and Domestic Production and Price Trends for Maize (1980 -2015)



Source: Farmers weekly

### SA maize end-of-year stock ('000t)



Source: Farmers weekly

- **Academic Research Questionnaire: Climate resilience of the South African maize value chain**

***10 focal companies needed for research case study***

# APPRECIATIONS



agriculture,  
forestry & fisheries

Department:  
Agriculture, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA

