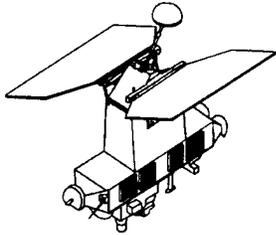


# ERBS

## Earth Radiation Budget Satellite

Spacecraft Sketch	Mission Objective
	<p>The objective of the ERBS mission is to gather earth radiation budget data, aerosol data and ozone data to assess climate changes and ozone depletion. The global determination of the components of the earth's radiation budget is a first step in NASA's Climate Program. The Earth Radiation Budget Experiment (ERBE) mission is a multi-spacecraft program designed to attain spatial and temporal sampling of key earth atmospheric parameters from an ERBE instrument set and demonstrate their useful application for climate related studies. The Earth Radiation Budget Satellite (ERBS), the mid-inclination spacecraft of the ERBE mission, will fly the ERBE instrument set with another instrument. In conjunction, the ERBE instrument set will be flown on two of the spacecraft in the National Oceanic and Atmospheric Administration (NOAA) series, the NOAA 9 and the NOAA 10.</p>

TYPE OF MISSION	PROGRAM OFFICE	PROJECT LEAD CENTER	MANAGEMENT APPROACH	S/C CONTRACTOR	I&T CONTRACTOR
EARTH SCIENCES & APPLICATIONS	SPACE SCIENCES & APPLICATIONS	GSFC	OUT-OF-HOUSE	BASD	BASD

Payload Description
<p>The ERBS payload includes an ERBE instrument set (e.g., one Scanner instrument and one Non-scanner instrument) to produce monthly averaged data sets of the Earth's radiation budget for the top of the atmosphere, and one instrument (SAGE 11) to monitor the amount and global distribution of stratospheric aerosols and ozone. The ERBS is a three-axis stabilized, momentumbiased spacecraft that consists of two structural units: a keel module and a base module. The keel module provides mounting for the orbit adjust propulsion system components, the solar array panels, an electronically-steerable spherical-array antenna and an omni antenna. The base module is the spacecraft core structure containing all remaining spacecraft subsystems.</p>

INSTRUMENT NAME	ACRONYM	PI AFFILIATION	PRINCIPAL INVESTIGATOR	I&T CONTRACTOR
EARTH RADIATION BUDGET EXPERIMENT NON-SCANNER	ERBE-NS	LARC	G. C. BROOME	TRW
EARTH RADIATION BUDGET EXPERIMENT SCANNER	ERBE-S	LARC	G. C. BROOME	TRW
STRATOSPHERIC AEROSOL & GAS EXPERIMENT II	SAGE 11	LARC	M. P. McCORMICK	BASD

**Instrument Descriptions**

The ERBS Earth Radiation Budget Experiment Non-Scanner (ERBE-NS), Data Point 662, is one of two instrument packages which constituted the overall ERBE instrument. The Non-Scanner is designed to measure the intensity of direct solar radiation and diffuse sky radiation. The instrument has four earth-viewing detectors mounted on an elevation gimbal which, when commanded, rotates the detectors to a pre-set elevation angle. The fifth fixed detector provides reference observation of the sun and measurement of the solar constant throughout the mission.

The ERBS Earth Radiation Budget Experiment Scanner (ERBE-S), Data Point 575, is one of two instrument packages which constituted the overall ERBE instrument. The Scanner is a small spatial resolution instrument (e.g., field-of-view equal to 3 degrees diameter) containing three separate channels. Each channel consisted of a two-mirror telescope, field stop, bandpass filter, and pyroelectric detector-preamplifier assembly. All three channels were located with a continuously rotating scan drum which scanned the earth field-of-view from horizon to horizon, plus a space field-of-view for calibration. The Scanner was developed for LaRC by TRW.

The ERBS Stratospheric Aerosol and Gas Experiment II (SAGE II), Data Point 574, is designed and built by BASD to measure the extinction of solar radiation intensity during solar occultation. The instrument uses a flat scanning mirror, Cassegrain optics and a detector package to scan the Earth's Atmospheric layers during orbital sunrise and sunset. SAGE-11 is the fourth in a series of instrument designed to measure aerosol concentration in the Earth's atmosphere.

**Launch**

10/5/84