Challenges for frequent LandCover mapping

Frequent availability of EU-39-wide

- Homogenous coverages
- Multispectral coverages
- Cloud-free coverages
- VHR coverages
- Harmonized to Sen-2 spectral information

Would allow for

- Shorter update cycles
- Consideration of small landscape features
- Identification of change processes

PLANET'S answer

Exploitation of largest fleet of EO satellites

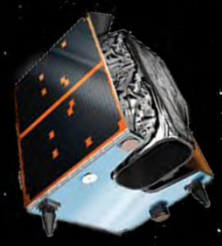
Development of next Generation of DOVE satellites

Launch of 48 SuperDOVE satellites

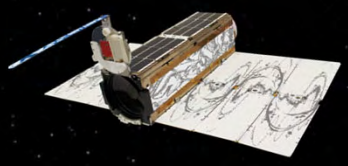
Launch of 6 more SkySat satellites

Development of PlanetFusion product

PLANET'S CONSTELLATIONS

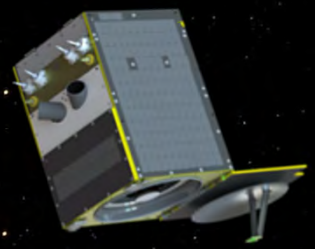


RapidEye
Satellite Archive 2009-2019



130 + 48

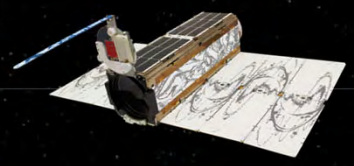
Dove Satellites
PlanetScope



21 SkySat Satellites

Last updated: Sept-2020

Planet's Constellations



130+

Dove Satellites
PlanetScope

48 SuperDove launched

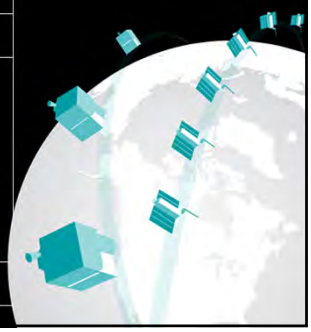
Last updated: Feb 2021

Orbit characteristics	Sun-synchronous
Orbit Altitude (reference)	475km(~98° inclination)
Max/Min Latitude Coverage	±81.5° (depending on season)
Equator Crossing Time	9:30 - 11:30 am (local solar time)
Ground Sample Distance (nadir)	3.7m (approximate at reference orbit altitude)
Maximum Image Strip per orbit	20,000 km²
Revisit Time	Daily at nadir
Image Capture Capacity	200 million km²/day

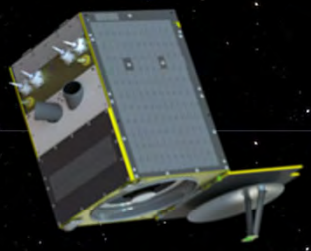
DATA SPECS PLANETSCOPE

	PS2 Dove Classic	PS2.SD Dove-R	PSB.SD SuperDove
Sensor Type	Four-band frame Imager with a split-frame VIS+NIR filter	Four-band frame imager with butcher-block filter providing blue, green, red, and NIR stripes	Eight-band frame imager with butcher-block filter providing blue, green, red, red-edge, and NIR stripes
Single Frame Size	24 km x 8 km (approximate)	24 km x **16 km** (approximate)	**32.5 km x 19.6 km** (approximate)
Ground Sampling Distance (GSD)	3-4 m	3-4 m	3-4 m
Pixel Resampled	3.0 / 3.125 m	3.0	3.0
Telescope and Camera	Bayer mask CCD sensor	Split frame CCD sensor	Split frame CCD sensor
Spectral Bands Blue Green Red Red-edge NIR Green 2 Yellow Coastal Bue	 455 – 515 nm 500 – 590 nm 590 – 670 nm 780 – 860 nm	 **464- 517 nm** **547- 585 nm** **650- 682 nm** **846- 888 nm**	 464 - 517 547 – 585 650 – 682 733 – 748 846 – 888 …….. …….. ……..
Pixel depth	12 bit (stored with 16bit)	12 bit (stored with 16bit)	12 bit (stored with 16bit)

