

### 3DVar Assimilation

O<sub>3</sub> observation in China

O<sub>3</sub> simulations from  
GEOS-Chem

Assimilated O<sub>3</sub>

### MET

T<sub>2m</sub>、T<sub>850</sub>、T<sub>500</sub>  
U<sub>850</sub>、U<sub>500</sub>、V<sub>850</sub>、V<sub>500</sub>  
RH、PRECP、CLT、  
RSDS、SLP

### EMIS

NO<sub>x</sub>  
CO  
NMVOC

**Historical  
Input  
(2014–2019)**

Land Cover

Topography

LAT  
LONG  
MOY

NDVI

Population

### Future MET

T<sub>2m</sub>、T<sub>850</sub>、T<sub>500</sub>  
U<sub>850</sub>、U<sub>500</sub>、V<sub>850</sub>、V<sub>500</sub>  
RH、PRECP、CLT、  
RSDS、SLP

Land Cover

NDVI

Topography

Population

### EMIS

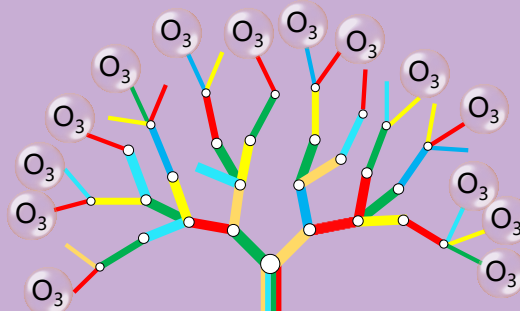
NO<sub>x</sub>  
CO  
NMVOC

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 O<sub>3</sub> in  
2020–2100