

Vertical distribution of atmospheric carbonyl sulfide in lower troposphere

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Carbonyl sulfide : COS



Biological effect

Toxic gas

Lethal dose : 2000~3000 ppm for rabbit

Flux in biosphere

Troposphere

COS ~500 pptv

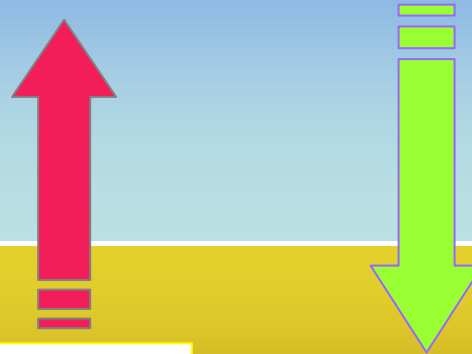
Emission
(1.31 ± 0.25 Tg/a)

Consumption
(1.66 ± 0.79 Tg/a)

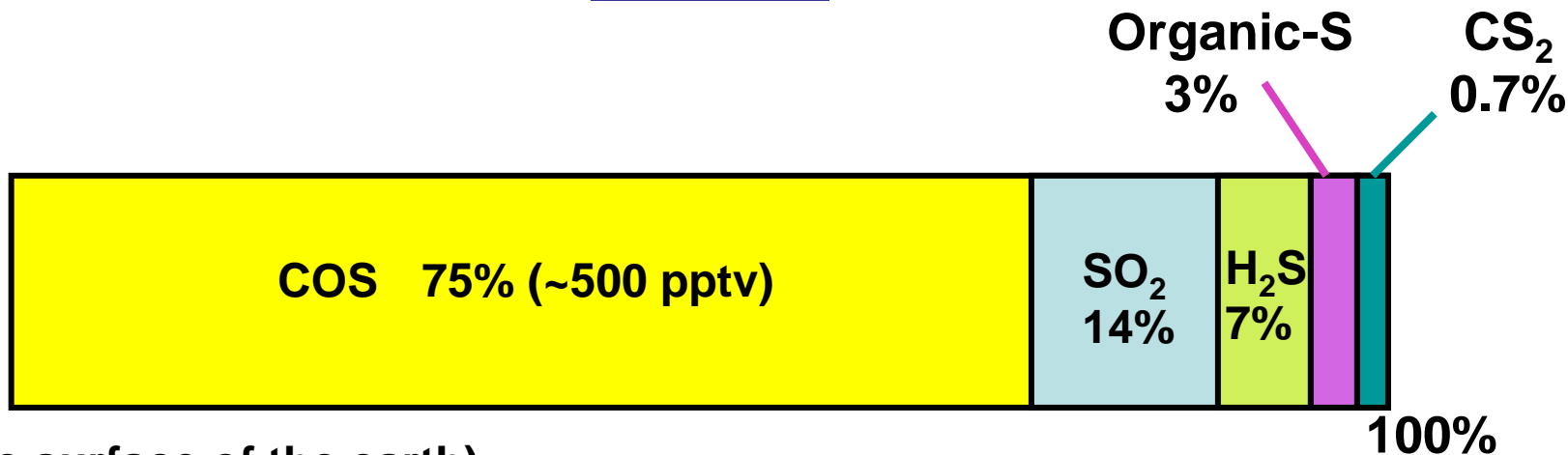
Natural and
anthropogenic processes

Missing
source

Vegetation and
soil



COS



(The surface of the earth)

COS is the most abundant sulfur gas in the atmosphere.

Concentrations of COS are reported constant both vertically and latitudinally.

COS is one of the most attractive trace gas in the atmosphere.

