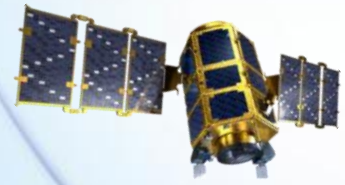
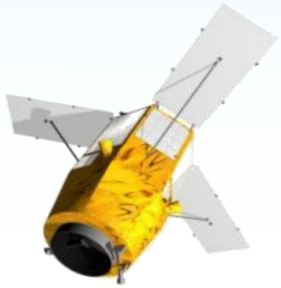
Fair Access to Space

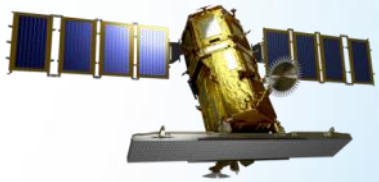
KOMPSAT Workshop

- Discover the Earth at Sub-meter Resolution -

V. Image Data Overview



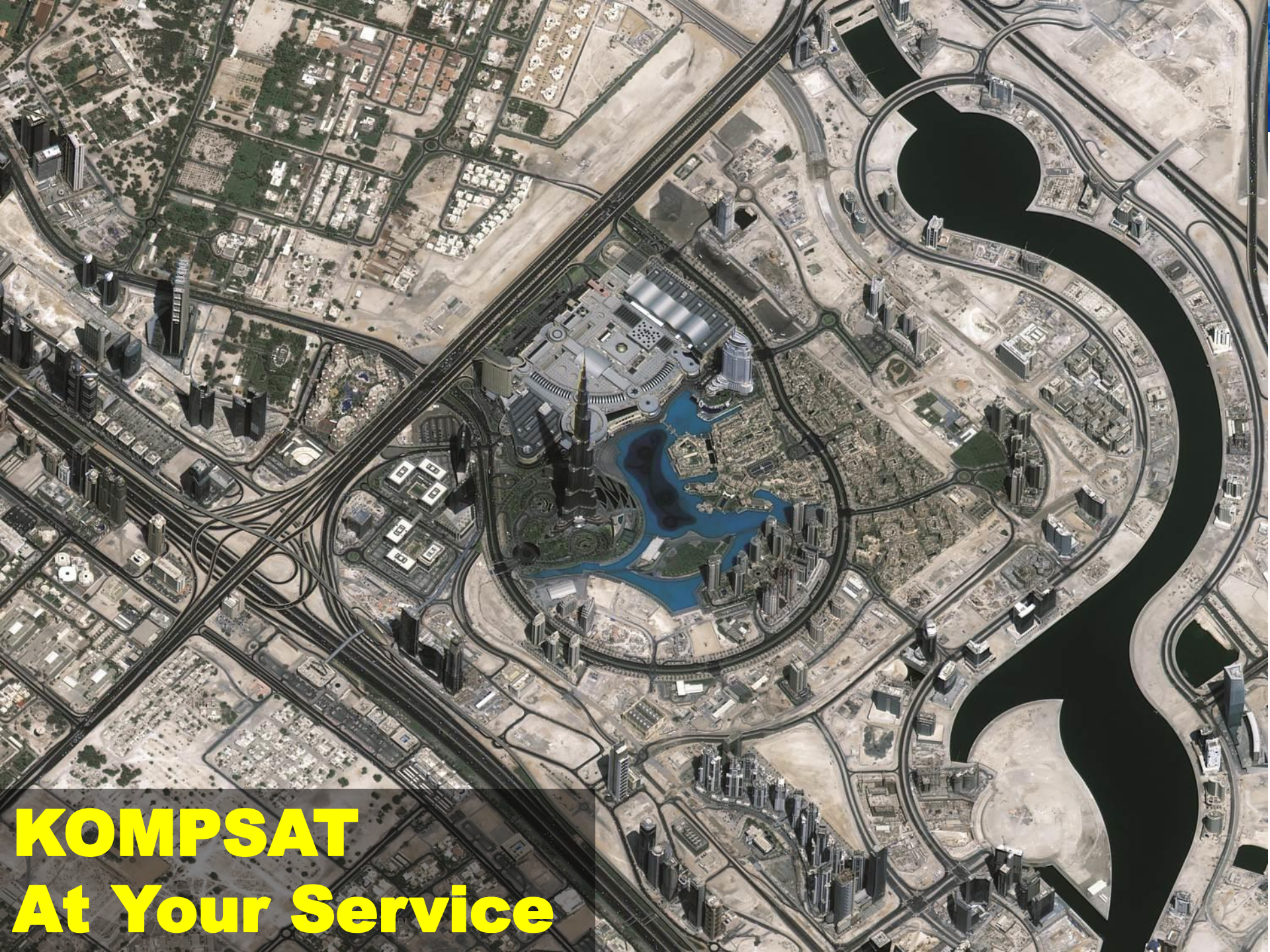




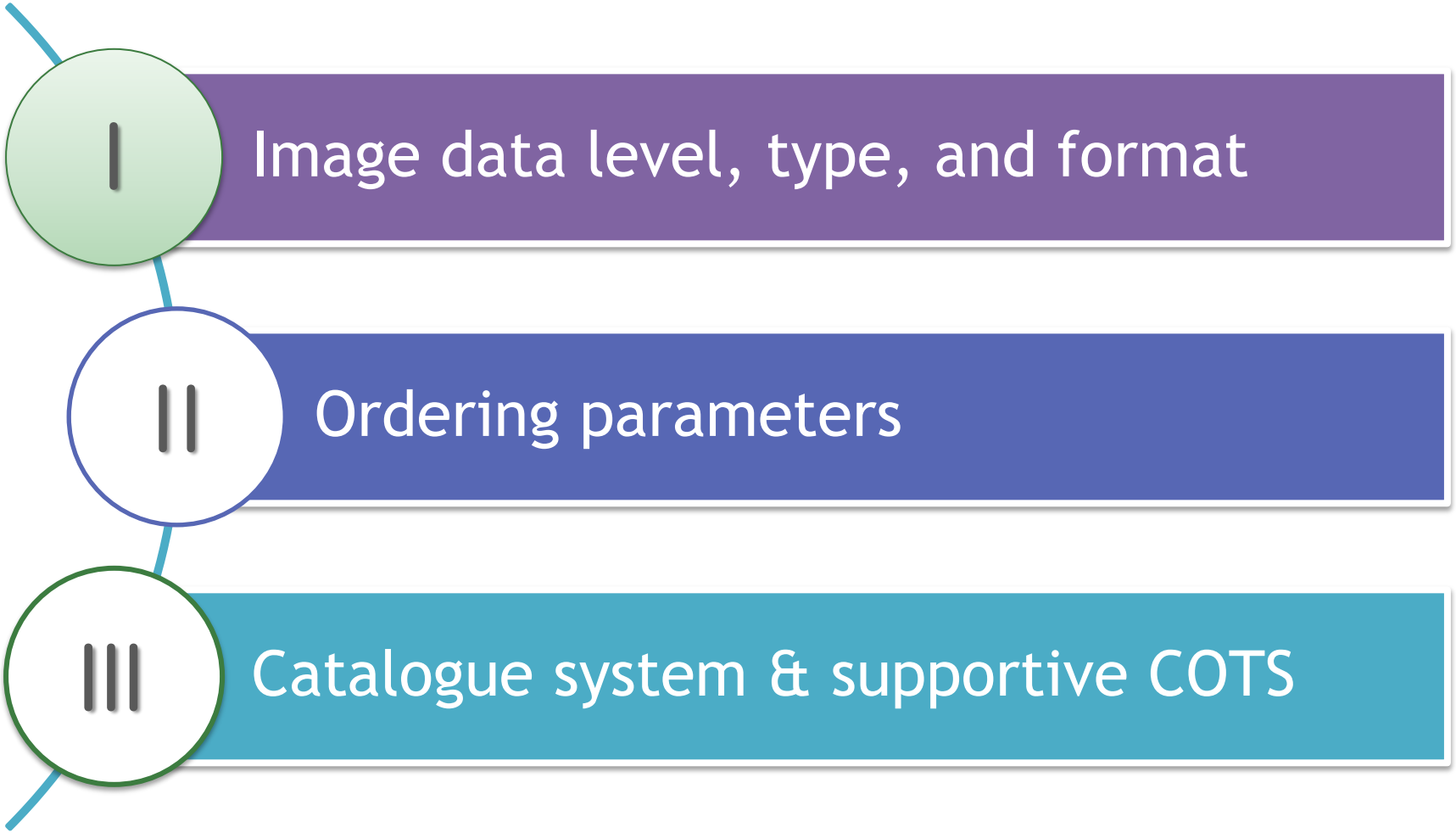
March, 2015

SI Imaging Services

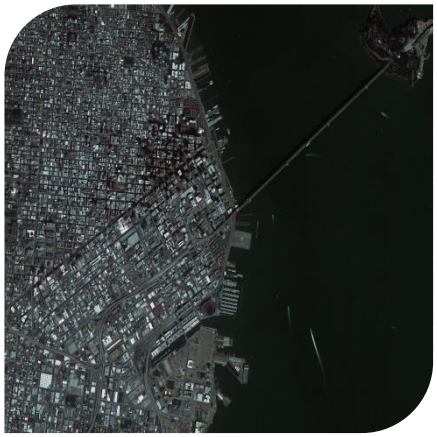
SIIS SI Imaging Services

