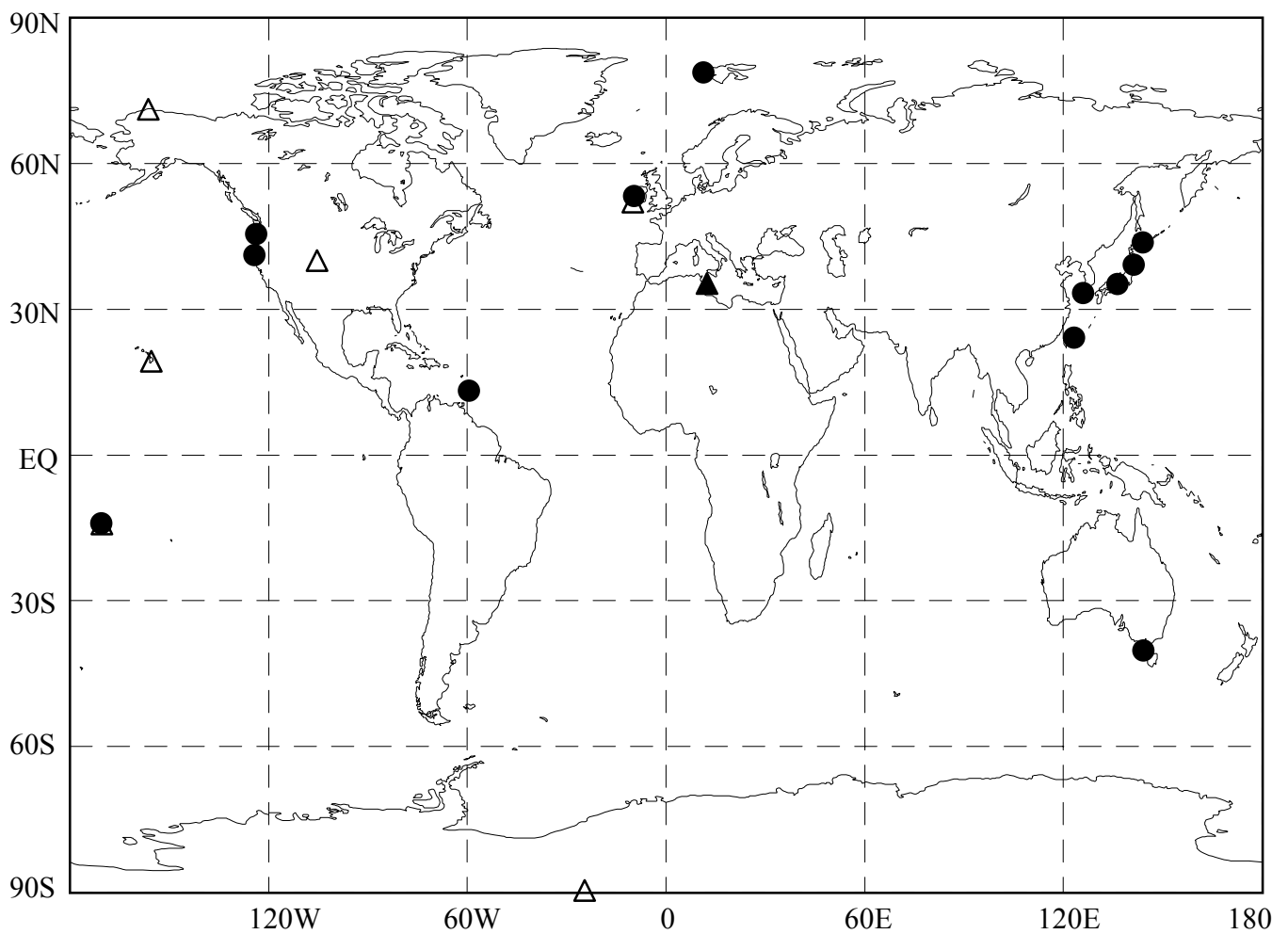


# 5. Nitrous Oxide (N<sub>2</sub>O)

- : *IN SITU* STATION
- ▲ : FLASK STATION
- △ : AGAGE/GAGE/ALE STATION



## 5. Nitrous Oxide (N<sub>2</sub>O)

Nitrous oxide is a greenhouse gas with a long life time of about 120 years. The atmospheric concentration increased steadily from about 270 ppb in pre-industrial times and now is 16% larger than in 1750 (IPCC, 2001).

Nitrous oxide is emitted into the atmosphere from natural and anthropogenic sources including the oceans, soil, the combustion of fuels, biomass burning, the use of fertilizer, catalytic converters for automobiles and various industrial processes. It is removed from the atmosphere mainly by photodissociation in the stratosphere.

Observation sites for nitrous oxide are shown in the location map at the beginning of this chapter. The time series of monthly mean concentrations of some of the reporting stations are plotted with the same marks as in Figure 5.1 to highlight only the long-term trends for each hemisphere. Observation data with a large variability is not shown in this figure. The concentrations are increasing in both hemispheres with a few interannual variations. The difference between both hemispheres is small.

At some stations, the average growth rate decreased considerably between 1991 and 1993, but returned to almost the same rate as that observed during the 1980s. Suggested causes for this are a decrease in the use of nitrogen-based fertilizer, lower biogenic emissions and larger stratospheric losses due to volcanic-induced circulation changes (IPCC, 2001).