Stratosphere

Sulfate aerosol

UV



COS



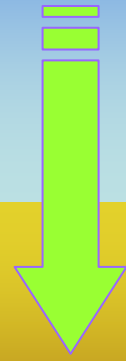
SO₄²⁻



Tropopause

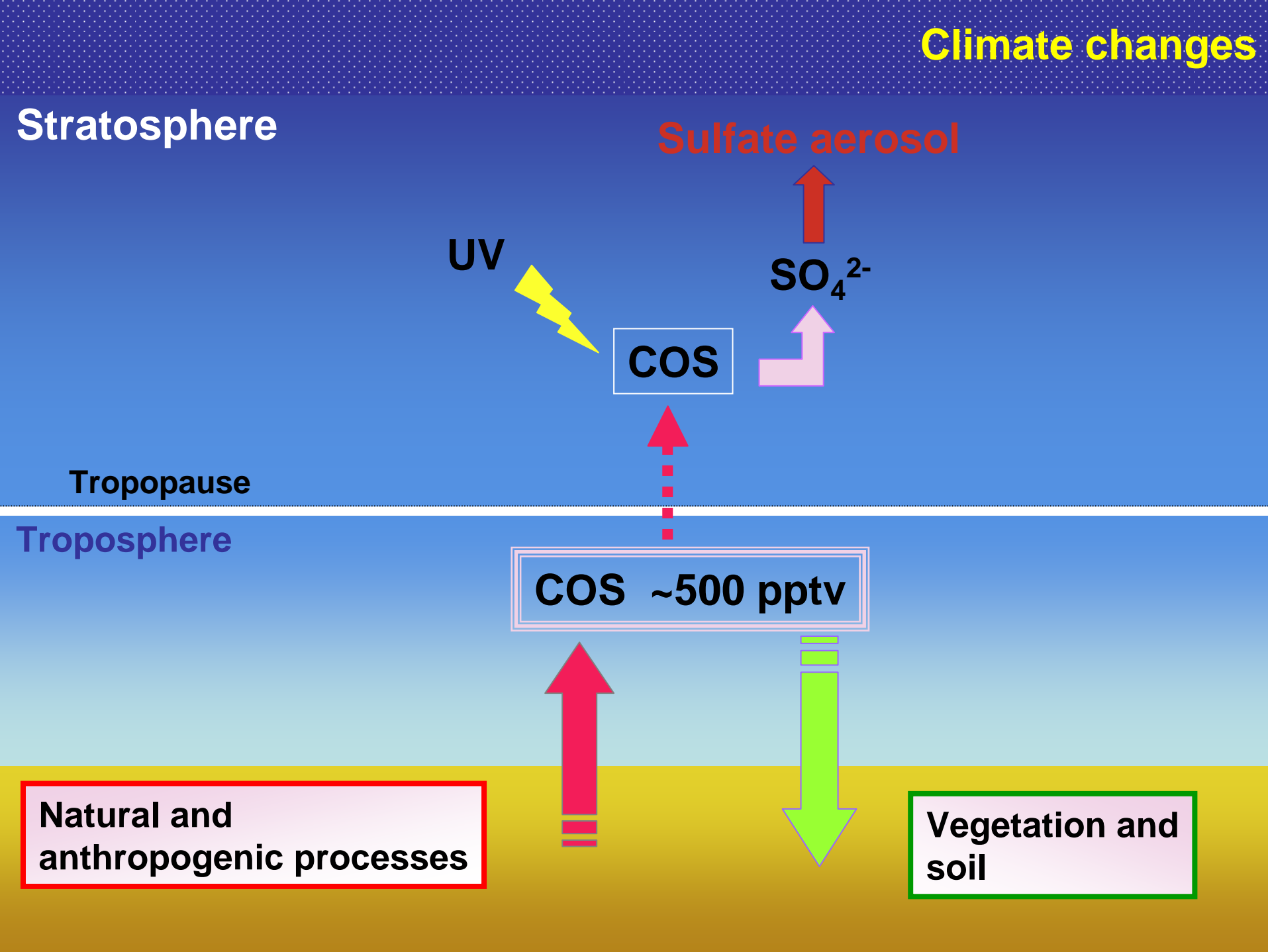
Troposphere

