

## Spectrometer Systems for Atmospheric Research

### Partner

Meteorologie Consult GmbH is specialized in the development and production of radiometer and spectrometer devices to measure the radiation from UVB up to the near IR for atmospheric research. These instruments are installed around the world in research airplanes, on top of the highest mountains and even in a research station in the Antarctic. Metcon instruments are based upon tec5 OEM components.

**metcon**  
meteorology consult, inc

### Application

In the atmosphere the chemical reactions are mostly influenced from the intensity of the sun light. Therefore e.g. the photolysis frequencies of NO<sub>2</sub> and Ozone have to be measured. From aircrafts the reflexion characteristics of the ground or from the surface of the clouds has to be characterized. This is an parameter to determine the pollution of the clouds. Other parameters like total ozone in the stratosphere as well as the aerosol content are important for the mathematic-meteorological calculations of the global climate.

### System Solutions



metcon is using ZEISS - MCS spectrographs with a special arrangement of the PDA in combination with operating electronics of tec5. Different receiving optics, developed by metcon, with various angles are coupled to the spectrometers.

A new ultra fast spectrograph has been assembled, based on the MCS CCD sensor from Zeiss and tec5 electronics. The sensitivity of the back-thinned CCD is in the range of 300 higher compared to the PDA device, which makes the this instrument especially suitable for aircraft applications. The CCD is temperature controlled at 0 °C.

### Advantages of diode array technology

Using the instruments in aircrafts needs very robust, operating safe and especially fast measurement equipment. Scanning spectrometers are too slow and mechanically not robust enough for this application. For long-term measurements the high stability of the absolute calibration of the radiation signal is of extreme importance.