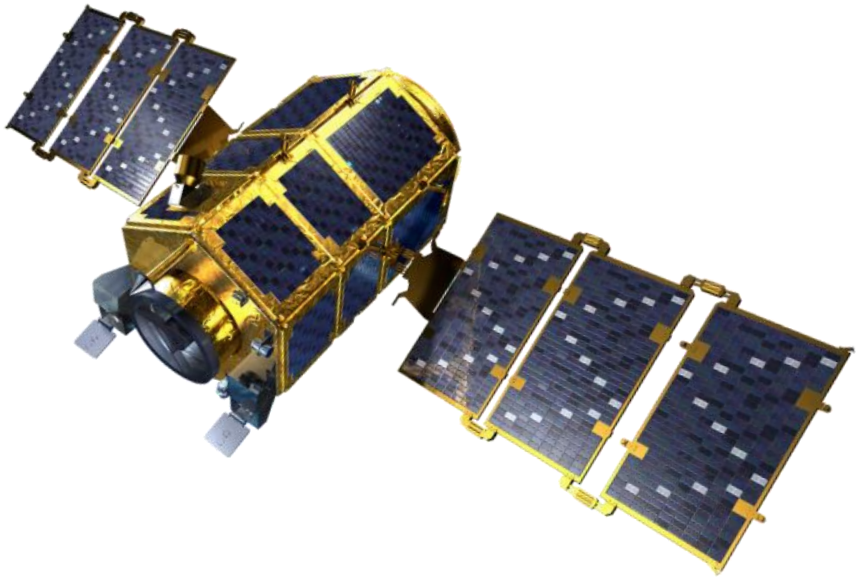

KOMPSAT
At Your Service

Contents



KOMPSAT-2 Image Data





Product Level

1R

- POD/PAD
- Radiometric Correction
- Sensor Correction
- MTF Compensation
- TIFF format

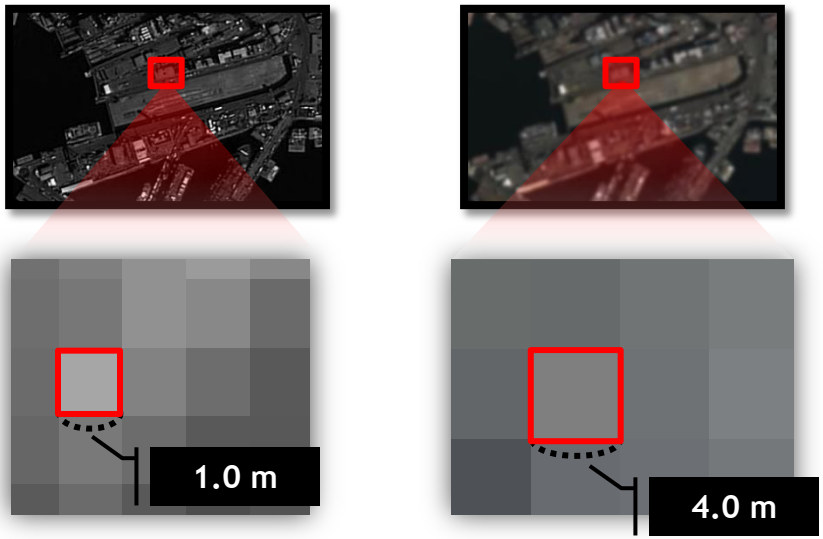
1G

- Radiometric Correction
- Sensor Correction
- MTF Compensation
- Geometrical Correction
- GeoTIFF format

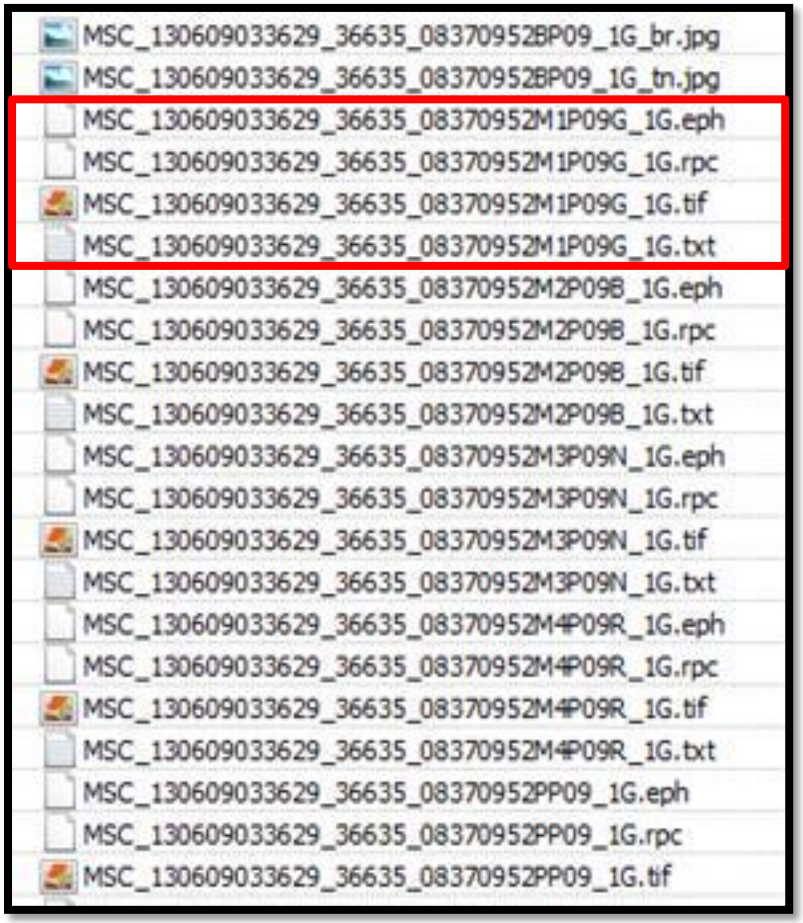
Product Type & Format (1/2)

