

Remote Sensing in India

India's Remote Sensing starts following the successful demonstration flights of Bhaskara-1 and Bhaskara-2 satellites launched in 1979 and 1981, respectively, with the development of indigenous Indian Remote Sensing (IRS) satellite program. Indian Remote Sensing (IRS) satellite system was commissioned with the launch of IRS-1A, in 1988. With many satellites in operation, IRS is the largest civilian remote sensing satellite constellation in the world providing imageries in a variety of spatial resolutions, spectral bands and swaths. Data from Indian Remote Sensing satellites are used for various applications of resources survey and management under the National Natural Resources Management System (NNRMS) in following: Pre harvest crop area and production estimation of major crops. Drought/irrigation monitoring and assessment based on vegetation condition. Flood risk zone mapping and flood damage assessment. Hydro-geomorphologic maps for locating underground water resources for drilling well. Snow-melt run-off estimates for planning water use in downstream projects. Land use and land cover mapping. Urban planning. Forest survey. Wetland mapping. Environmental impact analysis. Mineral Prospecting. Coastal studies.

India's Recent IRS satellites

2012: Radar Imaging Satellite-1 (RISAT-1) imaging of the surface features during both day and night under all weather conditions.

2011: Megha-Tropiques, for studying the water cycle and energy exchanges in the tropics.

2011: RESOURCESAT-2 to continue the remote sensing data services to global users provided by RESOURCESAT-1, and to provide data with enhanced multispectral and spatial coverage as well.

2010: Cartosat-2B to provide multiple spot scene imageries. It is capable of imaging a swath (geographical strip) of 9.6 km with a resolution of better than 1 metre.

2009: Oceansat-2 is to provide continuity of Oceansat (IRS-P4) with enhanced application potential. 2009: Radar Imaging Satellite (RISAT-2) is capable of taking earth images in all weather. 2008: IMS-1, previously referred to as TWSat (Third World Satellite), is a low-cost microsatellite imaging mission of ISRO.

2008: CARTOSAT – 2A is the thirteenth satellite in the Indian Remote Sensing Satellite series (IRS).

2007: CARTOSAT-2, launched by PSLV-C7 on January 10, 2007, is the twelfth in the Indian Remote Sensing.

2005: CARTOSAT – 1 is the first Indian Remote Sensing Satellite capable of providing in-orbit stereo images.

2003: RESOURCESAT-1 is the tenth satellite of ISRO in IRS series

IRS launch log

Serial No.	Satellite	Date of Launch	Launch Vehicle	Status
1	IRS-1A	17 March 1988	Vostok, USSR	Mission Completed
2	IRS-1B	29 August 1991	Vostok, USSR	Mission Completed
3	IRS-P1 (also IE)	20 September 1993	PSLV-D1	Crashed, due to launch failure of PSLV
4	IRS-P2	15 October 1994	PSLV-D2	Mission Completed
5	IRS-1C	28 December 1995	Molniya, Russia	Mission Completed

6	IRS-P3	21 March 1996	PSLV-D3	Mission Completed
7	IRS 1D	29 September 1997	PSLV-C1	Mission Completed
8	IRS-P4 (Oceansat-1)	27 May 1999	PSLV-C2	Mission Completed
9	Technology Experiment Satellite (TES)	22 October 2001	PSLV-C3	Mission Completed
10	IRS P6 (Resourcesat-1)	17 October 2003	PSLV-C5	In Service
11	IRS P5 (Cartosat 1)	5 May 2005	PSLV-C6	In Service
12	IRS P7 (Cartosat 2)	10 January 2007	PSLV-C7	In Service
13	Cartosat 2A	28 April 2008	PSLV-C9	In Service
14	IMS 1	28 April 2008	PSLV-C9	In Service
15	RISAT-2	20 April 2009	PSLV-C12	In Service
16	Oceansat-2	23 September 2009	PSLV-C14	In Service
17	Cartosat-2B	12 July 2010	PSLV-C15	In Service
18	Resourcesat-2	20 April 2011	PSLV-C16	In Service

19	<u>Megha-Tropiques</u>	12 October 2011	<u>PSLV-C18</u>	In Service
20	<u>RISAT-1</u>	26 April 2012	<u>PSLV-C19</u>	In Service
21	<u>SARAL</u>	25 Feb 2013	<u>PSLV-C20</u>	In Service
22	<u>Cartosat-2C</u>	22 June 2016	<u>PSLV-C34</u>	In Service
23	<u>ScatSat-1</u>	26 September 2016	<u>PSLV-C35</u>	In Service
24	<u>RESOURCESAT-2A</u>	07 Dec 2016	<u>PSLV-C36</u>	In Service
25	<u>Cartosat-2D</u>	15 Feb 2017	<u>PSLV-C37</u>	In Service
26	<u>Cartosat-2E</u>	23 June 2017	<u>PSLV-C38</u>	In Service
27	<u>Cartosat-2F</u>	12 Jan 2018	<u>PSLV-C40</u>	In Service
28	<u>RISAT-2B</u>	22 May 2019	PSLV-C46	In Service
29	<u>Cartosat-3</u>	27 Nov 2019	PSLV-C47	In Service
30	<u>RISAT-2BR1</u>	11 Dec 2019	PSLV-C48	In Service