* Improved specs marked in yellow



Planet's Constellations



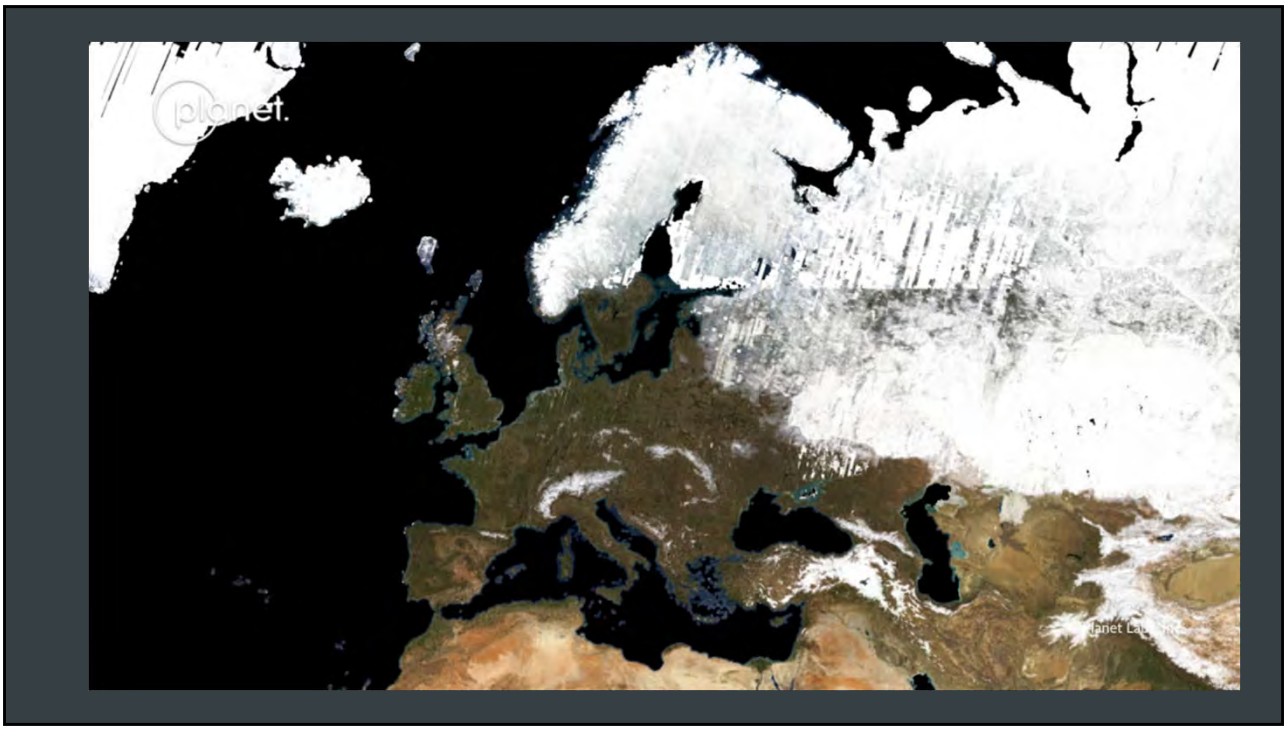
21 SkySat Satellites

Orbit characteristics	Sun-synchronous / inclined
Orbit Altitude (reference)	450 / 400 km
Equator Crossing Time	10:30 SkySat 3- 6, 14- 15 13:00 SkySat 1 and SkySat 2 13:00 SkySat 8-13 Variable SkySat 16-21
Ground Sample Distance (nadir)	Panchromatic: 0.64m / 0.58 m Multispectral: 0.81m
Revisit Time	Up-to 12 times daily for selected targets, 5-7 on worldwide average
Image Capture Capacity	500 K km²/day

Last updated: Oct 2020

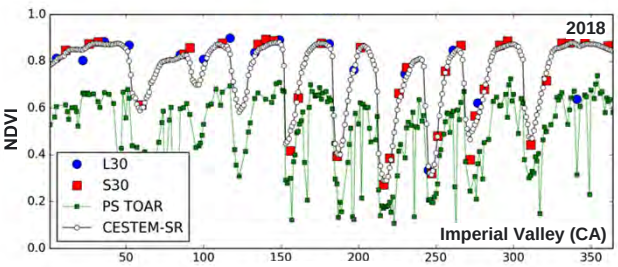
DATA SPECS SKYSAT

	SkySats at sun-synchronous orbits	SkySats at inclined orbits
Equator Crossing Time	10.30 a.m. +1.30 p.m. (approx.)	variable
Swath Width	6.0 km	5.7 km
Ground Sampling Distance (GSD incl. SuperResolution processing)	0.64 m PAN 0.81 m MS	0.58 m PAN 0.72 m MS
Camera	3x CMOS Frame Camera	3x CMOS Frame Camera
Spectral Bands (*λfwhm) Blue Green Red NIR PAN	 450 – 515 515 – 595 605 – 695 740 – 900 450 – 900	 450 – 515 515 – 595 605 – 695 740 – 900 450 – 900
Pixel depth	11 bit (stored with 16bit)	11 bit (stored with 16bit)
Absolute spectral calibration	5%	5%



Planet Fusion: the future of time-series data

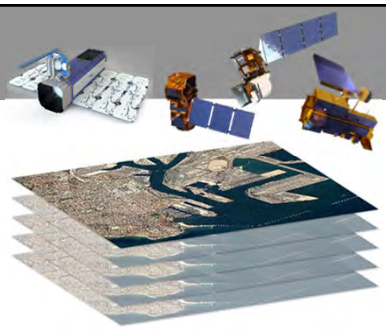
CESTEM: CubeSat-Enabled Spatio-Temporal Enhancement Method



Daily (gapfree) tracking of vegetation dynamics

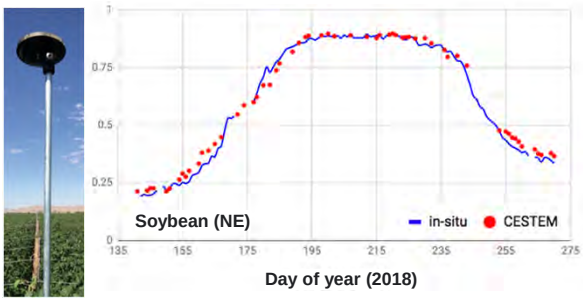
Sensor data fusion

PlanetScope
LANDSAT-8
Sentinel-2
Sentinel-1
MODIS
Sentinel-3
VIIRS



Harmonized stacks that are more than the sum of the parts

NDVI phenology validation




50 CENTIMETER SKYSAT
Small Landcape Features


planet.
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South Passage, Australia – October 1, 2015