Bundle

- 1 PAN (1.0 m) + 4 MS (R/G/B/NIR: 4.0 m)



For each Band (PAN, MS1 ~ MS4)	Image File (GeoTiff)
	EPH File (text)
	Auxiliary File (text)
	RPC File(text)
Etc	Browse Image File (Jpeg) Thumbnail File(Jpeg)



Product Type & Format (2/2)

❖ PAN-Sharpened

- 4 MS : 1.0 m (resampled R/G/B/NIR)

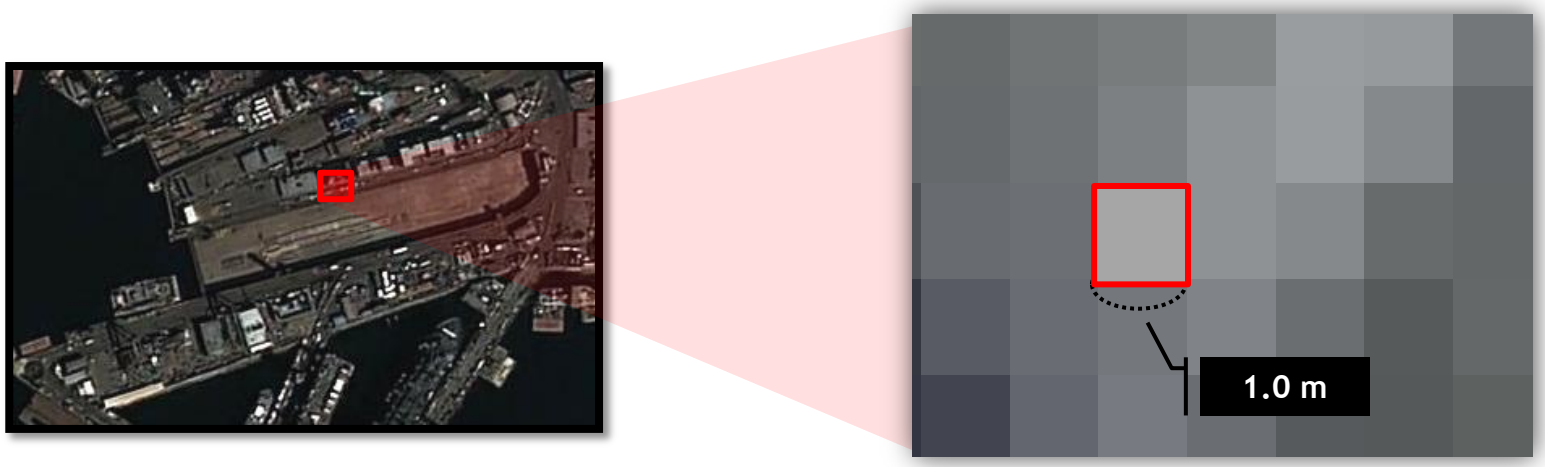
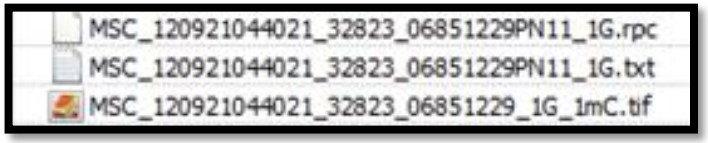


Image File	Image File (GeoTiff) - Includes 4 bands (*) - R/G/B/NIR
Etc	PAN RPC File (text) Auxiliary File(text)

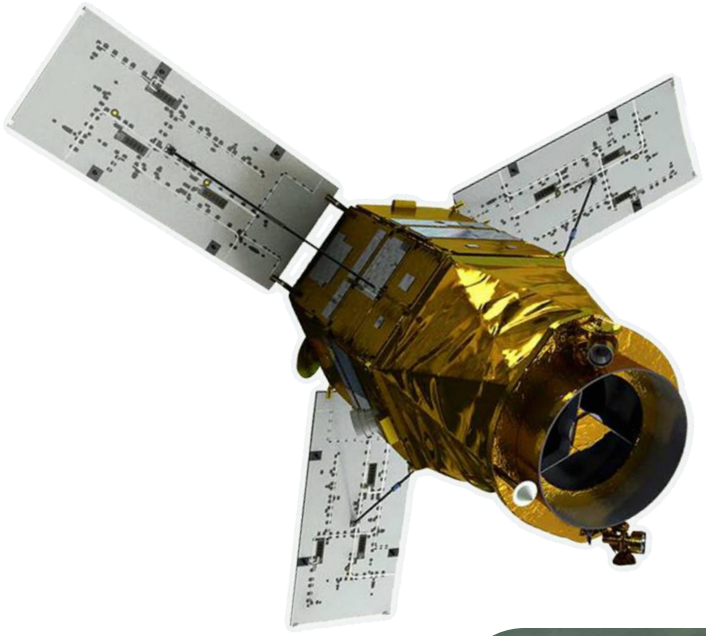


(*) If image file size > 4GB, image file will be provided for each band

File Naming Convention

- **File Name**
  - PAN File : MSC_"Time"_"OrbNo"_"PathRow"**PAxx_"Level".ext**
  - MS File : MSC_"Time"_"OrbNo"_"PathRow"**MXAxxB_"Level".ext**
  - Pan-Sharp File : MSC_"Time"_"OrbNo"_"PathRow"**_"Level"_1mC.tiff**
  - Browse/Thumbnail File : MSC_"Time"_"OrbNo"_"PathRow"T**"Level"_"Type".jpg**
- **Description**
  - Time : Scene Center Time(UTC), YYYYMMDDHHMMSS
  - Orbit No : 5 digit number of orbit after launch
  - PathRow :
    - PPPP: 4 digit path number of K2 Grid
    - rrrr : 4 digit row number of K2 Grid
  - Product Level : 1R or 1G
  - MXAxxB:
    - X : MS band (1/2/3/4)
    - A : P(positive)/N(negative) tilt angle
    - xx : tilt angle (first 2 digit)
    - B : Band(R/G/B/N)
  - Type : br or tn

