

SMALL SATELLITES FOR ADVANCED EARTH OBSERVATION MISSIONS

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The TOPSAT and Beijing-1 spacecraft were launched at the end of 2005. Since their launch, the spacecraft have been commissioned and have started routine operations.

Beijing-1 carries out a high resolution mapping mission. It comprises a small 168kg satellite carrying an imaging instrument providing 4-metre Ground Sampling Distance and 24km swath. This is in addition to a wide angle camera with 32-metre GSD and 600km swath as carried by the other DMC satellites.

The spacecraft provides a large data storage capacity with solid state storage augmented by hard drives modified for use in space, allowing the instrument to map long 3000km swaths with a 600km field of regard. A software configurable image compressor and high speed X-band downlink permit both store and forward, as well as real-time downlinking.

TOPSAT is a 112kg small satellite, and carries a 2.5m imaging instrument with 10km swath. It includes sophisticated attitude manoeuvring capabilities, allowing it to dwell over targets.

SSTL is now developing N2, a second generation 2.5m imaging spacecraft, with significantly higher capabilities. The spacecraft missions are discussed in more detail, and early mission results are discussed. It is concluded that small earth observation satellites have moved from technology demonstrators into the realm of real operational tools.