

3DVar Assimilation

O₃ observation in China

O₃ simulations from
GEOS-Chem

Assimilated O₃

MET

T_{2m}、T₈₅₀、T₅₀₀
U₈₅₀、U₅₀₀、V₈₅₀、V₅₀₀
RH、PRECP、CLT、
RSDS、SLP

EMIS

NO_x
CO
NMVOC

**Historical
Input
(2014–2019)**

Land Cover

Topography

LAT
LONG
MOY

NDVI

Population

Future MET

T_{2m}、T₈₅₀、T₅₀₀
U₈₅₀、U₅₀₀、V₈₅₀、V₅₀₀
RH、PRECP、CLT、
RSDS、SLP

Land Cover

NDVI

Topography

Population

EMIS

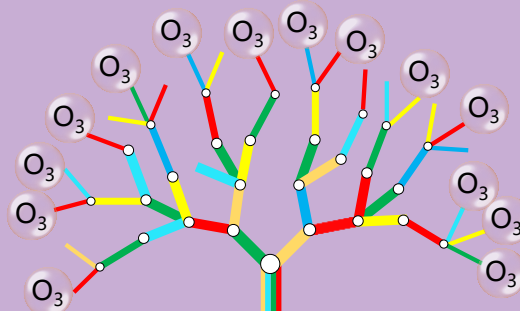
NO_x
CO
NMVOC

LAT
LONG
MOY

**Scenario:
SSP1-2.6,
SSP2-4.5,
SSP3-7.0,
SSP5-8.5**

Training and Evaluation

Random Forest



Turning Parameters

Prediction

Final Model

Output
Future O₃ in
2020–2100