



SPACE PRODUCTS & SERVICES

For space situational awareness (SSA)
and space control.

For over 35 years EOS has directed energy beams to space objects
for applications including tracking, characterisation, identification,
communications, remote maneuver and missile defence.

EOS provides SDA infrastructure including lasers, telescopes and
beam directors to allies and partners globally.



SPACE SITUATIONAL AWARENESS

EOS' advanced Space Situational Awareness (SSA) capability allows users to monitor, measure and interpret activities in space.

Our Conjunction Analysis and Threat Warning (CATW) system uses available data sources combined with highly accurate independent space object catalogue to provide realistic and actionable data for satellite operators.

High accuracy follow tracking to provide refined collision probabilities. With over 35 years' experience in SDA, EOS' products are mature and interoperable with allied systems.

SSA SERVICES

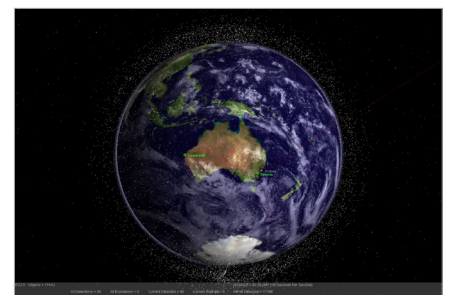
- Independent space object catalogue
- Optimized sensor scheduling
- Reliable and accurate tracking correlations
- Conjunction assessments and proximity warnings
- Ephemeris generation and prediction
- Object characterization and identification
- Data analytics, machine learning and artificial intelligence
- Simulation tools for mission planning and capability assessment

DATA SERVICES

- Accurate tracking: LEO to GEO and beyond
- Taskable network of sensors / sensor cueing
- Tracking: daytime / passive / emergency requests
- Region search, object detection and tracking
- Satellite and debris laser ranging
- High-rate image capture

SPACE DEBRIS MANAGEMENT

EOS' space tracking and debris monitoring systems provide the benchmark for space catalogue acquisition and maintenance, in all key performance indicators:



ACCURACY

A space object's range can be determined with an absolute accuracy selectable from 1 mm to 1 m depending on the application.

No other operational space technology offers this accuracy

SENSITIVITY

EOS trackers have been validated for tracking objects as small as 6 mm in size at 350 km range, 5 cm at 1,000 km and 30 cm at 35,000 km.

This sensitivity addresses over 90% of all risk to operational spacecraft

LOW COST PER TRACK

Allowing for frequent tracking of each object and highly accurate catalogues.



MISSILE DEFENSE

EOS missile defense products use high power lasers to detect, track, characterise, manoeuvre and affect objects in space. This can be achieved either from a space or near-space platform, or from the ground using advanced atmospheric correction technology for the laser.

Sensor technology can be applied at multiple points in a missile defence engagement process, including tracking and discrimination, terminal guidance, and damage assessment after conjunction.

Laser tracking is effective for 5 cm objects travelling at 10 km/sec at a range of 5,000 km, even for objects in close formation. Accurate trajectory and intended-target data can quickly be determined.

Laser trackers can designate targets for defensive kinetic kill vehicles (KVs) even while tracking.

High resolution tracking systems provide battle damage assessment with high fidelity if a tracked target fragments or breaks up.

EOS remote thrusting technology developed for space debris mitigation can also be applied to move (not damage or destroy) space vehicles for missile defence.



OPTICAL COMMUNICATIONS

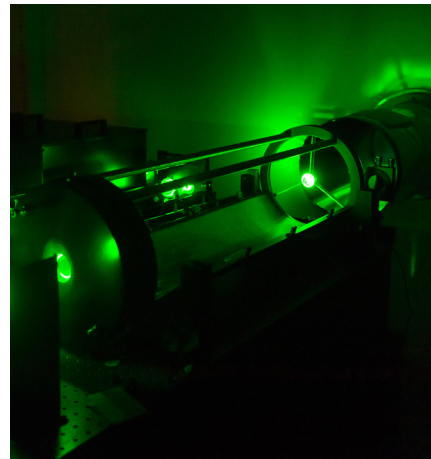
EOS developed low bandwidth optical communications for extreme range applications over 30 years ago.

In 1998 EOS launched its own satellite 'Westpac' (pictured) for use in optical communications and optical counter-measures testing. Still fully operational, the satellite is being used to support EOS' experimental work.