KOMPSAT-3 Image Data



Product Level

1R

- Without GCP
- OD/AD or POD/PAD
- Radiometric Correction
- Sensor Correction
- MTF Compensation
- Geo-information included

1G

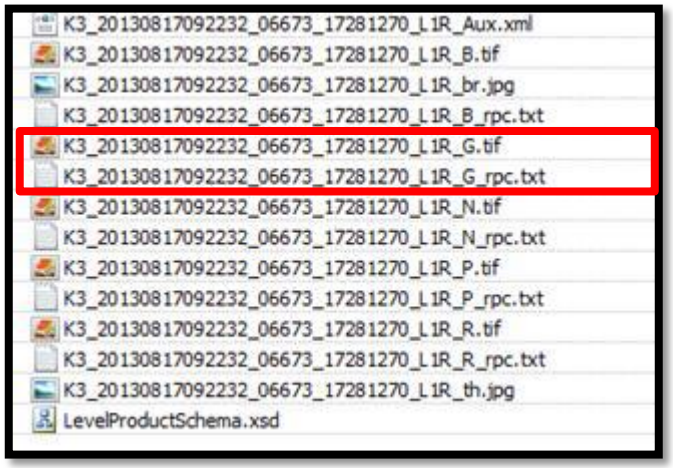
- Without GCP
- POD/PAD
- Radiometric Correction
- Sensor Correction
- MTF Compensation
- Geometrical Correction
- PAN-MS Registration

Product Type & Format

Bundle

- 1 PAN (0.7m) + 4 MS (R/G/B/NIR: 2.8m)

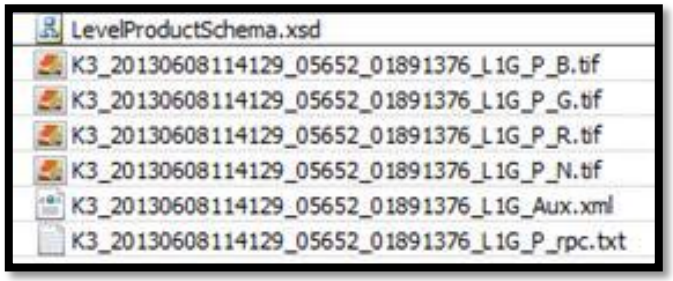
For each Band (PAN, MS1 ~ MS4)	Image File (GeoTiff)
	RPC File(text)
Etc	Browse Image File (Jpeg) Thumbnail File(Jpeg) Auxiliary File(xml) Schema File(xsd)



PAN-Sharpened

- 4 MS : 0.7m (resampled R/G/B/NIR)

MS1 (PAN-MS1)	Image File (GeoTiff)
MS2 (PAN-MS2)	Image File (GeoTiff)
MS3 (PAN-MS3)	Image File (GeoTiff)
MS4 (PAN-MS4)	Image File (GeoTiff)
Etc	PAN RPC File (text) Auxiliary File(xml) Schema File(xsd)



Product Format

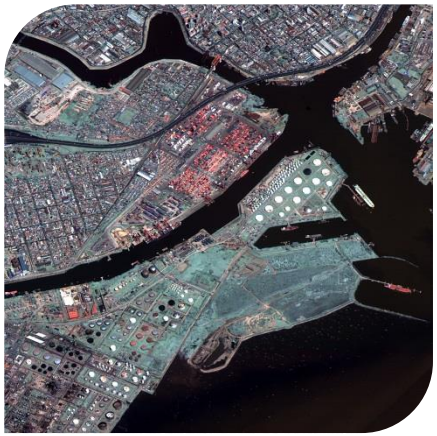
File Naming Convention

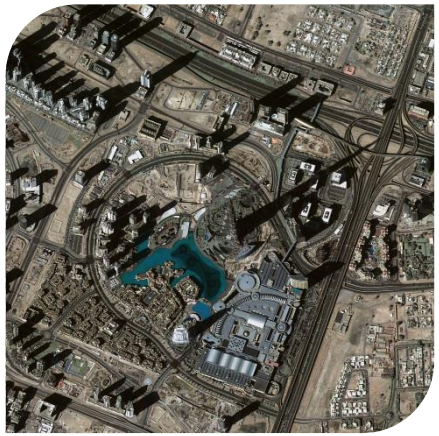
- Image File : K3_"Time"_"OrbNo"_"ProcLevel"_"Band".**tif**
- RPC File : K3_"Time"_"OrbNo"_"ProcLevel"_"Band"_**rpc**.txt
- Browse/Thumbnail File : K3_"Time"_"OrbNo"_"ProcLevel"_"**Type**".**jpg**
- Auxiliary File : K3_"Time"_"OrbNo"_"ProcLevel"_**Aux.xml**

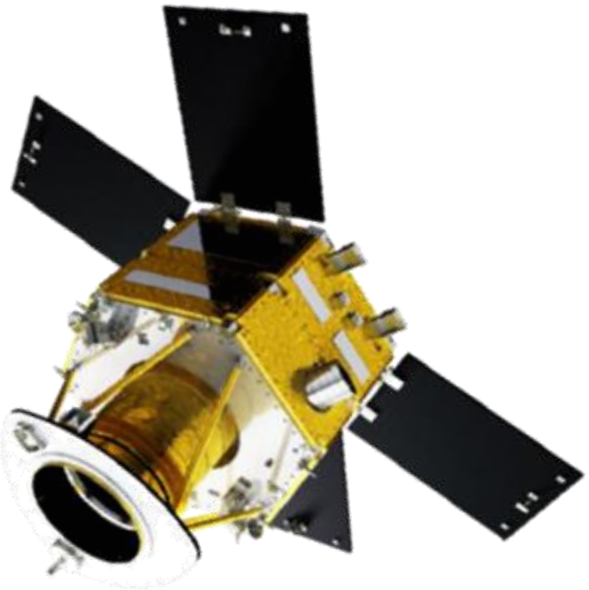
Description

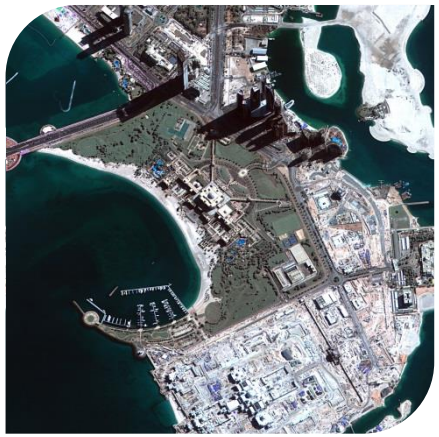
- Time : Scene Center Time(UTC), **YYYYMMDD**HHMMSS
- Orbit No : 5 digit number of Orbit after launch
- Product Level : L1R or L1G
- Band :
  - Bundle : P/R/G/B/N
  - Pan Sharpened : P_R/P_G/P_B/P_N
- Type : br or th

DubaiSat-2 Image Data









Product Level

Radio

- Without GCP
- OD/AD
- Radiometric Correction
- Sensor Correction
- MTF Compensation
- Geo-information included

