CH₄ Observational Sites (1996-2001)


CH₄ Observational Sites (1996-2001)

Reference Simulation (color) vs. Observed (black) CH$_4$ at 5 AGAGE Sites

Each station progressively offset from Cape Grim by 100 ppb for clarity
MATCH Simulates Effects of ENSO Transport on CH$_4$ at Samoa

AGAGE observations versus MATCH model at Samoa

El Nino winds

La Nina winds

MATCH simulates effect of North Atlantic Oscillation on CH$_4$

AGAGE Observations versus MATCH Model at MaceHead, Ireland
(d) Dimethyl Sulfide-Aerosol Connections

DMS is CH$_3$SCH$_3$

MSA is CH$_3$SO$_2$OH

Motivation for new chemical mechanisms

Original mechanism does a poor job simulating aircraft data (red dots)

Modified mechanism does a better job (model is black dots with grey model error bars)
DMS Oxidation Mechanism

Arrows: White=Basic Mechanism, Red & Yellow=New Pathways

OH-addition

H-abstraction
MATCH MODEL RUNS: DMS Emissions