

ABSTRACT

LAST NAME, FIRST NAME AND MIDDLE NAMES. Dissertation title. (Under the direction of Chair first and last name).

Abstract text ...

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Dissertation title

by
First name and Middle names Last Name

A dissertation submitted to the Graduate Faculty of
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APPROVED BY:

Member 1 name

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Member 4 name

Chair first and last name
Chair of Advisory Committee

BIOGRAPHY

The author was born in a small town ...

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CHAPTER

1

INTRODUCTION

1.1 Definitions

Define common terms used throughout the dissertation...

E.g. African Easterly Waves (AEWs) are waves in the atmosphere over Africa of wavelength ...

1.2 Motivations

Motivations for studying topic

Figure useful to motivations

Figure with trim and clip

1.3 Background

Background literature on topic

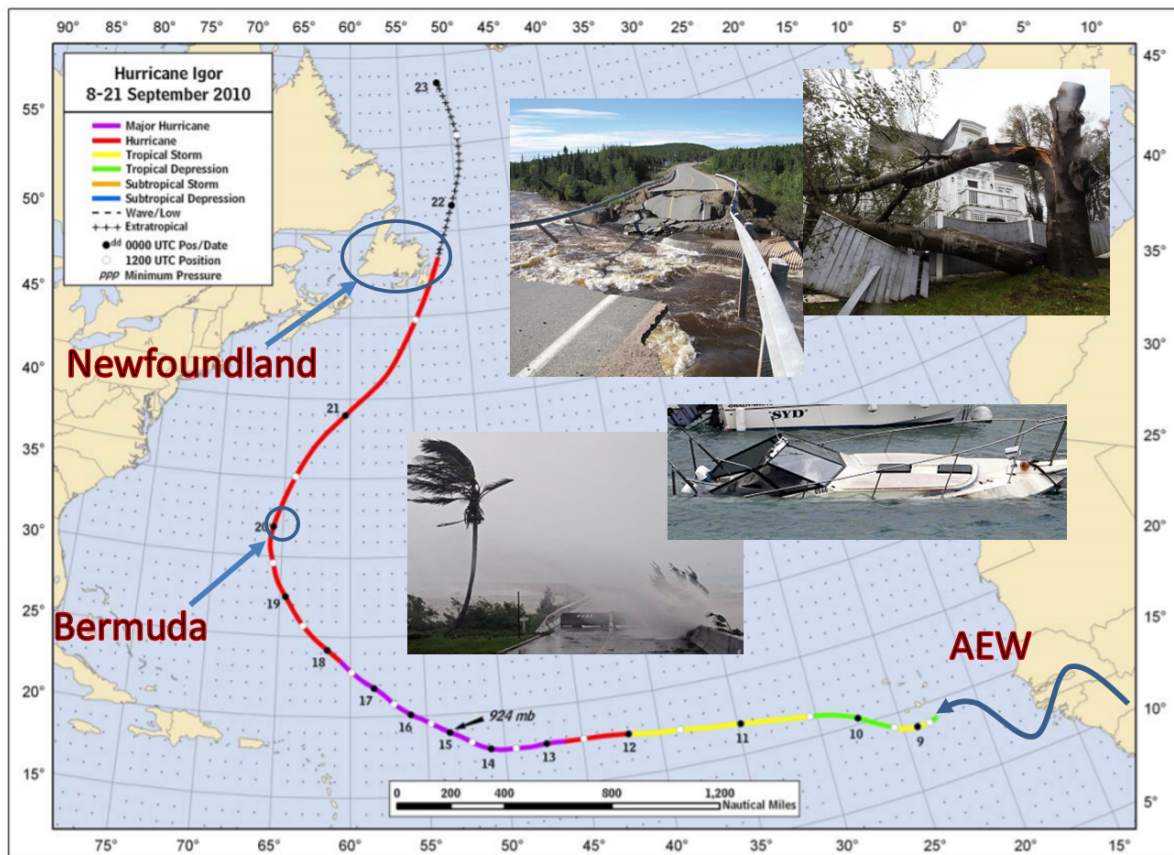


Figure 1.1: Caption...