Geo

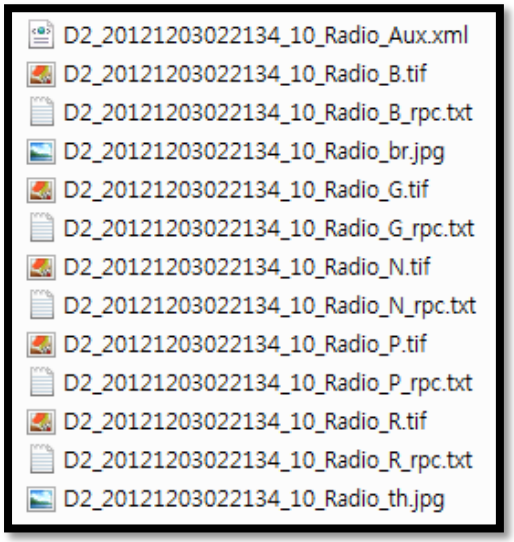
- Without GCP
- OD/AD
- Radiometric Correction
- Sensor Correction
- MTF Compensation
- Geometrical Correction

Product Type & Format

❖ Bundle: 1 PAN (1.0m) + 4 MS (4.0m)

- Radio product

For each Band (PAN, MS1 ~ MS4)	Image File (GeoTiff)
	RPC File(text)
Etc	Browse Image File (Jpeg) Thumbnail File(Jpeg) Auxiliary File(xml)



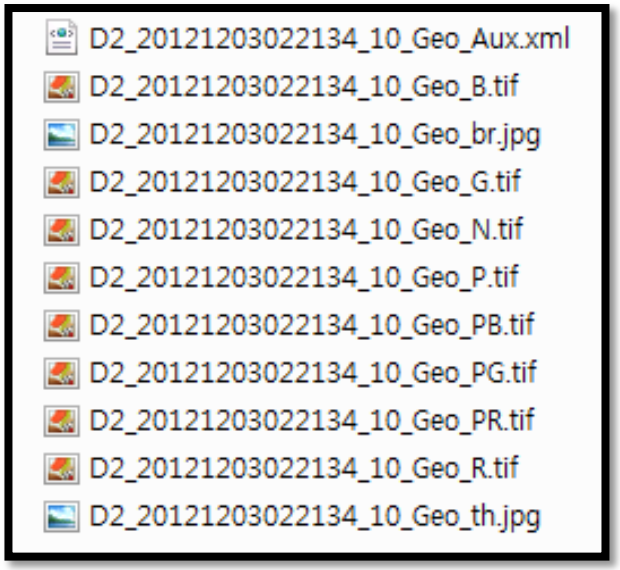
- Geo product

For each Band (PAN, MS1 ~ MS4)	Image File (GeoTiff)
Etc	Browse Image File (Jpeg) Thumbnail File(Jpeg) Auxiliary File(xml)

Product Type & Format

- **Pan-sharpened: 1 PAN (1.0m) + 8 MS (1.0m & 4.0m)**
  - only for Geo product

PAN, MS1 ~ MS4	Image File (GeoTiff)
Pan sharpened Blue(PB)	Image File (GeoTiff)
Pan sharpened Green(PG)	Image File (GeoTiff)
Pan sharpened Red(PR)	Image File (GeoTiff)
Pan sharpened NIR(PN)	Image File (GeoTiff)
Etc	Browse Image File (Jpeg) Thumbnail File(Jpeg) Auxiliary File(xml)



Product Format

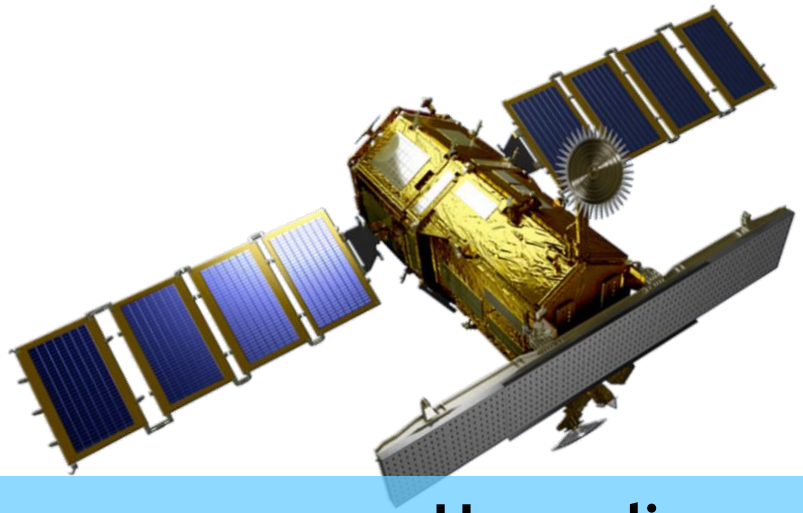
File Naming Convention

- Image File : D2_"Time"_"OrbNo"_"ProcLevel"_"Band".tif
- RPC File : D2_"Time"_"OrbNo"_"ProcLevel"_"Band"_rpc.txt
- Browse/Thumbnail File : D2_"Time"_"OrbNo"_"ProcLevel"_"Type".jpg
- Auxiliary File : D2_"Time"_"OrbNo"_"ProcLevel"_Aux.xml

Description

- Time : Scene Center Time(UTC), YYYYMMDDHHMMSS
- Orbit No : Number of orbit
- Product Level : Radio or Geo
- Band :
  - Bundle : P/R/G/B/N
  - Pan Sharpened : PB/PG/PR/PN
- Type : br or th

KOMPSAT-5 Image Data



Upgrading processing software &
Various levels of product will be lined up

Product level (1/2)