Long-haul communications are currently performed by microwave systems which have evolved over 40 years towards a theoretical bandwidth limit of around 1TBPS. Modern military, industrial and commercial requirements each will exceed this limit within a decade.

Optical communications systems promise to deliver improved bandwidth (up to 20TBPS) with high security in all domains, and overall distances through their amenability to quantum encryption as well as the extreme physical difficulties they present for signal detection or intercept.

In collaboration with JAXA, EOS laser communication systems achieved an optical communications link at 6.7 million km. EOS achieved this with a transmitter able to establish a link to the Japanese Hyabusa 2 satellite on its approach to the asteroid Ryugu 162173.



LASER PRODUCTS

- Completely Sealed Stimulated Brillouin Scattering (SBS) Cell
- Diode Pumped Thermal Electric Cooler (TEC) Cooled Repetition Rate Variable Laser Oscillator
- Diode Pumped Single Frequency Laser Oscillator
- Diode Pumped Solid State Laser
- 20 Hz Diode Pumped Laser Transmitter
- Diode Pumped and Passively Mode-Locked Laser Oscillator
- Infrared Pulsed Laser Module
- kHz 1540 nm Pulsed Laser Module
- Laser Rangefinder
- Photo Detector Modules
- Picosecond-Timing System
- Picosecond Pulsed Laser
- Ultrafast High Voltage Switches



TELESCOPES

EOS designs and manufactures state of the art alt-azimuth telescopes of the highest quality and technical performance as imagers, beam directors and trackers—they are smooth at high speeds, highly accurate, reliable, robust and low maintenance.

The design offers seamless integration of the telescope, telescope enclosure, instruments and software programs which are fitted with remote diagnostic support, automated operation and are easily upgraded.

EOS telescope gimbals are manufactured in either modular (standard) or custom designs:

1 Meter

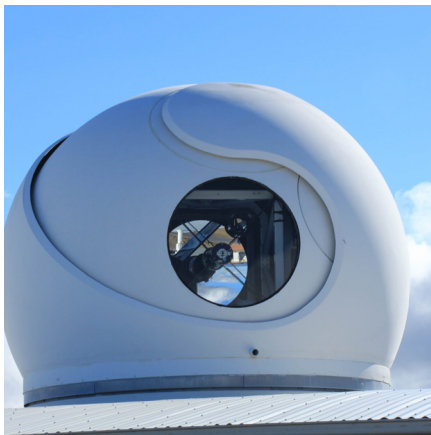
used for apertures up to 1.4m

2 Meter

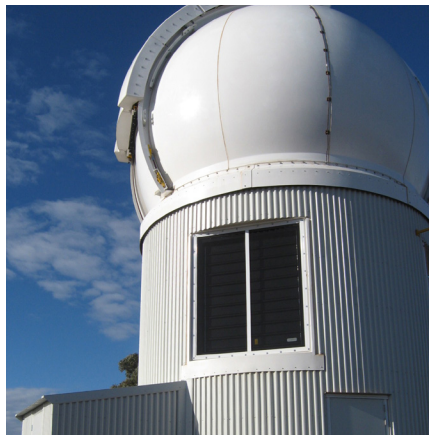
used for apertures from 1.8m to 2.4m

Custom designs

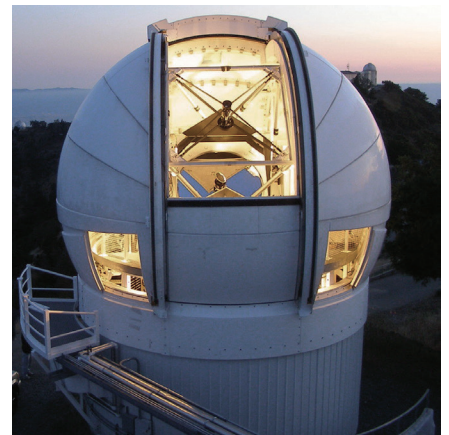
accommodate apertures of up to 6.5m



Typhoon Enclosure



Tempest Enclosure



Icestorm II Enclosure

OBSERVATORIES

EOS provides complete observatory design, installation, commissioning and maintenance.

Observatory designs are manufactured to ISO9001 standards and are optimized for thermal performance and can be provided in kit form (standard design) or installed on site (custom design).

EOS can take a greenfield site and transform it into an operational tracking station in less than 12 months



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