

1/15/14

YOUTUBE GLOBAL BUDGET

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VIDEO REVIEW

RESIDENCE TIME

- RESIDENCE TIME

D. NEV. RENO

- Reservoir Flux

- Atmosphere < 1% H₂O
 - Transmittance ~ 99% H₂O

- TRANSFER RATE

- ATMOSPHERE - RAPID TURNOVER

SHORT RESIDENCE TIME

SURFACE H₂O:

- SUBSURFACE = RESIDENCE TIME

> wind, Depth

CONVECTION FACTORS

GRAVITY + SOLAR ENERGY

High EP. → Low EP.

- SURFACE

LARGE RIVERS - SIMONIS - CROOKS

BO, OCEAN ATM. GLACIER

- EXCHANGES

ET - PRECIP - RUNOFF - INFILTRATION

" SURFACE vs. FLOXES

- PRECIP

- ET

- RUNOFF

- SIMONIS FLOX

$$Q = VA = \frac{V_0 L}{t}$$

residence time τ_{res} $\tau_{res} = \frac{V_{0L}^{reservoir}}{Q_{flux}}$ $\frac{M^3}{sec} \frac{ft^3}{sec}$ GPD

circled: $\frac{ac-ft}{yr}$

Av. Residence time τ_{res}
 Ocean residence time $\sim 2500 yr$

LANDSCAPE $\sim 100 yr$

Atmosphere $\sim 240 yr$

Atm $\sim < 1 yr$

CONTINENTAL VOLUME = LAND + ATMOSPHERE

Reservoirs: Atm, LAND, OCEAN

Residence time

$\sim 2300 yr$ Ocean

$\sim 240 yr$ Atmosphere

$\sim 100 yr$ LAND

$\sim < 1 yr$ Atm.

- Budgets of Carbon Budget = Carbon Volume

- INFLUX & EFFLUX -
 - TIME SCALE

YOUTUBE MASS BALANCE VIDEO

(2)

$$1 \frac{\text{kg}}{\text{l}} = \frac{1000 \text{ kg}}{\text{m}^3}$$

WATER INCOMPRESSIBLE
 MASS = VOL

$$I - O = \Delta S$$

VOL ↔ MASS

interchangeable
 via
 density

$$I - O = -\Delta S \quad \text{LOSS}$$

$$I - O = +\Delta S \quad \text{GAIN}$$

$$I - O = 0 = \text{Steady STATE}$$

$$I = \frac{V^3}{t}$$

$$O = \frac{V^3}{t}$$

DENSITY vs. Pump change negligible

$$I - O = \Delta S$$

TIME STEP = SCALABLE = min, yr, 1000 yr

DEFINE TIME STEP &
 CONTROL VOLUME

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$$\frac{\Delta S}{t} = \frac{I}{t} - \frac{O}{t}$$

RATES of change related via TIME

$$\frac{MASS}{t} = \frac{Vol}{t}$$

Compare Vol = Accounting unit

WATERMETER BOWMETER = Curva Vol.

Spanne Seite & Prognis
TO Diagramm Area

Cluster System

- GIS - Liana - Socio Au, inner
Time

- Spruce Vernetzt
with exchange
