

Building Inventory

	74.58	74.59	74.60	74.61	74.62	74.58	74.59	74.60	74.61	74.62		
	(a) Pleiad	les 2013	No. of Concession, Name	STREET, STREET,	STAL ST	(b) Worl	dView-2 20	19	STATE STATE	い、読むいる語言		
	an and an an	Lat Manual Land				ENRI	HAT COL	244	1 - 0.00	Control data		
	27 B	中部時	12020	at any	all all	A DEC DEC	11月2月1日	11 6 A				
	L'agent	"They	S	Colorine St.	A DISE	的四日	Die ge			N DICK		
		200	E SEE	and a state	Cille La Calle		Constant of the					
		Children of	E.F.	25月6	2.3 三國	影響	日日日	Three Sec. 7	品品。	部時后陸		
	18		And the participant	252	E PET IN		ST WER		3252	ET TH		
	+ DODDA			ALC: NO	REM A			States and	12 Parts	RED ST		
	19	美国的派	Sec.	TO DE C	TEN .	E De C		- Bank	THE PARTY	A		
		China .	Part of the	an Arithmet	THEFT		and the second	A second beauty	STORE STORE	PROVIDE		
	S CLAF	E VILL	Sector Ly	Print a		asu P	10 AL	3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S. Call	ALL STREE		
	4	县下福	出加速	T	St. St.	S BELLE	出下公	25 Miles	TT	alation		
	Mana -	早天版		E Longe			CE at ME		C. S. State	A DECEMBER		
		10000000000000000000000000000000000000	星。國行	A MERICAN			利用品		HERITOR			
	S STORE	Land Bills	12%	TILES		Bez	に一般語					
	Height (n)	Erina	and some	已以前	TEAC T	自己	A SE TIP	AL COL			
	0988	7	Profile	in panel (c)	1990	Base	日本が新聞	Profile	in panel (c)	冠派派部		
	Buildin	9× (6)	E The	The seal	12222	時間には	回聽起	La the	1 BEAC	神話這言		
	DEM d	ata gap	12:1	THE FEEL	100 - 900 m		(2)(1)	()定当	ICTION AND	「「「「「「「「」」」」」		
		The section of the section			THE DE TRACETORY		and and a second			AND ANY ROLLING		
Example	e hillshade	d DSMs	for Pleiad	des (a) a	nd World	View-2 (b) over (central E	Bishkek, k	Kyrgyzstar	(Source:	
Watson, C	S., Elliott, J.	R., Amey,	R.M. and At	odrakhmato	v, K.E., 2022	2. Analyzing	g Satellite-l	Derived 3D	Building Inv	ventories and	Quantifying	
	Urban Growth towards Active Faults: A Case Study of Bishkek, Kyrgyzstan. Remote Sensing, 14(22), p.5790.).											
	d Uco			ural Dic	actor		<u>, , , , , , , , , , , , , , , , , , , </u>		<u>.</u> г			
	u use				aster		bast Ma	nagem	ent L	J Earth's	Surface Motion	۱
📙 Lan	d Cover		L Clin	nate Cha	ange	ШM	arine					
Financial Domain(s)												
Investment manageme Risk analysis Insurance management Green												
	finance											
					User re	quirem	ents					
UN47: N	leed up-t	o-date	geospat	tial data	on resid	dential a	and indu	ustrial i	nfrastru	ctures' lo	cations	
	Description											
Detectin	ig structu	ires and	lassoci	ated det	tails like	their he	eights c	an prov	ide insig	ghts into	urban	
populati	on densit	y and e	enable t	he track	cing of co	onstruct	ion act	ivities.	Such da	ta is valu	able for	
formulat	ting inves	stment	strategi	es and o	overseei	ng cons	tructior	ו advan	cements	s, facilitat	ing both	
investm	ent planr	ning and	l projec	t monito	oring. Du	ie to th	e progr	ess in s	ophistic	ated deep	0	
learning	methods	s, it is r	ow pos	sible to	Identify	building	is from	VHR op	itical sat	ellite pict	tures.	
Addition	ally, ster	eo and	tri-stere	eo satel	lite visua	ais can i	be emp	ioyea ta	gauge	building	neignts	
through	tiliand to		uigital S	urrace a	ina terra	nn mod	eis (DSI	ini and L	JIM). Iľ Idina a≂	iese tech	niques	
can be t	doncity	genera	ite vario	Jus map			ioc an	nnt, Dui d floor	iuling co	unit, DUIIC	nny area,	
instrum	uensity,		en an a dotaile		iale COUI		nies an	u 1100ľ - Jation	area. IN	ese insig	nus are	
instrume					uie dells	ily UI li	ie popu	nation.				
Spatial Coverage Target												
		cuucin	Juetans	Spat	ial Cove	erage T	arget					
				Spat	ial Cove Buildin	erage 1 g Level	arget					
				Spat	ial Cove Buildin Data Thu	g Level roughp	arget ut	014/				
			Ra	Spat	ial Cove Buildin Data Thu king lability	erage 1 g Level roughp Hi	arget ut gh	ow				



	Product specifications
Main processing steps	Built-up areas can be identified using high-resolution land cover data such as the world settlement footprint (WSF) (10 m resolution). Alternatively, we can classify cloud-free Sentinel-2 images into Corine 2018 land-cover classes using a pre-trained U-net deep learning. Subsequently, VHR stereo images (such as Worldview-2&3) and tri- stereo images (such as Pleiades) can be orthorectified and pansharpened, then fed to a deep learning based semantic segmentation model for building extraction, by using available building datasets. The stereo and tri stereo image would also be used to derive point cloud and DSM using software such as Agisoft Metashape. All DSMs should be coregistered to TanDEM-X DSM. In addition, DTM which represents the surface features after the removal of vegetation and building can be generated using LAStools. By clipping the DSMs and DTMs to the building footprint, building heights can be calculated by subtracting DTMs from DSMs.
Input data sources	Optical: VHR stereo and tri-stereo images from commercial sources such as Worldview-2&3 and Pleiades, Sentinel-2 (for built-up regions identifying) Radar: N.A Supporting data: high resolution land cover data such as WSF, building detection training datasets for deep learning models
Accessibility	Sentinel-2: freely and publicly available from ESA. Stereo and tri-stereo VHR imagery: commercially available on demand from EO service providers.
Spatial resolution	Optical VHR: <1m Sentinel-2: 10m
Frequency (Temporal resolution)	Optical VHR: Daily Sentinel-2: 6 days
Latency	≤ 1 day
Geographical scale coverage	Globally
Delivery/ output format	Data type: Raster File format: GeoTIFF
Accuracies	Thematic accuracy: 60-70% Spatial accuracy: 1.5-2 pixels of input data
Constraints and limitations	 Cloud presence Urban areas across the world can have different building styles, densities, and layouts, which can make creating universally applicable methods challenging. Tall buildings or structures can cast shadows making it challenging to accurately identify their characteristics, and occlusion might hinder the detection of buildings behind vegetation or other structures. Estimating precise building heights from satellite imagery can be complex due to variations in terrain, building shapes, and local conditions. Cost of VHR images Using satellite imagery for building inventory might raise legal and privacy concerns, especially when dealing with sensitive areas or personal property.
User's level of knowledge and skills to extract information and perform further analysis on the EO products.	Skills: Ample Knowledge: Ample