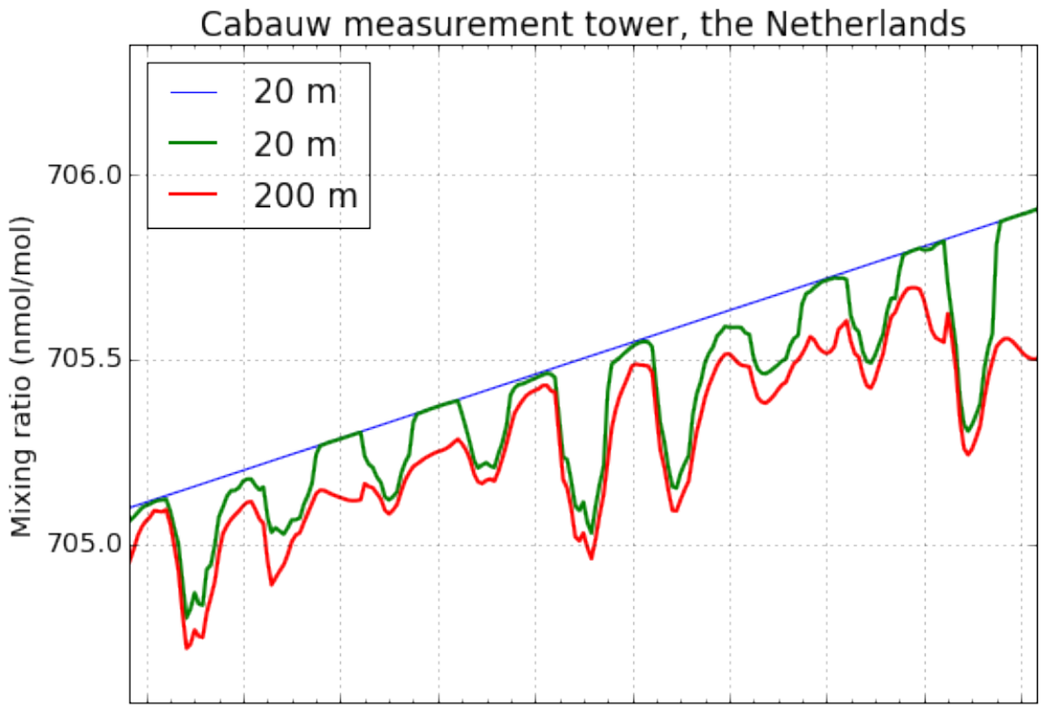
AoA inter-comparison results, TM5 and TM5-EC-Earth

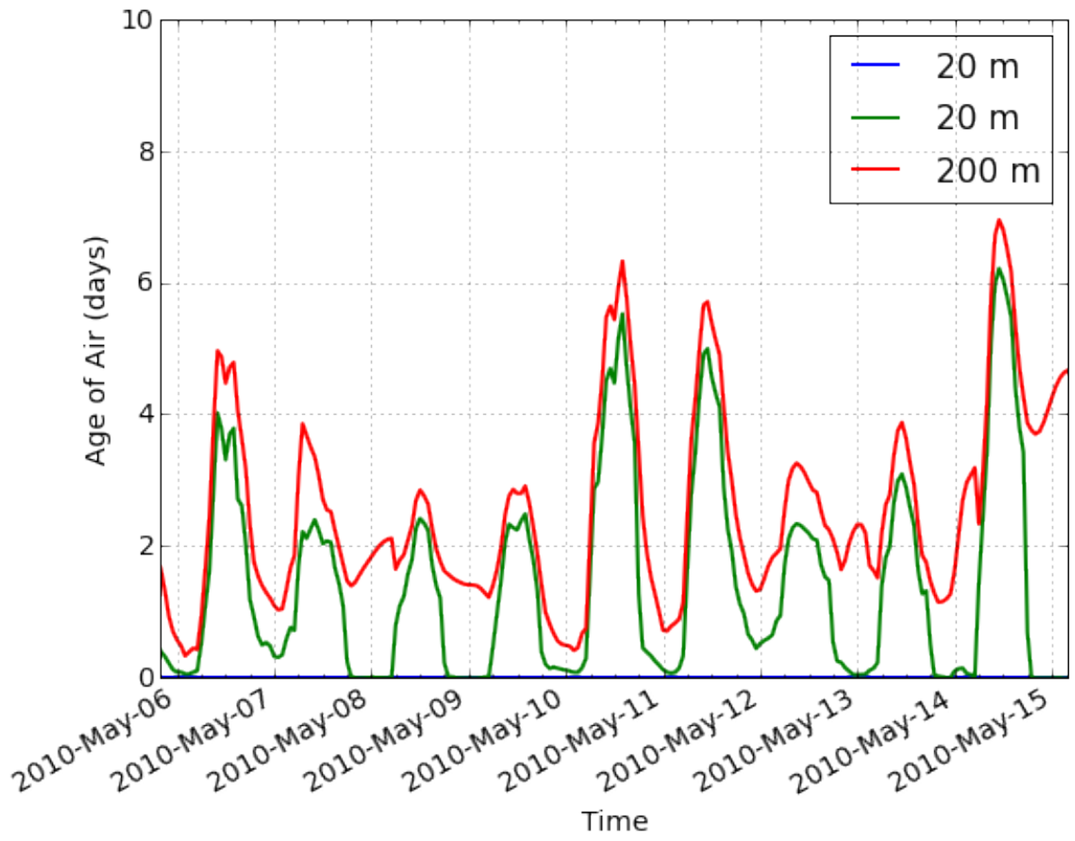
Maarten Krol, Lars Killaars (RUG)

WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research

Institute for Marine and Atmospheric research Utrecht





AoA Inter-comparison

Model experiment description paper

Age of Air as a diagnostic for transport time-scales in global models

Maarten Krol[1,2,3], Marco de Bruine[2], Lars Killaars[4], Huug Ouwersloot[5], Andrea Pozzer[5], Yi Yin[6,*], Frederic Chevallier[6], Philippe Bousquet[6], Prabir Patra[7], Dmitry Belikov[8], Shamil Maksyutov[9], Sandip Dhomse[10], Wuhu Feng[11], and Martyn P. Chipperfield[10,11]

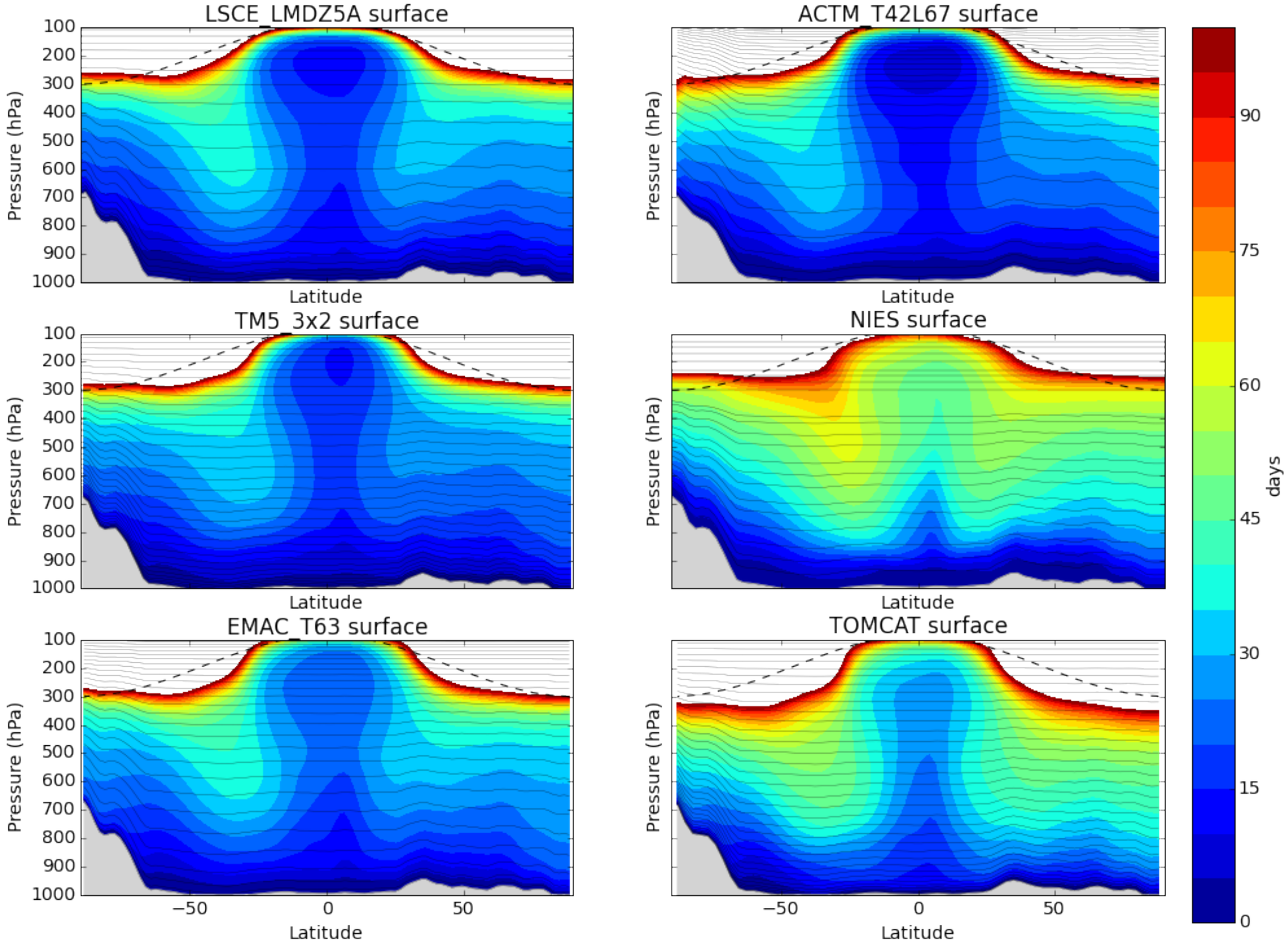
Linear growing BC
3 CTMs
3 GCM
Focus on transport time scales