COS ~500 pptv

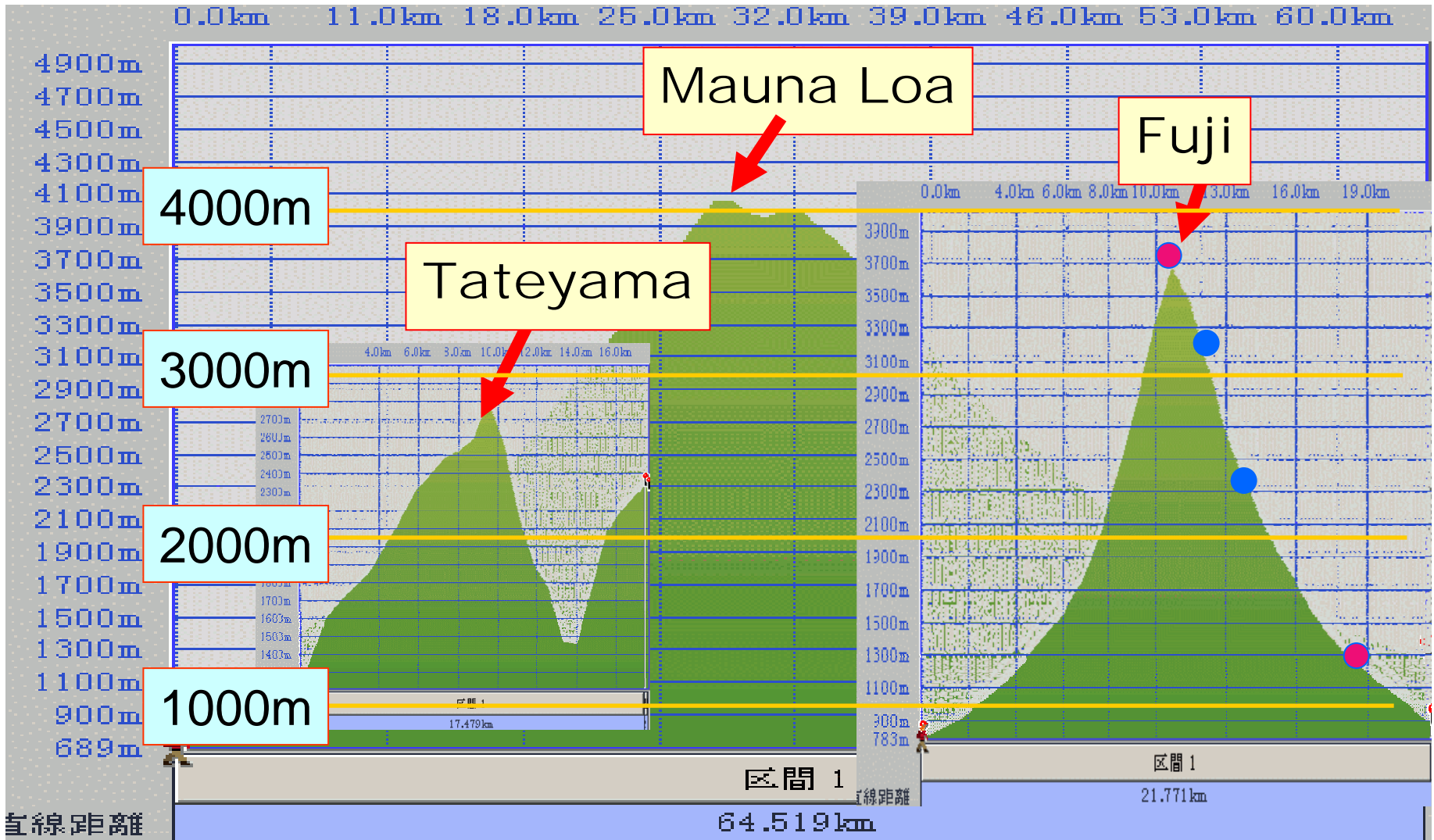


Natural and anthropogenic processes

Vegetation and soil



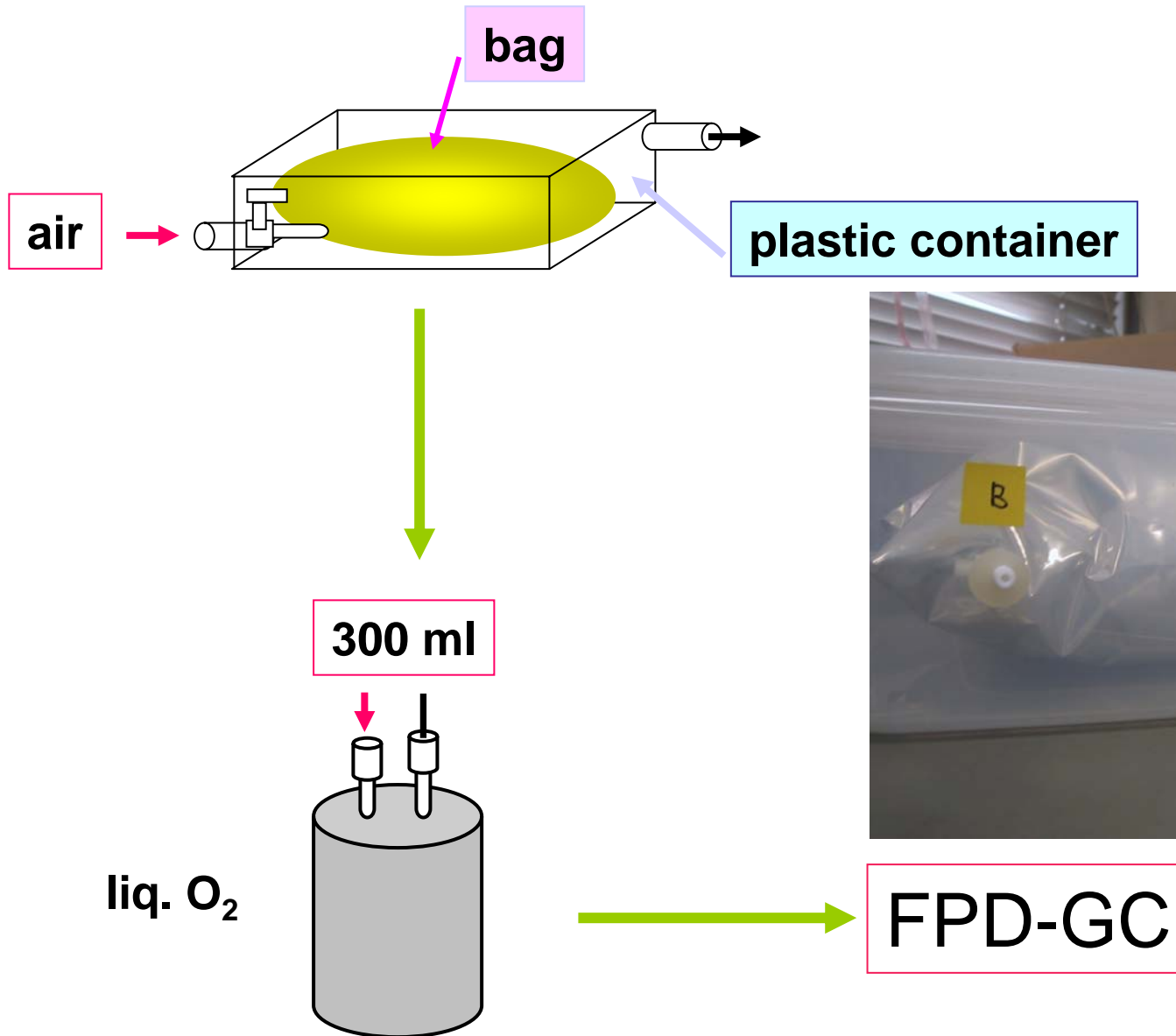
Cross section of mountain



Sampling location at Mt. Fuji



Estimation of COS



Flux of COS

Emission
(1.31 ± 0.25 Tg/a)

Anthropogenic

Biomass burning

Oxidation of:

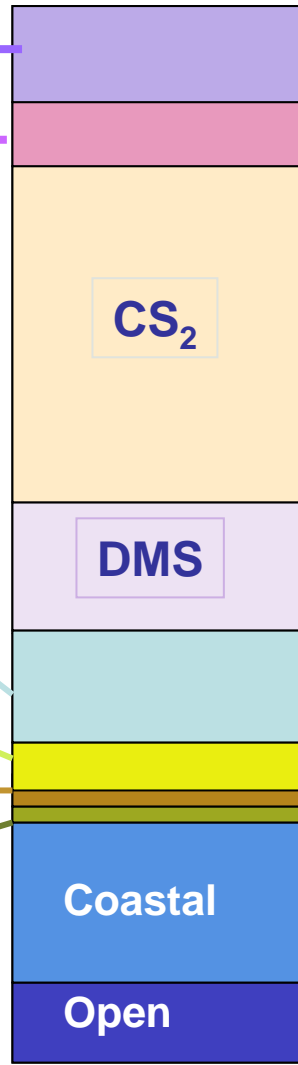
Precipitation

Volcanism

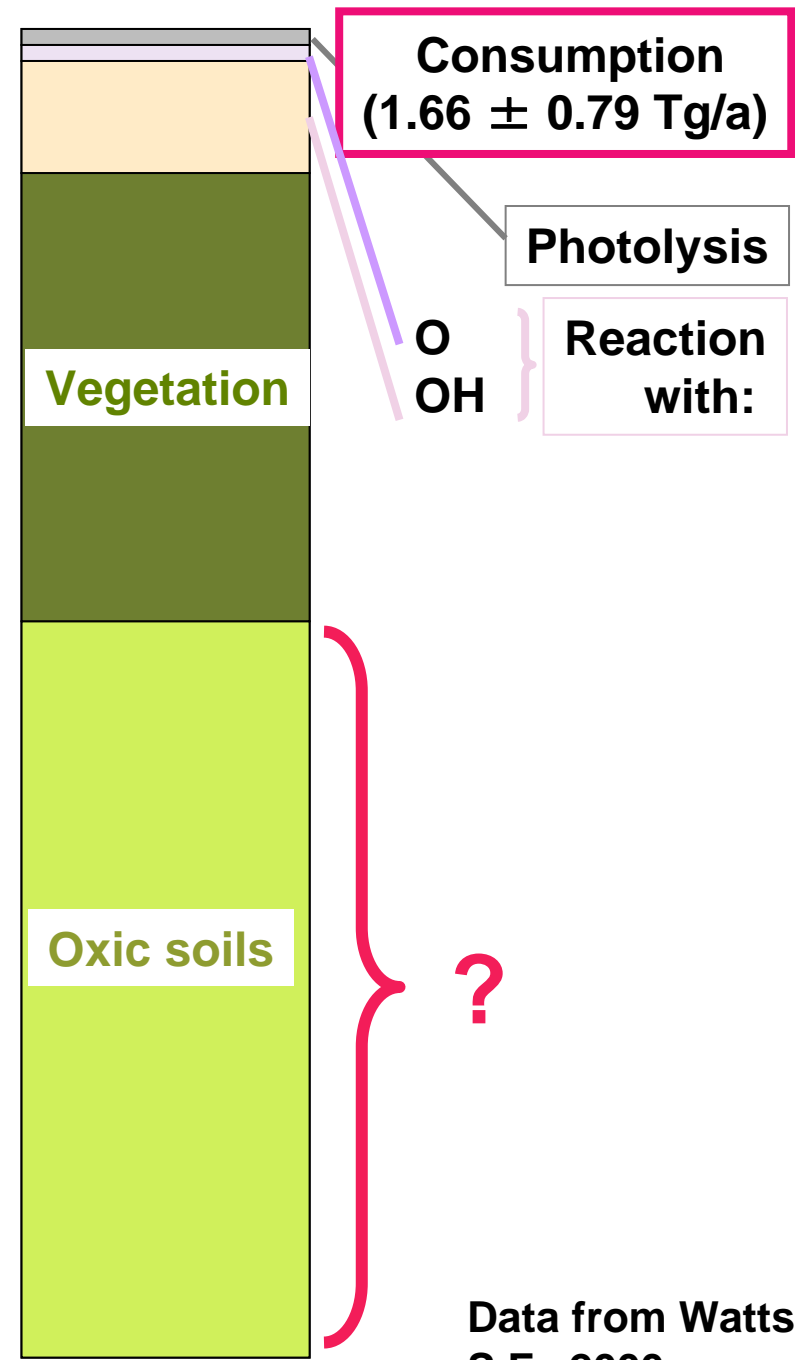
Wetlands

Anoxic soils

Ocean



Salt-marshes, estuaries



Data from Watts, S.F., 2000