

Water, *Air*, and *Land* Resources

Unit 9



The Water Planet

- ◆ Water covers
~71% of
Earth's surface

- ◆ Mostly **salt**
water

- ◆ **<1%** of water
is **potable**
(usable)





Conserve
WATER

The Water Planet

- ◆ Water as a natural resource:

- *High Specific Heat Capacity*

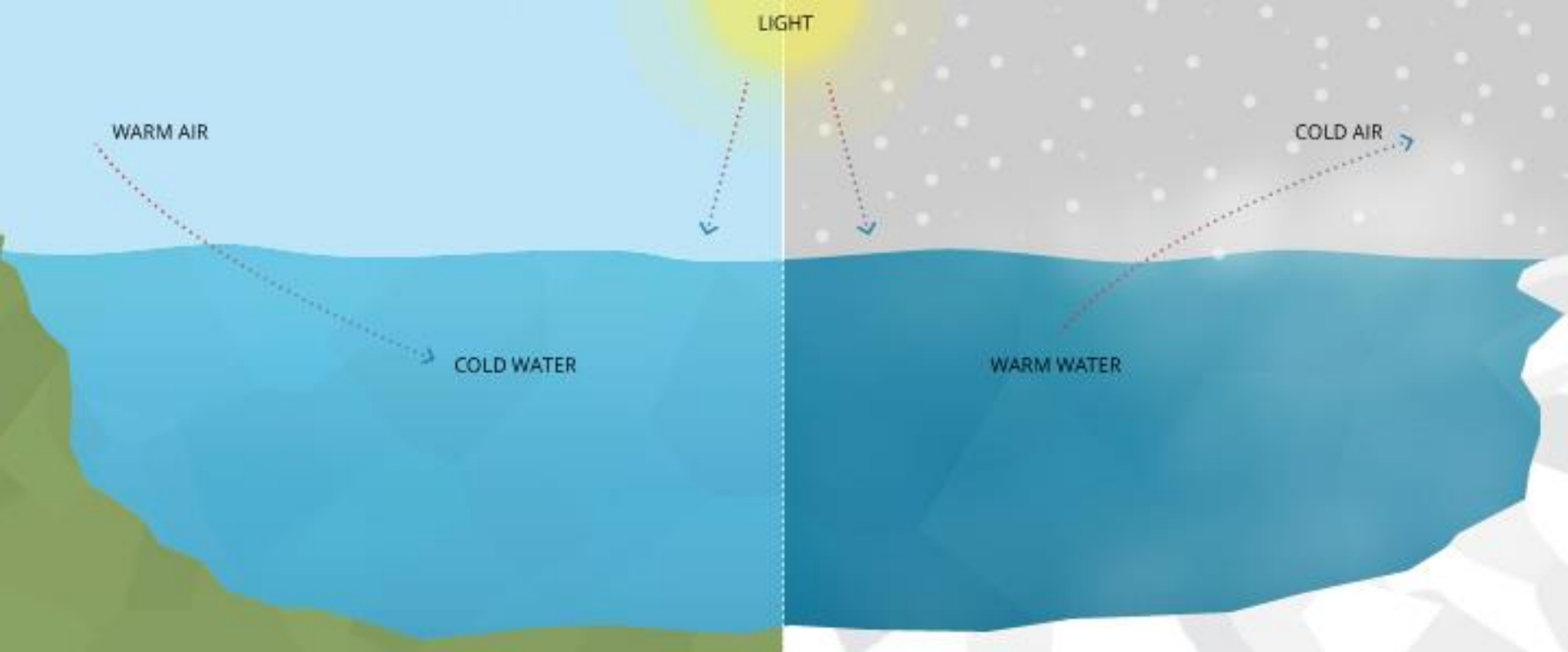
- ◆ Can store *large* amounts of heat

- *Acts as a solvent*

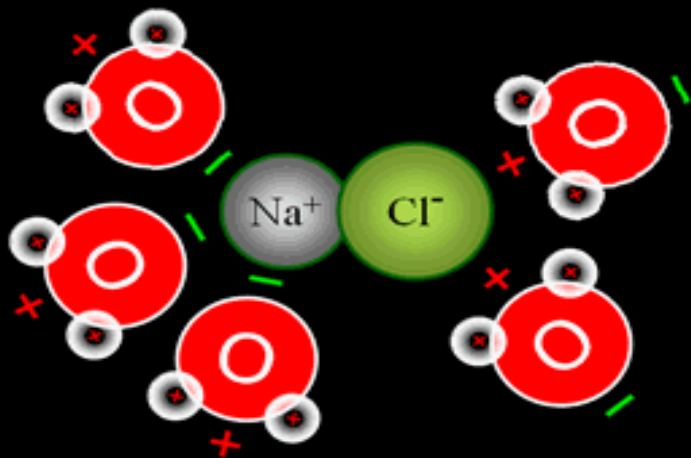
- ◆ Dissolves many compounds

- *Expands when frozen*

