

# Weather Satellites, Part 3

by Dr Donald Hillger

The author kindly gave permission for two of his articles originally published in *Topical Time* to be republished in *Orbit* (See issue No 40 for Jan 99). One article covered current-series geostationary weather satellites and the other polar-orbiting weather satellites, each article listing all known postage stamps showing each type of weather satellite.

However as a result of continuing research into this topic and due to correspondence as a result of publishing those two articles, several additional stamps have been "discovered". A third article then appeared in *The Astrophile* for November 1997 and this is an updated version of that article, reproduced with permission, accompanied by an updated list of all known stamps showing current-series weather satellites.

Weather satellites fall into two broad categories - geostationary and polar-orbiting. Geostationary satellites orbit with a period of 24 hours viewing the earth below as if it were stationary. These satellites orbit over an equator approximately 36,000 km above the earth and 5.6 earth radii away from the earth's surface. Polar-orbiting satellites orbit at much lower altitudes, typically between 800 km and 1200km above the earth. These satellites have orbits highly inclined to the equator passing over the polar regions of the earth. Their orbits are typically sun-synchronous, allowing a single satellites to pass over and view all portions of the earth as it rotates underneath.

TABLE 1 lists current series weather satellites (both geostationary and polar-orbiting) and gives the name corresponding to each satellite acronym. Geostationary weather satellites are currently in use by six countries: the United States, the European union, Japan, India, the Russian Federation and most recently China.. Polar orbiting weather satellites are currently in use by four countries: the United States (both civilian and military), the Russian Federation, India and Japan. Neither the European Union nor China currently have polar orbiting weather satellites, although the EU does operate polar-orbiting remote-sensing satellites.

Table 1: Current-series meteorological satellites

Satellite	Country (Agency)	Orbit Type
GOES	USA (NOAA)	geostationary
Meteosat	Europe (Eumetsat)	geostationary
GMS / Himawari	Japan	geostationary
INSAT	India	geostationary
GOMS / Elektro	Russian Federation	geostationary
FY-2 / Feng-Yun	China PR	geostationary
NOAA	USA (NOAA)	polar
DMSP	USA (DoD)	polar
Meteor	Russian Federation	polar
IRS	India	polar
ADEOS	Japan	polar

TABLE 2 lists stamp showing current-series geosats: 3 GOES, 10 Meteosat, 6 GMS and 2 INSAT. No stamps are known to show the Chinese FY-2 geosat, launched in 1997.

Table 2: Postage stamps showing current geostationary meteorological satellites

Country	Scott Number	Year	Satellite
Bulgaria	3612	1991	Meteosat
Cayman Islands	628	1991	GOES
Central Africa Rep.	C234 (Fig. 1)	1980	Meteosat
Chad	?	1996 ?	INSAT ?
China (Taiwan)	2222	1981	GMS
Ciskei	193 (Fig. 2)	1992	Meteosat
Comoro Islands	392 ss	1978	Meteosat ?
Congo PR	961	1992	Meteosat launch
France	1903	1983	Meteosat
Gr. Britain (Jersey)	561	1991	Meteosat
India	1020	1983	INSAT
Japan	1564	1984	GMS
Korea (South)	1572 (Fig. 3)	1990	GMS
Liechtenstein	956	1991	Meteosat
Maldive Islands	1575	1991	GMS
Morocco	464	1983	Meteosat
St. Lucia	611 ss	1983	GOES
Thailand	1472	1992	GMS
Turkey	2331	1985	Meteosat
Vanuatu	566	1992	GMS
Venezuela	1426c	1992	GOES?

ss = souvenir sheet

Illustrated:

GMS - S.Korea (1990)

Meteosats:  
Ciskei (1992)  
Central Africa (1980)

Meteor:  
Nicaragua (1987)

NOAAs:  
French Antarctica (1991)  
Madagascar (1990)



TABLE 3 lists stamps showing current series polar-orbiting satellites: 4 NOAA, 18 Meteor, 1 IRS and 3 ADEOS.

Table 3: Postage stamps showing current-series polar-orbiting weather satellites

Country	Scot Number	Year	Satellite
China (Taiwan)	2221	1981	TIROS-N / NOAA
Cuba	2324	1980	Meteor
Cuba	2502	1982	Meteor
Cuba	2587	1983	Meteor
Czechoslovakia	2304	1980	Meteor
India	1352	1991	IRS
Korea (North)	Mi2523	1984	Meteor
Laos	784	1987	Meteor (Cosmos)
Madagascar	969 (Fig. 5)	1990	NOAA
Madagascar	1050	1992	ADEOS
Madagascar	1050 ss	1992	ADEOS
Madagascar	1050a ss6	1992	ADEOS
Mongolia	C78	1976	Meteor
Mongolia	C90	1977	Meteor
Mongolia	1686	1988	Meteor
Nicaragua	1657 (Fig. 6)	1987	Meteor
Romania	2422	1973	Meteor
Russia	3860	1971	Meteor
Russia	4175	1974	Meteor
Russia	4665	1978	Meteor
Russia	5298	1984	Meteor
Russia	5299 ss	1984	Meteor (in margin)
Russia	5603 ss	1987	NOAA (in margin)

Mi = Michel catalog number

ss = souvenir sheet

ss6 = souvenir sheet of 6

References:

Hillger, D.W., 1997a: Geostationary Weather Satellites. *Topical Time*, 48(2), March-April, p.41-42, 64.

Hillger, D.W., 1997b: Polar-Orbiting Weather Satellites. *Topical Time*, 48(4), July-August, p.33-36.

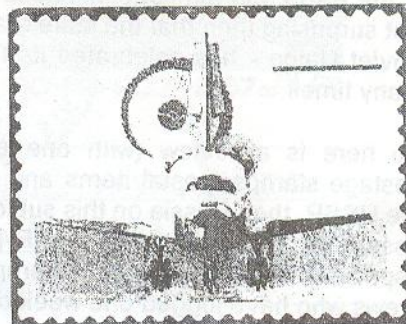
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## New USPS Shuttle Stamps "Endeavor" to Please!

Issued in early and mid November 1998 were two striking US high value Priority and Express Mail postage stamps: the \$3.20 "shuttle landing" on the 9th and ten days later the \$11.75 showing a shuttle piggybacked upon a transport plane.



As reported in *Linn's Stamp News* (21.12.98) there is a remarkable but hidden error in the higher value stamp as the name of the space shuttle *Endeavour* is spelled without the "u" within hidden text, which can be seen only with a special acrylic decoder lens, obtainable from the USPS.

The usage of hidden security messages in US stamps is a relatively new security measure, beginning with the 1997 32c US Dept of the Air Force stamp which apparently has "USAF\*USAF\*USAF" written across it. The special patented printing process involved in this practice is known as "scrambled indicia".

Space stamps with hidden messages are:

1997 \$3 Mars Pathfinder minisheet which has "USPS and Mars pathfinder July 4" repeated across it.

1998 Space Fantasy issue (5 @ 32c) - see page 4 of this edition - which have large or small spacecraft as hidden messages across them.

1998 Shuttle Landing (\$3.20)- with "Enterprise/Columbia/Challenger/Atlantis/Endeavour/Discovery" across it.

1998 Shuttle Piggy (\$11.75) - same scrambled message.

*Orbit* is grateful to our Dutch member Bert van Eiick for drawing our attention to these facts.

The illustrations here are quoted from the *Linn's* page.

