TABLE OF CONTENTS

Title				
Abstract Declaration Certificate of Supervisor Acknowledgements Table of Contents List of Tables List of Figures Abbreviations				
Chap	ter 1 Introduction			
1.1	Ambient Ozone (O ₃) 1.1.1 Sink of Ozone	1 2 3-4		
1.2 1.3	Ozone and its precursors			
1.3	Effects of O ₃ on Environment Effect of meteorology on ambient O ₃			
1.5	Importance of the Study	5-6 6		
1.6	Research Hypotheses	7		
1.7	Research Objectives	7		
1.8	Scope of the study	7		
1.9	References	8-13		
Chap	ter 2 Literature Review			
2.1	History of discovery of Ozone (O ₃)	14-15		
2.2	Trends on ozone	15-16		
2.3	Ozone trends in the Northern Hemisphere			
2.4	Trends in Europe	17-18		
2.5	Trends in India	18-19		
2.6	Relationship among the Precursor compounds and tropospheric O ₃	19-21		
2.7	Measurements of tropospheric O ₃ along with its precursors	21-23		
2.8	Tropospheric O ₃ and its meteorological interactions	23-24		
2.9	Night time chemistry of tropospheric O ₃	24-25		
2.10	Ozone trends during Different festivals	25-26		
2.11	Transport of ambient O ₃ and possible source regions of O ₃ concentrations	26-28		
2.12	References	28-37		

Chapter 3 Experimental Methods

3.1	The Site					
3.2	Measurement Techniques					
	3.2.1	Ozone (O_3)	40			
	3.2.2	Oxides of Nitrogen (NOx)	40-41			
	3.2.3	Sampling of pollutant during Diwali festival	41			
	3.2.4	Sampling of pollutant during solar eclipse hours	41-42			
3.3	Meteorological parameters					
3.4	Locating local sources					
3.5	Appreciating long range transport and locating source					
	region	1				
3.6	Refere	ences	46-48			
Chap	ter 4 Re	sults and Discussion				
4.1	Conce	entrations of O ₃ and its precursors over mid-	49-52			
	Brahmaputra valley					
4.2	Comparison of surface ozone and NOx measured at Tezpur					
	station with different locations in India and other					
	International Cities.					
4.3	Characteristics of tropospheric O ₃ and its selected					
	precursors over mid-Brahmaputra valley					
	4.3.1	Ambient O ₃	57			
		4.3.1.1 Diel and monthly variations	57-59			
		4.3.1.2 Seasonal variations	59-61			
	4.3.2	Oxides of Nitrogen (NOx)	62			
		4.3.2.1 Diel and monthly variations	62-64			
		4.3.2.2 Seasonal Variations	64-66			
4.4	Diurn	al and Seasonal variations of OX	67-68			
4.5	Relati	Relationship of O ₃ with NO, NO ₂ and NOx.				
4.6	O ₃ -NO and O ₃ -NO ₂ relationships during daytime and					
	nightt	ime				
	4.7.1	Relationship among NOx, NO ₂ and NO during	71			
		daytime				
	4.7.2	Relationship among NOx, NO ₂ and NO during	72			

		Nighttime			
	4.7.3	Relationship of OX and NO ₂ during Daytime and	73		
		Nighttime			
4.8	Ambient O ₃ during special days				
	4.8.1	Trends of O ₃ during Diwali festival	74-75		
	4.8.2	Trends of NO ₂ during Diwali festival	76-77		
	4.8.3	Relationship of ambient O ₃ with NO ₂ during	78-80		
		Diwali festival			
	4.8.4	Concentrations of O ₃ , NOx, NO, NO ₂ and	80-86		
		meteorological parameters during solar eclipse			
		days.			
	4.8.5	Relationship of ambient O ₃ with NOx and Solar	86-87		
		radiation (SR) during eclipse days			
4.9	Dependency of O ₃ on meteorology				
	4.9.1	Temperature and its relation with O ₃	87-89		
	4.9.2	Relative humidity and its relation with O ₃	90-91		
4.10	O_3 -NO2	x photostationary state	92-96		
4.11	Effect	of atmospheric transport on concentrations of	97-101		
	ambien	tozone			
4.12	NO _x Dependent and NO _x Independent Contributions to OX				
	4.13.1	Long range transport of ambient O ₃	102-112		
	4.13.2	Long range transport of NO ₂	113-121		
	4.14.1	Concentrated weighted trajectories of O ₃	122-126		
	4.14.2	Concentrated weighted trajectories of NO ₂	127-129		
	4.15	References	130-141		
Chapt	er 5 Con	clusions and Future scope			
5.1	Conclus	sions	142-147		
5.2	Future Scope		147		
Public	ation De	tails			
Peer-re	Peer-reviewed journal publications				
Papers in conference proceedings					
Conference presentations					