- ◆ Lower density when frozen (*floats*)



Water: the Universal Solvent



Earth's Blanket of **Air**

- ◆ Atmosphere contains mostly **nitrogen**, **oxygen**, and **water vapor**
- ◆ However, air **pollution** can change **chemical** composition of atmosphere
- ◆ Contains **ozone** layer





STRATOSPHERE

Air temperature
increases with height

Ultraviolet radiation is absorbed,
creating ozone layer in stratosphere

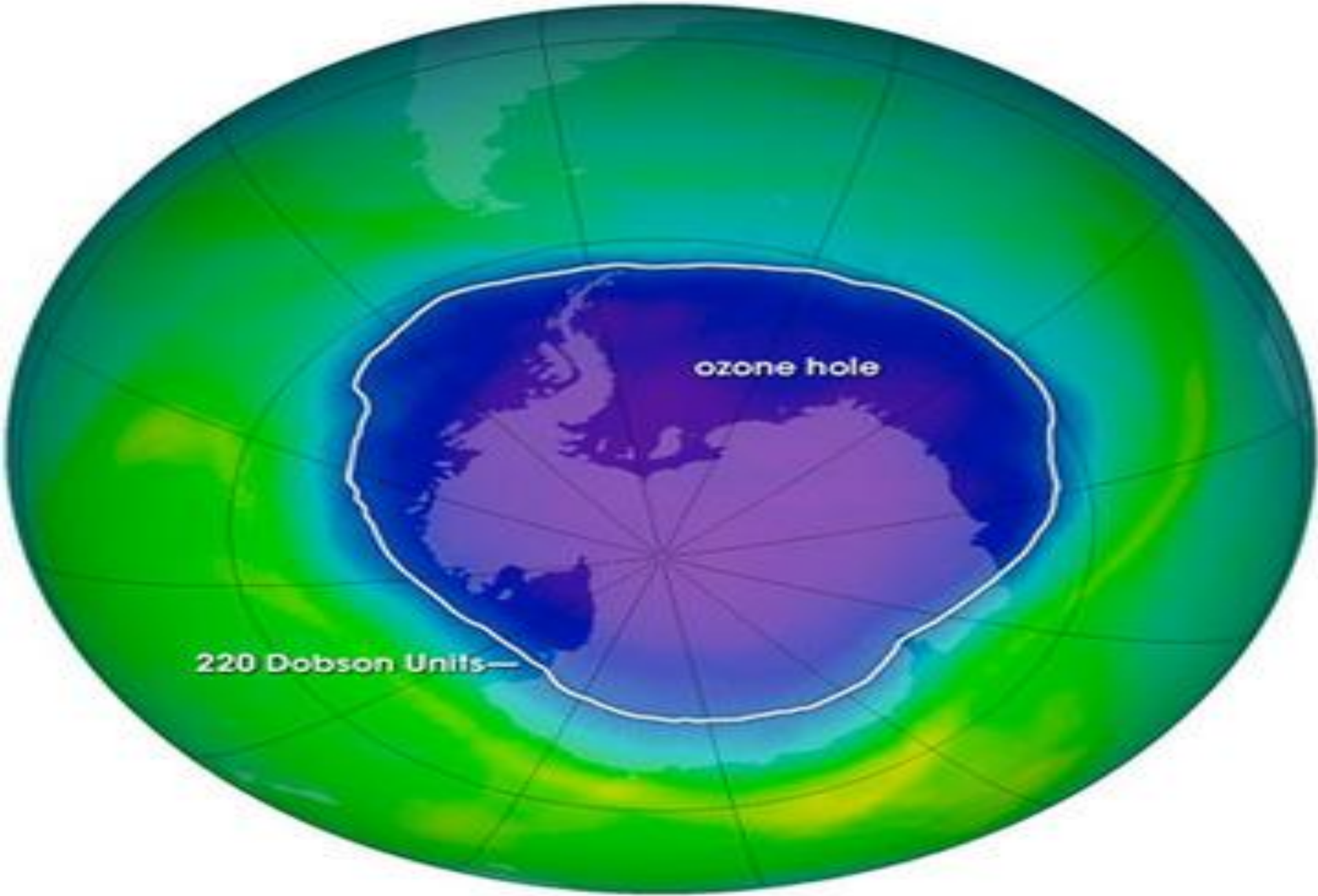
30,000 – 50,000 feet
(6 – 10 miles)



