ICTP DIPLOMA PROGRAMME IN EARTH SYSTEM PHYSICS 2015-16

SYLLABUS

Physics of the Atmosphere - {12 Lectures = 18 hours} A. Tompkins

1 Revision summary of Dry Thermodynamics

2 Revision summary of Moist Thermodynamics

3 Atmospheric Convection

3.1 A brief reminder of tephigrams

3.2 Introduction

3.3 Atmospheric Stability revisited

3.4 Convection in the atmospheric boundary Layer

3.4.1 Heat capacity of the surface

3.4.2 Structure of the PBL

3.4.3 The laminar layer

3.4.4 Diurnal cycle of the PBL

3.5 Single cell deep convection

3.5.1 Key convective parameters

3.5.2 Convective triggering

3.5.3 Updraught structure and entrainment

3.5.4 Downdraughts

3.6 Organised deep convection

3.7 Summary of convection

4.1 Introduction .

4.2 Cloud drop formation .

4.2.1 The energy barrier and Kelvin,Äôs equation