

# 國立臺北大學自然資源與環境管理研究所

## 101 學年度第一學期 『環境工程科學概論』

### 課程講義(十四)：全球尺度環境議題

#### ● INTRODUCTION

- World Summit on Sustainable Development: Rio+10
  - ⇒ WEHAB: Water, Energy, Health, Agriculture, and Biodiversity
- United Nations Conference on Sustainable Development (UNCSD): Rio+20
  - ⇒ A green economy in the context of sustainable development and poverty eradication
  - ⇒ The institutional framework for sustainable development
  - ⇒ 二大主題：「綠色經濟」與「制度架構」
    - 七項關鍵議題：就業、能源、城市、糧食、水、海洋及災害
- Global Atmospheric Change: Global Warming => Global Change
- Deforestation, Desertification, Loss of Habitats, and Loss of Biodiversity

#### ● THE ATMOSPHERE OF EARTH

- Composition of Clean Dry Air
- Temperature Profile and the Four Major Layers
  - ⇒ Troposphere, Stratosphere, Mesosphere, and Thermosphere
  - ⇒ Tropospheric Ozone vs. Stratospheric Ozone
- Global Temperature => How to Measure? => Isotopes and Ice Cores

#### ● THE GREENHOUSE EFFECT

- Temperature w/o Greenhouse Effect: 254°K; w/ Greenhouse Effect: 288 °K
- Radiative Forcing of Climate Change
- Global Warming Potential (GWP)
  - ⇒ Life Time and GWP Time Horizon; Contributions of GHGs
- Greenhouse Gases (GHG)
  - ⇒ Ozone (O<sub>3</sub>), Aerosol, and Halocarbons (CFCs, HCFCs, HFCs, PFCs)
  - ⇒ 京都議定書：六種溫室氣體—二氧化碳(CO<sub>2</sub>)、甲烷(CH<sub>4</sub>)、氧化亞氮(N<sub>2</sub>O)、  
氫氟碳化物(HFCs)、全氟碳化物(PFCs)及六氟化硫(SF<sub>6</sub>)=>空氣污染物

#### ● OTHER CONCEPTS AND SCIENTIFIC FOUNDATIONS

- IPCC Reports: FAR (1990), SAR (1995), TAR (2001), and AR4 (2007) => AR5?
- Stabilizing Greenhouse Gases: Mitigation vs. Adaptation
- Global Warming => Hydrological and Biological (Environmental) Changes
- Changes in Stratospheric Ozone: Ozone Layer Depletion => ODP

- HOMEWORK ASSIGNMENT #8：請下載並閱讀《[臺灣氣候變遷科學報告](#)》，以增進「對台灣氣候過去變遷與未來趨勢的了解」。