TROPOSPHERE

Air temperature
decreases with height





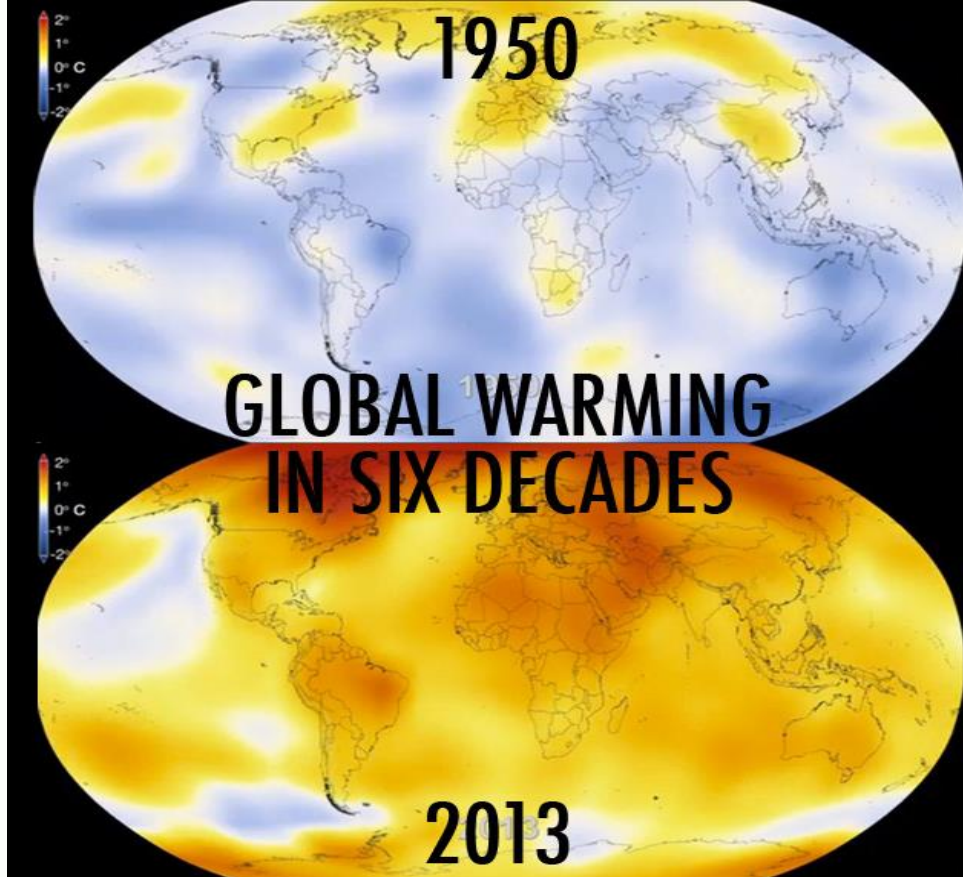
Earth's Blanket of Air

- ◆ Burning **fossil fuels** produce **CO₂** (*Greenhouse Gas*)

