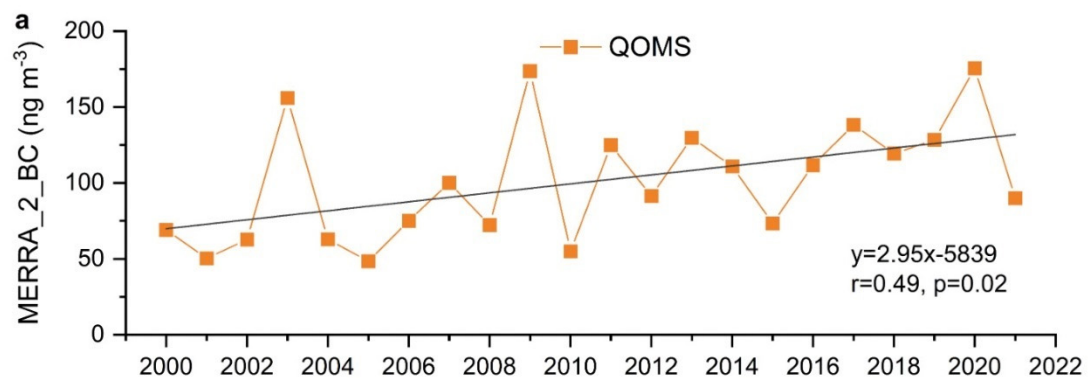


## supplementary: list of acronyms and Figure S1

### list of acronyms

AAVG	annual averages
AF	attenuation factor
AOD	aerosol optical depth
BC	black carbon
BVOCs	biogenic volatile organic compounds
CERES	Clouds and the Earth's Radiant Energy System
CPRs	chemical and photochemical reactions
GHGs	greenhouse gases
GLPs	gases, liquids, and particles
HAVG	hourly average
INEA	internal energy of the atmosphere
IPCC	Intergovernmental Panel on Climate Change
MAVG	monthly average
NIR	near infrared radiation
SOA	secondary organic aerosols
TOA	top of the atmosphere
UV	ultraviolet radiation
VIS	visible radiation
VOCs	volatile organic compounds



**Figure S1.** Black carbon concentration in 2000-2021 at QOMS station from monthly MERRA-2 data.