Here:

1. **TM5 (1x1, 60 layers)**
2. **TM5 (3x2, 60 layers)**
3. **TM5-EC-Earth (3x2, 34 layers)**

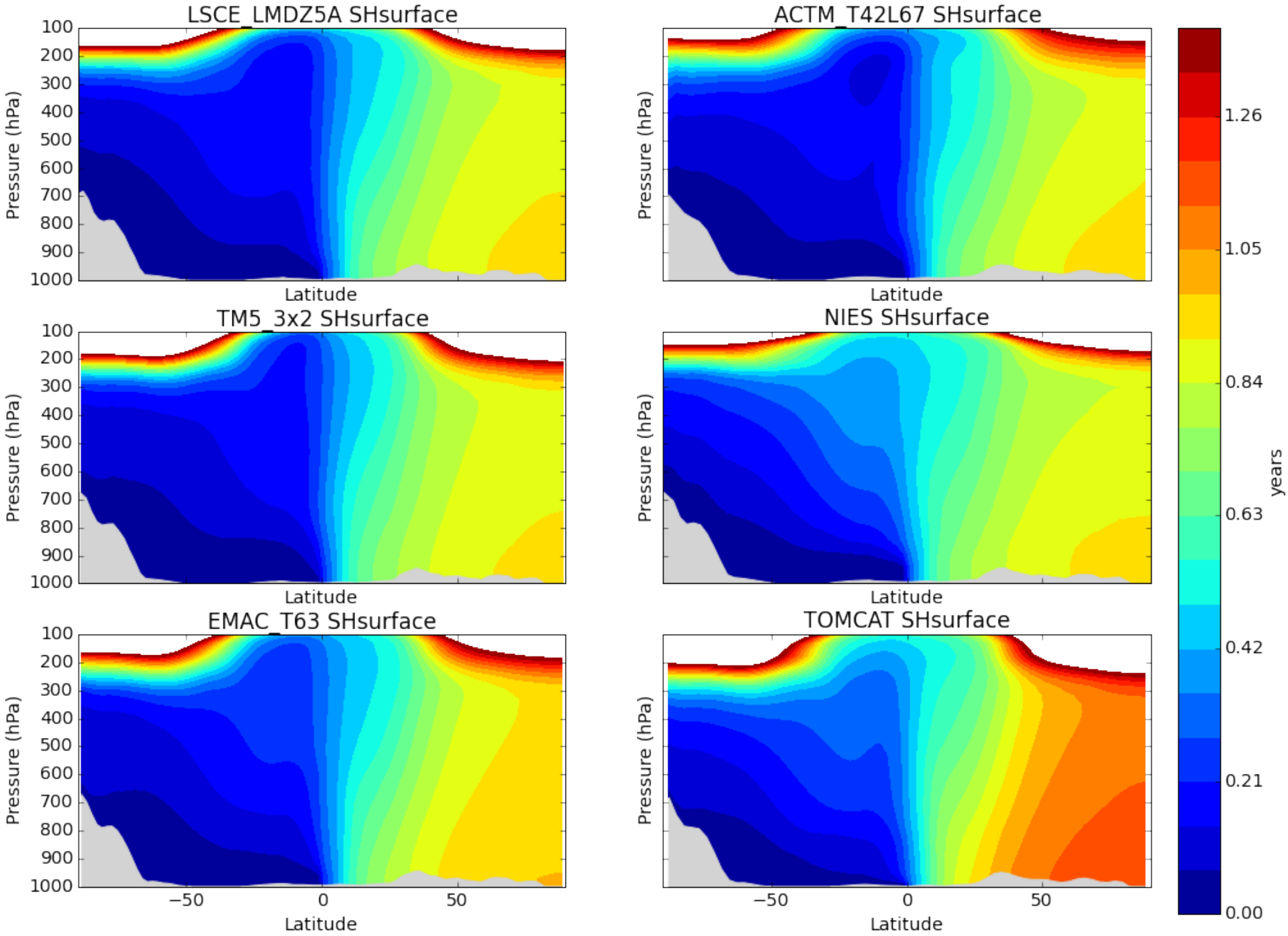
WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research