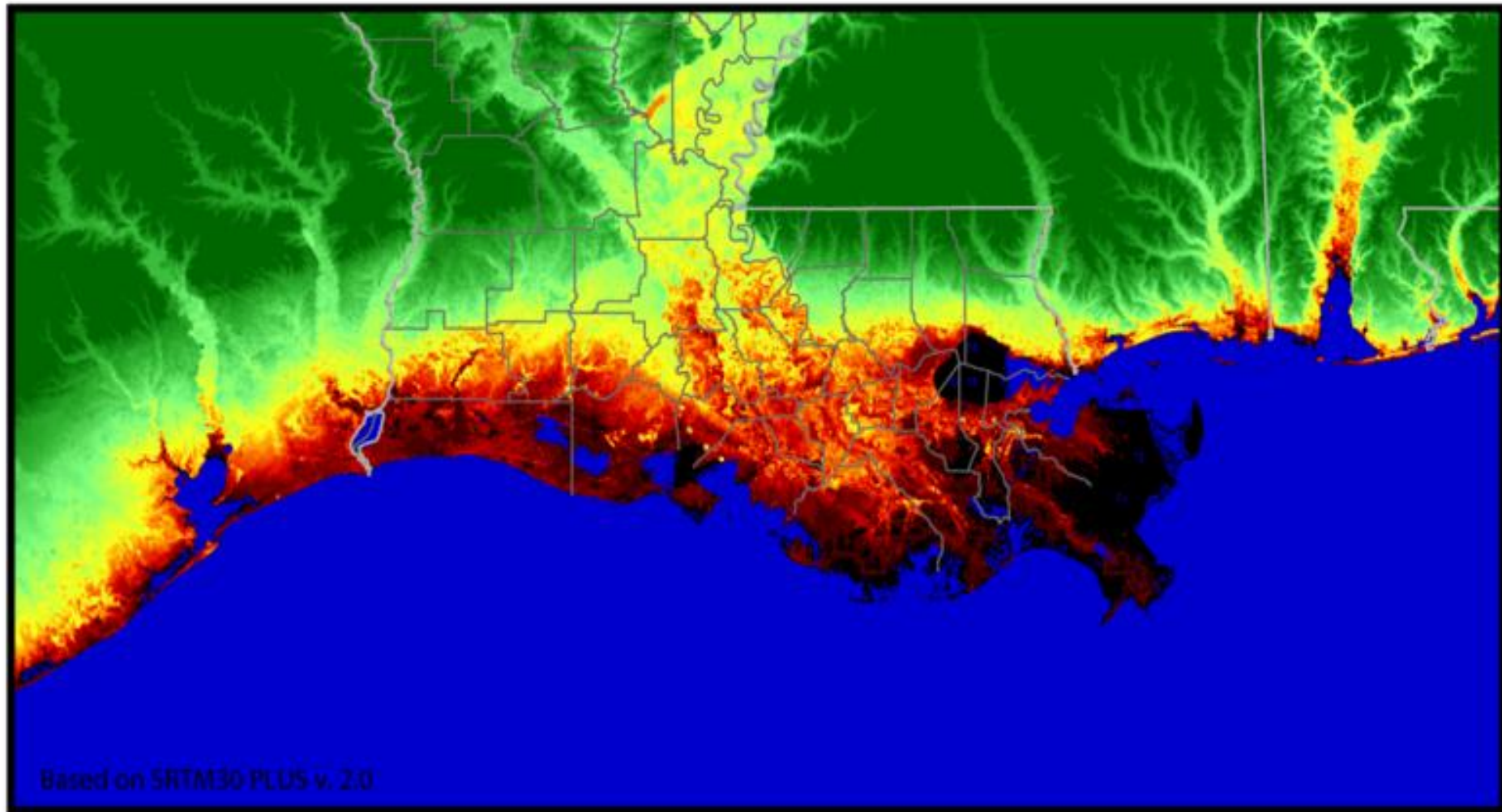


- ◆ **Increased** CO₂ emission leads to **unnatural** warming of **lower** atmosphere

- ◆ **GLOBAL WARMING!!!**



Sea Level Risks - Louisiana





Land Resources

