

EVAPORATION

The evaporation model in ADIOS 2 is a well-mixed pseudo-component model.

It is a bit simpler than what Jim Payne and Bruce Kirstein developed 20 years ago.

ADIOS 2

- ✖ 1. About 10 pseudo-components fabricated from distillation curves. Each component has vapor pressure, density, molar volume (matching normal alkanes by boiling point).

ADIOS 2

- ✗ 2. Instantaneous evaporation of components are independent of each other:

$$\frac{dn}{A dt} = \frac{K(P_{sat}(T, t) - P_{air})}{RT}$$

Mass transfer coeff. is function of wind speed

Raoult's law (ideal mix) -> $P_{sat} = \chi(t) P_{sat}^0(T)$

Mole fractions are spatially uniform

ADIOS 2

- ✖ 3. Flux equations are coupled through mole fraction terms and solved numerically

$$\frac{dn_i}{A dt} = \frac{n_i}{\sum_i n_i} \frac{K P_i^0(T)}{RT}$$

WHAT'S *V*

- ✗ Are we smarter yet?
- ✗ Deepwater wells
- ✗ Climate change
- ✗ Technology and expectations
- ✗ *Shrinking science staff*

GUIDING PRINCIPLES

GUIDING PRINCIPLE 2

✕ Minimal care and feeding
+(KISS)

WHAT SHOULD WE DO

- ✗ Initialize with available data

WHAT SHOULD WE DO

- ✗ Compare output with measurements

WHAT SHOULD WE DO

- ✗ Set thickness limit in ADIOS 3

Address the limitations of
the well-mixed assumption