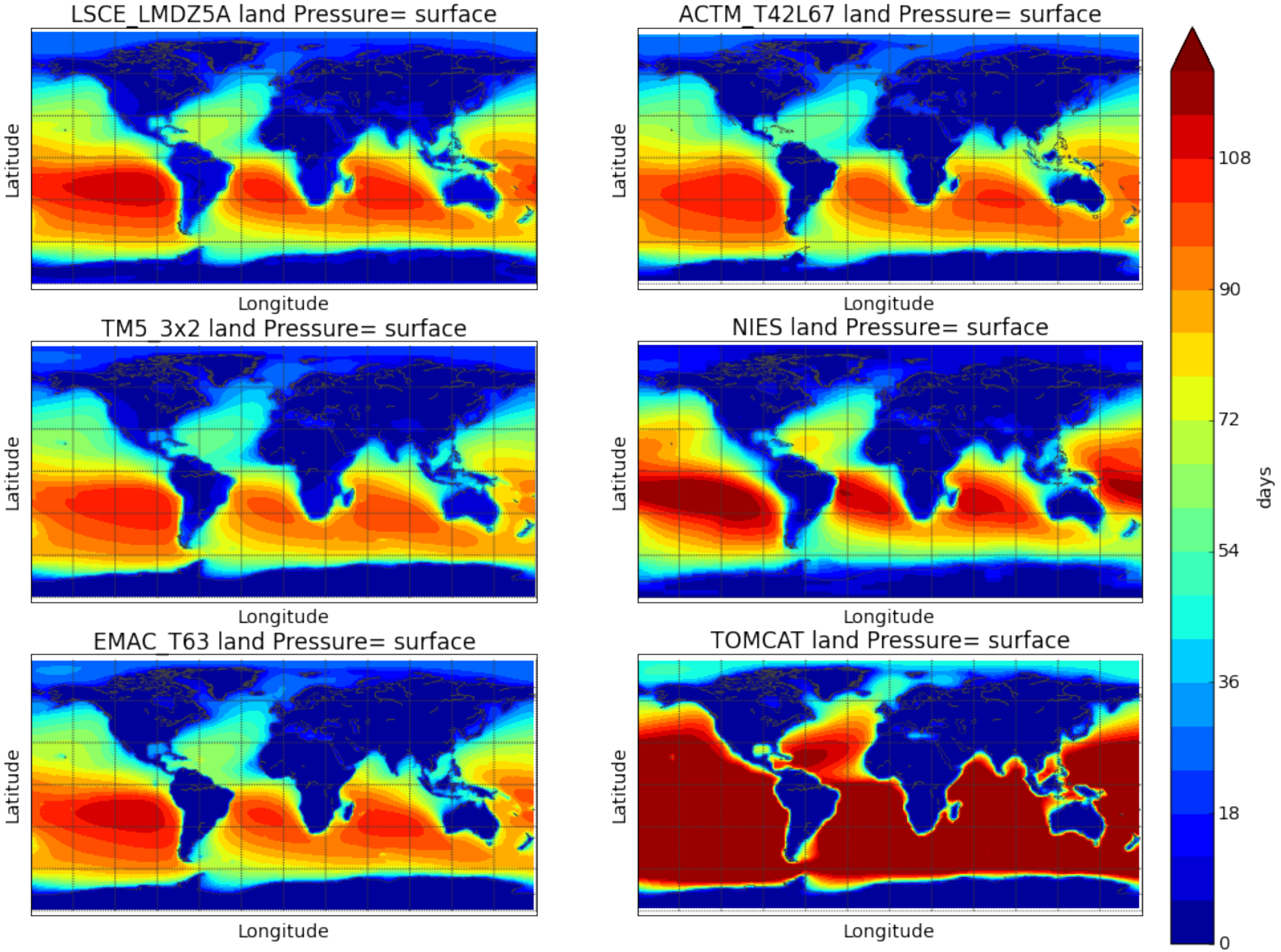
WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research



WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research



WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research

Institute for Marine and Atmospheric research Utrecht

LSCE_LMDZ5A ocean Pressure= surface

ACTM_T42L67 ocean Pressure= surface

TM5_3x2 ocean Pressure= surface

NIES ocean Pressure= surface

EMAC_T63 ocean Pressure= surface

TOMCAT ocean Pressure= surface

Latitude

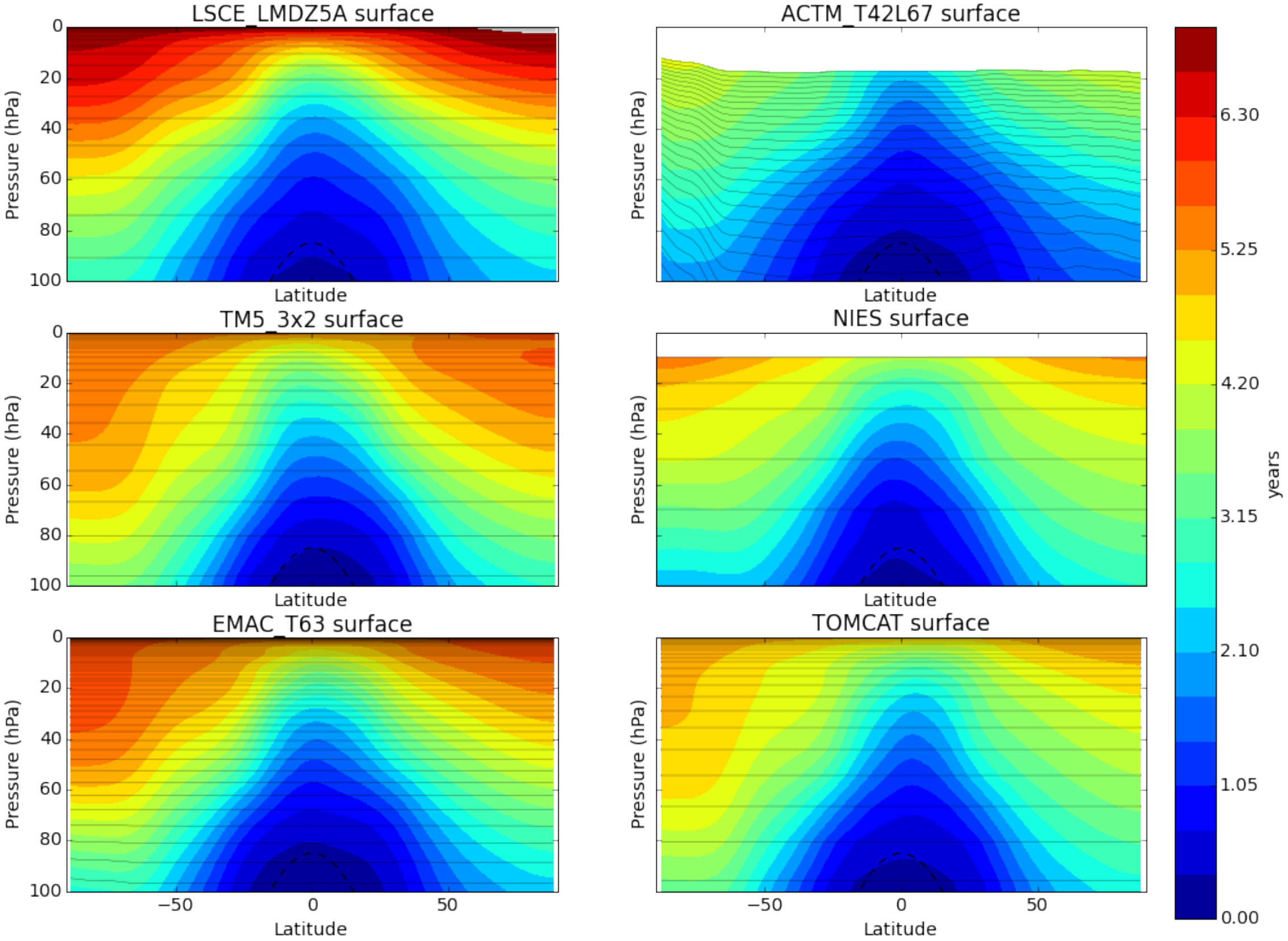
Longitude

54
45
36
27
18
9
0
days

WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research

Institute for Marine and Atmospheric research Utrecht



WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research

Zonal average over all longitudes

SF6 w.r.t. South Pole (pmol/mol)

