UNIVERSITÀ DEGLI STUDI
DI PERUGIA

DOTTORATO DI RICERCA

SCIENZA E TECNOLOGIA PER LA FISICA E LA GEOLOGIA

Short Course on

"Atmospheric Physics and Climate"

Teacher : Dr. Paolina Bongioannini Cerlini
Dipartimento di Ingegneria, CIRIAF, Perugia

All lessons will be held at Room E of Dipartimento di Fisica e Geologia, via Pascoli, starting on 12 February 2015, 3 p.m. and will go on for 4 weeks with the following timetable:

Tuesday 3 - 6 p. m.

Thursday 3 - 5 p. m.

Abstract

Introduction : The atmosphere continuum, atmospheric composition and phenomena, scale analysis, vertical structure of the atmosphere. Governing equations.

Thermodynamics (dry and moist): Kinetic theory, First and Second principle of Thermodynamics ,Enthalpy, Hydrostatic balance, Buoyancy, Moisture variables, Introduction to Convection.

Radiation and climate change: Elements of Thermal Balance, Solar and terrestrial radiation, Earth's budget, Radioactive equilibrium , Climate Change.

Atmospheric waves and atmospheric convection: Atmospheric equations of motion on spherical cords. Synoptic scale motions, Mesoscale motions: numerical modeling of convective clouds.