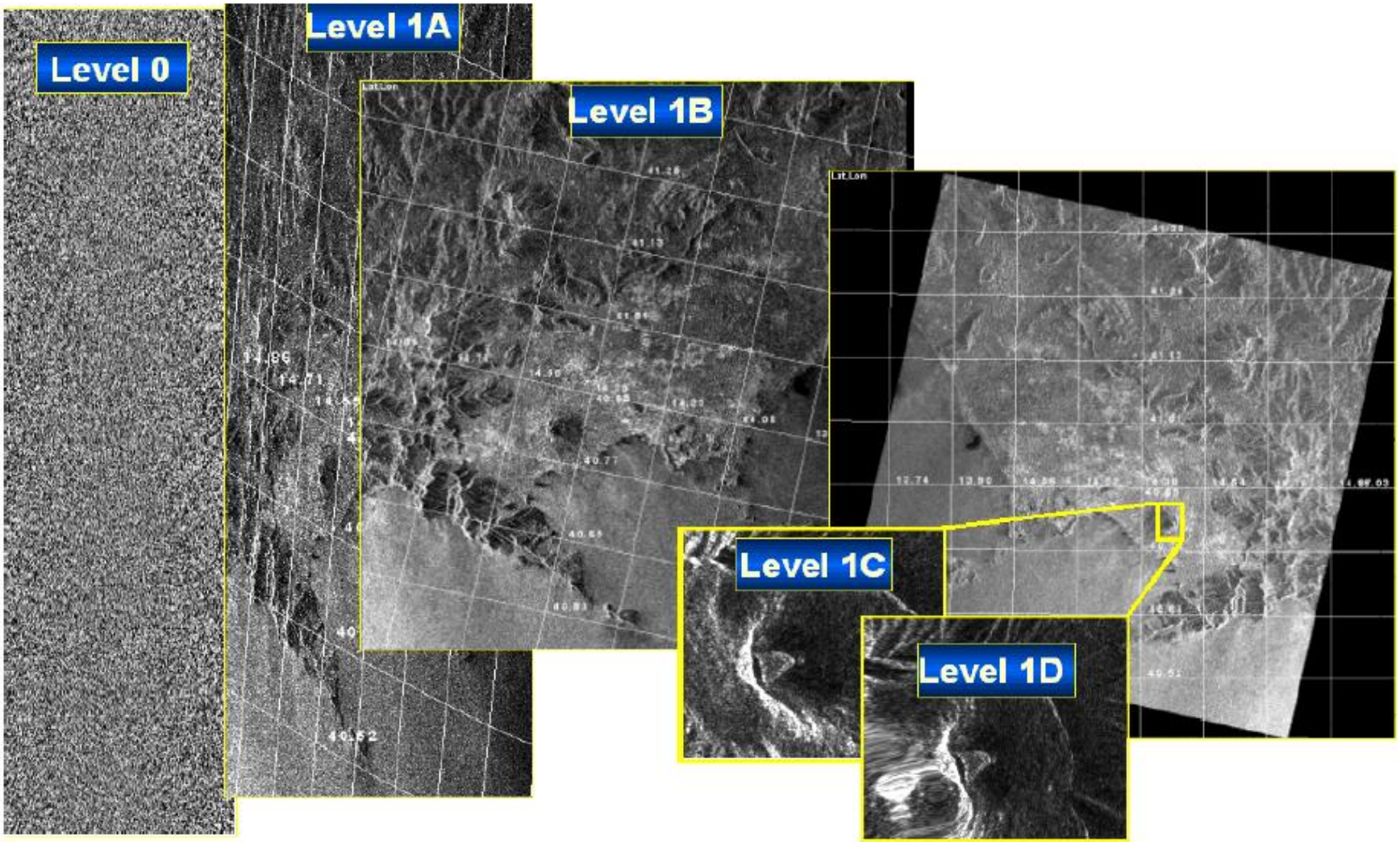


Fig. 4 – The 5 types of COSMO-SkyMed Standard Products (examples from ERS1)

Product level (2/2)

Level	Product	Description	Projection
Level 1A	SCS_B	In-Phase and Quadrature focused data, weighted and radiometrically equalized vs. slant range losses	Slant Range / Azimuth (Zero-Doppler)
Level 1B	DGM_B	Amplitude of the focused data,multilooked (but for High Resolution Mode)	Ground Range (WGS84 Ellipsoid) /Azimuth (Zero-Doppler)
Level 1C	GEC_B	Amplitude of the focused data, multilooked (but for High Resolution Mode)	UTM (-80° <= center latitude <= 84°) UPS (otherwise)
Level 1D	GTC_B	Backscattering coefficient of the observed scene, multilooked (but for HR Mode), with annexed the Incidence Angles Mask	UTM (-80° <= center latitude <= 84°) UPS (otherwise)

Processor Upgrading

- **Processor Upgrading: Scheduled to be completed by mid of April**
  - Possible to provide sample data using new processor during upgrading
- **Benefits of new processor**
  - Wider Dynamic range
  - Higher resolution for HR mode image: 1.0m → 0.85m
- **Product file structure & name convention will be specified after upgrading**

Contents

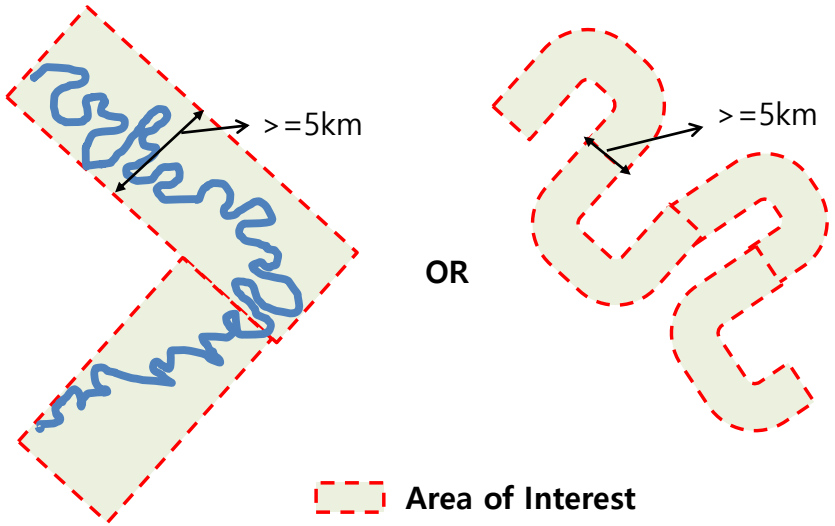
I Image data level, type, and format

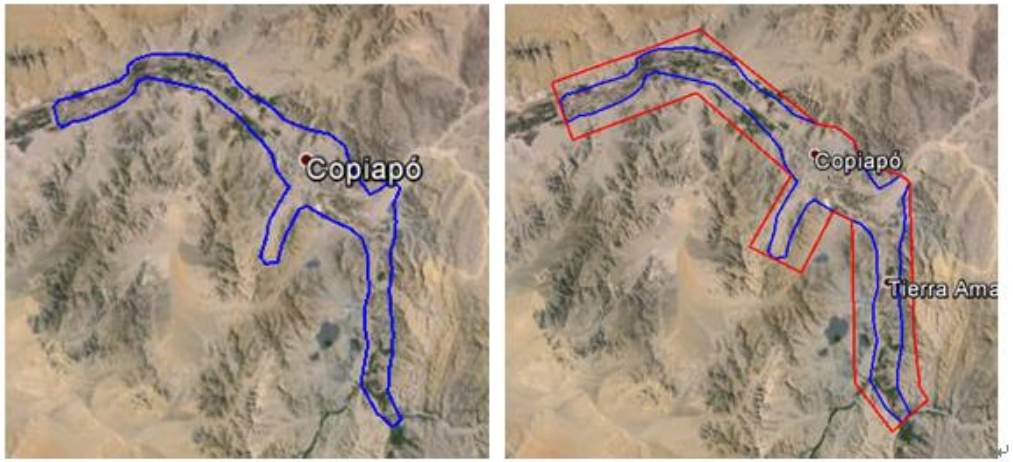
II Ordering parameters

III Catalogue system & supportive COTS

Minimum Order Size

- **KOMPSAT-2/3**
  - For non-stereo pair
    - 100 km^2(NTO), 25 km^2 (AO)
    - Minimum Swath : 5 km
  - For stereo pair
    - 100 km^2 for both NTO and AO
    - Minimum swath : 10 km
- **KOMPSAT-5**
  - Scene basis
- **DubaiSat-2**
  - Same as KOMPSAT-2/3