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
−0.1

spo cgo smo kum mlo nwr mhd brw alt

LSCE_LMDZ3
LSCE_LMDZ5A
TM5_3x2
TM5_1x1
TM5_EC_Earth
EMAC_T63
EMAC_T106
ACTM_T42L67
NIES
TOMCAT

Pacific Ocean zonal average

SF6 w.r.t. South Pole (pmol/mol)

0.4
0.3
0.2
0.1
0.0

spo cgo smo kum mlo nwr mhd brw alt

Age of Air (year)

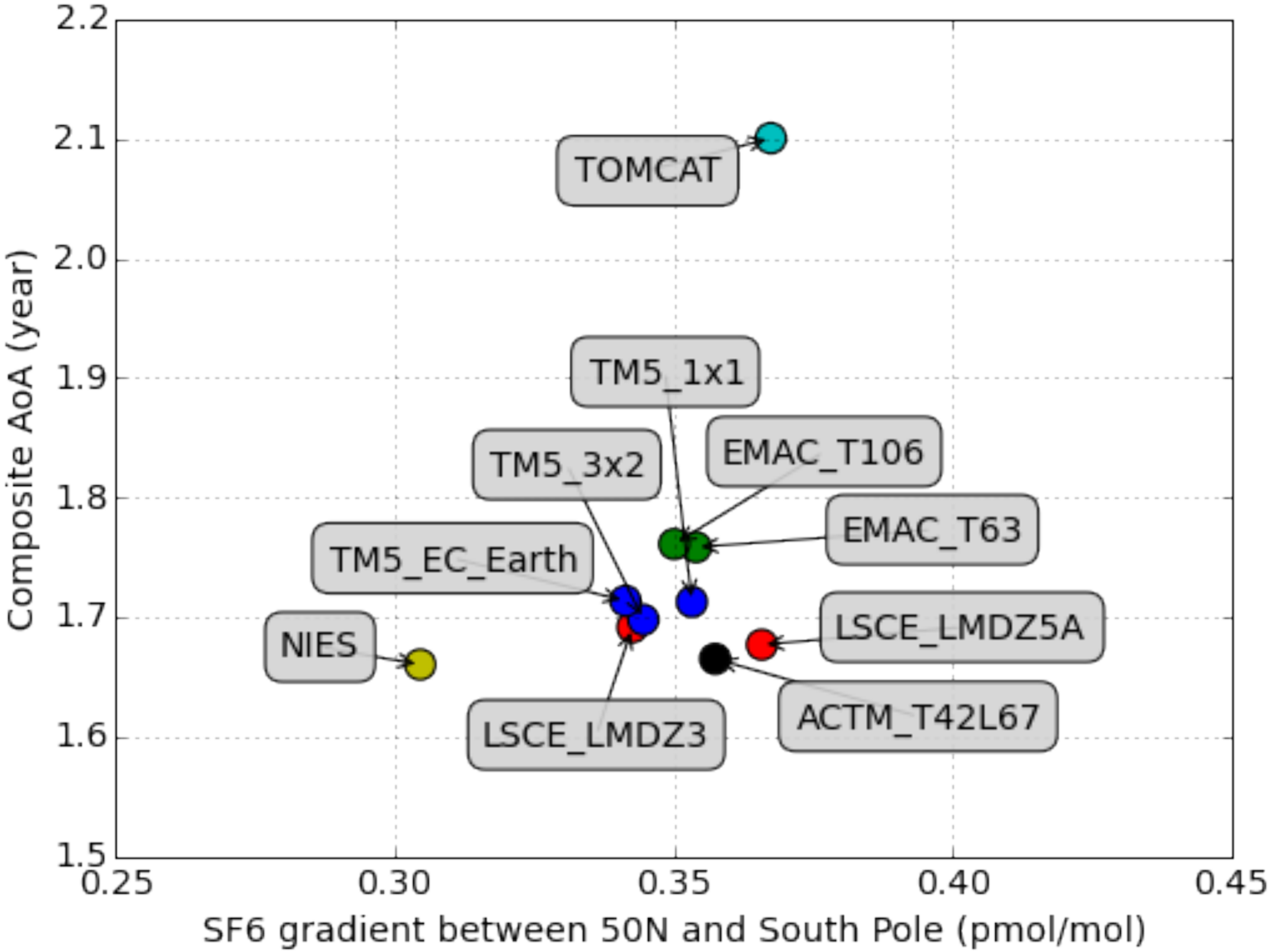
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4

