**SEO Response to CEOS Carbon Actions**

October 29, 2016

**(1) Action CARB-08-03**

Title: Public availability of historical moderate-resolution satellite data records

Description: CEOS Agencies with historical moderate-resolution (~250 m - 1 km) satellite data records will strive to ensure these data are publicly available and used to create the moderate-resolution (~250 m - 1 km) records of land properties over the historical satellite record that are useful for carbon science. They will coordinate their efforts with relevant CEOS WGs and VCs.

**(2) Action CARB-08-04**

Title: Public availability of historical medium-resolution satellite data records

Description: CEOS Agencies with historical medium-resolution (~30 m -100 m) satellite data records will strive to ensure these data are publicly available and used to create the medium-resolution records of land properties over the historical satellite record that are useful for carbon science. They will coordinate their efforts with relevant CEOS WGs and VCs.

**Response Summary**

As these actions are closely related, the SEO has developed this consolidated report as a response to both of these Carbon actions. It is assumed that “publicly available” means the datasets are free/open for public use and there are no restrictions. The tables below summarize the known (past, current and future) moderate and medium resolution satellite data records measuring land properties relevant to carbon science. Also included in these tables are data policies, measurement type, revisit, swath and resolution.

It is recommended that these summary tables be provided to Climate Working Group for further analysis to assess the specific data products, their relevance to Carbon and the existence of any long-term climate data records. In addition, there are likely other missions (past, current and future), not included on this list, that need to be included.

**Moderate Resolution (250 meter to 1000 meter) Mission Summary**

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| **Mission** | **Instrument** | **Instrument Type** | **Agency** | **Launch** | **Data Policy** | **Repeat or Revisit** | **Swath** | **Resolution** |
| Terra | MODIS | VIS, NIR, SWIR, MWIR, TIR | NASA | Dec 1999 | Open | 1 day | 2330 km | 250, 500, 1000m |
| Terra | MISR | UV, VIS, NIR | NASA | Dec 1999 | Open | 1 day | 380 km | 275m, 550m, 1.1km |
| Aqua | MODIS | VIS, NIR, SWIR, MWIR, TIR | NASA | May 2002 | Open | 1 day | 2330 km | 250, 500, 1000m |
| SPOT-5 | VGT-2 | VIS, NIR, SWIR | CNES | May 2002 | Open | 1 day | 2276 km | 1150 m |
| HJ-1B | IR | NIR, SWIR, MWIR, TIR (300m) | CAST | Sep 2008 | Open |  | 720 km | 150, 300m |
| COMS | GOCI | VIS, NIR | Korea | Jun 2010 | Open |  | 1440 km | 236 x 500m |
| Suomi-NPP | VIIRS | VIS, NIR, SWIR, MWIR, TIR | NASA | Oct 2011 | Open | 1 day | 3000 km | 375, 750m |
| Proba-V | VGT-P | VIS, NIR, SWIR | ESA/BELSPO | May 2013 | Open \* | 1 day | 2285 km | 100, 333, 1000m |
| Sentinel-3A | SLSTR | 500m (VNIR/SWIR), 1000m (TIR) | ESA | Feb 2016 | Open | 4 days | 1675 km | 500, 1000m |
| BJ-2 | CCD camera | VIS, NIR | ISRO | Jul 2015 | Open | <1 day | Full Earth Disk | 1km |
| Elektro-L N1 | MSU-GS | VIS, NIR, SWIR, MWIR, TIR | Russia | Jan 2011 | Open | <1 day | Full Earth disk | 1000, 4000 m |
| MTSAT-2 | Imager | VIS, MWIR, TIR | JMA | Feb 2006 | Open | < 1 day | Full Earth Disk | 1km, 4km |
| MTSAT-1R | JAMI | VIS, MWIR, TIR | JMA | Feb 2005 | Open | < 1 day | Full Earth Disk | 1km, 4km |
| COMS | MI | VIS (1km), SWIR, MWIR, TIR | KARI/KMA/ITT | Jun 2010 | Open | < 1 day | Full Earth Disk | 1km, 4km |
| Meteosat-10 | SEVERI | VIS (1km), NIR, SWIR, MWIR, TIR | EUMETSAT/ESA | Jul 2012 | Open | < 1 day | Full Earth Disk | 1km, 4km |