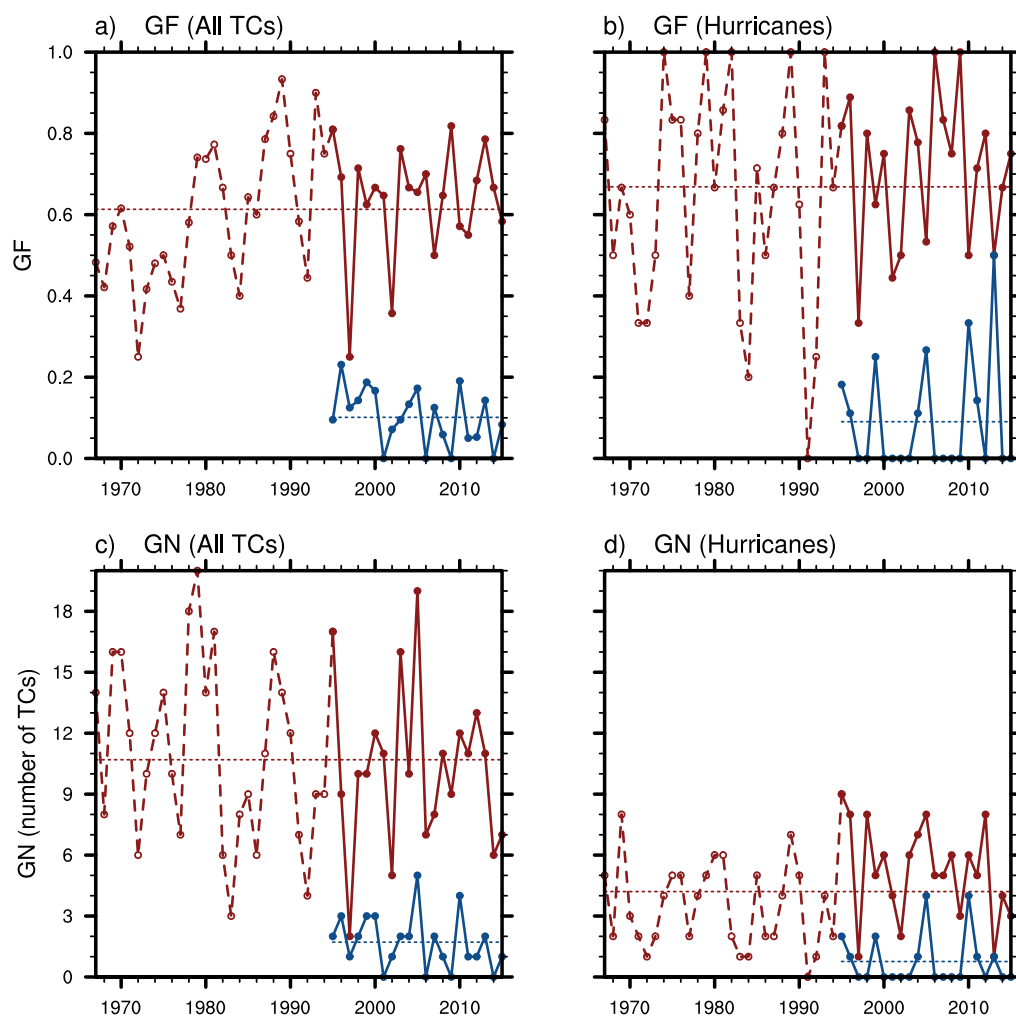


Figure 1.2: Caption...

Possible citation in parentheses (Kiladis et al. 2006)

Possible citation in parentheses with text before or after also in parentheses (e.g. Kiladis et al. 2006, Figure 1)

Citation in text Tomassini et al. (2017)

1.4 Open Questions and Theories

In this section I will present the open questions on the problem I am investigating.

1.4.1 Influence of AEWs on Convection

Background on theories

In summary we will attempt to address the following questions with regard to ...:

1. Question 1?
2. Question 2?
3. Question 3?

CHAPTER

2

METHODS

2.1 Data

Reference to data Table 2.1

Table 2.1: Caption...

Parameterization	Scheme	WRF Option
...
...