−50 0 50

Latitude

WAGENINGEN UNIVERSITY
WAGENINGEN UR

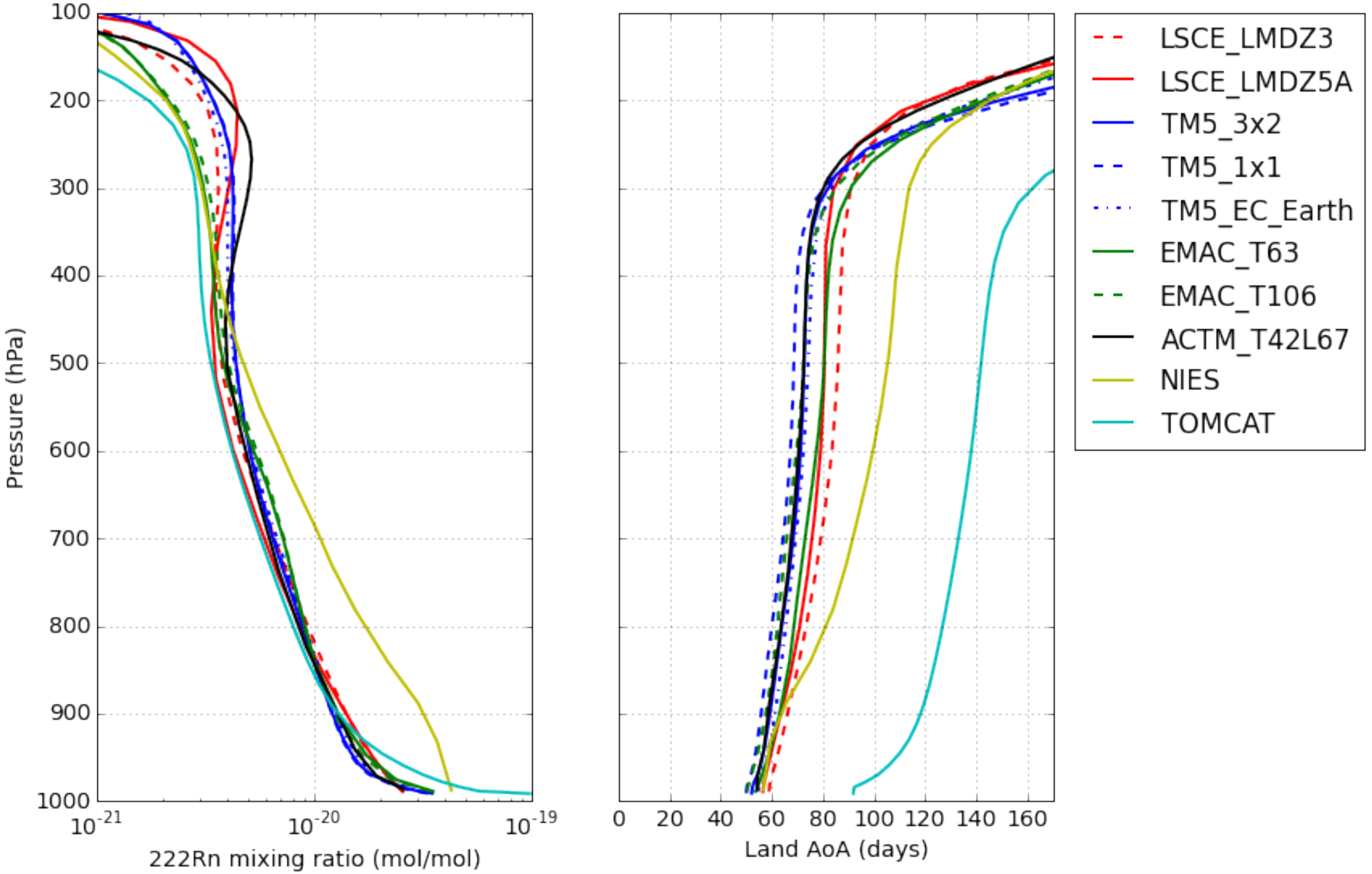
SRON
Netherlands Institute for Space Research



