

NASA/TM-2003-209984/VER.1/VOL.4

**GEOSAT Follow-On (GFO) Altimeter
Document Series**

Volume 4

**GFO Altimeter Engineering
Assessment Report**

Update:

**The First 43 Cycles Since Acceptance
November 29, 2000 to November 30, 2002**

Version 1

**D. W. Lockwood
D. W. Hancock, III
G. S. Hayne
R. L. Brooks**

April 2003



Observational Science Branch
Laboratory for Hydrospheric Processes
NASA Goddard Space Flight Center
Wallops Flight Facility

Section 1

Introduction

1.1 Identification of Document

The purpose of this document is to present and document GFO performance analyses and results. It is the third of a series of GFO performance documents, each of which update WFF's assessment results. This is the second Engineering Assessment Report since the initial report. This report extends the performance assessment since acceptance to 30 November 2002.

The initial GFO Altimeter Engineering Assessment Report, in March 2001, covered the GFO performance from Launch to Acceptance (10 February 1998 to 29 November 2000). The second of the series covered the performance from Acceptance to the end of Cycle 20 (29 November 2000 to 21 November 2001).

Since launch, we have performed a variety of GFO performance studies; Appendix A provides an accumulative index of those studies.

1.2 Definition of a GFO Cycle

Like its predecessor, GEOSAT, the GFO groundtrack has a repeat (± 1 km) period of 17.05 days. For our analyses, the repeat periods are referred to as cycles, and are used as data dividers to assess sensor internal consistency, taking into account seasonal differences.

For simplification in tracking the performance of the satellite, the Navy is using exactly 17-day boundaries in the definition of a cycle. The first 17-day cycle after acceptance by the Navy is numbered 000, Cycle 000, and is used as a reference for the succeeding cycles. The 17-day cycle which started on December 16, 2000 (Julian day 2000352) is the beginning of the first evaluation cycle, Cycle 001, which ended on January 2, 2001 (Julian day 2001002). Each subsequent cycle is consecutively numbered.

1.3 Data Flow to/from Wallops

1.3.1 To Wallops

The daily near-real time GFO data flow from the Naval Oceanographic Office (NAVO), Altimetry Data Fusion Center (ADFC), Stennis Space Center, Bay St. Louis, MS, to Wallops Flight Facility (WFF) consists of:

- Science data without waveforms (ra_data)
- Science data with waveforms (ra_cal_data)
- Engineering data (eng_data)
- Water Vapor Radiometer data (wvr_data)
- Sensor data (sdr)