2.1.1 Analyses

E.g. Statistical analyses

2.1.2 Math

Simple one-line equation

$$\frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} + \omega \frac{\partial u}{\partial p} = f v - \frac{\partial \Phi}{\partial x} + F_x, \quad (2.1)$$

Multi-line equation

$$\begin{aligned} \vec{\nabla} \theta \cdot \frac{D}{Dt} \vec{\eta} &= \vec{\nabla} \theta \cdot (\vec{\eta} \cdot \vec{\nabla}) \vec{U} + \vec{\nabla} \theta \cdot (\vec{\nabla} \times \vec{\nabla}_p \Phi) + \vec{\nabla} \theta \cdot \vec{\nabla} \times \vec{F} \\ &= (\vec{\eta} \cdot \vec{\nabla}) \vec{U} \cdot (\vec{\nabla} \theta) + \vec{\nabla} \theta \cdot \vec{\nabla} \times \vec{F} \end{aligned} \quad (2.2)$$

CHAPTER

3

RESULTS 1

bla bla bla ...

CHAPTER

4

RESULTS 2

bla bla bla ...

CHAPTER

5

RESULTS 3

bla bla ...

CHAPTER

6

CONCLUSIONS

6.1 Summary of Results

6.2 Overarching Conclusions

6.3 Future Work

REFERENCES

- Kiladis, G. N., Thorncroft, C. D., and Hall, N. M. (2006). Three-dimensional structure and dynamics of African easterly waves. Part I: Observations. *J. Atmos. Sci.*, 63(9):2212–2230.
- Tomassini, L., Parker, D. J., Stirling, A., Bain, C., Senior, C., and Milton, S. (2017). The interaction between moist diabatic processes and the atmospheric circulation in African Easterly Wave propagation. *Quart. J. Roy. Meteor. Soc.*, 143(709):3207–3227.

APPENDICES

APPENDIX

A

ACRONYMS

A summary of all acronyms is documented in Table A.1.

Table A.1: A summary of acronyms used in alphabetical order.

Acronym	Abbreviation
African Easterly Wave	AEW
African Easterly Jet	AEJ
African Monsoon Multidisciplinary Analysis	AMMA
Climate Forecasting System Reanalysis	CFSR
Convective Available Potential Energy	CAPE
Dry Adiabatic Lapse Rate	DALR
European Centre for Medium Range Weather Forecasting	ECMWF
Eddy Kinetic Energy	EKE
GARP Atlantic Tropical Experiment	GATE
Global Forecast System	GFS
Global Precipitation Mission	GPM
Long Wave (Radiation)	LW

Mesoscale Convective System	MCS
National Aeronautical and Space Administration	NASA
National Center for Atmospheric Research	NCAR
National Center for Environmental Prediction	NCEP
National Hurricane Center	NHC
National Science Foundation	NSF
Planetary Boundary Layer	PBL
Potential Vorticity	PV
Short Wave (Radiation)	SW
Quasi-Geostrophic	QG
Rossby Wave	RW
Tropical Cyclone	TC
TRMM Multi-Satellite Precipitation Analysis	TMPA
Tropical Rainfall Measurement Mission	TRMM
Weather Research and Forecasting Model	WRF

APPENDIX

B

VARIABLES

A summary of all variables is documented in Table B.1.

Table B.1: A summary of common meteorological variables and their abbreviations in alphabetical order.

Variable	Abbreviation
Arbitrary variable	X
Absolute vorticity vector	$\vec{\eta}$
Coriolis parameter	f
Gas constant for dry air	R
Geopotential	Φ
Geopotential height	Z
Gravitational acceleration	g
Horizontal wind vector	\vec{V}
Isobaric vertical motion	ω
Latent heat of vaporization	l_v
Meridional unit vector	\hat{j}

Meridional wind	v
Potential temperature	θ
Potential vorticity	P
Pressure	p
Relative vorticity vector	$\vec{\zeta}$
Specific density	α
Specific heat capacity at constant pressure	c_p
Temperature	T
Time	t
Three-dimensional wind vector	\vec{U}
Vertical absolute vorticity	η
Vertical unit vector	\hat{k}
Vertical relative vorticity	ζ
Zonal unit vector	\hat{i}
Zonal wind	u