- Soil requires **~1000** years to form few **centimeters** of topsoil
 - ◆ But can be **lost** in **minutes** due to **misuse** and **erosion** or **mining**



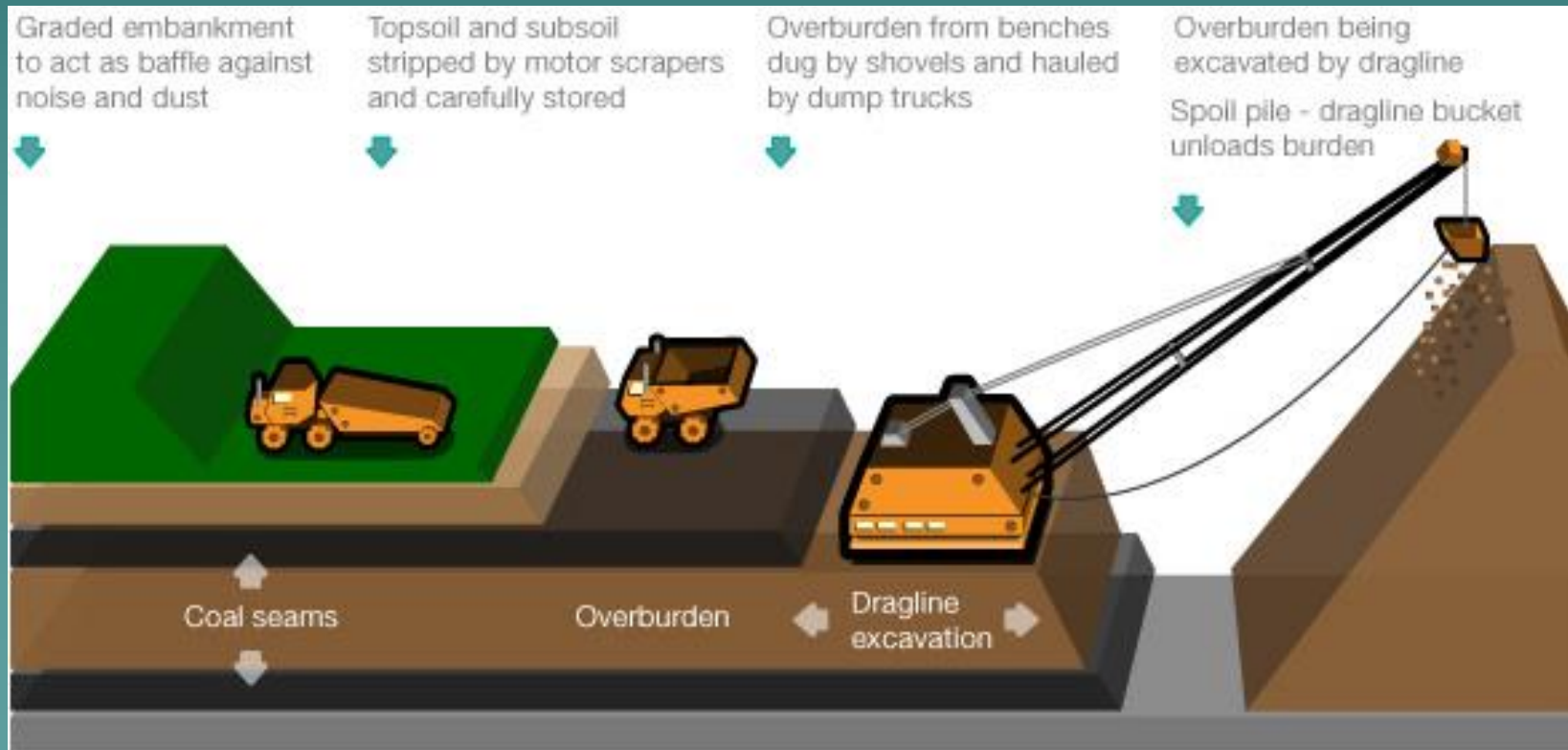
Open-Pit (Surface) Mining:

