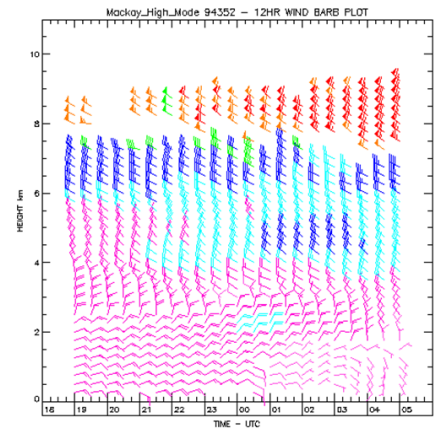


ATRAD wind profilers provide a highly cost-effective measuring solution with a very low total cost of ownership. Ongoing maintenance requirements are minimal, operation is unattended and there are no recurring consumable costs. BUFR data output is provided to enable easy data assimilation into existing observation networks. ATRAD has provided 13 radars of this class in recent years for various applications, the last 6 of which are operational profilers for the Australian Bureau of Meteorology, and for mining operations.

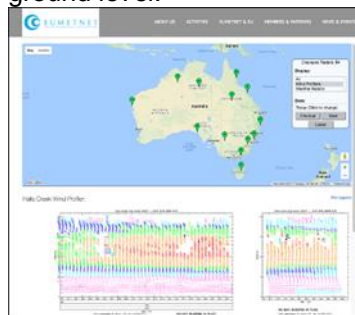


(Above) The Cairns BLP. The BLP system is a 12-kW peak power, 27 Yagi antenna array, three receive channel radar, which operates in SA mode. The antenna array covers an area of 16m x 16m. Data are provided by a 30-min BUFR data stream for weather forecasting and numerical weather model assimilation. Higher resolution (1-min) data are routinely produced for basic research purposes



(Above) Typical wind results from 12-h of operation of the Mildura BLP. Plot from the EUMETNET site (<http://eumetnet.eu/activities/observations-programme/current-activities/e-profile/radar-wind-profilers/>)

The ATRAD Boundary Layer Profiler uses Spaced Antenna techniques to provide real-time vertical profiles of horizontal wind speed and direction at heights of up to 8 km above ground level.



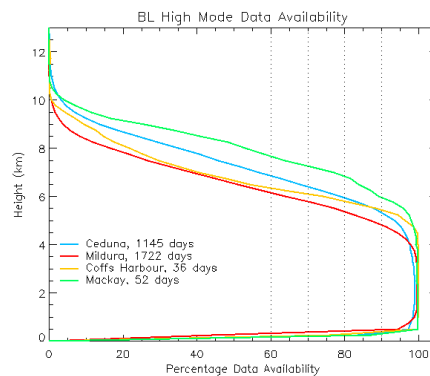
(Above) ATRAD Windprofilers in Australia. (see the EUMETNET site).

## APPLICATIONS

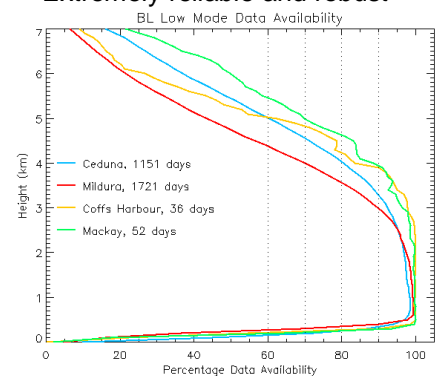
- Alternative to meteorological balloon stations
- Synoptic and mesoscale analysis and forecasting
- Climate change research
- Rocket and artillery range support

## KEY FEATURES

- Sampling range 0.2—13 km
- Real-time Wind Profiles
- Spaced Antenna (SA) operation
- BUFR Output for easy data assimilation
- Unaffected by tropical conditions, precipitation and bird or insect Migrations
- Remote monitoring and control
- Adopted by the Australian Bureau of Meteorology
- Low operating costs
- Fully automated
- Unattended operation
- **5-year warranty on power amplifiers**
- Extremely reliable and robust



(Above) Data availability in high mode for 4 BLP radars in the Australian Wind Profiler Network with 250-m height resolution. The radars provide winds from 300-m to 5-9 km depending on location with excellent data availability (at least 50 %) in this mode. Their performance has been validated against several hundred (collocated) radiosonde launches.



(Above) Data availability in low mode for 4 BLP radars in the Australian Wind Profiler Network with 100-m height resolution. The radars provide winds from 300-m to 5-6 km with excellent data availability (at least 50 %) in this mode

## Transceiver

(Digital receiver)



## Transmitter

(12 kW transmitter – rack at rear)



## Antenna Array

(View of Yagi antennas and feeds)



### General Description

16-Bit Digital Transceiver incorporating receiver and Exciter

Solid-state, modular, 12 kW transmitter, expandable to 20 kW

Spaced Antenna array

### Specifications

**Receiver:** Three Channel, 16-bit

**Exciter:** Single Channel, 16-bit

**Typical Sounding Range:** 200-13000m

**Range Resolution:** 100 – 4,000 m (software selectable)

**Range Gates:** Up to 6,000

**Operating Modes:** Spaced Antenna FCA analysis

**Remote access:** Remote monitoring and control via satellite, 3G/4G, ethernet or dialup.

**Frequency:** 55 MHz (Fixed at factory. Frequencies in range 30-65 MHz available)

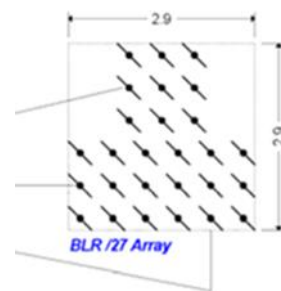
**Transmitter Power:** 12 kW (other powers available)

**Combiner Method:** Transmitter module outputs combined and then split; provides improved phase matching and allows for graceful degradation.

**Transmit/Receive Switching:** T/R Switches integrated in combiner/splitter unit

**AC Mains Power:** 220-240V AC or 110-120V AC, 3-Phase

### Array Configuration:



27 3-element Yagi antennas arranged in three 9 antenna groups

### Array Footprint:

Frequency dependent (~ 16 m x 16 m at 55 MHz)

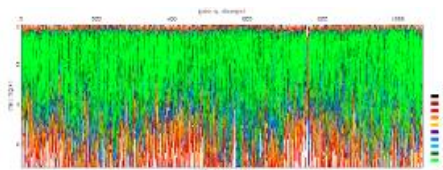
**Beam steering:** Not required

### Data Analysis and Display

**ATRAD DAA with QC:** modified Weber and Wuertz (see Dolman, B.K. and I.M. Reid (2014), <http://dx.doi.org/10.1016/j.jastp.2014.02.009j>)



**Data output:** Wind barb, wind field, wind profile, signal-to-noise ratio (SNR)



**Data Output Formats:** BUFR, ADF, user requested

### Options

GPS Reference

Antenna Guying

Precipitation Software

Turbulence Software

Tropopause Software

UPS

GPS disciplined oscillator (GPSDO) / GPS locked time and frequency

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

Measure rain rate

Estimate of turbulence intensity

Measure the height of the radar tropopause

Uninterruptible Power Supply