

DSS Monitoring Network

A wide ranging DSS monitoring network is being established from the northwestern part of the China to the Japanese archipelago to detect any dust and sandstorm activity as soon as possible and to grasp its development and movement.

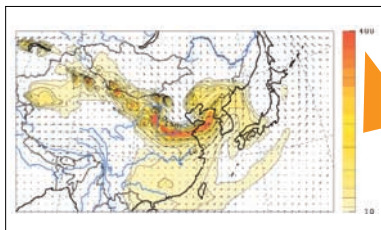
It is important to install three types of equipment-PM10 (to measure concentration of particulate matter of 10 microns or less), Visibility (to measure distance at which visibility is possible), and LIDAR (see the Column 3)-appropriately, and to monitor DSS even more accurately. It would enable alleviation of damages through improved prediction accuracy and effective countermeasures at DSS originating area based on the clarification of the mechanism with which DSS formation and transport.

Ministry of the Environment actively contributes to related international projects and installs and maintains monitoring equipment.

In addition, since public interests in DSS increase recently, real-time information on DSS that is obtained from the above mentioned monitoring network has been provided on the Ministry of the Environment's homepage since spring 2007. In the future, the Ministry will make efforts to share the observation data with relevant countries, and to promote developing a DSS monitoring network in the northeast Asian region and establishing an early-warning system.



Display example of hourly and daily changes of DSS concentration for each point



Display example of CFORS (distribution of DSS concentration based on model calculations)



Real time DSS information by MOE
<http://soramame.taiki.go.jp/dss/kosa/>

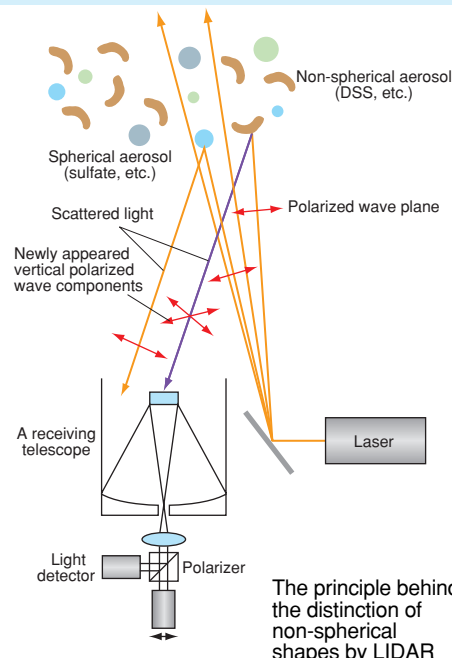
Column 3

LIDAR

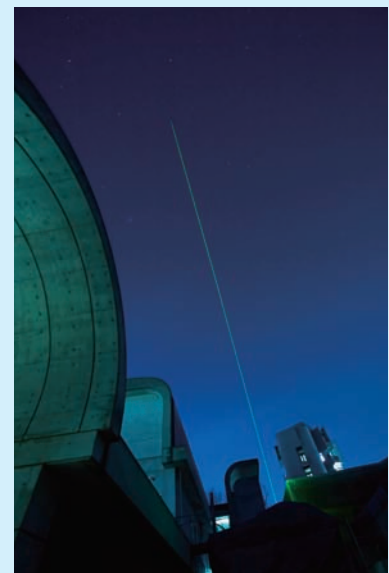
(LIDAR: Light Detection And Ranging)

LIDAR is a radar using laser light instead of radio waves. It is a remote sensing that can measure from the ground a DSS passing above. The laser light emitted from the ground is scattered by fine particles in the air. By measuring the scattered laser light, the vertical distribution of DSS particulate concentration, and the change with time, can be determined. By using polarized laser light, an estimation of the non-spherical character of airborne fine particles can be determined. The shapes of DSS particles are not spherical comparing with atmospheric pollutant particles, therefore with this method it is possible to distinguish DSS from atmospheric pollutants.

LIDAR has the added feature that it can continuously and fully automatically monitor in real time all the DSS passing in the troposphere above the monitoring sites, except when the concentration of floating fine particles is extremely high (such as clouds).



The principle behind the distinction of non-spherical shapes by LIDAR



LIDAR at work