Environmental friendly technologies
KEE/ENT

ESF II project of the University of West Bohemia in Pilsen

reg. č. CZ.02.2.69/0.0/0.0/18_056/0013239

Lecture 1

Atmosphere and its components

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Definition of atmosphere

Basic definition

Atmosphere = gaseous cover of the Earth

This definition is not correct….

Why?

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Components of the atmosphere:

- gaseous (oxygen, nitrogen, vapours,...)
- liquid (rain drops)
- solid (ice, dust particles,…)

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Function of the atmosphere

- meteorits burn or are being destroyed
- Contains oxygen → breathing
- Reflects part of the solar radiation to the space → Earth does not overheat
- Reflects heat back to the surface → temperatures do not drop too much

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Atmospherical layers

Defenition according to temperature

- troposphere → up to 11 km
- stratosphere → up to 55 km
- mezosphere → up to 85 km
- termosphere → up to 800 km
- exosphere → up to 70 000 km

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TROPOSPHERE

- Almost all observable phenomenons (wind, rain, clouds)

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TROPOSPHERE

- Almost all observable phenomenons (wind, rain, clouds)

- Temperaure decreases with altitude (o 0,6 °C na 100 m)

  → temperature at the edge: -60 °C

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- Almost all observable phenomenons (wind, rain, clouds)

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- Contains almost all mass of the componets:
- 78 % nitrogen
- 21 % oxygen
- 1 % others,..

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- Contains almost all mass of the componets:
- 78 % nitrogen
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- 1 % others,..

- Nowadays problem:
increasing exhalations → greenhouse effect

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STRATOSPHERE

- In lower layer constant temperature (-60 °C)

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STRATOSPHERE

- In lower layer constant temperature (-60 °C)
- In altitude 25–30 km there are molecules of ozon = OZON LAYER

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absorbs UV radiation → temperature raises to +90 °C

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decreasing amount of ozon (ozon hole)

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- In altitude 25–30 km there are molecules of ozon = OZONOVÁ LAYER

absorbs UV radiation → temperature raises to +90 °C

- Nowadays problem:

decreasing amount of ozon (ozon hole)→ increased occurance of cancer

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TERMOSPHERE

- Temperature raise (to 1 500 °C) → the name of this layer
-

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TERMOSPHERE

- Temperature raise (to 1 500 °C) → the name of this layer
- man would not feel this heat (would feel cold)

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- Why?

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Why?

Low density of the air

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- Artifitial satellites

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- Present particles (ionts) reflect radio waves back to the Earth

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- Present particles (ionts) reflect radio waves back to the Earth
  → sometimes is this layer called IONOSPHERE
  → allows radio broadcasting

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EXOSPHERE

- Unknown edge (20 000 – 70 000 km)
- Very low density of the air
- Some molecules blown away to the space

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Thank you for your attention...

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