接收極軌道衛星 INTASAT 信號推定電離層總電子密度之緯度變化動態

LATITUDINAL MORPHOLOGIES OF TEC DEDUCED FROM POLAR ORBITING SATELLITE INTASAT

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The radio beacon signals transmitted by the polar orbiting satellite INTASAT have been observed since Feb. 1975 at Radio Wave Research Laboratory (Geographic latitude 25°N, longitude 121.5°E, magnetic dip 34°N) of National Taiwan University. This satellite transmits beacon signals of 40 and 41 MHz which enables a determination of electron content by using the differential Faraday rotation method. Because of low latitude of Taiwan the quasi-transverse propagation condition is met at some point of nearly every satellite pass. At the point of transverse propagation, there generally occur coincident shallow nulls at 40 and 41 MHz. This gives an alternate but easier method of determining the electron content value and has been applied to more than two hundred INTASAT records in an effort of studying the latitudinal morphologies.

The present paper shows that the variation of the monthly mean total electron content versus sub-ionospheric latitude exhibit a strong equatorial anomaly. A comparative analysis also has been carried out in the latitudinal variation of TEC for magnetically disturbed days ($\Sigma_{kp} > 16$) and quiet days ($\Sigma_{kp} < 16$). Almost all of the data deduced from south-bound passes under the low sun-spot number near 0800 to 0900 local time.

1. INTRODUCTION

The Spanish orbiting satellite INTASAT was successfully launched from Vandenberg Air Force Base on November 15, 1974. This satellite was designed for measurement of total electron content of the ionosphere. [1]

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中文摘要

極軌道衛星INTASAT是西班牙太空研究委員會託美國航空暨太空總署(NASA)發射的衛星，專供探究電離層的動態被設計。該衛星的資料如下：

週期	114.86 分鐘
傾斜度	101.735 度
遠地点	1457.97 公里
近地点	1440.39 公里
位置	極軌道
發射頻率	40.01及41.01 兆赫

至目前全世界大約四十個追踪站接收來自INTASAT的指標信號，以利探究電離層總電子密度及閃爍之動態。台大電波研究室接用接受NASA, GSFC的衛星軌道預報表以利觀測。本研究室每天上午8－9点及晚間20－21点接受該衛星之信號二次。