WAGENINGEN UNIVERSITY
WAGENINGEN UR

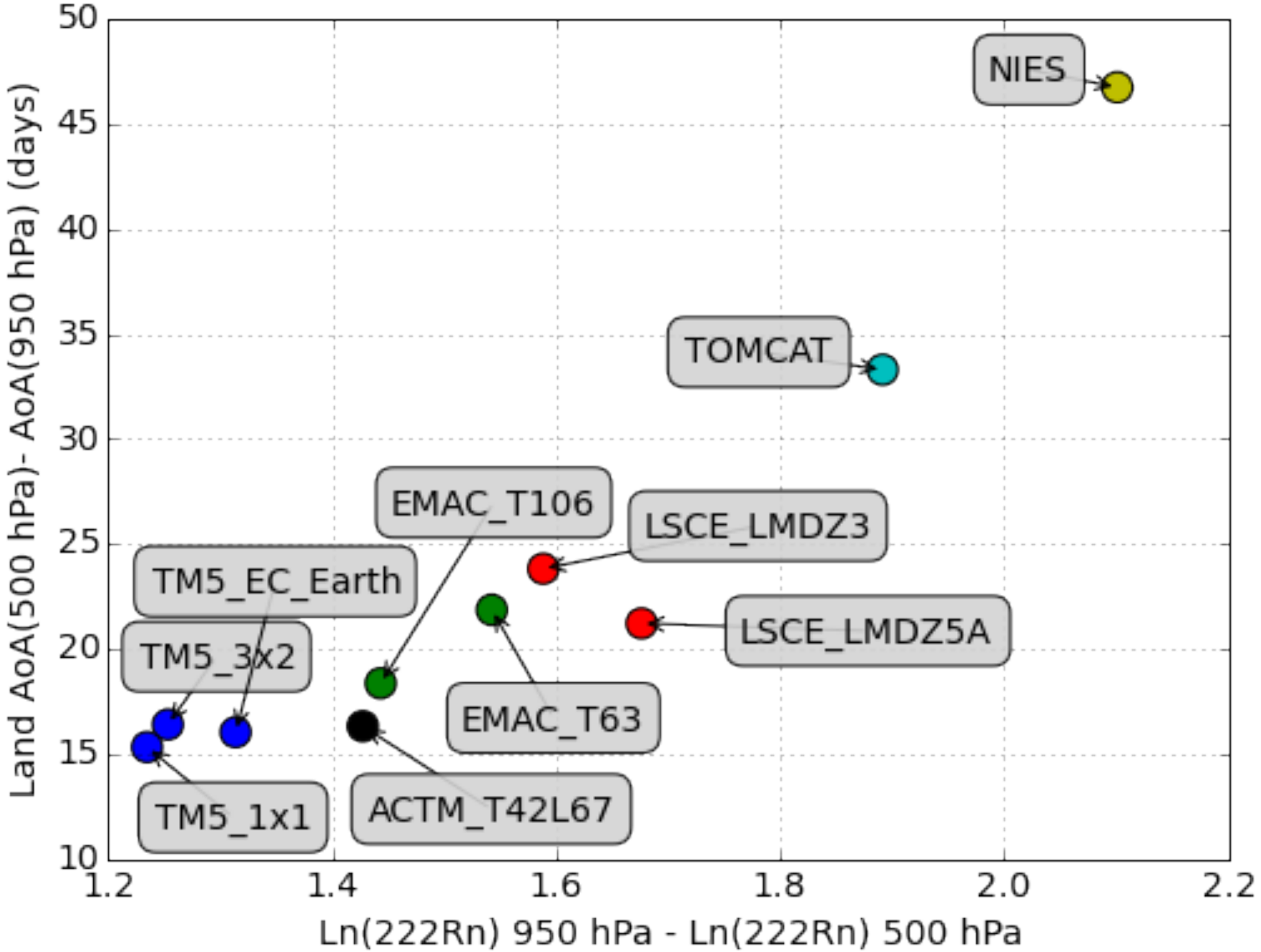
SRON
Netherlands Institute for Space Research

Institute for Marine and Atmospheric research Utrecht



WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research



WAGENINGEN UNIVERSITY
WAGENINGEN UR

SRON
Netherlands Institute for Space Research