**Medium Resolution (30 meter to 100 meter) Mission Summary**

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| **Mission** | **Instrument** | **Instrument Type** | **Agency** | **Launch** | **Data Policy** | **Repeat or Revisit** | **Swath** | **Resolution** |
| Landsat-7 | ETM+ | 15m (PAN), 30m (VIS/SWIR), 60m (TIR) | NASA/USGS | Apr 1999 | Open | 16 days | 183 km | 15, 30, 60m |
| NMP-EO-1 | ALI | 10m (Pan), 30m (VNIR/SWIR) | NASA | Nov 2000 | Open | 16 days | 185 km | 10, 30m |
| NMP-EO-1 | Hyperion | Hyperspectral imager | NASA | Nov 2000 | Open | 16 days | 185 km | 30m |
| Proba | CHRIS | VIS, NIR | ESA/UKSA | Oct 2001 | Open | 7 days | 14 km | 18, 36m |
| SPOT-5 | HRG | VIS, NIR, SWIR | CNES | May 2002 | Open | 26 days | 120 km | 10m |
| HJ-1A | HSI | VIS, NIR | CRESDA/CAST | Sep 2008 | Open | 31 days | 50 km | 100m |
| HJ-1A | CCD | VIS, NIR | CAST | Sep 2008 | Open | 31 days | 360 km (per set) | 30m |
| Meteor-M N1 | KMSS | VIS, NIR | ROSKOSMOS | Sep 2009 | Open | 4 days | 900 km | 60 m, 120 m |
| SJ-9A | MUX | VIS, NIR | CRESDA | Oct 2012 | Open | 69 days | 30 km | 10m |
| HJ-1C | SAR | S-Band Radar | CAST | Nov 2012 | Open | 31 days | 100 km | 20m (4 locks) |
| Landsat-8 | OLI + TIRS | 15m (PAN), 30m (VIS/SWIR), 100m (TIR) | NASA/USGS | Feb 2013 | Open | 16 days | 183 km | 15, 30, 100m |
| Sentinel-1A | SAR | C-Band Radar | ESA | Apr 2014 | Open | 12 days | 80, 250, 400 km | 9, 20, 50 m |
| CBERS-4 | WFI-2 | VIS, NIR | INPE/CAST | Dec 2014 | TBD | 5 days | 866 km | 73 m |
| CBERS-4 | MUXCam | VIS only | INPE/CAST | Dec 2014 | TBD | 26 days | 120 km | 20 m |
| CBERS-4 | IRS (China) | 40m (PAN/SWIR), 80m (TIR) | INPE/CAST | Dec 2014 | TBD | 26 days | 120 km | 40, 80m |
| Sentinel-2A | MSI | 10m (VNIR), 20m (SWIR) | ESA | Jun 2015 | Open | 10 days | 290 km | 10, 20m |
| Sentinel-1B | SAR | C-Band Radar | ESA | Apr 2016 | Open | 12 days | 80, 250, 400 km | 9, 20, 50 m |
| Sentinel-2B | MSI | 10m (VNIR), 20m (SWIR) | ESA | 2016 | Open | 10 days | 290 km | 10, 20m |
| SAOCOM-1A | SAR | L-Band Radar | CONAE/ASI | 2016 | TBD | 16 days | 20 to 350 km | 10 to 100 m |
| SAOCOM-1B | SAR | L-Band Radar | CONAE/ASI | 2017 | TBD | 16 days | 20 to 350 km | 10 to 100 m |
| RCM | SAR-C | C-Band Radar | CSA | 2018 | TBD | 4 days | 5 to 500 km | 1 to 100 m |