

ONE PAGER SERIES

SAR Data Access & Availability

A quick reference to Synthetic Aperture Radar collecting-missions and where to obtain data. For more information, check out the SAR Handbook: Comprehensive Methodologies for Forest Monitoring and Biomass Estimation and associated training materials at [SERVIRglobal.net](https://servirglobal.net)

EXISTING DATA

SENSOR	LIFETIME	WAVELENGTH/ FREQUENCY	POLARIZATION	RESOLUTION	FRAME SIZE	REPEAT CYCLE	ACCESS
Seasat	1978	L-band $\lambda = 24.6\text{cm}$	HH	Az: 25m Rg: 25m	100km	-	Free & open
ERS-1	1991-2001	C-band $\lambda = 05.6\text{cm}$	VV	Az: 6-30m RG: 26m	100km	35 days	Restrained
JERS-1	1995-1998	L-band $\lambda = 24.6\text{cm}$	HH	Az: 18m Rg: 18m	75km	44 days	Restrained
ERS-2	1995-2011	C-band $\lambda = 05.6\text{cm}$	VV	Az: 6-30m Rg: 26m	100km	35 days	Restrained
ENVISAT	2002-2012	C-band $\lambda = 05.6\text{cm}$	HH, VV, W/HH, HH/HV, W/VH	Az: 28m Rg: 28m	100km	35 days	Restrained
ALOS-1	2006-2011	L-band $\lambda = 24.6\text{cm}$	FBS: HH, VV FBD: HH/HV, HH/VH PLR: HH/HV /VH /VV ScanSAR: HH, VV	FBS: 10x10m FBD: 20x10m PLR: 30x10m ScanSAR: 100m	FBS: 70km FBD: 70km PLR: 30km ScanSAR: 250-350km	46 days	Free & open
Radarsat-1	1995-2013	C-band $\lambda = 05.6\text{cm}$	HH	Standard: 25x28m Fine: 9x9m Wide1: 35x28m Wide2: 35x28m ScanSAR: 50x50-100x100m	Standard: 100km Fine: 45km Wide1: 165km Wide2: 150km ScanSAR: 305-510km	24 days	1995-2008: Restrained 2008-2013: Commercial
TerraSAR-X TanDEM-X	2007- 2010-	X-band $\lambda = 03.5\text{cm}$	Single: HH, VV Dual: HH/VV, HH/HV, W/VH Twin: HH/VV, HH/VH, VV/VH	Spotlight: 0.2x1.0-1.7x3.5m Stripmap: 3x3m ScanSAR: 18-40m	Spotlight: 3-10km Stripmap: 50x30km ScanSAR: 150x100- 200x200km	11 days	Application- dependent; restrained scientific, commercial
Radarsat-2	2007-	C-band $\lambda = 05.6\text{cm}$	Single: HH, VV, HV, VH Dual: HH/HV, W/VH Quad: HH/HV/VH/VV	Spotlight: ~1.5m Stripmap: ~3x3-25x25m ScanSAR: 35x35-100x100m	Spotlight: 18x8km Stripmap: 20-170m ScanSAR: 300x300- 500x500km	24 days	Commercial
COSMO- SkyMed	2007-	X-band $\lambda = 03.5\text{cm}$	Single: HH, VV, HV, VH Dual: HH/HV, HH/VV, W/VH	Spotlight: $\leq 1\text{m}$ Stripmap: 3-15m ScanSAR: 30-100m	Spotlight: 10x10km Stripmap: 40x40km ScanSAR: 100x100 - 200x200km	Satellite: 16 days Constellation: ~hrs	Commercial; limited proposal- based scientific
ALOS-2 PALSAR-2	2014-	L-band $\lambda = 24.6\text{cm}$	Single: HH, VV, HV, VH Dual: HH/HV, W/VH Quad: HH/HV/VH/VV	Spotlight: 1x3m Stripmap: 3-10m ScanSAR: 25-100m	Spotlight: 25x25km Stripmap: 55x70- 70x70km ScanSAR: 355x355km	14 days	Commercial; limited proposal- based scientific
Sentinel-1	2014-	C-band $\lambda = 05.6\text{cm}$	Single: HH, VV Dual: HH/HV, W/VH	Stripmap: 5x5m Interferometric Wide Swath (IW): 5x20m Extra Wide Swath (EW): 20-40m	Stripmap: 375km IW: 250km EW: 400km	Satellite: 12 days Constellation: 6 days	Free & open
SAOCOM	2018-	L-band $\lambda = 24.6\text{cm}$	Single: HH, VV Dual: HH/HV, W/VH Quad: HH/HV/VH/VV	Stripmap: 10x10m TopSAR: 100x100m	Stripmap: >65km TopSAR: 320km	Satellite: 16 days Constellation: 8 days	TBD
PAZ SAR	2018-	X-band $\lambda = 03.5\text{cm}$	*See TerraSAR/ TanDEM-x	*See TerraSAR/ TanDEM-x	*See TerraSAR/ TanDEM-x	11 days	Commercial

FUTURE DATA

SENSOR	EXPECTED LAUNCH	WAVELENGTH/ FREQUENCY	POLARIZATION	RESOLUTION	FRAME SIZE	REPEAT CYCLE	ACCESS
RCM	2019	C-band $\lambda = 05.6\text{cm}$	Single: HH, WV, VH, HV Dual: HH/HV, WV/VH, HH/WV Compact Quad	Very high, high, medium, and low-res modes (3-100m)	20x20-500x500km	Satellite: 12 days Constellation: ~hrs	TBD
NISAR	2021	L-band $\lambda = 24.6\text{cm}$	Single: HH, WV, VH, HV Dual: HH/HV, WV/VH, HH/WV Quad	3-20m (mode dependent)	250km	12 days	Free & open
BIOMASS	2021	P-band $\lambda = 70\text{cm}$	Quad	$\leq 60 \times 50\text{m}$	160km	17 days	Free & open
TanDEM-L	2023	L-band $\lambda = 24.6\text{cm}$	Single, dual, quad modes	12x12m	350km	Satellite: 16 days Constellation: 8 days	Free & open

SOURCE: Meyer, Franz. "Spaceborne Synthetic Aperture Radar – Principles, Data Access, and Basic Processing Techniques." SAR Handbook: Comprehensive Methodologies for Forest Monitoring and Biomass Estimation. Eds. Flores, A., Herndon, K., Thapa, R., Cherrington, E. NASA.