Geography terms

Chapter one

**5 spatial themes**: *L/r/h-e-r/m &p* location/region/human-earth relationships/movement & place.

Open system - matter/energy input, ~self containing

Closed system - self contained (earth)

Scientific method - observe/ data/hypothesis/predictions/theory

Feedback loop - info return from system

(--) feedback - natural/equilibrium of system/ limits change

( + ) feedback - pro-change to system>> unstable *{climate change}*

steady-state equilibrium - input = output

dynamic equilibrium - -/+ change over time>>> threshold

model - 1 ideal representation of real world

earth’s 4 spheres: atmosphere/hydrosphere/lithosphere/biosphere

atmosphere - thin gas layer/ lower atm. = N,O2, Argon,CO2, H2O vapor

hydrosphere - earth H2O in atmosphere. Frozen = **cryosphere**/ 3 states: liq/gas/solid

lithosphere - earth crust: brittle {solid planet}/ **edaphosphere** = soil

biosphere - all organisms in physical enviro/abiotic & biotic

geodesy - science of earth shape & size via survey & math

latitude - North/south distance measure/ equator = 0 degrees

longitude - east/west distance measure from center of earth

**prime meridian** - lines at 0 degrees – Greenwich England time

**internat’l date line** - meridian that marks start of new day (west of Alaska)

coordinated universal time- atomic clock used to set official time

scale of maps: representative “cm” or graphical bar

Large scale – very detailed, streets & houses (1:24,000)

Medium scale – topographic maps (1:62,500- 1:125,000)

Small scale – maps of large area (1:250,000, 1:1,000,000+)

Globe is true representation of: distance/direction/area/shape/proximity

Map projections & types: equivalence- distorts or true shape = conformal

Type: cylindrical \**Mercator*/planar/conic/oval

Rhumb line - {Mercator projection} constant direction line

Satellite orbit types - geostationary/polar and sun-synchronous

volcano & earth system = sulfuric acid in atmosphere, solar energy increased

satellite image> earth> image scanned> pixel (pict+elements)> line & samples (vertical columns)

**remote sensing** = record electromagnetic info about earth via sensors in atmosphere or space.

**Active remote sensing** – direct beam of energy at surface and analyze energy reflected back. Radar short bursts of long wave energy. Can penetrate clouds/darkness.

(used to determine lava flow in volcanoes). Sonar, Lida, RADARSAT-1,-2

**Geographic info systems** – info for analyzing /processing tool

Chapter two terms

Gravity - attraction exerted by mass of object upon another

**Planetesimal hypothesis** = how suns condense from nebular clouds about central mass

Speed of light = 300,000 kmps (light year)

Fusion – sun hydrogen atoms joined

**Perihelion** = earth closest to sun

**Aphelion** = earth farthest from sun

Wavelength = distance between 2 points on any waves {sun’s wave is short/ earth’s wave is long}

**Thermopause** = outer boundary for earth’s energy

**Solar constant** = average insolation received at Thermopause when earth @ average distance from sun

Global net radiation = balance of short & longwave radiation

**Seasonality** = season & earth’s position.

Season = change in sun altitude/earth revolution in orbit/ rotation tilt on its axis / sphericity

Daylength depends on latitude, equator always = hrs. of day/night 12hrs

Circle of illumination = dividing line of night and day

Tropic of cancer = north point

Tropic of Capricorn = south point

Solstice = sun+stand-still

Winter solstice = dec 21 (sun 90 degrees over tropic of Capricorn / north =winter)

Vernal equinox = mar 21 (sun 90 degree over equator)

Summer solstice = june 21 (sun 90 degrees over tropic of Cancer/ North = summer)

Autumnal equinox = sept 21 (sun 90 degrees over equator)

Air = mix of gases

**Atmosphere** = heterosphere (outer) & homosphere (inner to earth)

**Atmospheric temperature zones** = thermosphere/mesosphere/stratosphere/ troposphere

Thermosphere = heat sphere, upper layer is Thermopause – to change

*Heat = density/temp./ heat capacity*

Mesosphere = area from 50-80km above earth

Stratosphere = 18-50km above earth (ozone layer) (temp. is < 0 degrees)