<AOI : before>

<AOI : minimum swath 5 km>

Delivery & Priority Option

KOMPSAT-2/3

- Archive order

Delivery Service	Expected time of delivery
Standard	3 working days
Rush	1 working day

- New Tasking order

New tasking option	Priority	Nominal collection window	Remarks
Priority Plus	Very high	4 days or specific date	Emergency or Assured date
Priority	Higher	4 weeks	
Standard	Standard	12 weeks or more	

Delivery & Priority Option

KOMPSAT-5

- Archive order

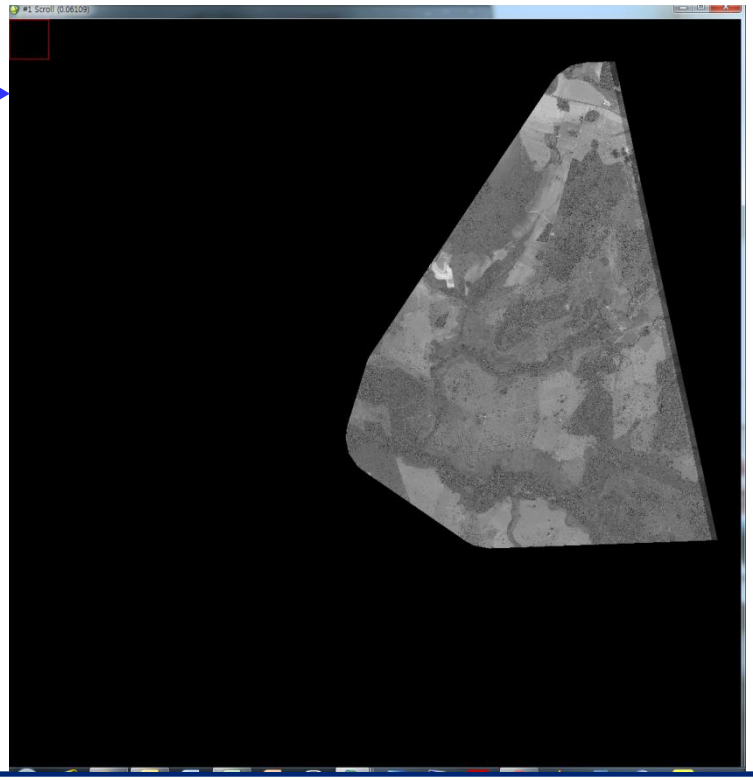
Delivery Service	Expected time of delivery
Standard	3 working days
Rush	1 working day

- New Tasking order

New tasking option	Priority	Description
Priority	Higher	Order shall be confirmed until 03:00 UTC **one day before** start of collection window
Standard	Standard	Order shall be confirmed until 03:00 UTC **two days before** start of collection window

AOI Based Product Delivery

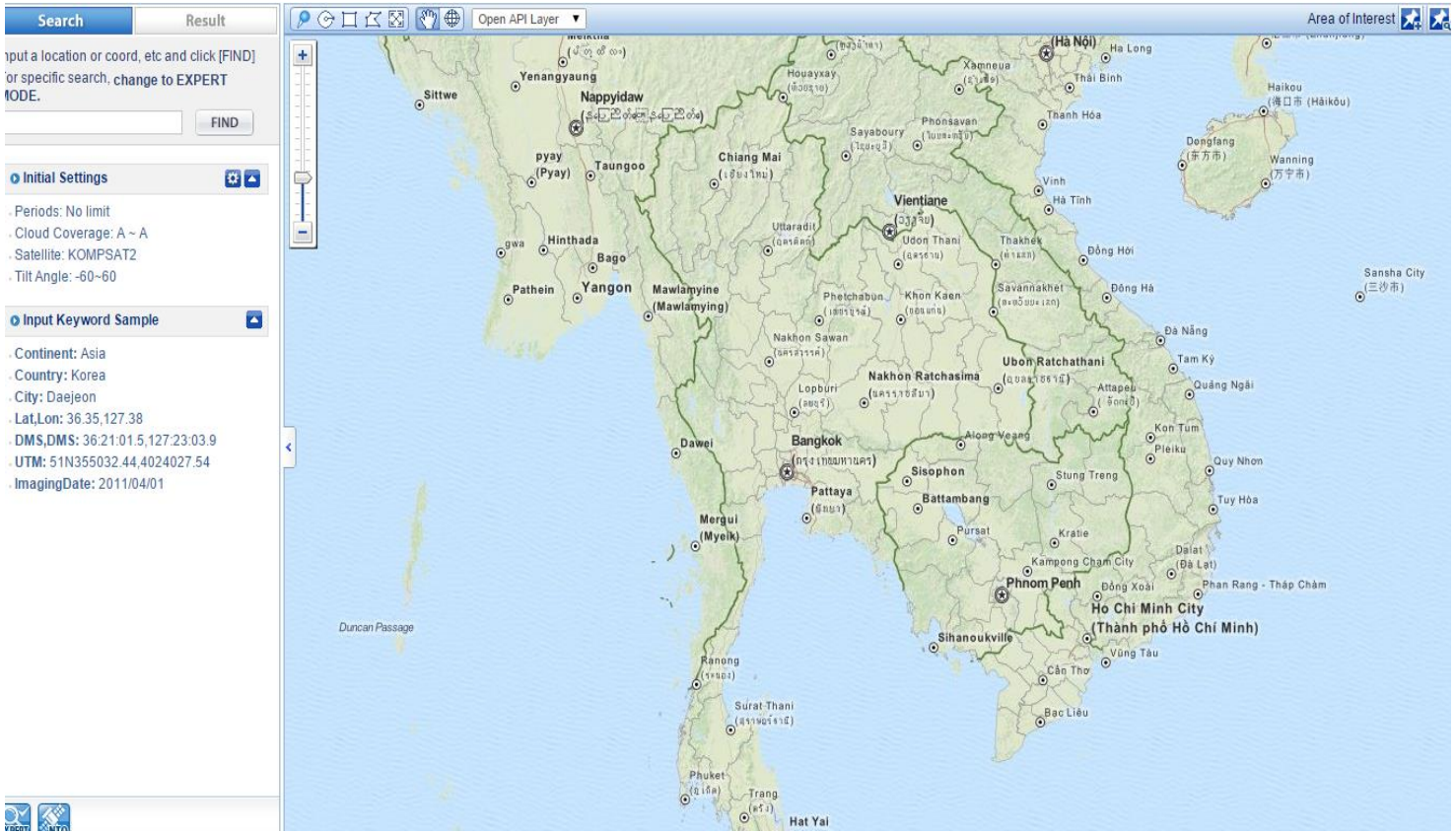
- Images : Black masked for non-AOI
  - With some margin
- RPC, EPH, Aux : for full scene.



