**Commonly Used Earth Observing Satellites**

You will turn in your satellite choice, answers to questions 1-11 and justification for your application (see page 3). And fill in the table on page 2. This will count as a lab grade.

Lab will be worth 2 points and due on friday. Everything must be typed! I will give this back to you next week to use as a reference, so make sure the information is correct.

In this exercise, your group will:

1. Each group will be assigned a group number - Research the satellite associated with your group from the list provided below, answering each of the questions that I pose,
2. Circulate around the class and visit with other groups to fill in the table on satellite characteristics, and,
3. Choose a satellite for the application that I give you based on the information about the satellites.

**Satellites**

|  |  |
| --- | --- |
| **#** | **Satellite** |
| 1 | Landsat MSS |
| 2 | Landsat TM (L4-5) |
| 3 | ASTER |
| 4 | Landsat OLI (L8) |
| 5 | AVHRR |
| 6 | Worldview 3 |
| 7 | MODIS |
| 8 | Sentinel 6 |
| 9 | Meteosat 11 |
| 10 | Pleiades 1b |
| 11 | SPOT 7 |

Answer each of the following questions about your satellite:

1. What does the satellite acronym (abbreviation) stand for, if anything?
2. Who operates the satellite (country and agency or company)?
3. When was the satellite launched?
4. Is the satellite still collecting data? If not, when did it stop?
5. What is the spatial resolution of your satellite (meters)?
6. What is the spectral resolution (# of bands)?
7. What is the satellite return time (temporal resolution)?
8. Does the satellite collect global imagery continuously, or is it an “on demand” satellite?
9. How much does it cost to get data for this satellite (*e.g.*, free, inexpensive, expensive, or be more specific if possible—some satellites require writing for a quote and you don’t have to do this today! But be sure to check multiple sources.)
10. What types of applications is this satellite well suited for?
11. Briefly describe an example of the satellite being used for some specific application (a case study).

Fill in the following table\* with satellite characteristics by visiting with other groups:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Satellite** | **Launch Date** | **End**  **Date** | **Cost** | **Spatial**  **Resolution (m)** | **Spectral**  **Resol.**  **(# bands)** | **Return**  **Time**  **(days)** | **Applications**  **(See next page)** |
| Landsat MSS |  |  |  |  |  |  |  |
| Landsat TM |  |  |  |  |  |  |  |
| Landsat ETM+ |  |  |  |  |  |  |  |
| Landsat OLI |  |  |  |  |  |  |  |
| AVHRR |  |  |  |  |  |  |  |
| Worldview 3 |  |  |  |  |  |  |  |
| MODIS |  |  |  |  |  |  |  |
| Sentinel 6 |  |  |  |  |  |  |  |
| Meteosat 11 |  |  |  |  |  |  |  |
| Pleiades 1b |  |  |  |  |  |  |  |
| SPOT 7 |  |  |  |  |  |  |  |

Finally, a number of applications are listed below. For your group’s satellite, which of the below would be good applications for your satellite’s data?

|  |  |
| --- | --- |
| **#** | **Application** |
| 1 | You have been hired by the National Park Service to map the extent of beetle killed pines in Yellowstone National Park as of the end of summer, 2014. They have provided you funding for researcher salaries, but only a small budget for image acquisition. |
| 2 | You are global change scientists interested in monitoring the change in vegetation distributions (plant migrations, *etc.*) with climate change. |
| 3 | Your family has a large ranch (about 50 mi2) in the Powder River Basin and you are interested in fine scale mapping all of the fences on your property. |
| 4 | You would like to create a baseline map of the vegetation of the African continent as it was distributed in 1985. |
| 5 | You have been hired by the Rawlins office of the Bureau of Land Management (BLM) to map land cover throughout their management jurisdiction which covers much of south-central Wyoming south of I-80 and between the Sierra Madre Mountains and Rock Springs. |
| 6 | You want to quantify the change in land cover around Las Vegas, Nevada, including urban change, from 1974 until 2010. |
| 7 | You would like to use satellite imagery to map the total surface area of water reservoirs in Wyoming at the end of the summer of 2012 with only a small budget for data acquisition. |
| 9 | You are interested in using satellite imagery as a tool to look for wildfire starts in the Western U.S. during the 2014 fire season based on algorithms that help detect smoke plumes. |