- ◆ Leaves large, exposed **holes** on surface
- ◆ Exposed rocks prone to **weathering** and **erosion**
- ◆ **USA**: Extracts **90%** of **non-fuel** minerals and rocks & **60%** of **coal**



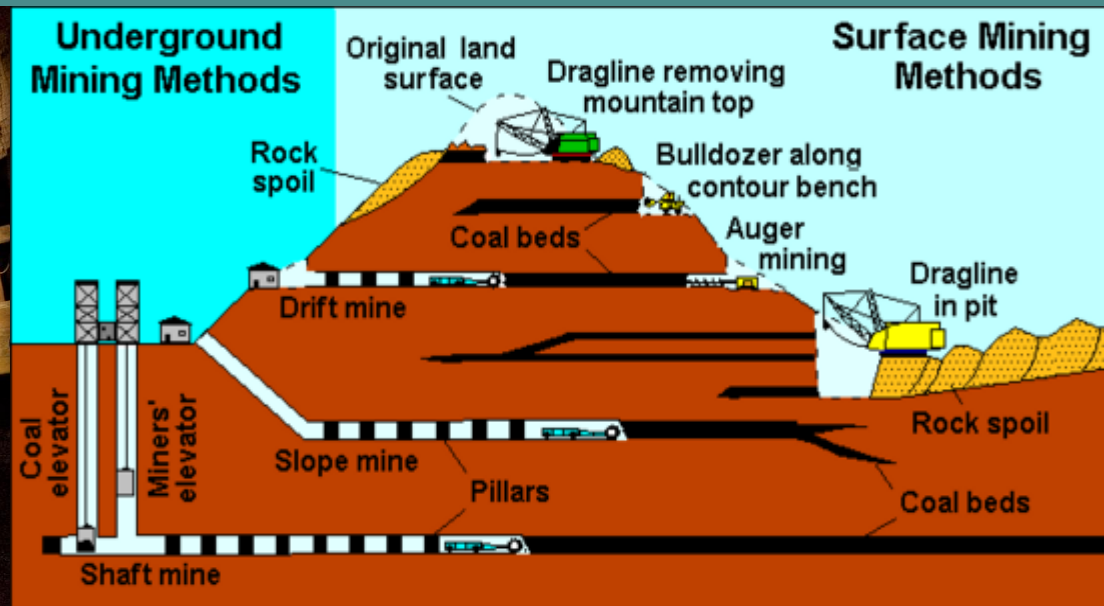
Strip Mining:

- ◆ Removal of **soil & rock (overburden)** above a layer of **coal**
- ◆ Followed by removal of **exposed minerals**



Subsurface - Underground Mining:

- ◆ More **directly harmful** to miners
- ◆ Tunnels closely lead to **ore** body
- ◆ Shallow and abandoned mines may cause **collapse**



Hydraulic Fracturing

- ◆ Also known as “**Fracking**”: Process of drilling and **injecting fluid** into ground at very **high pressure**
 - Goal is to fracture **shale** rocks to release **natural gas** inside