Contents

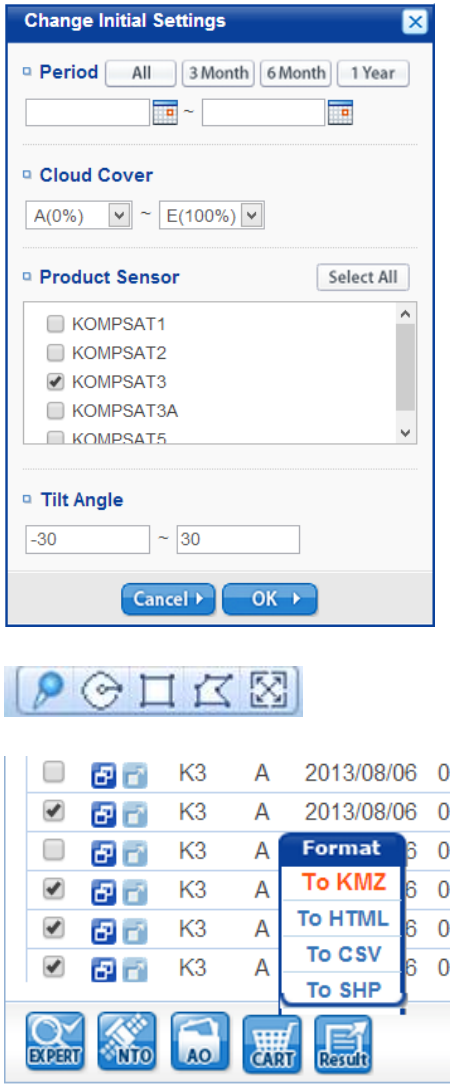
KOMPSAT – Arirang (1/2)

- http://arirang.kari.re.kr
- Web-based Catalog Search and Browse System for KOMPSAT-2/3/5



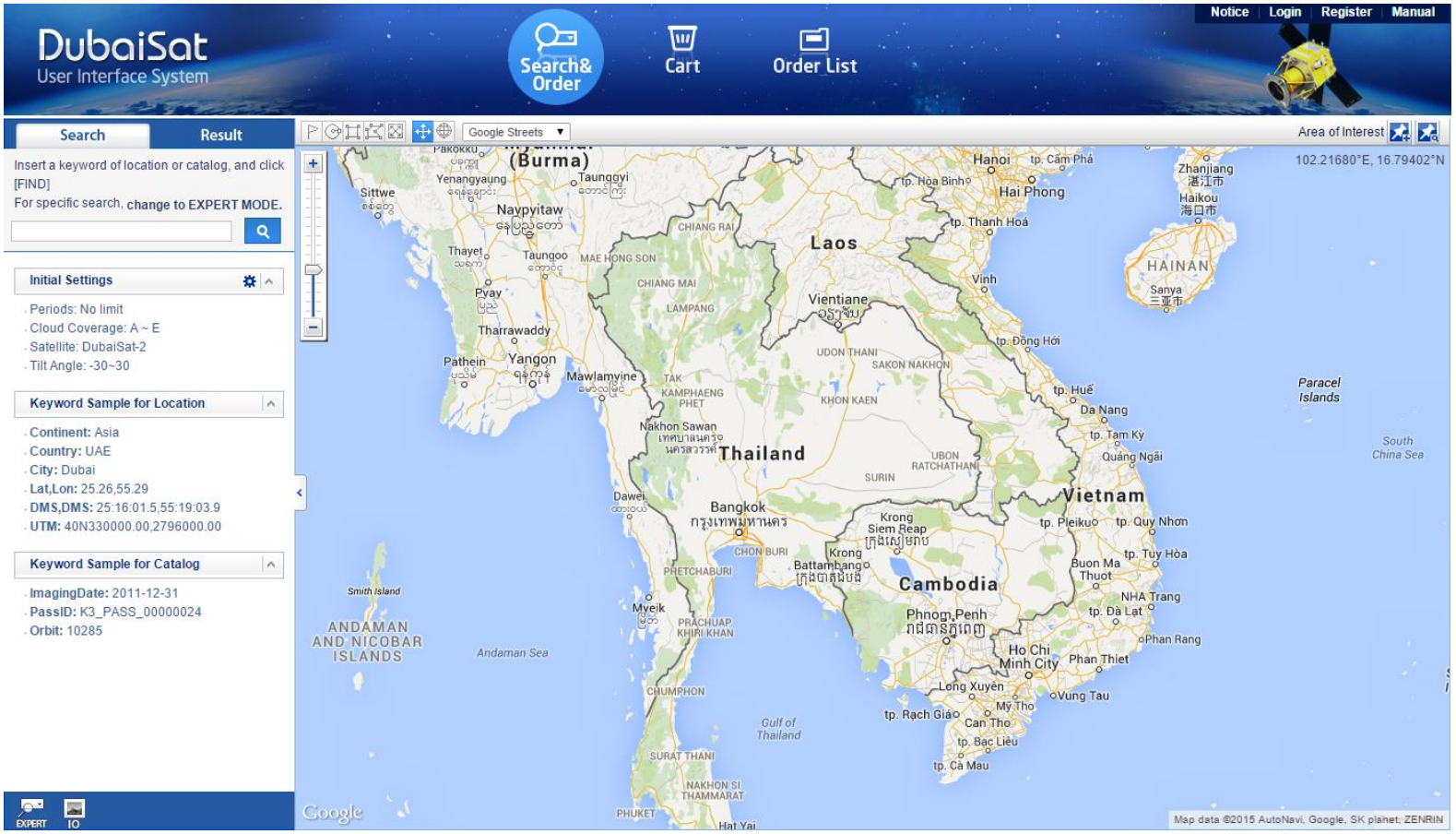
KOMPSAT – Arirang (2/2)

- **Search Mode**
  - Without log-in
  - Basic Search Condition
    - Imaging Period, Cloud Cover, Satellite, Tilt Angle
    - Area of Interest
  - Search Result Display
    - List on table
    - foot print, thumbnail, browse image on map, detailed metadata
  - Search Result Export
    - KMZ, HTML, CSV, SHP
- **Request to GISTDA for detailed search condition**



DubaiSat (1/2)

- http://uis.eiast.ae/map/map.jsp
- Web-based Catalog Search and Browse System for DubaiSat-2



DubaiSat (2/2)

- **Search Mode**
  - Without log-in
  - Basic Search Condition
    - Imaging Period, Cloud Cover, Tilt angle
    - Area of Interest
  - Search Result Display
    - List on table
    - foot print, thumbnail, browse image on map, detailed metadata
  - Search Result Export
    - KMZ, HTML, CSV, SHP
- **Request to GISTDA for detailed search condition**

Supportive COTS

- **KOMPSAT-2/3**
  - PCI Geomatica 2013
  - ENVI 5.1
  - ERDAS 2014
  - Pixel Factory 2014
- **KOMPSAT-5**
  - PCI Geomatica: Geomatica 2014 Service Pack 2
  - ENVI SARscape 5.1 (preliminary support) / 5.2 (scheduled)
  - ERDAS: ERDAS v14.1 patch
  - GAMMA Remote Sensing (patch for test is available)
- **DubaiSat-2**
  - PCI Geomatica 2015 (scheduled)
  - ERDAS (scheduled in second quarter of 2015)

We Are
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