Troposphere = final layer, solar radiation, biosphere weather activity. <20km above earth

**Atmospheric function zones** = ionosphere (outer: auroral borealis)

ozonosphere – 03 layer absorbs UV light = removes deadly radiation

**temperature inversion** = vertical temp. & atmosphere density increase pollution/ reverse temp. as increase

anthropogenic pollution = human caused

**Photochemical smog** = sunlight & vehicle exhaust (NO2)

NO2 + H2O => HNO3 nitric acid

Peroxyacetyl nitrates (PAN) damage plants

Industrial smog = coal burning pollution

SO2 + O2 ozone => SO3 + H2O 🡺 sulfuric acid

Particle matter = dust, smoke, haze

**Acid rain** (liq/dust/particle) causally linked: decline fish population/forest damage/soil changes/ acidic lakes

Nitric oxide emissions = agriculture (fertilizers/feedlots: nitrogen & ammonia)

Motor vehicle & coal burning

Chapter 3 terms

Transmission = passage of short or longwave energy via atmos. or water

**Diffuse radiation** = wavelength energy bounced in all direction on earth

**Albedo** = reflection of energy.

Darker color = low albedo

Water – low angle = greater albedo

Clouds = reflect insolation keeping earth cool by trapping longwaves

Greenhouse-albedo

Global dimming = atmosphere warming & surface cooling via lower insolation

Conduction = molecule transfer of heat energy

Convection = less dense rise, more dense sink

Advection = wind from land to sea and back

Microclimatology = physical conditions near or on earth

**3 ways net radiated used**:

sensible heat – transfer of air & surface heat

latent heat – heat stored in water vapor

ground – heat/cooling

temperature = kinetic energy of molecules

isotherm = a line on map that has a value

urban heat island = in a city pavement etc heat city

When pollution absorbs wavelength radiation and sends it back to earth = **greenhouse effect**

**\*\*\*\* Insolation** is energy driving earth’s atmosphere, dense gases near surface,

**Scattering** gas redirects radiation changing direction of light

Shorter wavelength = greater scattering/longer wavelength = lesser scattering

Why the sky is blue :

Short wavelength is visible (blue & violet) scatter the most, there’s more blue

wavelengths in sunlight = a blue sky.

Smog sky is white: large pollution particles scatter all wavelengths of visible light

Quiz need to know 60questions 2hrs

Chapter 3

Terms: Insolation & albedo {ice reflectivity}/ transmission/ refraction /scattering

3 ways energy is transferred: convection {density diff}, conduction & advection

insolation at earth surface/ diff between latent and sensible radiation/ net radiation

slide 27,28-lat & temp diff/

normal lapse rate: 50 degree what would it be at 3000m? calculate. {6.4 for every 1000 m}/ marine effects/

gulf stream & ocean currents/ land & water diff, heat capacity

maps for global temp for January –remember where the sun is 23.5 capricorn. North has more land mass compared to the south./ urban environment- microclimate p.95

chapter 1

spatial science/ open-closed systems/ **feedback loops {- & +} -examples**/ equilibrium steady state/

latitude/longitude / earth’s 4 spheres (a h l b) / p.16 1.13/ scales of maps/ remote sensing -2 types/

what GIS / 5 themes of geography –(l r h-e-r m & p) / latitudes = parallels/ longitude = meridian

p.20 –expect to know west lose time & east increase/ scale – written,graph & maps: large, med, small/

relative and conformal

chapter 2

p.39 solar system-milky / what is solar wind, corona mass injections/ magnetosphere/

elctro-magnetic spectrum/ visible light/ layers of atmosphere/ p.50 2.16 modern atmosphere/

troposphere = tropopause/

terms: solar constant/ subsolar point, **p.48 table 2.2 march of seasons**/ circle of illumination/ plane of ecliptic/

axil of parallelism/ division & temp of modern atmospheres / temperature inversion/anthropogenic pollution p60/ smog and particulates/

Chapter 4 ---------