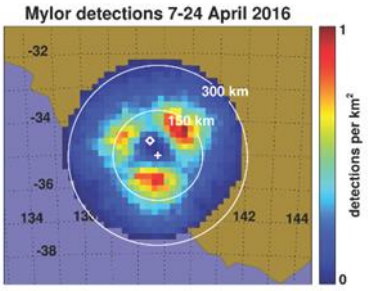
MF/HF/VHF REMOTE RECEIVING SYSTEM

The ATRAD Remote Receiver is a complete standalone receiving system with six channels for use with remote transmitters or radars operating in the MF, HF, and VHF frequency bands. This allows for the design of complex multi-station applications. Typical applications are ionospheric or meteor forward scatter in the upper atmosphere, and wind profiler forward scatter in the lower atmosphere.

(Above left) The Remote Receiving system with keyboard and screen stowed, and (above right), with the keyboard and screen deployed. This figure shows the 6-channel transceiver, with Linux-PC, bandpass filter set and UPS.



(Above) Geographic density of meteors detected at the ATRAD remote receiving array at Mylor near Adelaide. The cross shows the location of the Mylor array and the diamond shows the location of the Buckland Park transmitter.

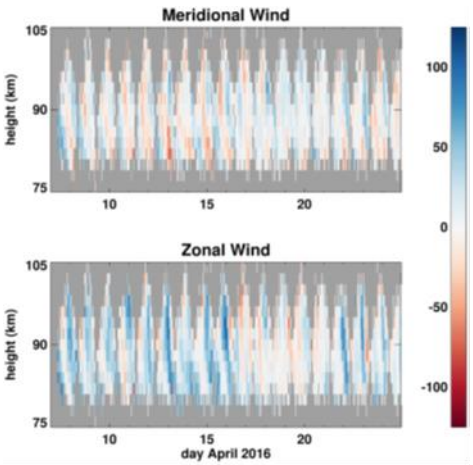
KEY FEATURES

- Six receiver channels
- GPS disciplined time and frequency
- Integrated screen and keyboard
- Integrated UPS
- Fully automated
- Unattended operation
- Ionospheric, meteor, wind profiler applications, and user defined applications
- ATRAD Display and Analysis Software Suite
- Remote monitoring and control
- Range of data outputs for easy data assimilation
- Readily networkable
- Extremely reliable

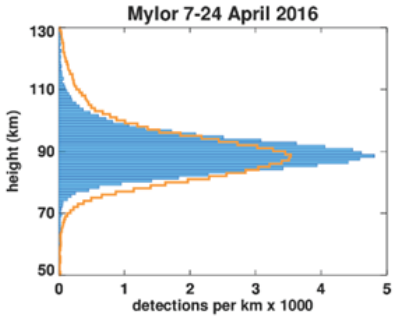
The ATRAD remote transceiver is based on ATRAD's scalable modular approach to system design. It extends the standard MF/HF/VHF transceiver to allow operation at remote sites, and to allow bi- and multi-static radar operation. The system ships complete, with integrated UPS, computer, screen and keyboard, remote communications, monitoring and control, and application specific analysis modules.

APPLICATIONS

- Alternative to a complete radar system
- Bi-static / multi-static operation
- Use remote GPSDO transmitters
- Use remote GPSDO transmitters of opportunity
- Measuring the 2-D wind field with meteor radar



(Above) Wind fields measured at the remote receiver site



(Above) The frequency distribution of heights of meteors detected on the Mylor remote meteor receiving array and transceiver. The orange solid line shows the distribution of meteors prior to angle-of-arrival correction. The solid blue histogram shows the distribution of corrected heights.

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Transceiver
(ATRAD Digital receiver)

Transmitters
Use local transmitter or radar, or remote transmitters or radars

Antenna Arrays
Selected according to application

General Description

16-bit Digital Transceiver incorporating receiver, exciter, and GPSDO (**3-12 receivers**)

User selected

User selected

Specifications

Receiver: Six-channel, 16-bit
Exciter: Single channel, 16-bit
Sounding Range: User selectable
Range Resolution: 100 – 4,000 m (software selectable)
Range Gates: Up to 6,000
Operating Modes: User determined operating modes. Multiple modes available by switching antenna sets
Remote access: Remote monitoring and control via: satellite, 3G/4G, ethernet or dialup.

Frequency: 2-65 MHz (up to 3 bands, with filter sets fixed at factory)
Transmitter Power: Not applicable
Combiner Method: Not applicable
AC Mains Power: 220-240V AC or 110-120V AC, single-Phase

Antenna Array Configurations: User / application determined
Antenna Array Footprints: User / application determined

Display and Analysis Software

ATRAD Display Acquisition Analysis (DAA): software modules selected for the particular application

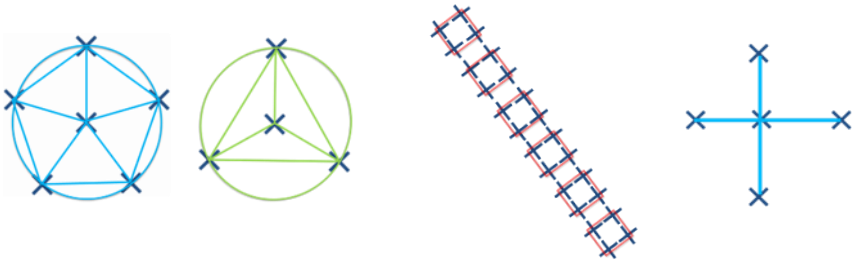
Data output: Determined by particular application

Data Output Formats: Atrad Data Format (ADF), user requested

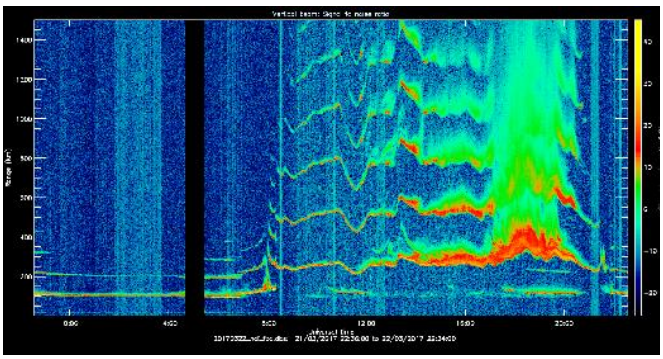
Options

Antenna Arrays

Example layouts for 6-channel meteor interferometer and spaced antenna operation (pentagon), 4-channel Spaced Antenna (triangle), 6-channel Ionospheric Array, 5-channel meteor interferometer (cross). User defined arrangements are of course possible.



Example of range-time SNR plot for remote single channel 2-MHz reception, showing E- and F-regions and E- and F-region multi-hop. The small loop antenna used to make these observations is also shown on the right.



Antenna Guying

For high-wind locations (> 20m/s)

Remote Transmitters, and transmitters for bi-static operation

ATRAD MF, HF and VHF transmitters available

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