

80 YEARS AFTER THE NORGE: TOP SCIENCE FROM POLAR LONG DURATION BALLOONS.

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Polar Long Duration Balloon Experiments provide access to space at a reasonable cost. The interest in this technology is rapidly growing and the Italian Space Agency in a cooperative effort with the Norway Andoya Rocket Range is developing a program of balloon launches from the Svalbard site of Longyearbyen (Peterzen et al., 2003, 16th ESA symp. on European Rocket and Balloon Programmes and Related Research, ESA-SP-530, pg. 213). In Italy several groups are developing science payloads for these flights. In advanced state of development are:

1) the PEGASO / TRAIL BLAZER project, aimed to measure the Earth magnetic field in the startosphere by means of a series of LDB flights of small magnetometer payloads. The instruments have flux-gate magnetometers, and independent GPS and IRIDIUM based telemetry.

PI dr. Giovanni Romeo at INGV-Roma.

2) the OLIMPO microwave/sub-mm telescope, an experiment devoted to the measurement of the Cosmic Microwave Background in the direction of Clusters of Galaxies and the anisotropy of the far IR background radiation. The instrument features arrays of 19,37,37,37 bolometric detectors respectively at frequencies of 150, 240, 350, 540 GHz. The resolution is around few arcminutes.

PI dr. Silvia Masi at Universita' di Roma La Sapienza.

3) the BAR-SPORT experiment, a balloon-borne microwave polarimeter aimed at the measurement of the polarization of the Cosmic Microwave Background at 30 and 90 GHz, with extremely low instrumental polarization.

PI dr. Stefano Cortiglioni at IASF-Bologna.

Interest in this opportunity has been expressed by atmospheric physics, planetary science, biology, and high energy astrophysics groups. The programme is proceeding in steps. The first coordinated launches were started last year, and in next June the first circumpolar test flights will be carried out, possibly with the launch of a small scientific payload. We hope to have the first flights of large scientific payloads in 2005/2006.

A Norway-Italian campaign of scientific balloon flights from Svalbard in preparation and during the IPY will be a great way to celebrate the NORGE mission of 1926, 80 years later.